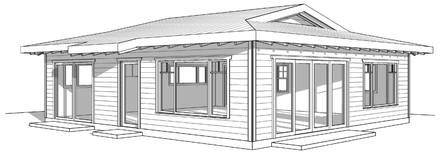
anaheim pradu 2 bedroom

CONTACT UTILITY COMPANY REGARDING ELECTRIC SERVICE TO THIS DETACHED ADU.
ANY EXISTING SERVICE UPGRADE OR NEW SERVICE FOR THE ADU
WILL REQUIRE A SEPARATE PERMIT FROM THE CITY OF ANAHEIM.

a

b

c



energy requirement notes:

1. CONNECTION TO A PHOTOVOLTAIC SOLAR SYSTEM IS REQUIRED FOR THIS PROJECT. SOLAR SYSTEM IS A DEFERRED SUBMITTAL.
2. REQUIRED SPECIAL FEATURES:
   - WHOLE HOUSE FAN
   - EXPOSED SLAB FLOOR IN CONDITIONED ZONE
   - VARIABLE CAPACITY HEAT PUMP COMPLIANCE OPTION (VERIFICATION DETAILS FROM VCHP STAFF REPORT, APPENDIX B, AND RA3)
   - NORTHWEST ENERGY EFFICIENCY ALLIANCE (NEEA) RATED HEAT PUMP WATER HEATER; SPECIFIC BRAND/MODEL, OR EQUAL,MUST BE INSTALLED
3. HERS FEATURE SUMMARY

BUILDING LEVEL VERIFICATIONS:
- INDOOR AIR QUALITY VENTILATION
- KITCHEN RANGE HOOD
- WHOLE HOUSE FAN AIRFLOW AND FAN EFFICACY

COOLING SYSTEM VERIFICATIONS:
- VERIFIED SEER/SEER2
- VERIFIED REFRIGERANT CHARGE
- AIRFLOW IN HABITABLE ROOMS(SC3.1.4.1.7)

HEATING SYSTEM VERIFICATIONS:
- VERIFIED HSPF (C ELEV ONLY)
- VERIFIED HEAT PUMP RATED HEATING CAPACITY
- WALL MOUNTED THERMOSTAT IN ZONES GREATER THAN 150 SF(SC3.4.5)
- DUCTLESS INDOOR UNITS LOCATED ENTIRELY IN CONDITIONED SPACE (SC3.1.4.1.8)

HVAC DISTRIBUTION SYSTEM VERIFICATIONS:
- NONE

DOMESTIC HOT WATER SYSTEM VERIFICATIONS:
- NONE

deferred submittals:

1. A PHOTOVOLTAIC SYSTEM MEETING THE MINIMUM QUALIFICATION REQUIREMENTS AS SPECIFIED IN JOINT APPENDIX JA11, WITH ANNUAL ELECTRICAL OUTPUT EQUAL TO OR GREATER THAN THE DWELLING'S ANNUAL ELECTRICAL USAGE AS DETERMINED BY EQUATION 150.1-C IS REQUIRED. ES SECTION 150.1(C)14.
2. SUBMITTED DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

solar system notes:

1. A PHOTOVOLTAIC (PV) SOLAR SYSTEM IS REQUIRED AND A SEPARATE PERMIT WILL BE REQUIRED. THE PV SYSTEM MUST BE INSTALLED, OPERATIONAL AND HAVE FINAL APPROVAL **PRIOR** TO FINAL BUILDING INSPECTION AND APPROVAL FOR THE ADU.
2. ADDITIONAL INFORMATION ABOUT THE PV SOLAR SYSTEM IS PROVIDED AT THE UTILITY PLAN ON SHEET a2.0 AND AT THE T-24 ENERGY REQUIREMENT SHEETS.

parking:

REQUIRED VEHICLE SPACES FOR EXISTING RESIDENCE	=	SPACES
REQUIRED VEHICLE SPACES FOR ADU	=	SPACES
REQUIRED SPACES ON SITE	=	TOTAL REQUIRED SPACES
PROVIDED ENCLOSED SPACES PROVIDED FOR EXISTING RESIDENCE	=	SPACES
PROVIDED UNENCLOSED SPACES PROVIDED FOR EXISTING RESIDENCE	=	SPACES
PROVIDED ENCLOSED SPACES PROVIDED FOR ADU	=	SPACES
PROVIDED UNENCLOSED SPACES PROVIDED FOR ADU	=	SPACES
VEHICLE SPACES PROVIDED ON SITE	=	TOTAL PROVIDED SPACES

conditions of use:

1. THE PERMITTEE AND OWNER OF THE PROPERTY THAT IS THE SUBJECT OF THESE PLANS AGREES TO AND DOES BY UTILIZING THESE PLANS AND BY SUBMITTING THEM TO THE CITY OF ANAHEIM FOR PERMITTING DOES HEREBY RELEASE, HOLD HARMLESS AND AGREE TO INDEMNIFY AND DEFEND THE CITY OF ANAHEIM AND THE ARCHITECT, INCLUDING WITHOUT LIMITATION, ALL EMPLOYEES, OFFICERS, COUNCILMEMBERS, COMMISSIONERS, AND AGENTS AND/OR CONSULTANTS OF THE FOREGOING WHO PREPARED THESE CONSTRUCTION DOCUMENTS, AND EACH OF THEM, FROM ANY AND ALL CLAIMS, LIABILITIES, SUITS AND DEMANDS ON ACCOUNT OF ANY INJURY, DAMAGE OR LOSS, TO PERSONS OR PROPERTY, INCLUDING INJURY OR DEATH, OR ECONOMIC LOSSES, ARISING OUT OF THE USE OF THESE CONSTRUCTION DOCUMENTS. THE OWNER AND THE PERMITTEE, AND EACH OF THEM ACKNOWLEDGE AGREEING TO THIS COVENANT, IS A CONDITION PRECEDENT TO BEING ABLE TO UTILIZE THESE PLANS, AND, THAT WITHOUT THIS HOLD HARMLESS AND RELEASE, WOULD NOT BE ABLE BE ABLE TO UTILIZE THESE PLANS. FURTHER, OWNER AND PERMITTEE ACKNOWLEDGES THAT THE OWNER/PERMITTEE HAS BEEN ADVISED TO SEEK THE SERVICES OF ANY AND ALL CONSULTANTS, THEY CHOOSE, TO REVIEW THESE PLANS PRIOR TO USING THEM, TO SEEK ADVICE ON THE SUITABLY OF THESE PLANS FOR THEIR USE FOR THE INTENDED USE BY THE OWNER/PERMITTEE. THE INDEMNITY DOES NOT INCLUDE ANY LIABILITY ARISING OUT OF THE SOLE NEGLIGENCE OR WILLFUL MISCONDUCT OF THE PARTIES BEING INDEMNIFIED.
2. BY USING THESE PERMIT READY CONSTRUCTION DOCUMENTS, THE USER AGREES TO RELEASE THE CITY OF ANAHEIM AND THE ARCHITECT WHO PREPARED THESE CONSTRUCTION DOCUMENTS FROM ANY AND ALL CLAIMS, LIABILITIES, SUITS AND DEMANDS ON ACCOUNT OF ANY INJURY, DAMAGE OR LOSS TO PERSONS OR PROPERTY, INCLUDING INJURY OR DEATH, OR ECONOMIC LOSSES, ARISING OUT OF THE USE OF THESE CONSTRUCTION DOCUMENTS.

scope of work:

PROJECT DESCRIPTION	=	ONE STORY DETACHED 2 BEDROOM ACCESSORY DWELLING UNIT (ADU)
PLAN CHECK NUMBER	=	

area calculations:

LOT AREAS			
GROSS LOT AREA	=		SF
NET LOT AREA	=		SF
(DEDUCTIONS PER CHAP 30.04)	=	(	SF)
BUILDING AREAS			
PROPOSED			
PROPOSED ADU	=	990	SF
EXISTING			
EXISTING RESIDENCE BASEMENT	=		SF
EXISTING RESIDENCE FIRST FLOOR	=		SF
EXISTING RESIDENCE SECOND FLOOR	=		SF
TOTAL EXISTING RESIDENCE	=		SF
EXISTING GARAGE ATTACHED	=		SF
EXISTING GARAGE DETACHED	=		SF
EXISTING ACCESSORY STRUCTURE	=		SF
FAR (FLOOR AREA RATIO)			
BULK FLOOR AREA (AS APPLIED TO FAR)			
FIRST FLOOR LIVING AREA	=		SF
SECOND FLOOR LIVING AREA	=		SF
GARAGE AREA EXCEEDING 400 SF	=		SF
ADU LIVING AREA	=		SF
ADU DEDUCTION	=	(	SF - NTE 800 SF)
ACCESSORY STRUCTURE TOTAL SF	=		SF
OUTDOOR COVERED AREAS	=		SF - IF QUALIFY AS FAR
TOTAL BULK FLOOR AREA	=		SF
ALLOWED FAR			
FAR ALLOWED	=	.	
FAR ALLOWED x GROSS LOT AREA	=		SF
PROPOSED FAR (TOTAL BULK FLOOR AREA / GROSS LOT AREA)	=		SF
FAR PROPOSED	=	.	
LOT COVERAGE (LC)			
ALLOWED LOT COVERAGE (BY ZONE)	=		%
TOTAL STRUCTURE FOOTPRINT AREA	=	SF(	EXISTING + PROPOSED)
CANTILEVERED FLOOR AREA ABOVE	=		SF
ADU DEDUCTION	=	(	SF - NTE 800 SF)
LC SF / NET LOT AREA	=	.	x 100 = %
PROPOSED LOT COVERAGE	=		%

agencies:

MUNICIPAL JURISDICTION	=	CITY OF ANAHEIM
ELEMENTARY SCHOOL DISTRICT	=	
HIGH SCHOOL DISTRICT	=	
SEWER DISTRICT	=	
WATER DISTRICT	=	
FIRE DEPARTMENT	=	ANAHEIM FIRE DEPARTMENT

sheet index:

project data:

SITE ADDRESS (EXISTING RESIDENCE)	=	
SITE ADDRESS (PROPOSED ADU)	=	
PROPERTY OWNER (LEGAL)	=	
PROPERTY OWNER PHONE	=	
PROPERTY OWNER EMAIL	=	
PROPERTY OWNER ADDRESS	=	
APN	=	
LEGAL DESCRIPTION	=	
GENERAL PLAN DESIGNATION	=	RESIDENTIAL _____
ZONE	=	R-____
ZONE OVERLAYS	=	
OCCUPANCY	=	R-3
CONSTRUCTION TYPE	=	V-B
ORIGINAL CONSTRUCTION YEAR	=	
EXISTING USE	=	____SINGLE OR ____MULTI FAMILY
PROPOSED USE	=	ACCESSORY DWELLING UNIT (ADU)
FIRE SPRINKLERS	=	SEE SELECTION ON SHEET a0.1
AVERAGE LOT SLOPE	=	____ % (FROM TABLE ON SHEET a0.5)
SLOPE ANALYSIS	=	SEE NOTE ON THIS SHEET

setback, height & story

	FRONT	INTERIOR SIDE	EXTERIOR SIDE	REAR
SETBACKS				
REQUIRED - STANDARD	FT	FT	FT	FT
EXISTING RESIDENCE	FT	FT	FT	FT
EXISTING ACCESSORY STRUCTURE	FT	FT	FT	FT
REQUIRED - ADU	FT	FT	FT	FT
PROPOSED - ADU	FT	FT	FT	FT

HEIGHT		
EXISTING RESIDENCE	=	FT
EXISTING ACCESSORY STRUCTURE	=	FT
PROPOSED ADU	=	FT
STORY		
EXISTING RESIDENCE	=	
EXISTING ACCESSORY STRUCTURE	=	
PROPOSED ADU	=	1

grading:

CUT	=	YD^3
FILL	=	YD^3
IMPORT	=	YD^3
EXPORT	=	YD^3
OVEREXCAVATION & RECOMPACTION	=	YD^3
MAXIMUM CUT HEIGHT	=	FT
MAXIMUM FILL HEIGHT	=	FT

landscape area:

EXISTING LANDSCAPE SITE AREA	=	SF,	%
PROPOSED LANDSCAPE SITE AREA	=	SF,	%
NON LANDSCAPE SITE AREA	=	SF,	%
TOTAL SITE AREA	=	SF,	100%

impervious surfaces:

EXISTING IMPERVIOUS SITE AREA	=	SF,	%
PROPOSED IMPERVIOUS SITE AREA	=	SF,	%
NON IMPERVIOUS SITE AREA	=	SF,	%
TOTAL SITE AREA	=	SF,	100%
CHANGE (+/-) IMPERVIOUS SITE AREA	=	SF,	%

project team:

ARCHITECT	FIRM	DZN PARTNERS
	ADDRESS	682 2ND ST
	CITY, STATE, ZIP	ENCINITAS, CA 92024
	PHONE	(760) 753-2464
	EMAIL	B.SMITH@DZNPARTNERS.COM
	CONTACT	BART SMITH, AIA LEED AP
ENERGY CONSULTANT	FIRM	BEAR TECHNOLOGYS CONSULTANTING, INC
	ADDRESS	3431 DON ARTURO DR
	CITY, STATE, ZIP	CARLSBAD, CA 92010
	PHONE	(760) 635-2327
	EMAIL	WAYNE@BEARTECHCONSULTING.COM
	CONTACT	WAYNE SEWARD
ENGINEER	FIRM	PCSD ENGINEERING
	ADDRESS	3529 COASTVIEW COURT
	CITY, STATE, ZIP	CARLSBAD, CA 92010
	PHONE	(760) 207-1885
	EMAIL	PAUL.PCSD@GMAIL.COM
	CONTACT	PAUL CHRISTENSON

construction codes:

2022	CALIFORNIA	BUILDING CODE	TITLE 24	PART 2, V. 1&2
2022	CALIFORNIA	RESIDENTIAL CODE	TITLE 24	PART 2.5
2022	CALIFORNIA	ELECTRICAL CODE	TITLE 24	PART 3
2022	CALIFORNIA	MECHANICAL CODE	TITLE 24	PART 4
2022	CALIFORNIA	PLUMBING CODE	TITLE 24	PART 5
2022	CALIFORNIA	ENERGY CODE	TITLE 24	PART 6
2022	CALIFORNIA	FIRE CODE	TITLE 24	PART 9
2022	CALIFORNIA	GREEN BUILDING CODE	TITLE 24	PART 11

PROJECT SHALL COMPLY WITH THE 2022 CALIFORNIA BUILDING CODE WHICH ADOPTS: 2021 IRC, 2021 UMC, 2021 UPC & 2020 NEC.

vicinity map:

SITE ADDRESS =

NOT TO SCALE

COMMUNITY =

required for plan check submittal and permits:

ITEM	√	COMPLETED OR ACKNOWLEDGED
SHEET a0.0	☐	PROJECT DATA SHEET INFORMATION FILLED OUT
SHEET a0.1	☐	CHECKLIST SHEET INFORMATION FILLED OUT
SHEET a0.3	☐	CAL GREEN CHECKLIST FILLED OUT
SHEET a0.4	☐	SITE PLAN DRAFTED & NOTED PER SITE PLAN INFORMATION CHECKLIST AND SAMPLE SITE PLAN DIAGRAM
SHEET a0.5	☐	AVERAGE LOT SLOPE DIAGRAM DRAFTED & NOTED WITH TABLE FILLED OUT
SHEET a2.0	☐	ELECTRIC UTILITY TABLE FILLED OUT & ADU ELECTRICAL PANEL LOAD CALCULATION REVISED IF MODIFIED
T24 SHEETS	☐	REPORT WITH PROJECT OWNER & LOCATION IF NEEDED
SEPARATE PERMIT	☐	DISCRETIONARY PERMIT (IF APPLICABLE)
SEPARATE PERMIT	☐	CONTACT UTILITY PROJECT PLANNING FOR WORK ORDER, GET CITY PERMIT FOR ELECTRICAL UPGRADE (IF APPLICABLE)
DEFERRED SUBMITTAL	☐	PHOTOVOLTAIC PERMIT OR EXISTING PV SYSTEM REPORT, SEE DEFERRED SUBMITTAL TABLE ON THIS SHEET
DEFERRED SUBMITTAL	☐	FIRE SPRINKLER PERMIT (IF APPLICABLE), SEE FIRE SPRINKLER CHECKLIST ON SHEET a0.1
BY OWNER	☐	SOIL REPORT FOR ADU OVER 500 SF WITH FOUNDATION DESIGN REVIEW APPROVAL LETTER
BY OWNER	☐	PROPERTY GRANT DEED WITH LEGAL DESCRIPTION
BY OWNER	☐	RESIDENTIAL BUILDING RECORD FROM COUNTY ASSESSOR
BY OWNER	☐	AGENCY LETTER IF OWNER IS USING AGENT FOR PLAN CHECK & PERMIT PROCESSING
CITY FORM	☐	BUILDING PERMIT CALCULATIONS - BUILDING SQUARE FOOTAGE
CITY FORM	☐	CONSTRUCTION & DEMO WASTE MANAGEMENT PLAN
CITY FORM	☐	STORMWATER INTAKE FORM & STANDARD SWQMP
CITY FORM	☐	LOCAL GREEN BUILDING ORDINANCE CHECKLIST
CITY FORM	☐	BUILDING ACKNOWLEDGMENT OWNER-BUILDER
CITY FORM	☐	HOUSING DEVELOPMENT TRACKING FORM
CITY FORM	☐	ADU COVENANT PROVIDED BY PROJECT PLANNER NOTARIZED AND OWNER CHECK PROVIDED FOR COUNTY RECORDER
CITY FORM	☐	WATER DISTRICT SIGN OFF
CITY FORM	☐	SEWER DISTRICT OR COUNTY HEALTH SEPTIC SIGN OFF
CITY FORM	☐	SCHOOL DISTRICT(S) SIGN OFF IF ADU IS 500 SF OR GREATER

PREPARER SIGNATURE

FOR CITY STAMPS

BY USING THESE PERMIT READY CONSTRUCTION DOCUMENTS, THE USER AGREES TO RELEASE THE CITY OF ANAHEIM AND THE ARCHITECT WHO PREPARED THESE CONSTRUCTION DOCUMENTS FROM ANY AND ALL CLAIMS, LIABILITIES, SUITS AND DEMANDS ON ACCOUNT OF ANY INJURY, DAMAGE OR LOSS TO PERSONS OR PROPERTY, INCLUDING INJURY OR DEATH, OR ECONOMIC LOSSES, ARISING OUT OF THE USE OF THESE CONSTRUCTION DOCUMENTS.

DZN PARTNERS
682 SECOND ST
ENCINITAS, CA
(760) 753 2464
DZNPARTNERS.COM

2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

PROJECT DATA

a0.0

abbreviations

&	AND
@	AT
°	DEGREES
Ø	DIAMETER
%	PERCENT
d	PENNY (NAIL SIZE)
#	POUND OR NUMBER
(E)	EXISTING
(N)	NEW
(NR)	NEW REPLACEMENT
AA	ATTIC ACCESS
AB	ANCHOR BOLT
AC	ASPHALT CONCRETE
A-C	ALTERNATING CURRENT
A/C	AIR CONDITIONING
ACOUS	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADA	AMERICAN DISABILITY ACT
AFO	ARCHED FRAMED OPENING
AGGR	AGGREGATE
AGO	ARCH GYPSUM BOARD OPENING
AHS	ALUMINUM HORIZONTAL SLIDING
AL	ALUMINUM
ALM	ALARM
ALT	ALTERNATE
AMP	AMPERE
APN	ASSESSORS PARCEL NUMBER
ARCH	ARCHITECT
AS	ALUMINUM SLIDING
ASPH	ASPHALT
AVE	AVENUE
AVS	ALUMINUM VERTICAL SLIDING
AWG	AWNING
B	BOTTOM
BBQ	BARBEQUE
BD	BOARD
BFD	BIFOLDING DOOR
BI	BUILT IN
BJ	BALCONY JOIST
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAIL
BOT	BOTTOM
BPD	BYPASS DOOR
BRG	BEARING
BRK	BRICK
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BW	BOTH WAYS
CAB	CABINET
CB	CATCH BASIN
CEM	CEMENT
CER	CERAMIC
CI	CAST IRON
CIP	CAST IN PLACE
CJ	CEILING JOIST / CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLKG	CAULKING
CLO	CLOSET
CLR	CLEAR
CMN	COMMON
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CONTR	CONTRACTOR
CP	CEMENT PLASTER
CPT	CARPET
CSMT	CASEMENT
CTR	CENTER
CW	COLD WATER VALVE
CY	CUBIC YARD
DBL	DOUBLE
DEMO	DEMOLITION
DF	DOUGLAS FIR
DG	DUAL GLAZED
DH	DOUBLE HUNG
DIA	DIAMETER
DIM	DIMENSION
DJ	DECK JOIST
DN	DOWN
DP	DEEP
DR	DOOR
DS	DOWNSPOUT
DTP	DOUBLE TOP PLATE
DV	DRYER VENT
DW	DISHWASHER
DZN	DESIGN
E	EAST
EA	EACH
EGR	EXISTING GRADE
EJ	EXPANSION JOINT
ELEC	ELECTRIC
ELEV	ELEVATOR OR ELEVATION
EM	ELECTRICAL METER
EMER	EMERGENCY
EN	EDGE NAIL
ENCL	ENCLOSURE
EP	ELECTRICAL PANEL
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXST	EXISTING
EXT	EXTERIOR
FA	FIRE ALARM
FAB	FABRICATE
FAU	FORCED AIR UNIT
FD	FLOOR DRAIN
FDN	FOUNDATION
FE	FIRE EXSTINGUISHER
FF	FINISH FLOOR
FG	FINISH GRADE
FIN	FINISH
FJ	FLOOR JOIST
FL	FLOURESCENT
FLR	FLOOR
FLSH	FLASHING
FN	FIELD NAILING
FO	FRAMED OPENING
FP	FIREPLACE
FR	FIRE RATED
FRMG	FRAMING
FT	FOOT/FEET
FTG	FOOTING
FXD	FIXED
FYSB	FRONT YARD SETBACK
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GYPSUM BOARD
GFI	GROUND FORCE INTERRUPT
GI	GALVANIZED IRON
GL	GLASS
GLB	GLU-LAM BEAM
GO	GYPSUM BOARD OPENING
GR	GRADE
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
H	HIP
HB	HOSE BIBB
HC	HOLLOW CORE
H/C	HANDICAPPED
HD	HEAD
HDR	HEADER
HDWR	HARDWARE
HF	HARDY FRAME
HI	HIGH
HM	HOLLOW METAL
HOR	HORIZONTAL
HP	HEAT PUMP
HPR	HOPPER
HR	HOUR
HT	HEIGHT
HTR	HEATER
HW	HOT WATER
INSUL	INSULATION
IN	INCH
INT	INTERIOR
JST	JOIST
JT	JOINT
KIT	KITCHEN
L	LINEN
LAM	LAMINATE
LAT	LATERAL
LAV	LAVATORY
LDG	LANDING
LG	LONG
LR	LARGE
LS	LAZY SUSAN
LSW	LAG SCREW
LT	LAUNDRY TUB
LGT	LIGHT
MAX	MAXIMUM
MB	MACHINE BOLT
MBPD	MIRROR BYPASS DOOR
MC	MEDICINE CABINET
MDL	MODEL
MECH	MECHANICAL
MEMB	MEMBRANE
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MS	MACHINE SCREW
MTL	METAL
MW	MICROWAVE OVEN
N	NORTH
N/A	NOT APPLICABLE
NAT	NATURAL
NAP	NOT A PART
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
O/	OVER
OC	ON CENTER
OAE	OR APPROVED EQUAL
OH	OVERHANG
OPG	OPENING
OZ	OUNCE
P	POLE
PCC	PRECAST CONCRETE
PKT	POCKET
PL	PLATE
P/L	PROPERTY LINE
PLS	PLASTER
PLY	PLYWOOD
PNL	PANEL
PR	PAIR
PRE	PREFABRICATED
PT	PRESSURE TREATED
PTR	PARTNER
PV	PRESSURE VALVE
PVC	POLYVINYL CHLORIDE
R	RISER, RIDGE OR RADIUS
RA	RETURN AIR
RB	REINFORCING BAR
RBR	RUBBER
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REF	REFRIGERATOR
REG	REGISTER
REINF	REINFORCE
REQD	REQUIRED
REV	REVISION
RI	RIGID INSULATION
RM	ROOM
RO	ROUGH OPENING
RR	ROOF RAFTER
R/S	RESAWN
RYSB	REAR YARD SETBACK
S	SOUTH
SA	SUPPLY AIR
SBO	SELECTION BY OWNER
SC	SOLID CORE
SDG	SIDING
SEC	SECTION
SF	SQUARE FEET
SFD	SINGLE FAMILY DWELLING
SH	SINGLE HUNG OR SHELF
SHR	SHEAR
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SP	SHEAR PANEL
S & P	SHELF AND POLE
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
SSW	STEEL STRONG WALL
SSYSB	STREET SIDEYARD SETBACK
ST	STAIR
STL	STEEL
STP	STRAP
STR	STRUCTURAL
STRG	STORAGE
SUSP	SUSPENDED
SWU	SOFT WATER UNIT
SYSB	SIDE YARD SETBACK
T	TREAD OR TOP
TB	THROUGH BOLT
T & B	TOP AND BOTTOM
TC	TRASH COMPACTOR
TELE	TELEPHONE
TEMP	TEMPORARY
TG	TEMPERED GLASS
T & G	TONGUE AND GROOVE
THK	THICK
TME	TO MATCH EXISTING
TP	TOP PLATE
TV	TELEVISION
TYP	TYPICAL
TWH	TANKLESS WATER HEATER
U/	UNDER
U/C	UNDER COUNTER
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V	VALLEY OR VALVE
VAC	VACUUM
VER	VERTICAL
VHS	VINYL HORIZONTAL SLIDER
VIF	VERIFY IN FIELD
VOL	VOLUME
VTR	VENT TO ROOF
VVS	VINYL VERTICAL SLIDER
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WDWR	WARMING DRAWER
WH	WATER HEATER
WHS	WOOD HORIZONTAL SLIDER
WI	WROUGHT IRON
WIC	WALK IN CLOSET
WMH	WALL MOUNTED HEATER
WP	WATERPROOF
WS	WOOD SCREW
WSW	WOOD STRONG WALL
WVS	WOOD VERTICAL SLIDER
WWM	WELDED WIRE MESH
YD	YARD

door schedule - elevation a & c (d)

DOOR #	WIDTH	HEIGHT	THICK	TYPE	OPERATION	CORE OR GLAZING	MATERIAL	FRAME	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	3'-0"	6-8"	1-3/4"	FRENCH	SWING	DG, TG	WOOD	WOOD	OPTIONAL	.48	.3	1	ENTRY DOOR
2	12'-0"	6-8"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.48	.3	1	
3	8'-0"	6-8"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.48	.3	2	
4	3'-0"	6-8"	1-1/2"	INTERIOR	SWING	HOLLOW	WOOD	WOOD	NO	N/A	N/A	4	PRIVACY/BTH
5	3'-0"	6-8"	1-1/2"	INTERIOR	BARN	SOLID	WOOD	WOOD	NO	N/A	N/A	2	
6	6'-0"	6-8"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	
7	5'-0"	6-8"	1-1/2"	INTERIOR	BIFOLD	HOLLOW	WOOD	ALUMINUM	NO	N/A	N/A	1	LAUNDRY
8	2'-4"	6-8"	1-3/4"	EXTERIOR	SWING	SOLID	WOOD	WOOD	VENTS T&B	N/A	N/A	1	WH DOOR
9	5'-0"	6-8"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	

door schedule - elevation b (d)

DOOR #	WIDTH	HEIGHT	THICK	TYPE	OPERATION	CORE OR GLAZING	MATERIAL	FRAME	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	3'-0"	8'-0"	1-3/4"	FRENCH	SWING	DG, TG	WOOD	WOOD	OPTIONAL	.46	.3	1	ENTRY DOOR
2	12'-0"	8'-0"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.46	.3	1	
3	8'-0"	8'-0"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.46	.3	2	
4	3'-0"	8'-0"	1-1/2"	INTERIOR	SWING	HOLLOW	WOOD	WOOD	NO	N/A	N/A	4	PRIVACY/BTH
5	3'-0"	8'-0"	1-1/2"	INTERIOR	BARN	SOLID	WOOD	WOOD	NO	N/A	N/A	2	
6	6'-0"	8'-0"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	
7	5'-0"	8'-0"	1-1/2"	INTERIOR	BIFOLD	HOLLOW	WOOD	ALUMINUM	NO	N/A	N/A	1	LAUNDRY
8	2'-4"	8'-0"	1-3/4"	EXTERIOR	SWING	SOLID	WOOD	WOOD	VENTS T&B	N/A	N/A	1	WH DOOR
9	5'-0"	8'-0"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	

window schedule - elevation a & c (w)

WINDOW #	WIDTH	HEIGHT	TYPE	MATERIAL	GLAZING	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	9'-0"	5'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.4	.3	1	
2	8'-0"	3'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.4	.3	2	
3	2'-0"	4'-0"	VERTICAL SLIDER	VINYL	DG	YES	.4	.3	1	OPAQUE
4	4'-0"	3'-8"	HORIZONTAL SLIDER	VINYL	DG	YES	.4	.3	1	
5	8'-0"	5'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.4	.3	1	

window schedule - elevation b (w)

WINDOW #	WIDTH	HEIGHT	TYPE	MATERIAL	GLAZING	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	9'-0"	6'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.44	.3	1	
2	8'-0"	4'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.44	.3	2	
3	2'-0"	2'-0"	AWNING	VINYL	DG	YES	.44	.3	1	OPAQUE
4	4'-0"	5'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.44	.3	1	
5	8'-0"	6'-0"	HORIZONTAL SLIDER	VINYL	DG	YES	.44	.3	1	

appliance schedule - two bedroom 2 (a)

APPLIANCE	OPERATION	MANUFACTURER	MODEL	QUANTITY	NOTES
SPLIT SYSTEM HEAT PUMP	ELECTRICITY	PANASONIC	CU-5E36QBU-4	1	OR EQUAL, INTERIOR UNITS TO BE DETERMINED
HEAT PUMP TANK WATER HEATER	ELECTRICITY	RHEEM	PROPH40 T2 RH375-SO	1	OR EQUAL
REFRIGERATOR	ELECTRICITY	BY OWNER	BY OWNER	1	36" WIDE, COUNTER DEPTH
OVEN	ELECTRICITY	BY OWNER	BY OWNER	1	30" WIDE
COOKTOP	ELECTRICITY	BY OWNER	BY OWNER	1	30" WIDE
HOOD	ELECTRICITY	BY OWNER	BY OWNER	1	30" WIDE
MICROWAVE DRAWER	ELECTRICITY	BY OWNER	BY OWNER	1	30" WIDE
DISHWASHER	ELECTRICITY	BY OWNER	BY OWNER	1	24" WIDE
WASHER	ELECTRICITY	BY OWNER	BY OWNER	1	
DRYER	ELECTRICITY	BY OWNER	BY OWNER	1	
GARBAGE DISPOSAL	ELECTRICITY	BY OWNER	BY OWNER	1	

fixture schedule - two bedroom 2 (f)

FIXTURE	LOCATION	MANUFACTURER	MODEL	QUANTITY	NOTES
SINK	KITCHEN	BY OWNER	BY OWNER	1	
SINK FAUCET	KITCHEN	BY OWNER	BY OWNER	1	
LAVATORY	BATH	BY OWNER	BY OWNER	2	
LAVATORY FAUCET	BATH	BY OWNER	BY OWNER	2	
TOILET	BATH	BY OWNER	BY OWNER	2	
SHOWER HEAD	BATH	BY OWNER	BY OWNER	2	HANDHELD WITH ADJUSTABLE MOUNTING ROD

material schedule - two bedroom 2 (m)

LOCATION	FLOOR	BASE	CASE	COUNTER	CABINET	WALL	CEILING	NOTES
GREAT ROOM	5	4	4	-	-	1	5	OR EQUAL
ENTRY	2	4	4	-	-	1	1	OR EQUAL
KITCHEN	5	4	4	3	2	2	2	OR EQUAL
BATH	2	2	4	4	1	2	2	OR EQUAL
BEDROOM	5	4	4	-	-	1	5	OR EQUAL

1-CONCRETE	1-NONE	1-NONE	1-CONCRETE	1-PAINTED	1-FLAT PAINT	1-FLAT PAINT
2-TILE	2-TILE	2-TILE	2-TILE	WOOD	O/ GB	O/ GB
3-VINYL	3-VINYL	3-VINYL	3-STONE	2-STAINED	2-SEMIGLOSS	2-SEMIGLOSS
4-CARPET	4-P. WOOD	4-P. WOOD	4-GLASS	WOOD	PAINT O/ GB	PAINT O/ GB
5-WOOD	5-S. WOOD	5-S. WOOD	5-WOOD	3-METAL	5-WOOD	5-T&G WOOD

fire sprinklers:

√ EXISTING OR PROPOSED RESIDENCE

☐ NO

☐ YES

fire sprinklers:

√ REQUIRED AT PROPOSED ADU

☐ NO

☐ YES

fire sprinkler notes:

1. IF FIRE SPRINKLERS ARE REQUIRED AT THE ADU THAN THESE NOTES APPLY.
2. AUTOMATIC FIRE SPRINKLER SYSTEM - AN AUTOMATIC FIRE SPRINKLER SYSTEM SHALL BE INSTALLED AS PER N.F.P.A. 13D. THE MOST CURRENT EDITION SHALL BE USED AND THE ANAHEIM FIRE DEPARTMENT POLICIES/ORDINANCES. DETAILED SPRINKLER PLANS SHALL BE SUBMITTED TO THE FIRE PREVENTION BUREAU AND APPROVED PRIOR TO INSTALLATION. PLANS AND INSTALLATION MUST BE BY A C16 LICENSED SPRINKLER CONTRACTOR.
3. **SECTION 903.2 GROUP R** AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3 SHALL BE PROVIDED THROUGHOUT ALL BUILDINGS WITH A GROUP R FIRE AREA. THIS INCLUDES SINGLE FAMILY DWELLINGS, MULTI-FAMILY DWELLINGS AND ALL RESIDENTIAL CARE FACILITIES REGARDLESS OF OCCUPANT LOAD.
4. **SECTION 903.2.01** ADDITIONS AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH 903.3 MAY BE REQUIRED TO BE INSTALLED THROUGHOUT STRUCTURES WHEN THE ADDITION IS MORE THAN 50% OF THE EXISTING BUILDING OR WHEN THE ALTERED BUILDING WILL EXCEED A FIRE FLOW OF 1,500 GALLONS PER MINUTE AS CALCULATED PER SECTION 507.3. THE FIRE CODE OFFICIAL MAY REQUIRE AN AUTOMATIC SPRINKLER SYSTEM BE INSTALLED IN BUILDINGS WHERE NO WATER MAIN EXISTS TO PROVIDE THE REQUIRED FIRE FLOW OR WHERE A SPECIAL HAZARD EXISTS SUCH AS: POOR ACCESS ROADS, GRADE, BLUFFS AND CANYON RIMS, HAZARDOUS BRUSH AND RESPONSE TIMES GREATER THAN 5 MINUTES BY A FIRE DEPARTMENT.
5. **SECTION 903.2.01** REMODELS OR RECONSTRUCTION AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION 903.3 MAY BE REQUIRED IF THE SCOPE OF WORK INCLUDES SIGNIFICANT MODIFICATION TO THE INTERIOR AND/OR ROOF OF THE BUILDING, AND THE COST OF THE INSTALLATION DOES NOT EXCEED 15 PERCENT OF THE VALUATION OF THE REMODEL.
6. LOCATION AND SIZE OF WATER SERVICE UNDERGROUND SHALL BE INSTALLED AS SHOWN ON APPROVED FIRE SPRINKLER PLANS. A MINIMUM 1 INCH WATER SHALL BE INSTALLED.
7. A FIRE UNDERGROUND FLUSH CERTIFICATION SHALL BE REQUIRED AT FINAL INSPECTION.
8. A HYDRO INSPECTION OF THE FIRE SPRINKLER SYSTEM IS REQUIRED PRIOR TO FRAME INSPECTION. ONLY THE NEW PIPING SHALL BE TESTED.

waste water:

√ SELECTION

☐ SEWER

☐ SEPTIC (REQUIRES SAN DIEGO COUNTY HEALTH APPROVAL)

DISTANCE TO CONNECTION = _____FEET

onsite parking:

√ REQUIRED

☐ NONE

☐ ONE PARKING SPACE

very high fire severity zone:

√ SELECTION

☐ NO

☐ YES

1. IF THE PROPERTY THAT WILL CONTAIN THE ADU IS IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE SEE NOTES BELOW & ON SHEET a0.1F
2. THE ADU SHALL COMPLY WITH CHAPTER 7A OF THE CURRENT CALIFORNIA BUILDING CODE.
3. STRUCTURES IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE SHALL PROVIDE & MAINTAIN A FUEL MODIFICATION ZONE. FUEL MODIFICATION ZONES: THE APPLICANT SHALL PROVIDE & MAINTAIN FIRE/FUEL BREAKS TO THE SATISFACTION OF THE ANAHEIM FIRE DEPARTMENT. FIRE/FUEL BREAKS SIZE (MINIMUM 100 FEET FROM STRUCTURE) & COMPOSITION SHALL BE DETERMINED BY THE FIRE DEPARTMENT & SHOWN ON THE IMPROVEMENT/GRADING PLANS, FINAL MAP & BUILDING PLANS.

schedule notes:

1. ALL GLAZING IN DOORS SHALL BE TEMPERED.
2. SEE ELEVATIONS FOR 'TG' AT WINDOWS THAT REQUIRE TEMPERED GLAZING.
3. IF THE PROPERTY THAT WILL CONTAIN THE ADU IS IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE SEE NOTES AND SCHEDULES ON SHEET a0.1F CONCERNING DOOR & WINDOW CONSTRUCTION AND TEMPERED GLAZING.
4. SEE ELEVATIONS FOR WINDOW OPERATION DIRECTION & LOCATION OF MUNTINS.
5. SEE FLOOR PLANS FOR DOOR SWING DIRECTION.
6. ALL GLAZED OPENINGS SHALL MEET THE REQUIREMENTS OF THE CBC T24 SHEETS PROVIDED IN THE PLANS.
7. VINYL WINDOWS AND EXTERIOR VINYL DOOR FRAMES & SASH WILL BE COMPRISED OF VINYL MATERIAL WITH WELDED CORNERS & METAL REINFORCEMENT IN THE INTERLOCK AREA.

two bedroom 2 plan selection:

√ SELECTION

☐ STANDARD PLAN, ELEVATION A

☐ STANDARD PLAN, ELEVATION B

☐ STANDARD PLAN, ELEVATION C

☐ REVERSE PLAN, ELEVATION A

☐ REVERSE PLAN, ELEVATION B

☐ REVERSE PLAN, ELEVATION C

foundation type:

√ SELECTION

☐ STANDARD SOIL, SLAB ON GRADE

☐ EXPANSIVE SOIL, SLAB ON GRADE

☐ STANDARD SOIL, RAISED FLOOR FOUNDATION (ENERGY CALCS AVAILABLE ON REQUEST)

☐ EXPANSIVE SOIL, RAISED FLOOR FOUNDATION (ENERGY CALCS AVAILABLE ON REQUEST)

exterior wall material:

#1	#2	MATERIAL
☐	☐	CEMENT PLASTER SIDING - SAND FINISH OR TME
☐	☐	STONE SIDING
☐	☐	FIBER CEMENT - BOARD & BATT SIDING
☐	☐	FIBER CEMENT - LAP SIDING
☐	☐	FIBER CEMENT - SHINGLE SIDING

window material:

√ **MATERIAL**

☐ VINYL

☐ FIBERGLASS

☐ WOOD

☐ ALUMINUM CLAD WOOD

eave/rake & parapet:

#1	#2	MATERIAL
☐	☐	SINGLE FASCIA - IGNITION RESISTANT
☐	☐	EXPOSED RAFTER - IGNITION RESISTANT
☐	☐	STEPPED DOUBLE FASCIA - IGNITION RESISTANT
☐	☐	HEAVY TIMBER RAFTER TAIL - IGNITION RESISTANT
☐	☐	PARAPET WITH WALL MATERIAL CAP - IGNITION RESISTANT
☐	☐	PARAPET WITH METAL CAP - IGNITION RESISTANT
☐	☐	CORBEL PARAPET WITH METAL CAP - IGNITION RESISTANT

roof material:

#1	#2	MATERIAL
☐	☐	FIBERGLAS ASPHALT SHINGLES - GAF INC - ICC ESR 1475 OR ICC ESR 3267 - OAE
☐	☐	CONCRETE ROOF TILES - EAGLE ROOFING PRODUCTS INC - IAPMO-UES ER 1900 - OAE
☐	☐	STANDING SEAM METAL ROOF - AEP SPAN INC - IAPMO-UES ER 0309 - OAE
☐	☐	TORCH APPLIED MODIFIED BITUMEN ROOFING - GAF INC - UL ER1306-02 - OAE [USE ONLY FOR ROOF PITCH OF 2/12 OR LESS]
☐	☐	CLAY ROOF TILES - REDLAND CLAY TILE INC - IAPMO ER 445 - OAE

stormwater bioretention:

_____SQ. FT. TOTAL NEW &/OR REMOVED & REPLACED IMPERVIOUS SURFACES

☐ IS NOT GREATER THAN 500 SQ. FT. SIZING CALCULATION NOT REQUIRED

☐ IS GREATER THAN 500 SQ. FT. SIZING CALCULATION REQUIRED

SIZING CALCULATION: _____SQ. FT. x 4% = _____SQ. FT. (MIN BMP AREA REQUIRED)

√ **BMP DRAINAGE TYPE**

☐ A - BIORETENTION BASIN - SURFACE FLOW WITH SPILLWAY

☐ B - VEGETATED SWALE

☐ C - SITE DESIGN + LID (LOW IMPACT DEVELOPMENT)

☐ NOT REQUIRED

PREPARER SIGNATURE

FOR CITY STAMPS

DZN PARTNERS
682 SECOND ST
ENCINITAS, CA
(760) 753 2464
DZNPARTNERS.COM

2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

CHECKLIST + SCHEDULE

a0.1

very high fire hazard severity zone

PREPARER SIGNATURE

FOR CITY STAMPS

very high fire hazard severity zone notes:

CBC CHAPTER 7A - MATERIALS & CONSTRUCTION METHODS FOR EXTERIOR WILDFIRE EXPPOSURE

IF THE PROPERTY THAT WILL CONTAIN THE ADU IS IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE THESE NOTES & NOTES ON SHEET a0.1 APPLY.

701A.3 APPLICATION THE JURISDICTION HAS DETERMINED THAT THIS PROJECT IS IN A WILDLAND-URBAN INTERFACE AREA. PLEASE SHOW COMPLIANCE WITH THE FOLLOWING ITEMS FOR NEW BUILDINGS, PER THE 2022 CBC.

EXCEPTIONS

1. GROUP U OCCUPANCY ACCESSORY BUILDINGS OF ANY SIZE LOCATED AT LEAST 50 FEET (15 240 MM) FROM AN APPLICABLE BUILDING ON THE SAME LOT.
2. GROUP U OCCUPANCY AGRICULTURAL BUILDINGS, AS DEFINED IN SECTION 202 OF THIS CODE OF ANY SIZE LOCATED AT LEAST 50 FEET (15 240 MM) FROM AN APPLICABLE BUILDING.
3. GROUP C OCCUPANCY SPECIAL BUILDINGS CONFORMING TO THE LIMITATIONS SPECIFIED IN SECTION 450.4.1.
4. NEW ACCESSORY BUILDINGS AND MISCELLANEOUS STRUCTURES SPECIFIED IN SECTION 710A SHALL COMPLY ONLY WITH THE REQUIREMENTS OF THAT SECTION.
5. ADDITIONS TO AND REMODELS OF BUILDINGS ORIGINALLY CONSTRUCTED PRIOR TO JULY 1, 2008

REQUIREMENTS

ROOFING

1. **705A.2 ROOF COVERINGS** WHERE THE ROOFING PROFILE HAS AN AIRSPACE UNDER THE ROOF COVERING, INSTALLED OVER A COMBUSTIBLE DECK, A 72 LB. (32.7 KG) CAP SHEET COMPLYING WITH ASTM D3909 STANDARD SPECIFICATION FOR "ASPHALT ROLLED ROOFING (GLASS FELT) SURFACED WITH MINERAL GRANULES," SHALL BE INSTALLED OVER THE ROOF DECK. BIRD STOPS SHALL BE USED AT THE EAVES WHEN THE PROFILE FITS, TO PREVENT DEBRIS AT THE EAVE. HIP & RIDGE CAPS SHALL BE MUDDED IN TO PREVENT INTRUSION OF FIRE OR EMBERS.
EXCEPTION: CAP SHEET IS NOT REQUIRED WHEN NO LESS THAN 1" OF MINERAL WOOL BOARD OR OTHER NONCOMBUSTIBLE MATERIAL IS LOCATED BETWEEN THE ROOFING MATERIAL & WOOD FRAMING OR DECK.
ALTERNATELY, A CLASS A FIRE RATED ROOF UNDERLAYMENT, TESTED IN ACCORDANCE WITH ASTM E108, SHALL BE PERMITTED TO BE USED. IF THE SHEATHING CONSISTS OF EXTERIOR FIRE-RETARDANT-TREATED WOOD, THE UNDERLAYMENT SHALL NOT BE REQUIRED TO COMPLY WITH A CLASS A CLASSIFICATION. BIRD STOPS SHALL BE USED AT THE EAVES WHEN THE PROFILE FITS, TO PREVENT DEBRIS AT THE EAVE. HIP AND RIDGE CAPS SHALL BE MUDDED IN TO PREVENT INTRUSION OF FIRE OR EMBERS.
2. **705A.3 ROOF VALLEYS** WHERE VALLEY FLASHING IS INSTALLED, THE FLASHING SHALL BE NOT LESS THAN 0.019-INCH (0.48 MM) NO. 26 GAGE GALVANIZED SHEET CORROSION-RESISTANT METAL INSTALLED OVER NOT LESS THAN ONE LAYER OF MINIMUM 72 POUND (32.4 KG) MINERAL-SURFACED NONPERFORATED CAP SHEET COMPLYING WITH ASTM D3909, AT LEAST 36-INCH-WIDE (914 MM) RUNNING THE FULL LENGTH OF THE VALLEY.
3. **705A.4 ROOF GUTTERS.** ROOF GUTTERS SHALL BE PROVIDED WITH THE MEANS TO PREVENT THE ACCUMULATION OF LEAVES & DEBRIS IN THE GUTTER.

VENTS

4. **706A.1 GENERAL** WHERE PROVIDED, VENTILATION OPENINGS FOR ENCLOSED ATTICS, GABLE ENDS, RIDGE ENDS, UNDER EAVES AND CORNICES, ENCLOSED EAVE SOFFIT SPACES, ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS, UNDER FLOOR VENTILATION, FOUNDATIONS AND CRAWL SPACES, OR ANY OTHER OPENING INTENDED TO PERMIT VENTILATION, EITHER IN A HORIZONTAL OR VERTICAL PLANE, SHALL BE IN ACCORDANCE WITH SECTION 1202 AND SECTIONS 706A.1 THROUGH 706A.2 TO RESIST BUILDING IGNITION FROM THE INTRUSION OF BURNING EMBERS AND FLAME THROUGH THE VENTILATION OPENINGS.
5. **706A.2 REQUIREMENTS** VENTILATION OPENINGS SHALL BE FULLY COVERED WITH WILDFIRE FLAME AND EMBER RESISTANT VENTS APPROVED AND LISTED BY THE CALIFORNIA STATE FIRE MARSHAL, OR WUI VENTS TESTED TO ASTM E2886 AND LISTED, BY COMPLYING WITH ALL OF THE FOLLOWING REQUIREMENTS:
1. THERE SHALL BE NO FLAMING IGNITION OF THE COTTON MATERIAL DURING THE EMBER INTRUSION TEST.
2. THERE SHALL BE NO FLAMING IGNITION DURING THE INTEGRITY TEST PORTION OF THE FLAME INTRUSION TEST.
3. THE MAXIMUM TEMPERATURE OF THE UNEXPOSED SIDE OF THE VENT SHALL NOT EXCEED 662°F (350°C).
6. **706A.2.1 OFF RIDGE AND RIDGE VENTS** VENTS THAT ARE INSTALLED ON A SLOPED ROOF, SUCH AS DORMER VENTS, SHALL COMPLY WITH ALL OF THE FOLLOWING:
1. VENTS SHALL BE COVERED WITH A MESH WHERE THE DIMENSIONS OF THE MESH THEREIN SHALL BE A MINIMUM OF 1/16-INCH (1.6 MM) AND SHALL NOT EXCEED 1/8-INCH (3.2 MM) IN DIAMETER.
2. THE MESH MATERIAL SHALL BE NONCOMBUSTIBLE.
3. THE MESH MATERIAL SHALL BE CORROSION RESISTANT.

EXTERIOR COVERINGS

7. **707A.3 EXTERIOR WALL COVERINGS** THE EXTERIOR WALL COVERING SHALL COMPLY WITH ONE OR MORE OF THE FOLLOWING REQUIREMENTS, EXCEPT AS PERMITTED FOR EXTERIOR WALL ASSEMBLIES COMPLYING WITH SECTION 707A.4:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
8. **707A.3.1 EXTENT OF EXTERIOR WALL COVERING** EXTERIOR WALL COVERINGS SHALL EXTEND FROM THE TOP OF THE FOUNDATION TO THE ROOF, AND TERMINATE AT 2 INCH (50.8 MM) NOMINAL SOLID WOOD BLOCKING BETWEEN RAFTERS AT ALL ROOF OVERHANGS, OR IN THE CASE OF ENCLOSED EAVES, TERMINATE AT THE ENCLOSURE.

EXTERIOR WALL ASSEMBLIES

9. **707A.4 EXTERIOR WALL ASSEMBLIES** EXTERIOR WALL ASSEMBLIES OF BUILDINGS OR STRUCTURES SHALL BE CONSTRUCTED USING ONE OR MORE OF THE FOLLOWING METHODS, UNLESS THEY ARE COVERED BY AN EXTERIOR WALL COVERING COMPLYING WITH SECTION 707A.3:
1. ASSEMBLY OF SAWN LUMBER OR GLUE-LAMINATED WOOD WITH THE SMALLEST MINIMUM NOMINAL DIMENSION OF 4 INCHES (102 MM). SAWN OR GLUE-LAMINATED PLANKS SPLINED, TONGUE-AND-GROOVE, OR SET CLOSE TOGETHER AND WELL SPIKED.
2. LOG WALL CONSTRUCTION ASSEMBLY.
3. ASSEMBLY THAT HAS BEEN TESTED IN ACCORDANCE WITH THE TEST PROCEDURES FOR A 10-MINUTE DIRECT FLAME CONTACT EXPOSURE TEST SET FORTH IN ASTM E2707 WITH THE CONDITIONS OF ACCEPTANCE SHOWN IN SECTION 707A.4.1.
4. ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES FOR A 10-MINUTE DIRECT FLAME CONTACT EXPOSURE TEST SET FORTH IN SFM STANDARD 12-7A-1.
5. ASSEMBLY SUITABLE FOR EXTERIOR FIRE EXPOSURE WITH A 1-HOUR FIRE-RESISTANCE RATING, RATED FROM THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
6. ASSEMBLY SUITABLE FOR EXTERIOR FIRE EXPOSURE CONTAINING ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND THE EXTERIOR WALL COVERING OR CLADDING ON THE EXTERIOR SIDE OF THE FRAMING.
7. ASSEMBLY SUITABLE FOR EXTERIOR FIRE EXPOSURE CONTAINING ANY OF THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL AS COMPLYING WITH A 1-HOUR FIRE-RESISTANCE RATING, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.

OPEN ROOF EAVES

10. **707A.5 OPEN ROOF EAVES** THE EXPOSED ROOF DECK ON THE UNDERSIDE OF UNENCLOSED ROOF EAVES SHALL CONSIST OF ONE OR MORE OF THE FOLLOWING:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
4. MATERIALS APPROVED FOR NOT LESS THAN 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ON THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
5. ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND AN EXTERIOR COVERING ON THE UNDERSIDE OF THE ROOF DECK.
6. THE EXTERIOR PORTION OF A 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR ASSEMBLY, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263, APPLIED TO THE UNDERSIDE OF THE ROOF DECK DESIGNED FOR EXTERIOR FIRE EXPOSURE, INCLUDING ASSEMBLIES USING THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL.
EXCEPTION TO SECTION 707A.5: THE FOLLOWING MATERIALS DO NOT REQUIRE PROTECTION: FASCIA & OTHER ARCHITECTURAL TRIM BOARDS.

ENCLOSED ROOF EAVES AND ROOF EAVE SOFFITS

11. **707A.6 ENCLOSED ROOF EAVES AND ROOF EAVE SOFFITS** THE EXPOSED UNDERSIDE OF ENCLOSED ROOF EAVES HAVING EITHER A BOXED-IN ROOF EAVE SOFFIT WITH A HORIZONTAL UNDERSIDE, OR SLOPING RAFTER TAILS WITH AN EXTERIOR COVERING APPLIED TO THE UNDERSIDE OF THE RAFTER TAILS, SHALL BE PROTECTED BY ONE OR MORE OF THE FOLLOWING:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
4. MATERIALS APPROVED FOR NOT LESS THAN 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ON THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
5. ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND THE EXTERIOR COVERING OR CLADDING ON THE UNDERSIDE OF THE RAFTER TAILS OR SOFFIT.
6. THE EXTERIOR PORTION OF A 1-HOUR FIRE-RESISTIVE EXTERIOR ASSEMBLY APPLIED TO THE UNDERSIDE OF THE RAFTER TAILS OR SOFFIT, INCLUDING ASSEMBLIES USING THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL.
7. BOXED-IN ROOF EAVE SOFFIT ASSEMBLIES WITH A HORIZONTAL UNDERSIDE THAT MEET THE PERFORMANCE CRITERIA IN SECTION 707A.11 WHEN TESTED IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN ASTM E2957.
8. BOXED-IN ROOF EAVE SOFFIT ASSEMBLIES WITH A HORIZONTAL UNDERSIDE THAT MEET THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN SFM STANDARD 12-7A-3.
EXCEPTION TO SECTION 707A.6: THE FOLLOWING MATERIALS DO NOT REQUIRE PROTECTION: FASCIA & OTHER ARCHITECTURAL TRIM BOARDS.

PORCH CEILINGS

12. **707A.7 EXTERIOR PORCH CEILINGS** THE EXPOSED UNDERSIDE OF EXTERIOR PORCH CEILINGS SHALL BE PROTECTED BY ONE OR MORE OF THE FOLLOWING:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
4. MATERIALS APPROVED FOR NOT LESS THAN 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ON THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
5. ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND THE EXTERIOR COVERING OR CLADDING ON THE UNDERSIDE OF THE RAFTER TAILS OR SOFFIT.
6. THE EXTERIOR PORTION OF A 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR ASSEMBLY, AS TESTED IN ACCORDANCE WITH ASTM E119, APPLIED TO THE UNDERSIDE OF THE CEILING ASSEMBLY, INCLUDING ASSEMBLIES USING THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL.
7. PORCH CEILING ASSEMBLIES WITH A HORIZONTAL UNDERSIDE THAT MEET THE PERFORMANCE CRITERIA IN SECTION 707A.11 WHEN TESTED IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN ASTM E2957.
8. PORCH CEILING ASSEMBLIES WITH A HORIZONTAL UNDERSIDE THAT MEET THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN SFM STANDARD 12-7A-3.
EXCEPTION TO SECTION 707A.7: ARCHITECTURAL TRIM BOARDS DO NOT REQUIRE PROTECTION.

FLOOR PROJECTIONS

13. **707A.8 FLOOR PROJECTIONS** THE EXPOSED UNDERSIDE OF A CANTILEVERED FLOOR PROJECTION WHERE A FLOOR ASSEMBLY EXTENDS OVER AN EXTERIOR WALL SHALL BE PROTECTED BY ONE OR MORE OF THE FOLLOWING:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
4. MATERIALS APPROVED FOR NOT LESS THAN 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ON THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
5. ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND THE EXTERIOR COVERING ON THE UNDERSIDE OF THE CEILING.
6. THE EXTERIOR PORTION OF A 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR ASSEMBLY, AS TESTED IN ACCORDANCE WITH ASTM E119, APPLIED TO THE UNDERSIDE OF THE CEILING ASSEMBLY, INCLUDING ASSEMBLIES USING THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL.
7. THE UNDERSIDE OF A FLOOR PROJECTION ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN SECTION 707A.10 WHEN TESTED IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN ASTM E2957.
8. THE UNDERSIDE OF A FLOOR PROJECTION ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN SFM STANDARD 12-7A-3.
EXCEPTION TO SECTION 707A.8: ARCHITECTURAL TRIM BOARDS DO NOT REQUIRE PROTECTION.

UNDER FLOOR & UNDERSIDE PROTECTION

14. **707A.9 UNDERFLOOR PROTECTION** THE UNDERFLOOR AREA OF ELEVATED OR OVERHANGING BUILDINGS SHALL BE ENCLOSED TO GRADE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS CHAPTER OR THE UNDERSIDE OF THE EXPOSED UNDERFLOOR SHALL BE PROTECTED BY ONE OR MORE OF THE FOLLOWING:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
4. MATERIALS APPROVED FOR NOT LESS THAN 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ON THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
5. ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND AN EXTERIOR COVERING ON THE UNDERSIDE OF THE FLOOR PROJECTION.
6. THE EXTERIOR PORTION OF A 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR ASSEMBLY, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263, APPLIED TO THE UNDERSIDE OF THE FLOOR, INCLUDING ASSEMBLIES USING THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL.
7. THE UNDERSIDE OF A FLOOR ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN SECTION 707A.11 WHEN TESTED IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN ASTM E2957.
8. THE UNDERSIDE OF A FLOOR ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN SFM STANDARD 12-7A-3.
EXCEPTION TO SECTION 707A.9: STRUCTURAL COLUMNS AND BEAMS DO NOT REQUIRE PROTECTION WHEN CONSTRUCTED WITH SAWN LUMBER OR GLUE-LAMINATED WOOD WITH THE SMALLEST MINIMUM NOMINAL DIMENSION OF 4 INCHES (102 MM). SAWN OR GLUE-LAMINATED PLANKS SHALL BE SPLINED, TONGUE-AND-GROOVE, OR SET CLOSE TOGETHER AND WELL SPIKED.
15. **707A.10 UNDERSIDE OF APPENDAGES** WHEN REQUIRED BY THE ENFORCING AGENCY, THE UNDERSIDE OF OVERHANGING APPENDAGES SHALL BE ENCLOSED TO GRADE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS CHAPTER, OR THE UNDERSIDE OF THE EXPOSED UNDER-FLOOR SHALL BE PROTECTED BY ONE OR MORE OF THE FOLLOWING:
1. NONCOMBUSTIBLE MATERIAL.
2. IGNITION-RESISTANT MATERIAL. THE IGNITION-RESISTANT MATERIAL SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 704A.2.
3. FIRE-RETARDANT-TREATED WOOD. THE FIRE-RETARDANT-TREATED WOOD SHALL BE LABELED FOR EXTERIOR USE AND SHALL MEET THE REQUIREMENTS OF SECTION 2303.2.
4. MATERIALS APPROVED FOR NOT LESS THAN 1-HOUR FIRE-RESISTANCE-RATED CONSTRUCTION ON THE EXTERIOR SIDE, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263.
5. ONE LAYER OF 5/8-INCH (15.9 MM) TYPE X GYPSUM SHEATHING APPLIED BEHIND THE EXTERIOR COVERING ON THE UNDERSIDE OF THE APPENDAGE PROJECTION.
6. THE EXTERIOR PORTION OF A 1-HOUR FIRE-RESISTANCE-RATED EXTERIOR ASSEMBLY, AS TESTED IN ACCORDANCE WITH ASTM E119 OR UL 263, APPLIED TO THE UNDERSIDE OF THE APPENDAGE, INCLUDING ASSEMBLIES USING THE GYPSUM PANEL AND SHEATHING PRODUCTS LISTED IN THE GYPSUM ASSOCIATION FIRE RESISTANCE DESIGN MANUAL.
7. THE UNDERSIDE OF AN APPENDAGE ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN SECTION 707A.11 WHEN TESTED IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN ASTM E2957.
8. THE UNDERSIDE OF AN APPENDAGE ASSEMBLY THAT MEETS THE PERFORMANCE CRITERIA IN ACCORDANCE WITH THE TEST PROCEDURES SET FORTH IN SFM STANDARD 12-7A-3.
EXCEPTION TO SECTION 707A.10: STRUCTURAL COLUMNS AND BEAMS DO NOT REQUIRE PROTECTION WHEN CONSTRUCTED WITH SAWN LUMBER OR GLUE LAMINATED WOOD WITH THE SMALLEST MINIMUM NOMINAL DIMENSION OF 4 INCHES (102 MM). SAWN OR GLUE-LAMINATED PLANKS SHALL BE SPLINED, TONGUE-AND-GROOVE, OR SET CLOSE TOGETHER AND WELL SPIKED.

EXTERIOR GLAZING & OPENINGS

16. **708A.2 EXTERIOR GLAZING** THE FOLLOWING EXTERIOR GLAZING MATERIALS AND/OR ASSEMBLIES SHALL COMPLY WITH THIS SECTION:
1. EXTERIOR WINDOWS.
2. EXTERIOR GLAZED DOORS.
3. GLAZED OPENINGS WITHIN EXTERIOR DOORS.
4. GLAZED OPENINGS WITHIN EXTERIOR GARAGE DOORS.
5. EXTERIOR STRUCTURAL GLASS VENEER.
6. SKYLIGHTS.
7. VENTS.
17. **708A.2.1 EXTERIOR WINDOWS, SKYLIGHTS AND EXTERIOR GLAZED DOOR ASSEMBLY REQUIREMENTS** EXTERIOR WINDOWS, SKYLIGHTS & EXTERIOR GLAZED DOOR ASSEMBLIES SHALL COMPLY WITH ONE OF THE FOLLOWING REQUIREMENTS:
1. BE CONSTRUCTED OF MULTIPANE GLAZING WITH A MINIMUM OF ONE TEMPERED PANE MEETING THE REQUIREMENTS OF SECTION 2406 SAFETY GLAZING, OR
2. BE CONSTRUCTED OF GLASS BLOCK UNITS, OR
3. HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 20 MINUTES WHEN TESTED ACCORDING TO NFPA 257, OR
4. BE TESTED TO MEET THE PERFORMANCE REQUIREMENTS OF SFM STANDARD 12-7A-2.
18. **708A.2.2 OPERABLE SKYLIGHTS.** OPERABLE SKYLIGHTS SHALL BE PROTECTED BY A NON-COMBUSTIBLE MESH SCREEN WHERE THE DIMENSIONS OF THE OPENINGS IN THE SCREEN SHALL NOT EXCEED 1/8-INCH (3.2MM).
19. **708A.2.3 STRUCTURAL GLASS VENEER** THE WALL ASSEMBLY BEHIND STRUCTURAL GLASS VENEER SHALL COMPLY WITH SECTION 707A.3.
20. **708A.3 EXTERIOR DOORS** EXTERIOR DOORS SHALL COMPLY WITH ONE OF THE FOLLOWING:
1. THE EXTERIOR SURFACE OR CLADDING SHALL BE OF NONCOMBUSTIBLE MATERIAL.
2. THE EXTERIOR SURFACE OR CLADDING SHALL BE OF IGNITION RESISTANT MATERIAL.
3. THE EXTERIOR DOOR SHALL BE CONSTRUCTED OF SOLID CORE WOOD THAT COMPLIES WITH THE FOLLOWING REQUIREMENTS:
3.1 STILES AND RAILS SHALL NOT BE LESS THAN 13/8 INCHES THICK.
3.2 PANELS SHALL NOT BE LESS THAN 11/4 INCHES 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 THAN 20 MINUTES WHEN TESTED ACCORDING TO NFPA 252.
5. THE EXTERIOR SURFACE OR CLADDING SHALL BE TESTED TO MEET THE PERFORMANCE REQUIREMENTS OF SECTION 707A.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 STANDARD 12-7A-1.
21. **708A.3.1 EXTERIOR DOOR GLAZING.** GLAZING IN EXTERIOR DOORS SHALL COMPLY WITH SECTION 708A.2.1.
22. **708A.4 GARAGE DOOR PERIMETER GAP** EXTERIOR GARAGE DOORS SHALL RESIST THE INTRUSION OF EMBERS FROM ENTERING BY PREVENTING GAPS BETWEEN DOORS AND DOOR OPENINGS, AT THE BOTTOM, SIDES & TOPS OF DOORS, FROM EXCEEDING 1/8 INCH (3.2 MM). GAPS BETWEEN DOORS & DOOR OPENINGS SHALL BE CONTROLLED BY ONE OF THE FOLLOWING METHODS:
1. WEATHER-STRIPPING PRODUCTS MADE OF MATERIALS THAT: (A) HAVE BEEN TESTED FOR TENSILE STRENGTH IN ACCORDANCE WITH ASTM D638 (STANDARD TEST METHOD FOR TENSILE PROPERTIES OF PLASTICS) AFTER EXPOSURE TO ASTM G155 (STANDARD PRACTICE FOR OPERATING XENON ARC LIGHT APPARATUS FOR EXPOSURE OF NON-METALLIC MATERIALS) FOR A PERIOD OF 2,000 HOURS, WHERE THE MAXIMUM ALLOWABLE DIFFERENCE IN TENSILE STRENGTH VALUES BETWEEN EXPOSED AND NON-EXPOSED SAMPLES DOES NOT EXCEED 10%; AND (B) EXHIBIT A V-2 OR BETTER FLAMMABILITY RATING WHEN TESTED TO UL 94, STANDARD FOR TESTS FOR FLAMMABILITY OF PLASTIC MATERIALS FOR PARTS IN DEVICES AND APPLIANCES.
2. DOOR OVERLAPS ONTO JAMBS AND HEADERS.
3. GARAGE DOOR JAMBS & HEADERS COVERED WITH METAL FLASHING.

DECKING

23. **709A.1.1 FLASHING.** A MINIMUM OF A 6-INCH (150 MM) METAL FLASHING, APPLIED VERTICALLY ON THE EXTERIOR OF THE WALL, SHALL BE INSTALLED AT ALL DECK-TO-WALL INTERSECTIONS.
24. **709A.3 DECKING SURFACES** THE WALKING SURFACE MATERIAL OF DECKS, PORCHES, BALCONIES & STAIRS SHALL BE CONSTRUCTED WITH ONE OF THE FOLLOWING MATERIALS:
1. MATERIAL THAT COMPLIES WITH THE PERFORMANCE REQUIREMENTS OF SECTION 709A.4 WHEN TESTED IN ACCORDANCE WITH BOTH ASTM E2632 AND ASTM E2726.
2. IGNITION-RESISTANT MATERIAL THAT COMPLIES WITH THE PERFORMANCE REQUIREMENTS OF SECTION 704A.3.
3. MATERIAL THAT COMPLIES WITH THE PERFORMANCE REQUIREMENTS OF BOTH SFM STANDARD 12-7A-4 AND SECTION 704A.3.
4. EXTERIOR FIRE-RETARDANT-TREATED WOOD.
5. NONCOMBUSTIBLE MATERIAL.
6. ANY MATERIAL THAT COMPLIES WITH THE PERFORMANCE REQUIREMENTS OF SFM STANDARD 12-7A-4A WHEN ATTACHED EXTERIOR WALL COVERING IS ALSO COMPOSED OF NONCOMBUSTIBLE OR IGNITION-RESISTANT MATERIAL.
EXCEPTION: WALL MATERIAL SHALL BE PERMITTED TO BE OF ANY MATERIAL THAT OTHERWISE COMPLIES WITH THIS CHAPTER WHEN THE DECKING SURFACE MATERIAL COMPLIES WITH THE PERFORMANCE REQUIREMENTS ASTM E84 WITH A CLASS B FLAME SPREAD INDEX.
7. ANY MATERIAL THAT COMPLIES WITH THE PERFORMANCE REQUIREMENTS OF SECTION 709A.5 WHEN TESTED IN ACCORDANCE WITH ASTM E2632 AND WHEN ATTACHED EXTERIOR WALL COVERING IS ALSO COMPOSED OF ONLY NONCOMBUSTIBLE OR IGNITION-RESISTANT MATERIALS.
EXCEPTION: WALL MATERIAL SHALL BE PERMITTED TO BE OF ANY MATERIAL THAT OTHERWISE COMPLIES WITH THIS CHAPTER WHEN THE DECKING SURFACE MATERIAL COMPLIES WITH THE PERFORMANCE REQUIREMENTS ASTM E84 WITH A CLASS B FLAME SPREAD INDEX.

door schedule - elevation a & c (d)

DOOR #	WIDTH	HEIGHT	THICK	TYPE	OPERATION	CORE OR GLAZING	MATERIAL	FRAME	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	3'-0"	6-8"	1-3/4"	FRENCH	SWING	DG, TG	WOOD	WOOD	OPTIONAL	.48	.3	1	ENTRY DOOR
2	12'-0"	6-8"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.48	.3	1	
3	8'-0"	6-8"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.48	.3	2	
4	3'-0"	6-8"	1-1/2"	INTERIOR	SWING	HOLLOW	WOOD	WOOD	NO	N/A	N/A	4	PRIVACY/BTH
5	3'-0"	6-8"	1-1/2"	INTERIOR	BARN	SOLID	WOOD	WOOD	NO	N/A	N/A	2	
6	6'-0"	6-8"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	
7	5'-0"	6-8"	1-1/2"	INTERIOR	BIFOLD	HOLLOW	WOOD	ALUMINUM	NO	N/A	N/A	1	LAUNDRY
8	2'-4"	6-8"	1-3/4"	EXTERIOR	SWING	SOLID	WOOD	WOOD	VENTS T&B	N/A	N/A	1	WUI APPRVD
9	5'-0"	6-8"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	

door schedule - elevation b (d)

DOOR #	WIDTH	HEIGHT	THICK	TYPE	OPERATION	CORE OR GLAZING	MATERIAL	FRAME	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	3'-0"	8'-0"	1-3/4"	FRENCH	SWING	DG, TG	WOOD	WOOD	OPTIONAL	.46	.3	1	ENTRY DOOR
2	12'-0"	8'-0"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.46	.3	1	
3	8'-0"	8'-0"	1-3/4"	FRENCH	SLIDING	DG, TG	VINYL	VINYL	YES	.46	.3	2	
4	3'-0"	8'-0"	1-1/2"	INTERIOR	SWING	HOLLOW	WOOD	WOOD	NO	N/A	N/A	4	PRIVACY/BTH
5	3'-0"	8'-0"	1-1/2"	INTERIOR	BARN	SOLID	WOOD	WOOD	NO	N/A	N/A	2	
6	6'-0"	8'-0"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	
7	5'-0"	8'-0"	1-1/2"	INTERIOR	BIFOLD	HOLLOW	WOOD	ALUMINUM	NO	N/A	N/A	1	LAUNDRY
8	2'-4"	8'-0"	1-3/4"	EXTERIOR	SWING	SOLID	WOOD	WOOD	VENTS T&B	N/A	N/A	1	WUI APPRVD
9	5'-0"	8'-0"	1-1/2"	INTERIOR	BYPASS	-	MIRROR	WOOD	NO	N/A	N/A	1	

window schedule - elevation a & c (w)

WINDOW #	WIDTH	HEIGHT	TYPE	MATERIAL	GLAZING	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	9'-0"	5'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.4	.3	1	
2	8'-0"	3'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.4	.3	2	
3	2'-0"	4'-0"	VERTICAL SLIDER	VINYL	DG, TG	YES	.4	.3	1	OPAQUE
4	4'-0"	3'-8"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.4	.3	1	
5	8'-0"	5'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.4	.3	1	

window schedule - elevation b (w)

WINDOW #	WIDTH	HEIGHT	TYPE	MATERIAL	GLAZING	SCREEN	U FACTOR	SHGC	QUANTITY	NOTES
1	9'-0"	6'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.44	.3	1	
2	8'-0"	4'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.44	.3	2	
3	2'-0"	2'-0"	AWNING	VINYL	DG, TG	YES	.44	.3	1	OPAQUE
4	4'-0"	5'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.44	.3	1	
5	8'-0"	6'-0"	HORIZONTAL SLIDER	VINYL	DG, TG	YES	.44	.3	1	

schedule notes:

1. ALL GLAZING IN EXTERIOR DOORS SHALL BE TEMPERED IN THE VHFSZ.
2. ALL GLAZING IN WINDOWS SHALL BE TEMPERED IN THE VHFSZ.
3. THE PROPERTY THAT WILL CONTAIN THE ADU IS IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE, SEE NOTES ON SHEET a0.1F CONCERNING DOOR & WINDOW CONSTRUCTION AND TEMPERED GLAZING.
4. SEE ELEVATIONS FOR WINDOW OPERATION DIRECTION & LOCATION OF MUNTINS.
5. SEE FLOOR PLANS FOR DOOR SWING DIRECTION.
6. ALL GLAZED OPENINGS SHALL MEET THE REQUIREMENTS OF THE CBC T24 SHEETS PROVIDED IN THE PLANS.
7. VINYL WINDOWS AND EXTERIOR VINYL DOOR FRAMES & SASH WILL BE COMPRISED OF VINYL MATERIAL WITH WELDED CORNERS & METAL REINFORCEMENT IN THE INTERLOCK AREA.

very high fire hazard severity zone notes:

1. THE ADU SHALL COMPLY WITH CHAPTER 7A OF THE CURRENT CALIFORNIA BUILDING CODE BECAUSE IT IS IN THE VHFHSZ.
2. STRUCTURES IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE SHALL PROVIDE & MAINTAIN A FUEL MODIFICATION ZONE. FUEL MODIFICATION ZONES: THE APPLICANT SHALL PROVIDE & MAINTAIN FIRE/FUEL BREAKS TO THE SATISFACTION OF THE ANAHEIM FIRE DEPARTMENT. FIRE/FUEL BREAKS SIZE (MINIMUM 100 FEET FROM STRUCTURE) & COMPOSITION SHALL BE DETERMINED BY THE FIRE DEPARTMENT & SHOWN ON THE IMPROVEMENT/GRADING PLANS, FINAL MAP & BUILDING PLANS.

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2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

VERY HIGH FIRE HAZARD SEVERITY ZONE

a0.1F

general specifications:

#	NOTE				
1	**GENERAL REQUIREMENTS**				

STANDARDS

1.0 CODES GOVERNING CONSTRUCTION:

•	2022 CALIFORNIA	BUILDING CODE	(CBC)	TITLE 24	PART 2, VOLUME 1 & 2
•	2022 CALIFORNIA	RESIDENTIAL CODE	(CRC)	TITLE 24	PART 2.5
•	2022 CALIFORNIA	ELECTRICAL CODE	(CEC)	TITLE 24	PART 3
•	2022 CALIFORNIA	MECHANICAL CODE	(CMC)	TITLE 24	PART 4
•	2022 CALIFORNIA	PLUMBING CODE	(CPC)	TITLE 24	PART 5
•	2022 CALIFORNIA	ENERGY CODE	(CEC)	TITLE 24	PART 6
•	2022 CALIFORNIA	FIRE CODE	(CFC)	TITLE 24	PART 9
•	2022 CALIFORNIA	GREEN BUILDING STDS CODE	(CALGREEN)	TITLE 24	PART 11
•	2022 CALIFORNIA	BLDG ENERGY EFFICIENCY STDS	(CBEES)		

1.1 ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE 2022 EDITION OF THE CALIFORNIA BUILDING STANDARDS CODE (TITLE 24), WHICH ADOPTS THE 2021 IBC, 2021 IRC, 2021 UMC, 2021 UPC, 2020 NEC, 2021 CEC AND THE 2021 CGBSC.

1.2 ALL WORK SHALL CONFORM TO THE CODE AMENDMENTS, ORDINANCES AND REQUIREMENTS OF THE LOCAL GOVERNMENTAL JURISDICTION HAVING AUTHORITY OVER THE PROJECT.

1.3 THE APPROVED PLANS, SPECIFICATIONS, CALCULATIONS AND OTHER PROJECT CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED PROJECT. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION.

1.4 THE APPROVED CONSTRUCTION DOCUMENTS, INCLUDING ALL APPROVED REVISIONS SHALL BE PRESENT AT THE PROJECT SITE AT ALL TIMES.

1.5 ALL DIMENSIONS AND CONDITIONS SHALL BE CHECKED AND VERIFIED IN THE FIELD BY EACH SUBCONTRACTOR BEFORE COMMENCING WORK. ANY ERRORS, OMISSIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT, ENGINEER, GENERAL CONTRACTOR AND/OR PROJECT MANAGER BEFORE CONSTRUCTION BEGINS.

1.6 ALL WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED MEASUREMENTS.

1.7 NOTES & DETAILS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES & TYPICAL DETAILS IN CASE OF CONFLICT.

1.8 WHERE CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE THE SAME AS FOR SIMILAR WORK SHOWN ON THE DRAWINGS. WHERE SUFFICIENT SIMILAR WORK IS NOT SHOWN THE ARCHITECT, ENGINEER, GENERAL CONTRACTOR AND/OR PROJECT MANAGER SHALL BE CONSULTED FOR CLARIFICATION.

1.9 ANY OPTIONS OR SUBSTITUTIONS ARE FOR THE CONTRACTOR'S CONVENIENCE. NO STRUCTURAL CHANGES OR SUBSTITUTIONS SHALL BE MADE IN THE FIELD FROM THE APPROVED CONSTRUCTION DOCUMENTS UNLESS WRITTEN APPROVAL OF SUCH CHANGES OR SUBSTITUTIONS IS OBTAINED FROM THE ARCHITECT AND/OR ENGINEER. IF CHANGES ARE MADE WITHOUT WRITTEN APPROVAL, SUCH CHANGES ALONG WITH ANY ADDITIONAL COSTS, REPAIRS AND COORDINATION WITH OTHER AFFECTED ITEMS SHALL BE THE LEGAL AND FINANCIAL RESPONSIBILITY OF THE CONTRACTOR AND/OR SUBCONTRACTOR INVOLVED WITH THE CHANGE.

SAFETY

1.10 IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, BRACING & SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, MATERIALS, ETC. THE CONTRACTOR IS RESPONSIBLE FOR ALL METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, SUPERVISION & INSTALLATION OF ALL TEMPORARY BRACING & SHORING TO ENSURE THE SAFETY OF THE WORK. BRACING & SHORING IS TO BE INSTALLED PER THE CURRENT OSHA & ANY OTHER APPLICABLE SAFETY STANDARDS. ALL BRACING &/OR SHORING SHALL STAY IN PLACE UNTIL ALL WORK HAS BEEN SUITABLY COMPLETED.

1.11 THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE IN PLACE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY BRACING AND SHORING AS REQUIRED TO INSURE THE VERTICAL AND LATERAL STABILITY OF THE STRUCTURE OR ANY PORTION THEREOF DURING CONSTRUCTION.

1.12 THE CONTRACTOR SHALL DESIGN, CONSTRUCT & MAINTAIN ALL SAFETY DEVICES, INCLUDING BRACING & SHORING, & SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE & FEDERAL HEALTH & SAFETY LAWS, REGULATIONS & STANDARDS.

1.13 CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOFS. LOADS SHALL NOT EXCEED THE DESIGNED LOADING FOR THE SUPPORTING MEMBERS.

1.14 EACH CONTRACTOR SHALL AT ALL TIMES KEEP THE PROJECT AREA FREE FROM ACCUMULATION OF WASTE MATERIALS CAUSED BY THEIR WORK.

INSURANCE

1.15 CONTRACTORS SHALL MAINTAIN, FOR THE ENTIRE DURATION OF THE PROJECT, FULL AND UNLIMITED WORKMEN'S COMPENSATION INSURANCE IN ACCORDANCE WITH THE LABOR CODE OF THE STATE OF CALIFORNIA. THEY SHALL ALSO CARRY PUBLIC CONTINGENT LIABILITY INSURANCE IN AMOUNTS SATISFACTORY TO THE OWNER AND WITH COMPANIES SELECTED WITH THE CONSENT OF THE OWNER.

2 SITE WORK

DEMOLITION AND PREPARATION

2.1 REMOVE ALL DEBRIS FROM THE PROJECT AND DISPOSE OF IT LEGALLY IN A TIMELY FASHION.

2.2 DO NOT REMOVE ANY VEGETATION EXCEPT AS NOTED ON THE DRAWINGS OR WITH PRIOR OWNER OR ARCHITECT APPROVAL.

2.3 CONTRACTORS SHALL TAKE ALL NECESSARY PRECAUTIONS TO LOCATE AND PROTECT ANY UNDERGROUND OR CONCEALED CONDUIT, PLUMBING OR OTHER UTILITIES WHERE NEW WORK IS BEING PERFORMED, PRIOR TO BEGINNING WORK AND THROUGHOUT CONSTRUCTION.

2.4 ALL UTILITY LINES SHALL BE BURIED, WRAPPED AND PROTECTED TO MEET APPLICABLE CODE REQUIREMENTS & INDUSTRY STANDARD CONSTRUCTION PROCEDURES.

2.5 FORM SIDES OF TRENCHES FOR FOOTINGS AS REQUIRED TO PROVIDE FOR FIRM CONTAINMENT OF FOOTINGS AND REMOVE ALL LOOSE MATERIAL AND STANDING WATER FROM THE TRENCHES.

2.6 SHOULD LOOSE FILL, EXPANSIVE SOIL, GROUND WATER OR OTHER HAZARDOUS CONDITIONS BE ENCOUNTERED DURING THE EXCAVATION OF THE FOOTINGS, THE ARCHITECT SHALL BE NOTIFIED AND ALL FOUNDATION WORK SHALL HALT UNTIL A SOLUTION TO THE ISSUE IS REACHED.

2.7 TRENCHES OR EXCAVATIONS MORE THAN 5 FEET IN DEPTH INTO WHICH A PERSON IS REQUIRED TO DESCEND SHALL HAVE ALL NECESSARY PERMITS FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO BUILDING/GRADING PERMIT ISSUANCE OR BEFORE ANY WORK COMMENCES WITHIN THE TRENCH.

GRADING AND DRAINAGE

2.8 ALL UTILITY TRENCHES SHALL BE COMPACTED TO A MINIMUM OF 90% RELATIVE DENSITY.

2.9 GRADING PERMIT REQUIRED IF VOLUME OF EARTH MOVED EXCEEDS THE MAXIMUM CUBIC YARDS ALLOWED BY THE MUNICIPAL JURISDICTION OR IF ANY CUTS OR FILLS EXCEED 8 FEET IN HEIGHT/DEPTH. (MUNICIPAL GRADING ORDINANCE)

2.10 FINISH GRADES SHALL BE SLOPED SO THAT SURFACE WATER DRAINS AWAY FROM THE BUILDING. (CRC R401.3 & CBC 1804.4).

2.11 ALL REQUIRED BACKFILL SHALL BE COMPACTED TO AT LEAST 90% OF THE MAXIMUM DENSITY OBTAINABLE BY ASTM D1557-12E1 (LATEST ADOPTED STANDARD) METHOD OF COMPACTION. BACKFILL SHALL ALSO CONFORM TO THE SOILS REPORT RECOMMENDATIONS IF A SOILS REPORT IS A PART OF THE CONSTRUCTION DOCUMENTS. (CBC 1804.3)

2.12 BACKFILL FOR ALL RETAINING WALLS SHALL BE PERVIOUS MATERIAL. BACKFILLING SHALL NOT BEGIN UNTIL THE MASONRY OR CONCRETE RETAINING STRUCTURES HAVE ATTAINED THE SPECIFIED DESIGN STRENGTH. BACKFILL SHALL CONFORM TO THE SOILS REPORT RECOMMENDATIONS IF A SOILS REPORT IS A PART OF THE CONSTRUCTION DOCUMENTS. (CRC R404.1.7)

2.13 FOR RETAINING WALLS WHICH WILL HAVE PERMANENT STRUCTURAL SUPPORT AT THE TOP PROVIDE SHORING PRIOR TO BACKFILLING, UON. SHORING TO REMAIN IN PLACE UNTIL PERMANENT STRUCTURAL SUPPORTING MEMBERS ARE IN PLACE AND HAVE DEVELOPED SPECIFIED STRENGTHS. IN THE CASE OF CONCRETE SUPPORTS, THE SHORING SHALL REMAIN IN PLACE A MINIMUM OF 7 DAYS AFTER CONCRETE PLACEMENT.

2.14 ALL RETAINING WALLS MUST BE PROVIDED WITH AN ADEQUATE DRAINAGE SYSTEM (CRC SECTION R405)

.1 A GRAVEL & PIPE BACK DRAIN AND OUTLET SYSTEM, WITH A MINIMUM OF 2 OUTLETS PER WALL, TO PREVENT BUILDUP OF HYDROSTATIC PRESSURES. PIPES SHOULD CONSIST OF SCHEDULE 40 PERFORATED PVC PIPE. GRAVEL USED IN THE BACKDRAIN SYSTEMS MUST BE A MINIMUM OF 3 CUBIC FEET PER LINEAL FOOT OF 3/8" TO 1 1/2" CLEAN CRUSHED ROCK ENCAPSULATED IN NON-WOVEN FILTER FABRIC(MIRAFI 140N, OAE). PERFORATIONS IN THE PIPE MUST BE FACE DOWN. THE SURFACE OF THE BACKFILL MUST BE SEALED BY PAVEMENT OR THE TOP 18" COMPACTED TO 90% RELATIVE COMPACTION WITH NATIVE SOIL. PROPER SURFACE DRAINAGE MUST BE MAINTAINED.

.2 AS AN ALTERNATIVE TO A GRAVEL & PIPE BACK DRAIN SYSTEM, PANEL DRAINS (MIRADRAIN 6000, TENSAR UX1700 MSE, OAE) MAY BE USED. PANEL DRAINS MUST BE INSTALLED PER MANUFACTURER'S GUIDELINES.

.3 RETAINING & STEM WALLS SHALL BE WATERPROOFED WHERE THEY WOULD IMPACT LIVING AREAS OR WHERE WALL STAINING OR EFFLORESCENCE WOULD BE OBJECTIONABLE. DAMPPROOFING MATERIALS FOR FOUNDATION WALLS ENCLOSING USABLE SPACE BELOW GRADE SHALL BE INSTALLED ON THE EXTERIOR SURFACE OF THE WALL, & SHALL EXTEND FROM THE TOP OF THE FOOTING TO FINISHED GRADE. (CRC SECTION R406 & CBC SECTION 1805)

GEOTECHNICAL (CRC R401.4 & CBC SECTION 1803 & 1806).

2.15 PROJECTS WITH NO SOILS REPORT SHALL USE A SOIL LOAD BEARING VALUE OF 1,500 PSF. (CRC TABLE R401.4.1 & CBC TABLE 1806.2)

2.16 PROJECTS REQUIRING OR PROVIDED WITH SOILS REPORT SHALL:

.1 CONSIDER THE REPORT AN INTEGRAL PART OF THE CONSTRUCTION DOCUMENTS TO BE COMPLIED WITH BY THE CONTRACTOR.

.2 HAVE THE FOUNDATION PLAN REVIEWED BY SOILS ENGINEER.

.3 HAVE THE FOUNDATION DESIGN BASED ON THE MAXIMUM SOIL BEARING VALUE AND SOIL TYPE PROVIDED IN THE REPORT.

.4 HAVE THE BUILDING PAD PREPARED IN ACCORDANCE WITH THE REPORT.

.5 REQUIRE ALL SOIL AND GRADING WORK IS DONE UNDER THE DIRECT OBSERVATION OF THE SOILS ENGINEER.

.6 REQUIRE THE SOILS ENGINEER TO VERIFY IN WRITING TO THE ARCHITECT THAT CONSTRUCTION AT THE SITE COMPLIES WITH ALL OF THE RECOMMENDATIONS AND CONCLUSIONS CONTAINED IN THE REPORT.

2.17 A COMPACTION REPORT MUST BE SUBMITTED TO & APPROVED BY THE GOVERNING JURISDICTION PRIOR TO PLACEMENT OF CONCRETE ON FILL MATERIAL 12 INCHES OR MORE IN DEPTH. (CBC 1803.5.8 & 1803.6)

3 FOUNDATIONS AND CONCRETE

STANDARDS

3.1 FOUNDATION DESIGN IS BASED ON A SOILS BEARING VALUE OF 1,500 PSF, UON IN THE SOILS REPORT, WITH THE BASE OF THE FOOTING TO BE PLACED AS SHOWN IN THE APPROVED CONSTRUCTION DOCUMENTS, WITH A MINIMUM DEPTH BELOW THE ADJACENT COMPETENT FORMATIONAL GRADE OF 12" IF NOT SPECIFIED. WIDTH OF THE FOOTING SHALL BE NOT LESS THAN 12" IF NOT SPECIFIED. THICKNESS OF THE FOOTING SHALL NOT BE LESS THAT 6" IF NOT SPECIFIED. (CRC TABLE R403.1(1) & CBC TABLE 1809.7)

3.2 FORMWORK SHALL RESULT IN A FINAL STRUCTURE THAT CONFORMS TO SHAPES, SIZES & DIMENSIONS OF FOUNDATIONS AS SHOWN IN THE APPROVED CONSTRUCTION DOCUMENTS (CRC R404.1.3.3.6, CBC 1808.8.5 & SECTION 26.10 OF ACI 318).

3.3 FORMWORK SUPPORTING VERTICAL SURFACES SHALL REMAIN IN PLACE FOR A MINIMUM OF 2 DAYS.
FORMWORK SUPPORTING BEAMS AND GIRDERS SHALL REMAIN IN PLACE FOR A MINIMUM OF 15 DAYS.

3.4 PIPES, CONDUITS OR DUCTS SHALL NOT BE PLACED IN CONCRETE SLABS, BEAMS OR WALLS UNLESS SPECIFICALLY SHOWN OR NOTED IN THE APPROVED CONSTRUCTION DOCUMENTS (CPC SECTION 312).

3.5 CONCRETE TO BE READY MIX CONCRETE (ACI 318, ASTM C150, C595 & C1157 LATEST ADOPTED STANDARD) OR CONCRETE SHALL CONSIST OF 1 PART CEMENT, 3 PARTS SAND, 4 PARTS 1-INCH MAXIMUM SIZE ROCK, AND NOT MORE THAN 7-1/2 GALLONS OF WATER PER SACK OF CEMENT. (CRC R402.2 & CBC SECTION 1903)

3.6 CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS OF 2500 PSI FOR POURED IN PLACE CONTINUOUS AND SPREAD FOOTINGS, UON (CRC TABLE R402.2, CBC TABLE 1808.8.1 & ACI 318).
MAXIMUM SLUMP SHALL NOT BE GREATER THAN 4".

3.7 MINIMUM ULTIMATE COMPRESSIVE CONCRETE STRENGTHS SHALL BE (CRC TABLE R402.2 & CBC TABLE 1808.8.1):

ITEM	STRENGTH (PSI)	@DAYS	SPECIAL INSPECTION
SLAB ON GRADE	2500	28	NO
FOOTINGS	2500	28	NO
GRADE BEAMS	3000	28	YES
CAISSONS	3000	28	YES
STRUCTURAL DECK	3000	28	YES
COLUMNS	3000	28	YES

3.8 CONCRETE SLABS ON GRADE SHALL NOT BE LESS THAN 4" THICK & HAVE #3 REINFORCING BARS EACH WAY @ 18" OC MIN, UON. A BASE OF 2" CLEAN GRADED SAND OVER A 15 MIL POLYETHYLENE VAPOR BARRIER OVER A 4" THICK BASE COURSE CONSISTING OF CLEAN GRADED SAND, GRAVEL OR CRUSHED STONE SHALL BE PROVIDED UNDER THE CONCRETE SLAB, UON. (CRC SECTION R506 & CBC SECTION 1907).

3.9 CONCRETE FOUNDATIONS SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF CRC SECTION R403 & R404 & CBC 1808.8

3.10 CONCRETE FOOTINGS SHALL BE DEEPENED AS REQUIRED TO OBTAIN MINIMUM CONCRETE EMBEDMENT FOR ALL HOLD DOWN BOLTS. ALL HOLD DOWN BOLTS SHALL HAVE A MINIMUM OF 3" OF CONCRETE COVER TO SOIL AT BASE OF FOOTING.

3.11 IN THE EVENT FOUNDATION EXCAVATIONS ARE CARRIED TO A DEPTH GREATER THAN REQUIRED, THE ADDITIONAL DEPTH SHALL BE FILLED WITH THE SAME CONCRETE AS THAT USED FOR THE FOOTING. THE ADDITIONAL CONCRETE SHALL BE PLACED AT THE BOTTOM OF THE FOOTING EXCAVATION WITH THE REINFORCING REMAINING AT THE LOCATION SHOWN FOR THE ORIGINAL FOOTING DEPTH. NO UNCONTROLLED FILL WILL BE PERMITTED. (CRC R403.1.1 & R403.1.4)

3.12 SHEAR WALLS SHALL BE SUPPORTED BY CONTINUOUS FOUNDATIONS. (CRC 403.1.2)

3.13 FOUNDATIONS OR FOUNDATION WALLS SUPPORTING WOOD SHALL EXTEND AT LEAST 6" ABOVE THE ADJACENT FINISH GRADE (CRC R404.1.6 & CBC SECTION 2304.12.1.2).

3.14 ALL FOUNDATION PLATES, SILLS AND SLEEPERS ON A CONCRETE SLAB, WHICH IS IN DIRECT CONTACT WITH EARTH, AND SILLS WHICH REST ON CONCRETE OR MASONRY FOUNDATIONS, SHALL BE TREATED WOOD OR FOUNDATION REDWOOD (CRC R317.1 AND CBC SECTION 2304.12.1.4).

3.15 ALL HOLD DOWNS, DOWELS AND INSERTS MUST BE ANCHORED IN PLACE PRIOR TO CONCRETE PLACEMENT AND FOUNDATION INSPECTION.

REINFORCEMENT

3.16 CONCRETE SLABS SHALL BE REINFORCED WITH #3 REINFORCING BARS AT 18" OC MIN EACH WAY, UON. REINFORCING SHALL BE PLACED ON CONCRETE CHAIRS TO MAINTAIN STEEL REINFORCEMENT IN THE MIDDLE THIRD OF SLAB THICKNESS (CBC 1907 & ACI 318).

3.17 CONTINUOUS CONCRETE FOOTINGS AND STEM WALLS SHALL BE PROVIDED WITH A MINIMUM TWO LONGITUDINAL NO. 4 BARS, ONE AT THE TOP AND ONE AT THE BOTTOM OF THE FOOTING. (CRC R403.1.3.3)

3.18 STEEL REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF ARTICLE 2.4 OF TMS 602 & ASTM A615, A706 OR A996. ASTM A996 BARS PRODUCED FROM RAIL STEEL SHALL BE TYPE R. THE MINIMUM YIELD STRENGTH OF REINFORCING STEEL SHALL BE 60,000 PSI (GRADE 60 KSI) (276 MPa) REINFORCING STEEL USED IN CONSTRUCTION OF REINFORCED MASONRY OR CONCRETE STRUCTURES SHALL BE DEFORMED & COMPLY WITH ASTM A615. (CBC 2103.4)

3.19 REINFORCING BAR LAPPED SPLICES IN CONCRETE SHALL BE 40 BAR DIAMETERS OR 20" MINIMUM, UON. SPLICES SHALL BE SECURELY TIED TOGETHER WITH 16 GAUGE WIRE. SPLICES OF ADJACENT REINFORCING BARS SHALL BE STAGGERED WHERE POSSIBLE (CRC R403.1.3.5.4)

3.20 ALL CONNECTORS AND METAL HARDWARE IN CONTACT WITH PRESSURE TREATED WOOD, TIMBERS OR CONCRETE SHALL HAVE CORROSION RESISTANT COATINGS OR PROTECTION SUCH AS 'ZMAX', HOT DIPPED GALVANIZED, OR BE STAINLESS STEEL. HDG: ASTM A 123/A 123M, ASTM A 153/A 153M & ASTM A 767/A 767M(CBC CHAPTER 19 & ACI 318).

3.21 REINFORCEMENT SHALL BE ACCURATELY PLACED, ADEQUATELY SUPPORTED, & SECURED AGAINST DISPLACEMENT PRIOR TO CONCRETE PLACEMENT (CBC 1907.1, CRC R403.1.3.5.2 & THE LATEST ADOPTED STANDARDS OF THE WESTERN CONCRETE REINFORCING STEEL INSTITUTE).

3.22 CLEAR SPACING BETWEEN REINFORCEMENT SHALL NOT BE LESS THAN 1 BAR DIAMETER, 1", OR 1-1/3 TIMES THE MAXIMUM AGGREGATE SIZE (CRC R403.1.5.2).
STEEL REINFORCEMENT IN CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COVERAGE (CRC R403.1.3.5.3):
3.22.1 CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH : 3"
3.22.2 CONCRETE SURFACES EXPOSED TO EARTH & WEATHER, #5 OR LESS : 1-1/2"
3.22.3 CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH EARTH: 3/4"

3.23 PROVIDE #3 REINFORCING BAR STIRRUPS AT 5' OC FROM TOP TO BOTTOM REINFORCEMENT IN ALL CONTINUOUS FOOTINGS, OAE. ALL TIES AND STIRRUPS SHALL CONFORM TO ASTM A-615, GRADE 40 KSI STEEL

3.24 CONTINUOUS FOOTING REINFORCEMENT TO BE CONTINUOUS ACROSS ALL SPREAD OR SPOT FOOTINGS.

3.25 REINFORCING SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH INTERSECTIONS

CONNECTIONS

3.26 ANCHOR BOLTS AT FOUNDATION PLATES OR SILLS SHALL BE BOLTED OR ANCHORED TO THE FOUNDATION OR FOUNDATION WALL PER THE FOLLOWING WITH 'ZMAX', GALVANIZED OR STAINLESS STEEL FINISH (CRC R403.1.6.1 & CRC R602.11.1):
A. MINIMUM 5/8"Ø 'L' STEEL ANCHOR BOLTS A307
B. BOLTS EMBEDDED AT LEAST 7" INTO CONCRETE OR MASONRY
C. BOLTS SPACED MAXIMUM 4' ON CENTER OR PER SHEAR SCHEDULE
D. MINIMUM 2 BOLTS PER PLATE/SILL PIECE WITH 1 BOLT LOCATED MAXIMUM 12" & MINIMUM 7 BOLT DIAMETERS FROM EACH END OF EACH SILL PLATE/PIECE.
E. MINIMUM 3" BY 3" BY 0.299" STEEL PLATE WASHER BETWEEN SILL & NUT ON EACH BOLT

3.27 ALL NON-BEARING INTERIOR SILLS OR PLATES, UNLESS OTHERWISE NOTED, SHALL BE ATTACHED TO THE FOUNDATION WITH SIMPSON CO PDPAWL-250 PINS AT 36" O.C. WITH 1" Ø WASHERS. PROVIDE ONE PIN WITHIN 6" OF EACH END OF EACH SILL PLATE, OAE. (ICC-ES ESR-2183)

3.28 DOWEL ANY NEW FOOTINGS TO EXISTING FOOTINGS WITH 2 - #4 x 2' REINFORCING BARS @ TOP & BOTTOM WITH 6" MINIMUM EMBEDMENT IN 5/8"Ø CORED HOLES WITH SIMPSON SET EPOXY GROUT. (ICC-ES, ESR-1772)

3.29 ALL HOLD DOWNS INTO EXISTING FOOTINGS SHALL BE INSTALLED WITH SIMPSON SET EPOXY ADHESIVE GROUT. INSTALLATION PER MANUFACTURER'S SPECIFICATIONS AND OBTAIN SPECIAL INSPECTION (ICC-ES, ESR-1772)

3.30 DOWEL NEW CONCRETE SLABS TO EXISTING CONCRETE FOOTINGS OR SLABS WITH 1 - #4 x 2' REINFORCING BARS @ 24" OC WITH 6" MINIMUM EMBEDMENT IN 5/8"Ø CORED HOLES WITH SIMPSON SET EPOXY ADHESIVE GROUT. (ICC-ES, ESR-1772)

3.31 DOWEL NEW THREADED ROD ANCHOR BOLTS INTO EXISTING CONCRETE FOOTINGS WITH 6" MINIMUM EMBEDMENT IN 5/8"Ø CORED HOLES WITH SIMPSON SET EPOXY ADHESIVE GROUT. (ICC-ES, ESR-1772)

RAISED FLOOR - STEM WALL FOUNDATION

3.32 NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS FOR PROTECTION OF WOOD AGAINST DECAY. (CRC R317.1):
A. ALL WOOD IN CONTACT WITH GROUND, EMBEDDED IN CONCRETE IN DIRECT CONTACT WITH GROUND, OR EMBEDDED IN CONCRETE EXPOSED TO WEATHER
B. WOOD JOISTS WITHIN 18" INCHES AND WOOD GIRDERS WITHIN 12" OF THE EXPOSED GROUND IN CRAWL SPACES SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD
C. WOOD FRAMING MEMBERS THAT REST ON CONCRETE OR MASONRY EXTERIOR FOUNDATION WALLS AND ARE LESS THAN 8" FROM EXPOSED EARTH SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD
D. WOOD FRAMING, SHEATHING, & SIDING ON THE EXTERIOR OF THE BUILDING & HAVING CLEARANCE LESS THAN 6" FROM THE EXPOSED GROUND OR LESS THAN 2" VERTICALLY FROM CONCRETE STEPS, PORCH SLABS, PATIO SLABS, AND SIMILAR HORIZONTAL SURFACE EXPOSED TO WEATHER
E. SILLS AND SLEEPERS ON CONCRETE OR MASONRY SLAB IN DIRECT CONTACT WITH GROUND UNLESS SEPARATED FROM SUCH SLAB BY IMPERVIOUS MOISTURE BARRIER
F. ENDS OF WOOD GIRDERS ENTERING MASONRY OR CONCRETE WALLS WITH CLEARANCES LESS THAN 1/2" ON TOPS, SIDES, AND ENDS
G. WOOD STRUCTURAL MEMBERS SUPPORTING MOISTURE-PERMEABLE FLOORS OR ROOFS EXPOSED TO WEATHER, SUCH AS CONCRETE OR MASONRY SLABS, UNLESS SEPARATED FROM SUCH FLOORS OR ROOFS BY AN IMPERVIOUS MOISTURE BARRIER
H. WOOD FURRING STRIPS OR OTHER WOOD FRAMING MEMBERS ATTACHED DIRECTLY TO INTERIOR OF EXTERIOR CONCRETE OR MASONRY WALLS BELOW GRADE EXCEPT WHERE VAPOR RETARDER APPLIED BETWEEN WALL AND FURRING STRIPS OR FRAMING MEMBERS

3.33 UNDERFLOOR AREAS SHALL HAVE VENTILATION OPENINGS THROUGH FOUNDATION WALLS OR EXTERIOR WALLS, WITH MINIMUM NET AREA OF VENTILATION OPENINGS OF 1 SQUARE FOOT FOR EACH 150 SQUARE FEET OF UNDERFLOOR AREA. ONE SUCH VENTILATING OPENING SHALL BE WITHIN 3 FEET OF EACH CORNER OF THE BUILDING. (CRC R408.2)

3.34 UNDERFLOOR AREAS SHALL BE PROVIDED WITH A MINIMUM 18-INCH BY 24-INCH ACCESS OPENING. (CRC R408.4)

4 MASONRY

STANDARDS

4.1 CONCRETE MASONRY UNITS SHALL COMPLY WITH ARTICLE 2.3 OF TMS 602 FOR LOAD-BEARING UNITS. (CBC 2103.1) OAE

4.2 GROUT SHALL CONFORM ARTICLE 2.2 OF TMS 602 & SHALL CONSIST OF 1 PART PORTLAND CEMENT, 1/10 PART HYDRATED LIME, 2-1/4 TO 3 PARTS SAND, & 1 TO 2 PARTS GRAVEL. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS. OAE (CBC 2103.3)

4.3 MORTAR USED IN CONSTRUCTION OF MASONRY, FOUNDATION & RETAINING WALLS SHALL CONFORM TO ARTICLE 2.1 & 2.6A OF TMS 602 & SHALL CONSIST OF 1 PART PORTLAND CEMENT, 2-1/4 TO 3 PARTS SAND, & 1/4 TO 1/2 PART HYDRATED LIME. OAE (CBC 2103.2)

4.4 PORTLAND CEMENT SHALL BE TYPE 1. (ASTM 150) AGGREGATES SHALL HAVE A MAXIMUM SIZE OF 1/2" FOR FOOTINGS AND 1" FOR ALL OTHER LOCATIONS. (ASTM C33)

4.5 MORTAR FOR USE WITH ADHERED MASONRY VENEER SHALL CONFORM TO ANSI C270 FOR TYPE N OR S, OR SHALL COMPLY WITH ANSI A118.4 FOR LATEX-MODIFIED PORTLAND CEMENT MORTAR. (CBC 2103.2.4, 1404.10)

4.6 MASONRY CEMENT SHALL CONFORM TO ASTM C91-18

4.7 QUICKLIME AND HYDRATED LIME SHALL CONFORM TO ASTM C977-18

4.8 PORTLAND CEMENT MORTARS FOR INSTALLING CERAMIC WALL AND FLOOR TILE SHALL COMPLY WITH ANSI A108.1A AND ANSI A108.1B AND BE OF THE COMPOSITIONS INDICATED IN CBC TABLE 2103.2.3. (CBC 2103.2.3)

4.9 GLASS UNIT MASONRY CONSTRUCTION SHALL BE INSTALLED PER MANUFACTURERS INSTRUCTIONS & COMPLY WITH CHAPTER 13 OF TMS 402 & CBC §2110.(CBC 2110.1) MORTAR FOR USE WITH GLASS UNITS SHALL BE USED. (ASTM C270, TYPE S OR N)

REINFORCEMENT

4.10 STEEL REINFORCEMENT SHALL COMPLY WITH THE REQUIREMENTS OF ARTICLE 2.4 OF TMS 602 & ASTM A615, A706 OR A996. ASTM A996 BARS PRODUCED FROM RAIL STEEL SHALL BE TYPE R. THE MINIMUM YIELD STRENGTH OF REINFORCING STEEL SHALL BE 60,000 PSI (GRADE 60 KSI) (276 MPa) REINFORCING STEEL USED IN CONSTRUCTION OF REINFORCED MASONRY OR CONCRETE STRUCTURES SHALL BE DEFORMED & COMPLY WITH ASTM A615. (CBC 2103.4)

4.11 REINFORCING BAR LAPPED SPLICES IN MASONRY SHALL BE 40 BAR DIAMETERS OR 20" MINIMUM, UON. SPLICES SHALL BE SECURELY TIED TOGETHER WITH 16 GAUGE WIRE. SPLICES OF ADJACENT REINFORCING BARS SHALL BE STAGGERED WHERE POSSIBLE (CBC 2107.2.1)

4.12 REINFORCEMENT SHALL BE ACCURATELY PLACED, ADEQUATELY SUPPORTED, & SECURED AGAINST DISPLACEMENT PRIOR TO GROUT PLACEMENT (CBC 1907.1, CRC R403.1.3.5.2 & THE LATEST ADOPTED STANDARDS OF THE WESTERN CONCRETE REINFORCING STEEL INSTITUTE).

4.13 CLEAR SPACING BETWEEN REINFORCEMENT SHALL NOT BE LESS THAN 1 BAR DIAMETER, 1", OR 1-1/3 TIMES THE MAXIMUM AGGREGATE SIZE (CRC R403.1.5.2).

4.14 ALL MASONRY WALLS AND COLUMNS SHALL BE DOWELED TO THEIR SUPPORTS WITH BARS OF THE SAME SIZE AND SPACING.

4.15 PROVIDE CLEANOUTS AT THE BOTTOM OF EVERY CELL CONTAINING VERTICAL REINFORCEMENT IN ALL WALLS OF HEIGHT GREATER THAN 5 FEET.

CONNECTIONS

4.16 ALL LEDGER BOLTS SHALL BE BENT BAR ANCHOR BOLTS WITH A 90° BEND WITH AN INSIDE Ø OF 3 BOLT Ø, PLUS AN EXTENSION OF 1- 1/2 BOLT Ø AT THE FREE END. THE EFFECTIVE EMBEDMENT DEPTH FOR LEDGER BOLTS SHALL BE MEASURED PERPENDICULAR FROM THE SURFACE OF THE MASONRY TO THE BEARING SURFACE OF THE BENT END. THE MINIMUM EMBEDMENT SHALL BE NO LESS THAN 5 BOLT Ø BUT NOT LESS THAN 2", UON. ALL BOLTS SHALL BE GROUTED IN PLACE WITH AT LEAST 1" OF GROUT BETWEEN THE BOLT AND MASONRY.

5 STEEL

STANDARDS

5.1 STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED & ERECTED IN ACCORDANCE WITH THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION & ERECTION OF STRUCTURAL STEEL FOR BUILDINGS (AISC CURRENT EDITION AND SUPPLEMENTS).

5.2 STRUCTURAL STEEL. STEEL USED AS STRUCTURAL SHAPES SUCH AS WIDE-FLANGE SECTIONS, CHANNELS, PLATES, & ANGLES SHALL COMPLY WITH ASTM A36. PIPE COLUMNS SHALL COMPLY WITH ASTM A53. STRUCTURAL TUBES SHALL COMPLY WITH ASTM A500, GRADE B.

5.3 STRUCTURAL STEEL SHALL CONFORM TO CHAPTER 22 OF THE 2022 CBC AND AISC 360.

W-WIDE FLANGE SHAPES	ASTM A992	F_Y=50-65 KSI
PLATES, ANGLES & CHANNELS	ASTM A36	F_Y=36 KSI
HOLLOW TUBE SHAPES	ASTM A500, GRADE B	F_Y=46 KSI
ROUND PIPE SHAPES	ASTM A53, GRADE B	F_Y=35 KSI

5.4 ALL STRUCTURAL STEEL SHALL BE IDENTIFIED AS NOTED IN THE 2022 CBC. DESIGN OF STEEL MEMBERS SHALL BE AS NOTED IN ASD (ALLOWABLE STRESS DESIGN) METHOD PROVISIONS IN THE 2022 CBC §2205.1 & §2205.2 & AISC 360.

5.5 ALL STRUCTURAL STEEL SHALL BE FABRICATED IN A STEEL SHOP APPROVED BY THE MUNICIPAL JURISDICTION BUILDING DEPARTMENT.

5.7 STRUCTURAL STEEL SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO STEEL FABRICATION. SHOP DRAWINGS SHALL INCLUDE ALL INFORMATION NECESSARY FOR THE FABRICATION OF THE STRUCTURES COMPONENT PARTS. SHOP DRAWINGS SHALL INCLUDE THE SIZE & WEIGHT OF MEMBERS, TYPE & LOCATION OF SHOP & FIELD CONNECTIONS, TYPE, SIZE & EXTENT OF ALL WELDS, WELDING SEQUENCE & METHOD OF ANCHORAGE TO ADJACENT WORK.

FINISHING

5.8 SHOP PAINT FOR STEEL OTHER THAN GALVANIZED SHALL MEET FEDERAL SPECIFICATION TT-P-645C F84 (ZINC CHROMATE).

5.9 STRUCTURAL STEEL SHALL HAVE 2 SHOP COATS OF RED OXIDE PRIMER. AFTER ERECTION, ALL FIELD CONNECTIONS, BOLTS, WELDS, & ABRADED PLACES ON THE SHOP PAINT SHALL BE TOUCHED UP WITH THE SAME TYPE OF PAINT AS THE SHOP COAT.

5.10 ALL STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED, UON.

CONNECTORS AND CONNECTIONS

5.11 BOLTS SHALL BE A307 QUALITY WITH WASHERS, UON; HIGH STRENGTH A325/A490 BOLTS MUST BE SPECIAL INSPECTED, UON.

5.12 ALL NAILS SHALL BE COMMON WIRE NAILS, UNLESS OTHERWISE NOTED.

5.13 MACHINE BOLTS, LAG SCREWS & SIMILAR FASTENERS SHALL CONFORM TO ASTM A307 & ASTM A563, UON.

5.14 STEEL COLUMNS WITH BASE PLATES SHALL BE BEDDED ON DRY PACK OR NON-SHRINK GROUT OF 1" MINIMUM THICKNESS.

5.15 STEEL ERECTOR TO PROVIDE ERECTION BRACING REQUIRED TO MAINTAIN A PLUMB & PROPERLY BRACED STRUCTURE DURING CONSTRUCTION.

WELDING

5.16 ALL WELDS SHALL CONFORM TO THE CURRENT EDITION OF THE CODE FOR WELDING IN BUILDING CONSTRUCTION OF THE AMERICAN WELDING SOCIETY (AWS D1.1) AND SHALL BE MADE ONLY BY WELDERS AND WELDING OPERATORS QUALIFIED BY TESTS AS PRESCRIBED IN THE STRUCTURAL CODE FOR WELDING IN BUILDING CONSTRUCTION OF THE AMERICAN WELDING SOCIETY.

5.17 FIELD & SHOP WELDING SHALL BE PERFORMED BY A DULY CERTIFIED WELDER USING LOW HYDROGEN E70-T6 ELECTRODE RODS, UON.

5.18 ALL STRUCTURAL FIELD WELDING SHALL BE CONTINUOUSLY INSPECTED BY AN APPROVED REGISTERED SPECIAL INSPECTOR.

5.19 WELD LENGTHS CALLED FOR IN THE PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED.

5.20 WELDING ELECTRODES SHALL COMPLY TO AWSA5.1 OR A5.5, E70XX, UON .

5.21 WELDING FILLER METAL (AWS D1.1, TABLE 4.1.1).

6 WOOD , TIMBER AND CARPENTRY

STANDARDS

6.1 ALL TIMBER DESIGN & CONSTRUCTION SHALL BE IN ACCORDANCE WITH CBC CHAPTER 23 & THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (LATEST ADOPTED SPECIFICATION) WITH AMENDMENTS PER CBC SECTION 2306.

6.2 ALL LUMBER AND TIMBERS SHALL BE CLEARLY GRADE MARKED BY WWPA OR WCLIB PER DOC PS 20 (CBC §2303.1.1).

6.3 LUMBER & TIMBER SHALL BE CUT SQUARE AND TO ACCURATE LENGTH AND NEATLY ASSEMBLED. ALL FRAMING SHALL BE INSTALLED PLUMB, LEVEL, STRAIGHT AND TRUE.

6.4 MOISTURE CONTENT OF SAWN LUMBER AT THE TIME OF INSTALLATION SHALL NOT EXCEED 19%. (CBC §2303.1.9.2).

6.5 STANDARD WOOD GRADES SHALL BE IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:

LUMBER OR TIMBER	SPECIES	GRADE
PRESSURE TREATED SILL PLATES ON CONCRETE	DOUGLAS FIR-LARCH	#2
2x4 STUDS LESS THAN 8' TALL	DOUGLAS FIR-LARCH	#2
2x4 STUDS GREATER THAN 8' TALL, 4x4 STUDS, PLATES, STRIPPING, MISC. CONCEALED FRAMING, BLOCKING & FIRESTOPPING	DOUGLAS FIR-LARCH	#2
2x & 3x MEMBERS, LARGER THAN 4" NOMINAL WIDTH STUDS, PLATES, JOISTS, RAFTERS, STRIPPING, MISC. CONCEALED FRAMING, BLOCKING & FIRESTOPPING	DOUGLAS FIR-LARCH	#2 JOISTS & PLANKS OR BETTER
POSTS LARGER THAN 4x4	DOUGLAS FIR-LARCH	#1, POSTS & TIMBERS
BEAMS, HEADERS, STRINGERS & LEDGERS EQUAL TO OR LESS THAT 4x10	DOUGLAS FIR-LARCH	#2
BEAMS, HEADERS, STRINGERS & LEDGERS GREATER THAN 4x10	DOUGLAS FIR-LARCH	#1

6.6 ALL JOISTS, RAFTERS, BEAMS, AND POSTS 2" TO 4" THICK SHALL BE NO. 2 GRADE DOUGLAS FIR-LARCH OR BETTER. ALL POSTS AND BEAMS 5" & THICKER SHALL BE NO. 1 GRADE DOUGLAS FIR-LARCH OR BETTER. STUDS NOT MORE THAN 8' LONG SHALL BE STUD-GRADE DOUGLAS FIR-LARCH OR BETTER WHEN SUPPORTING NOT MORE THAN 1 FLOOR, ROOF, AND CEILING. STUDS LONGER THAN 8' SHALL BE NO. 2 GRADE DOUGLAS FIR-LARCH OR BETTER.

CONNECTIONS

6.7 NAILING SHALL MEET JURISDICTIONAL STANDARDS, CBC TABLE 2304.10.2, CRC TABLE R602.3(1), R502.9, R602.3 & R802.2, UON.

6.8 DRILLED HOLES FOR NAILS, WHERE NECESSARY TO PREVENT SPLITTING, SHALL BE OF A Ø SMALLER THAN THAT OF THE NAIL.

6.9 METAL FRAMING CONNECTORS SHALL BE PROVIDED BY SIMPSON CO., OAE. ALL CONNECTORS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS & ASTM D7147 WITH THE APPROPRIATE NUMBER OF BOLTS OR NAILS. ALL CONNECTORS SHALL BE CBC/CRC CODE APPROVED (CBC §2304.10.4).

6.10 ALL BOLTS HEADS & NUTS BEARING ON WOOD SHALL SIT ON .229" x 3" x 3" METAL PLATE WASHERS, MINIMUM.

6.11 ALL BOLTS HOLES IN WOOD SHALL BE DRILLED 1/16"Ø LARGER THAN THE NOMINAL BOLT Ø.

6.12 ANCHOR BOLTS TO SILL PLATES SHALL HAVE NUTS WITH SQ. PLATE WASHERS IN ACCORDANCE WITH THIS SCHEDULE:

BOLT Ø	PLATE SIZE	SIMPSON CO.
5/8"	.229" x 3" x 3"	BP 5/8-3
3/4"	.229" x 3" x 3"	BP 3/4-3
7/8"	.3125" x 3" x 3"	BP 7/8-2
1"	.375" x 3.5" x 3.5"	BP 1

6.12 SCHEDULE ALSO APPLIES TO LAG SCREWS DRIVEN INTO SOLE PLATES FOR RAISED FLOOR & UPPER STORY CONDITIONS.

6.13 BOLTS IN WOOD SHALL NOT BE LESS THAN 7Ø FROM THE END OR 4Ø FROM THE EDGE.

6.14 FASTENERS FOR PRESERVATIVE-TREATED AND FIRE-RETARDANT-TREATED WOOD , INCLUDING NUTS AND WASHERS, SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE, OR COPPER. (CRC R317.3.1) EXCEPTION 1: 1/2-INCH DIAMETER OR GREATER STEEL BOLTS EXCEPTION 2: FASTENERS OTHER THAN NAILS AND TIMBER RIVETS MAY BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B 695, CLASS 55 MINIMUM EXCEPTION 3: PLAIN CARBON STEEL FASTENERS ACCEPTABLE IN SBX/DOT & ZINC BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT.

6.15 FASTENERS FOR FIRE-RETARDANT-TREATED WOOD USED IN EXTERIOR APPLICATIONS OR WET OR DAMP LOCATIONS SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE, OR COPPER. (CRC R317.3.3)

6.16 LAG SCREWS SHALL BE INSTALLED IN PREDRILLED HOLES. THE CLEARANCE HOLE FOR THE SHANK PORTION SHALL HAVE THE SAME Ø & DEPTH AS THE SHANK. THE LEAD HOLE FOR THE THREADED PORTION SHALL HAVE A Ø EQUAL TO 40%-70% OF THE SHANK Ø (FOR ALL DOUGLAS FIR-LARCH MEMBERS). LAG SCREWS ARE TO BE INSTALLED WITH THE TURN OF A WRENCH. DRIVING, AS WITH A HAMMER, IS NOT PERMITTED.

FIRE BLOCKING AND DRAFT STOPPING

6.17 FIREBLOCKING SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS (CRC R302.11 & CRC R1003.19):
A. IN CONCEALED SPACES OF STUD WALLS & PARTITIONS, INCLUDING FURRED SPACES, & PARALLEL ROWS OF STUDS OR STAGGERED STUDS, AS FOLLOWS:
1. VERTICALLY AT THE CEILING AND FLOOR LEVELS
2. HORIZONTALLY AT INTERVALS NOT EXCEEDING 10'-0"
B. AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL & HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS, & COVE CEILINGS
C. IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP & BOTTOM OF THE RUN
D. AT OPENINGS AROUND VENTS, PIPES, DUCTS, CABLES AND WIRES AT CEILING AND FLOOR LEVEL, WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION
E. AT CHIMNEYS AND FIREPLACES PER ITEM 6.20
F.CORNICES OF A TWO-FAMILY DWELLING AT THE LINE OF DWELLING-UNIT SEPARATION

6.18 EXCEPT AS OTHERWISE SPECIFIED IN ITEMS 6.19 & 6.20, FIREBLOCKING SHALL CONSIST OF THE FOLLOWING MATERIALS WITH THE INTEGRITY MAINTAINED (CRC R302.11.1):
A. TWO-INCH NOMINAL LUMBER
B. TWO THICKNESSES OF ONE-INCH NOMINAL LUMBER WITH BROKEN LAP JOINTS
C. ONE THICKNESS OF 23/32-INCH WOOD STRUCTURAL PANEL WITH JOINTS BACKED BY 23/32-INCH WOOD STRUCTURAL PANEL
D. ONE THICKNESS OF 3/4-INCH PARTICLEBOARD WITH JOINTS BACKED BY 3/4-INCH PARTICLEBOARD
E. 1/2-INCH GYPSUM BOARD
F. 1/4-INCH CEMENT-BASED MILLBOARD
G. BATTS OR BLANKETS OF MINERAL OR GLASS FIBER OF OTHER APPROVED MATERIALS INSTALLED IN SUCH A MANNER AS TO BE SECURELY RETAINED IN PLACE. BATTS OR BLANKETS OF MINERAL OR GLASS FIBER OR OTHER APPROVED NON-RIGID MATERIALS SHALL BE PERMITTED FOR COMPLIANCE WITH THE 10-FOOT HORIZONTAL FIREBLOCKING IN WALLS CONSTRUCTED USING PARALLEL ROWS OF STUDS OR STAGGERED STUDS. UNFACED FIBERGLASS BATT INSULATION USED AS FIREBLOCKING SHALL FILL THE ENTIRE CROSS-SECTION OF THE WALL CAVITY TO A MINIMUM HEIGHT OF 16" MEASURED VERTICALLY. WHEN PIPING, CONDUIT, OR SIMILAR OBSTRUCTIONS ARE ENCOUNTERED, THE INSULATION SHALL BE PACKED TIGHTLY AROUND THE OBSTRUCTION. LOOSE-FILL INSULATION MATERIAL SHALL NOT BE USED AS A FIREBLOCK UNLESS SPECIFICALLY TESTED IN THE FORM & MANNER INTENDED FOR USE TO DEMONSTRATE ITS ABILITY TO REMAIN IN PLACE & TO RETARD THE SPREAD OF FIRE.

6.19 FIREBLOCKING AT OPENINGS AROUND VENTS, PIPES, DUCTS, CABLES, & WIRES AT CEILING AND FLOOR LEVEL. SUCH OPENINGS SHALL BE FIREBLOCKED WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION. (CRC R302.11)

6.20 ALL SPACES BETWEEN CHIMNEYS AND FLOORS AND CEILINGS THROUGH WHICH CHIMNEYS PASS SHALL BE FIREBLOCKED WITH NONCOMBUSTIBLE MATERIAL SECURELY FASTENED IN PLACE. THE FIREBLOCKING OF SPACES BETWEEN CHIMNEYS AND WOOD JOISTS, BEAMS, OR HEADERS SHALL BE SELF-SUPPORTING OR BE PLACED ON STRIPS OF METAL OR METAL LATH LAID ACROSS THE SPACES BETWEEN COMBUSTIBLE MATERIAL AND THE CHIMNEY. (CRC R1003.19)

6.21 IN COMBUSTIBLE CONSTRUCTION WHERE THERE IS USABLE SPACE BOTH ABOVE & BELOW THE CONCEALED SPACE OF A FLOOR/CEILING ASSEMBLY, DRAFTSTOPS SHALL BE INSTALLED SO THAT THE AREA OF THE CONCEALED SPACE DOES NOT EXCEED 1000 SQUARE FEET. DRAFTSTOPPING SHALL DIVIDE THE CONCEALED SPACE INTO APPROXIMATELY EQUAL AREAS. WHERE THE ASSEMBLY IS ENCLOSED BY A FLOOR MEMBRANE ABOVE AND A CEILING MEMBRANE BELOW, DRAFTSTOPPING SHALL BE PROVIDED IN FLOOR/CEILING ASSEMBLIES UNDER THE FOLLOWING CIRCUMSTANCES (CRC R302.12):
A. CEILING IS SUSPENDED UNDER THE FLOOR FRAMING.
B. FLOOR FRAMING IS CONSTRUCTED OF TRUSS-TYPE OPEN-WEB OR PERFORATED MEMBERS.

6.22 DRAFTSTOPPING SHALL NOT BE LESS THAN 1/2-INCH GYPSUM BOARD, 3/8-INCH WOOD STRUCTURAL PANELS, OR OTHER APPROVED MATERIALS ADEQUATELY SUPPORTED. DRAFTSTOPPING SHALL BE INSTALLED PARALLEL TO THE FLOOR FRAMING MEMBERS UNLESS OTHERWISE APPROVED BY THE BUILDING OFFICIAL. THE INTEGRITY OF DRAFTSTOPS SHALL BE MAINTAINED. (CRC R302.12.1)

SHEATHING

6.23 SHEATHING SPECIFICATIONS 6.24, 6.25 & 6.26 MAY BE SUPERCEDED BY ALTERNATE SPECIFICATIONS ON THE FRAMING PLANS.

6.24 FLOOR SHEATHING SHALL BE 23/32" CDX APA RATED STURD-I-FLOOR, T&G UNDERLAYMENT, EXPOSURE 1, MINIMUM SPAN RATING 20", UNBLOCKED. NAIL WITH HOT DIP GALVANIZED 10d COMMON NAILS, HAND NAILED 6" O.C. AT EDGE AND 10" O.C. IN FIELD. GLUE ALONG FLOOR JOISTS AND PLYWOOD T&G GROOVES SHALL BE PL 400 AS MANUFACTURED BY B.F. GOODRICH OAE. PLYWOOD TO BE GLUED AS IT IS NAILED BEFORE GLUE HAS DRIED OR HARDENED (CBC 2304.8.1 & CRC R503).

6.25 WALL SHEATHING AT SHEAR PANELS SHALL BE APA RATED STRUCTURAL 1, EXPOSURE 1, GROUP 1, UON. SHEATHING THICKNESS & NAILING SHALL BE ACCORDING TO THE SHEAR PANEL SCHEDULE. (CBC 2304.6.1 & CRC R604)

6.26 ROOF SHEATHING SHALL BE 15/32" CDX APA RATED SHEATHING, EXPOSURE 1, MINIMUM SPAN INDEX 24/0, NAILED WITH 8d COMMON NAILS AT 6" O.C. AT EDGE & 12" O.C. IN FIELD & AT INTERMEDIATE MEMBERS (CBC 2304.8.2 & CRC R803).

6.27 USE 1x8 SPRUCE, CEDAR OR REDWOOD TONGUE AND GROOVE AT ALL EXPOSED EAVE AREAS, UON.

6.28 DIAPHRAGM SHEATHING NAILS OR OTHER APPROVED SHEATHING CONNECTORS SHALL BE DRIVEN SO THAT THEIR HEAD OR CROWN IS FLUSH WITH THE SHEATHING SURFACE.

6.29 ALL WOOD STRUCTURAL PANEL SHEATHING SHALL BE GRADE MARKED BY APA, TECO OR PLT & SHALL CONFORM TO PS 1-95, PS 2-92 OR PRP-108

6.30 PLYWOOD FLOOR & ROOF SHEATHING SHALL BE LAID WITH THE LONG DIMENSION AND FACE GRAIN PERPENDICULAR TO THE RAFTERS, JOISTS OR TRUSSES, AND THE SHEETS SHALL BE STAGGERED AS SHOWN IN CBC TABLES IN §2306.2 (CASE 1 & 3). EACH SHEET SHALL CONTAIN A MINIMUM OF 8 SQ FT & EXTEND TO 3 SUPPORTS. PROVIDE 1/8" SPACING BETWEEN PANEL ENDS & EDGES AS REQUIRED FOR EXPANSION. ALL WOOD STRUCTURAL PANEL SHEATHING DIAPHRAGMS SHALL BE REVIEWED BY THE CONTRACTOR FOR COMPLIANCE WITH NAILING AND PANEL REQUIREMENTS BEFORE THE FINISH MATERIAL IS APPLIED.

6.31 ROOF PLYWOOD SHALL BE CONTINUOUS UNDER CALIFORNIA FILL FRAMING SO ROOF DIAPHRAGM EXTENDS TO WALL PLATE.

FLOOR FRAMING

6.32 FLOOR FRAMING SHALL BE IN ACCORDANCE WITH CBC §2304.4 & 2308.4 & CRC §R502.

6.33 FLOOR FRAMING SPAN LIMITATIONS SHALL BE IN ACCORDANCE WITH; CBC TABLES 2308.4.1.1(1) & (2), 2308.4.2.1(1) & (2), CRC TABLES R502.3.1(1) & (2) AND MUNICIPAL JURISDICTION TABLES.

6.34 THE ENDS OF EACH FLOOR JOIST, BEAM, OR GIRDER SHALL HAVE MINIMUM 1-1/2 INCHES OF BEARING ON WOOD OR METAL AND MINIMUM 3 INCHES OF BEARING ON MASONRY OR CONCRETE EXCEPT WHERE SUPPORTED ON A 1-INCH-BY-4-INCH RIBBON STRIP AND NAILED TO THE ADJOINING STUD OR BY THE USE OF APPROVED JOIST HANGERS. (CBC 2308.4.2.2 & CRC R502.6)

6.35 PROVIDE 2x DOUBLE JOISTS UNDER ALL PARALLEL BEARING & NON-BEARING PARTITIONS. NAIL ALL DOUBLE 2x JOISTS WITH 16d NAILS AT 12" OC, STAGGERED, TOP & BOTTOM. BOLT ALL TRIPLE 2x JOISTS WITH 1/2"Ø BOLTS AT 18" OC, STAGGERED, TOP & BOTTOM(CBC SECTION 2308.9).

6.36 JOISTS UNDER PARALLEL BEARING PARTITIONS SHALL BE OF ADEQUATE SIZE TO SUPPORT THE LOAD. DOUBLE JOISTS, SIZED TO ADEQUATELY SUPPORT THE LOAD, THAT ARE SEPARATED TO PERMIT THE INSTALLATION OF PIPING OR VENTS SHALL BE FULL-DEPTH SOLID-BLOCKED WITH MINIMUM 2" NOMINAL LUMBER SPACED AT MAXIMUM 4' OC. BEARING PARTITIONS PERPENDICULAR TO JOISTS SHALL NOT BE OFFSET FROM SUPPORTING GIRDERS, WALLS, OR PARTITIONS MORE THAN THE JOIST DEPTH UNLESS SUCH JOISTS ARE OF SUFFICIENT SIZE TO CARRY THE ADDITIONAL LOAD. (CBC 2308.4.5 & CRC R502.4)

6.37 WHERE JOISTS ARE PERPENDICULAR TO A SHEAR WALL ABOVE OR BELOW, A 4x RIM JOIST, BAND JOIST, OR BLOCKING SHALL BE PROVIDED ALONG THE ENTIRE LENGTH OF THE SHEAR WALL. WHERE JOISTS ARE PARALLEL TO A SHEAR WALL ABOVE OR BELOW, A RIM JOIST, END JOIST, OR OTHER PARALLEL FRAMING SHALL BE PROVIDED DIRECTLY ABOVE AND/OR BELOW THE SHEAR WALL. WHERE A PARALLEL FRAMING MEMBER CANNOT BE LOCATED DIRECTLY ABOVE &/OR BELOW THE SHEAR WALL, FULL-DEPTH BLOCKING AT 16" OC SPACING SHALL BE PROVIDED BETWEEN THE PARALLEL FRAMING MEMBERS TO EACH SIDE OF THE SHEAR WALL. (CBC 2308.4.5 & CRC R602.10.8)

6.38 FLOOR JOISTS SHALL BE SUPPORTED LATERALLY AT ENDS AND EACH INTERMEDIATE SUPPORT BY MINIMUM 2" FULL-DEPTH BLOCKING, BY ATTACHMENT TO FULL-DEPTH HEADER, BAND JOIST, OR RIM JOIST, TO AN ADJOINING STUD, OR SHALL BE OTHERWISE PROVIDED WITH LATERAL SUPPORT TO PREVENT ROTATION. (CBC SECTION 2308.4.2.3 & CRC R502.7)

6.39 NOTCHES ON THE ENDS OF JOISTS SHALL NOT EXCEED 1/4 THE JOIST DEPTH. NOTCHES IN THE TOP OR BOTTOM OF JOISTS SHALL NOT EXCEED 1/6 THE DEPTH AND SHALL NOT BE LOCATED IN THE MIDDLE THIRD OF THE SPAN. HOLES BORED IN JOISTS SHALL NOT BE WITHIN 2" OF THE TOP OR BOTTOM OF THE JOIST AND THE DIAMETER OF ANY SUCH HOLE SHALL NOT EXCEED ONE-THIRD THE DEPTH OF THE JOIST. (CBC 2308.4.2.4 & CRC R502.8).

6.40 FLOOR JOISTS EXCEEDING NOMINAL 2"x12" SHALL BE SUPPORTED LATERALLY BY SOLID BLOCKING, DIAGONAL BRIDGING (WOOD OR METAL), OR A CONTINUOUS 1-INCH-BY-3-INCH STRIP NAILED ACROSS THE BOTTOM OF JOISTS PERPENDICULAR TO JOISTS AT MAXIMUM 8-FOOT INTERVALS. (CBC 2308.4.6 & CRC R502.7.1)

6.41 FLOOR JOISTS FRAMING OPPOSITE SIDES OVER A BEARING SUPPORT SHALL LAP MINIMUM 3 INCHES & SHALL BE NAILED TOGETHER WITH MINIMUM 3 -10d FACE NAILS. A WOOD OR METAL SPLICE WITH STRENGTH EQUAL TO OR GREATER THAN THAT PROVIDED BY THE LAP IS PERMITTED. (CBC 2308.4.2.3 & CRC R502.6.1)

6.42 FLOOR JOISTS FRAMING INTO THE SIDE OF A WOOD GIRDER SHALL BE SUPPORTED BY APPROVED FRAMING ANCHORS OR ON LEDGER STRIPS MINIMUM NOMINAL 2"X2". (CBC 2308.4.2.3 & CRC R502.6.2)

6.43 OPENINGS IN FLOOR FRAMING SHALL BE FRAMED WITH A HEADER & TRIMMER JOISTS. WHEN THE HEADER JOIST SPAN DOES NOT EXCEED 4', THE HEADER JOIST MAY BE A SINGLE MEMBER THE SAME SIZE AS THE FLOOR JOIST. SINGLE TRIMMER JOISTS MAY BE USED TO CARRY A SINGLE HEADER JOIST LOCATED WITHIN 3' OF THE TRIMMER JOIST BEARING. WHEN THE HEADER JOIST SPAN EXCEEDS 4', THE TRIMMER JOISTS & HEADER JOIST SHALL BE DOUBLED AND OF SUFFICIENT CROSS SECTION TO SUPPORT THE FLOOR JOISTS FRAMING INTO THE HEADER. APPROVED HANGERS SHALL BE USED FOR THE HEADER- JOIST TO-TRIMMER-JOIST CONNECTIONS WHEN THE HEADER JOIST SPAN EXCEEDS 6'. TAIL JOISTS OVER 12' LONG SHALL BE SUPPORTED AT THE HEADER BY FRAMING ANCHORS OR ON LEDGER STRIPS MINIMUM 2"x2". (CBC 2308.4.4.1 & CRC R502.10)

6.44 GIRDERS FOR SINGLE-STORY CONSTRUCTION OR GIRDERS SUPPORTING LOADS FROM A SINGLE FLOOR SHALL NOT BE LESS THAN 4"X6" FOR SPANS 6' OR LESS, PROVIDED THAT GIRDERS ARE SPACED NOT MORE THAN 8' OC. OTHER GIRDERS SHALL BE DESIGNED TO SUPPORT THE LOADS SPECIFIED IN THE CBC. GIRDER END JOINTS SHALL OCCUR OVER SUPPORTS. WHEN A GIRDER IS SPLICED OVER A SUPPORT, AN ADEQUATE TIE SHALL BE PROVIDED. THE ENDS OF BEAMS OR GIRDERS SUPPORTED ON MASONRY OR CONCRETE SHALL NOT HAVE LESS THAN 3" OF BEARING. (CBC 2308.7)

WALL FRAMING

6.45 WALL FRAMING SHALL BE IN ACCORDANCE WITH CBC §2308.5 & §2308.6 & CRC CHAPTER 6.

6.46 THE SIZE, HEIGHT, AND SPACING OF STUDS SHALL BE IN ACCORDANCE WITH CRC TABLE R602.3(5). (CRC R602.3.1)

6.47 TYPICAL STUD SIZE IS 2x4 WITH A TYPICAL SPACING OF 16" OC. THE MAXIMUM HEIGHT FOR 2x4 & 2x6 STUD BEARING WALLS SHALL BE 10'-0". NON-BEARING STUD WALL MAXIMUM HEIGHT IS 14' FOR 2x4 STUDS & 20' FOR 2x6 STUDS. WALLS WHOSE HEIGHT DOES NOT MEET THESE CRITERIA SHALL BE ENGINEERED FOR THEIR SPECIFIC CONDITION. (CBC 2308.5.1 & TABLE 2308.5.1 AND CRC R602.3 & TABLE R602.3(5)

6.48 WHERE JOISTS, TRUSSES, OR RAFTERS ARE SPACED MORE THAN 16" O. C. & BEARING STUDS BELOW ARE SPACED 24" O. C., SUCH MEMBERS SHALL BEAR WITHIN 5" OF THE STUDS BENEATH. (CBC 2308.5.3.2 & CRC R602.3.3)

6.49 STUDS SHALL BE PLACED WITH THEIR WIDE DIMENSION PERPENDICULAR TO THE WALL. STUDS SHALL HAVE FULL BEARING ON A PLATE OR SILL NOT LESS THAN 2" IN THICKNESS HAVING A WIDTH NOT LESS THAN THAT OF THE STUD WALLS (CBC 2308.5.3.1 & CRC R602.3.4)

6.50 WOOD STUD WALLS SHALL BE CAPPED WITH A DOUBLE TOP PLATE INSTALLED TO PROVIDE OVERLAPPING AT CORNERS & AT INTERSECTIONS WITH OTHER PARTITIONS. END JOINTS IN DOUBLE TOP PLATES SHALL BE OFFSET AT LEAST 48". JOINTS IN PLATES NEED NOT OCCUR OVER STUDS. PLATES SHALL BE MINIMUM NOMINAL 2" THICK & HAVE WIDTH AT LEAST EQUAL TO WIDTH OF STUDS. (CBC 2308.5.3.2 & CRC R602.3.2)

6.51 TOP PLATE SPLICES SHALL BE LAPPED A MINIMUM OF 4'-0" & FACE NAILED WITH MINIMUM 20-16d AT EACH SIDE OF THE SPLICE WITH NO MORE THAN 12" BETWEEN NAILS (CBC SECTION 2308.9.1 & CRC R602.10.8.1). NEW TO EXISTING DTP USE ST6236 STRAP.

6.52 PROVIDE 1/2" MINIMUM CLEARANCE BETWEEN TOP PLATE OF INTERIOR NON-BEARING PARTITIONS & THE BASE OF CEILING JOISTS, RAFTERS & TRUSS BOTTOM CHORDS. (CBC 2308.5.4 & CRC 602.5)

6.53 WHEN PIPING OR DUCTWORK IS PLACED IN OR PARTLY IN AN EXTERIOR WALL OR INTERIOR LOAD-BEARING WALL, NECESSITATING CUTTING, DRILLING, OR NOTCHING OF THE TOP PLATE BY MORE THAN 50% OF ITS WIDTH, A GALVANIZED METAL TIE NOT LESS THAN 0.054" THICK & 1-1/2" WIDE SHALL BE FASTENED ACROSS AND TO THE PLATE AT EACH SIDE OF THE OPENING WITH NOT LESS THAN 8-10d NAILS HAVING A MINIMUM LENGTH OF 1-1/2" AT EACH SIDE OR EQUIVALENT. THE METAL TIE MUST EXTEND MINIMUM 6 INCHES PAST THE OPENING. (CBC 2308.5.3.2 & CRC R602.6.1)

6.54 ANY STUD IN AN EXTERIOR WALL OR BEARING PARTITION MAY BE CUT OR NOTCHED TO A DEPTH NOT EXCEEDING 25% OF ITS WIDTH. STUDS IN NONBEARING PARTITIONS MAY BE NOTCHED TO A DEPTH NOT TO EXCEED 40% OF A SINGLE STUD WIDTH. ANY STUD MAY BE BORED OR DRILLED, PROVIDED THE DIAMETER OF THE RESULTING HOLE IS NO MORE THAN 60% OF THE STUD WIDTH, THE EDGE OF THE HOLE IS NO MORE THAN 5/8 INCH TO THE EDGE OF THE STUD, AND THE HOLE IS NOT LOCATED IN THE SAME SECTION AS A CUT OR NOTCH. STUDS LOCATED IN EXTERIOR WALL OR BEARING PARTITIONS DRILLED OVER 40% & UP TO 60% SHALL ALSO BE DOUBLED WITH NO MORE THAN TWO SUCCESSIVE STUDS BORED. (CBC 2308.5.9&10 & CRC R602.6)

6.55 HEADERS, DOUBLE JOISTS, OR TRUSSES OF ADEQUATE SIZE TO TRANSFER LOADS TO VERTICAL MEMBERS SHALL BE PROVIDED OVER WINDOW AND DOOR OPENINGS IN LOAD-BEARING WALLS AND PARTITIONS. (CBC 2304.3.2)

6.56 EACH END OF HEADERS SHALL HAVE A BEARING LENGTH OF NOT LESS 1-1/2" FOR THE FULL WIDTH OF THE HEADER. (CBC 2308.5.5 & CRC R602.7).

6.57 STANDARD HEADERS SIZES, UON:

BEARING WALLS		NON-BEARING WALLS	
OPENING WIDTH	HEADER SIZE	OPENING WIDTH	HEADER SIZE
3' OR LESS	4x6	4' OR LESS	4x4
3' TO 6'	4x8	4' TO 7'	4x6
6' TO 8'	4x10	7' TO 10'	4x8

6.58 ALL BEAMS SHALL BE SUPPORTED BY POSTS OR GIRDERS. FOR 4x8 & SMALLER BEAMS A MINIMUM 2-2x4 DF #2 POST SHALL BE USED, UON. FOR 4x10 & LARGER BEAMS A MINIMUM 4x4 DF #1 POST SHALL BE USED, UON. EACH POST SHALL PROVIDE FULL BEARING WITH FOR THE BEAM IT SUPPORTS, UON.

6.59 ALL POSTS SHALL BE CONTINUED BETWEEN FLOORS WITH SOLID FULL WIDTH BLOCKING AND A POST OF EQUAL OR GREATER SIZE BELOW, UNTIL A BEAM OR FOUNDATION IS ENCOUNTERED. ALL POSTS INSIDE WALLS MAY BEAR ON THE SOLE OR SILL PLATE, UON. ISOLATED POSTS SHALL BE SEATED IN A POST OR COLUMN BASE, UON.

6.60 ALL STUD WALLS 8' AND OVER IN HEIGHT SHALL HAVE 2x SOLID, STAGGERED BRIDGING AT MID-HEIGHT (CBC 2308.5.7).

6.61 FOUNDATION CRIPPLE WALLS SHALL BE FRAMED OF STUDS NOT LESS IN SIZE THAN THE STUDDING ABOVE. CRIPPLE WALLS MORE THAN 4' IN HEIGHT SHALL HAVE STUDS SIZED AS REQUIRED FOR AN ADDITIONAL STORY. CRIPPLE WALLS WITH STUD HEIGHT LESS THAN 14" SHALL BE SHEATHED ON AT LEAST ONE SIDE WITH A WOOD STRUCTURAL PANEL FASTENED TO BOTH THE TOP AND BOTTOM PLATES IN ACCORDANCE WITH TABLE R602.3(1), OR THE CRIPPLE WALLS SHALL BE CONSTRUCTED OF SOLID BLOCKING. CRIPPLE WALLS SHALL BE SUPPORTED ON CONTINUOUS FOUNDATIONS. (CRC R602.9)

SHEAR PANELS

6.62 BUILDINGS WALLS SHALL BE BRACED IN ACCORDANCE WITH THE METHODS ALLOWED PER CBC & CRC. (CBC 2308.6 & CRC R602.10, CRC R602.10.1, CRC R602.10.4, AND/OR CRC R602.10.5.

6.63 BRACED WALL LINE SPACING. SPACING BETWEEN BRACED WALL LINES SHALL NOT EXCEED 20 FEET OR ALTERNATE PROVISIONS OF CRC R602.10.1.3.

6.64 THE CUMULATIVE LENGTH OF SHEAR WALLS WITHIN EACH BRACED WALL LINE SHALL MEET THE PROVISIONS OF CRC TABLE R602.10.1.3(1) FOR WIND LOADS AND CRC TABLE R602.10.1.3(2) FOR SEISMIC LOADS. (CRC R602.10.1.1)

6.65 SHEAR WALLS SHALL BE LOCATED NOT MORE THAN 25 FEET ON CENTER. (CRC R602.10.2.2)

6.66 SHEAR WALLS MAY BE OFFSET OUT-OF-PLAN NOT MORE THAN 4' FROM THE DESIGNATED BRACED WALL LINE AND NOT MORE THAN 8' FROM ANY OTHER OFFSET WALL CONSIDERED PART OF THE SAME BRACED WALL LINE. (CRC R602.10.1.2)

6.67 SHEAR WALLS SHALL BE LOCATED AT THE ENDS OF EACH BRACED WALL LINE OR MEET THE ALTERNATE PROVISIONS OF CRC R602.10.2.2.

6.68 SHEAR WALLS SHALL MEET MINIMUM LENGTH REQUIREMENTS OF CRC R602.10.6.5.1.

6.69 CRIPPLE WALLS SHALL BE BRACED PER CRC R602.10.11

6.70 ALL SHEAR WALLS, ROOF DIAPHRAGMS, AND FLOOR DIAPHRAGMS SHALL BE NAILED, WITH COMMON OR GALVANIZED NAILS, TO SUPPORTING CONSTRUCTION PER THE SHEAR PANEL SCHEDULE AND CRC TABLE R602.3(1). (CRC R604.3)

6.71 ALL VERTICAL JOINTS IN SHEAR WALL SHEATHING SHALL OCCUR OVER, AND BE FASTENED TO, COMMON STUDS. HORIZONTAL JOINTS IN SHEAR WALLS SHALL OCCUR OVER, AND BE FASTENED TO, MINIMUM 1-1/2-INCH-THICK BLOCKING. (CRC R602.10.10)

6.72 ALL SHEAR WALLS WITH AN ALLOWABLE SHEAR CAPACITY GREATER THAN 350 PLF REQUIRE 3x LUMBER AT THE SILL PLATE AND ADJACENT PANEL EDGES. A MINIMUM OF 1/2" EDGE DISTANCE FROM THE PANEL EDGE TO THE CENTER OF THE NAIL IS REQUIRED AT THE 3x LUMBER,

6.73 4x4 POST MINIMUM AT HOLD DOWNS AT THE ENDS OF SHEAR WALLS AND HOLD DOWN CONNECTORS SHALL BE TIGHTENED JUST PRIOR TO WALL FRAMING COVERING.

6.74 PROVIDE SIMPSON CO ST6236 STRAP HORIZONTAL @ ALL SHEAR WALL DRAG LINES BREAKS & DIAPHRAGM EDGE NAILING, OAE.

6.75 AT FLOOR FRAMING SHEAR WALL PANEL WILL RUN UP TO DTP WITH EDGE NAIL & METAL ANCHOR PER SHEAR WALL SCHEDULE.

6.76 RAFTERS OR ROOF TRUSSES SHALL BE CONNECTED TO DTP OF SHEAR WALLS WITH BLOCKING BETWEEN THE RAFTERS OR TRUSSES & SHEAR PANEL WILL RUN UP TO DTP WITH EDGE NAIL & METAL ANCHOR PER SHEAR WALL SCHEDULE. (CRC R602.10.8)

CONVENTIONAL ROOF FRAMING

6.77 ROOF AND CEILING FRAMING SHALL BE IN ACCORDANCE WITH CBC §2308.7 & CRC CHAPTER 8.

6.78 SPAN LIMITATIONS FOR CEILING JOISTS SHALL BE IN ACCORDANCE WITH CBC TABLE 2308.7.1(1), 2308.7.1(2), CRC TABLES R802.5.2(1)&(2) AND MUNICIPAL JURISDICTION TABLES.

6.79 SPAN LIMITATIONS FOR CEILING JOISTS SHALL BE IN ACCORDANCE WITH CBC TABLE 2308.7.2(1), 2308.7.2(2), 2308.7.2(3), 2308.7.2(4), 2308.7.2(5), 2308.7.2(6), CRC TABLES R802.4.1(1)-(8) AND MUNICIPAL JURISDICTION TABLES.

6.80 WHEN THE ROOF SLOPE IS LESS THAN 3/12, MEMBERS SUPPORTING RAFTERS & CEILING JOISTS SUCH AS RIDGES, HIPS AND VALLEYS SHALL BE DESIGNED AS BEAMS (CBC SECTION 2308.7).

6.81 DRILLING, CUTTING, AND NOTCHING OF ROOF/FLOOR FRAMING. NOTCHES IN SOLID LUMBER JOISTS, RAFTERS, BLOCKING, & BEAMS SHALL NOT EXCEED 1/6 THE MEMBER DEPTH, SHALL BE NOT LONGER THAN 1/3 THE MEMBER DEPTH, AND SHALL NOT BE LOCATED IN THE MIDDLE 1/3 THIRD OF THE SPAN. NOTCHES AT MEMBER ENDS SHALL NOT EXCEED 1/4 THE MEMBER DEPTH. THE TENSION SIDE OF MEMBERS 4" OR GREATER IN NOMINAL THICKNESS SHALL NOT BE NOTCHED EXCEPT AT MEMBER ENDS. THE Ø OF HOLES BORED OR CUT INTO MEMBERS SHALL NOT EXCEED1/3 THE MEMBER DEPTH. HOLES SHALL NOT BE CLOSER THAN 2" TO THE TOP OR BOTTOM OF THE MEMBER OR TO ANY OTHER HOLE LOCATED IN THE MEMBER. WHERE THE MEMBER IS ALSO NOTCHED, THE HOLE SHALL NOT BE CLOSER THAN 2" TO THE NOTCH. (CBC 2308.7.4 & CRC R502.8.1)

6.82 CEILING JOISTS AND RAFTERS SHALL BE NAILED TO EACH OTHER PER CRC TABLE R802.5.1(9), AND THE RAFTER SHALL BE NAILED TO THE WALL TOP PLATE PER CRC TABLE R602.3(1). CEILING JOISTS SHALL BE CONTINUOUS OR SECURELY JOINED PER CRC TABLE R802.5.1(9) WHERE THEY MEET OVER INTERIOR PARTITIONS AND ARE NAILED TO ADJACENT RAFTERS TO PROVIDE A CONTINUOUS TIE ACROSS THE BUILDING WHEN SUCH JOISTS ARE PARALLEL TO RAFTERS. WHERE CEILING JOISTS ARE NOT CONNECTED TO THE RAFTERS AT THE WALL TOP PLATE, JOISTS CONNECTED HIGHER IN THE ATTIC SHALL BE INSTALLED AS RAFTER TIES, OR RAFTER TIES SHALL BE INSTALLED TO PROVIDE A CONTINUOUS TIE. WHERE CEILING JOISTS ARE NOT PARALLEL TO RAFTERS, RAFTER TIES SHALL BE INSTALLED. RAFTER TIES SHALL BE MINIMUM 2"x4" NOMINAL, INSTALLED PER CRC TABLE R802.5.1(9), OR CONNECTIONS OF EQUIVALENT CAPACITIES SHALL BE PROVIDED. WHERE CEILINGS JOISTS OR RAFTER TIES ARE NOT PROVIDED, THE RIDGE FORMED BY THESE RAFTERS SHALL BE SUPPORTED BY A WALL OR ENGINEER-DESIGNED GIRDER. (CBC 2808.7.3 & CRC R802.3.1)

6.83 ENDS OF CEILING JOISTS SHALL BE LAPPED MINIMUM 3" OR BUTTED OVER BEARING PARTITIONS OR BEAMS AND TOENAILED TO THE BEARING ELEMENT. WHERE CEILING JOISTS PROVIDE RESISTANCE TO RAFTER THRUST, LAPPED JOISTS SHALL BE NAILED TOGETHER PER CRC TABLE R602.3(1) AND BUTTED JOISTS SHALL BE TIED TOGETHER IN A MANNER TO RESIST SUCH THRUST. (CBC 2308.7.3.1 & CRC R802.3.2)

6.84 RIDGES, HIPS, AND VALLEYS. RAFTERS SHALL BE FRAMED TO A RIDGE BOARD OR TO EACH OTHER WITH A GUSSET PLATE AS A TIE. RIDGE BOARDS SHALL BE MINIMUM 1" NOMINAL THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. AT ALL VALLEY AND HIPS, THERE SHALL BE A VALLEY OR HIP RAFTER NOT LESS THAN 2" NOMINAL THICKNESS & NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. HIP AND VALLEY RAFTERS SHALL BE SUPPORTED AT THE RIDGE BY A BRACE TO A BEARING PARTITION OR BE DESIGNED TO CARRY AND DISTRIBUTE THE SPECIFIC LOAD AT THAT POINT. (CRC R802.3)

6.85 COLLAR TIES OR RIDGE STRAPS TO RESIST WIND UPLIFT SHALL BE CONNECTED IN THE UPPER THIRD OF THE ATTIC SPACE. COLLAR TIES SHALL BE A MINIMUM 1"x4" NOMINAL AND SPACED AT MAXIMUM 4' OC. (CRC R802.3.1)

6.86 PURLINS INSTALLED TO REDUCE THE SPAN OF RAFTERS SHALL BE SIZED NOT LESS THAN THE REQUIRED SIZE OF THE RAFTERS THEY SUPPORT. PURLINS SHALL BE CONTINUOUS AND SHALL BE SUPPORTED BY 2"x4" NOMINAL BRACES INSTALLED TO BEARING WALLS AT A MINIMUM 45° SLOPE FROM HORIZONTAL. THE BRACES SHALL BE SPACED MAXIMUM 4' OC WITH A MAXIMUM 8' LENGTH. (CRC R802.5.1)

6.87 THE ENDS OF EACH RAFTER OR CEILING JOIST SHALL HAVE NOT LESS THAN 1-1/2" BEARING ON WOOD OR METAL AND NOT LESS THAN 3" OF BEARING ON MASONRY OR CONCRETE. (CBC 2308.4.2.2 & CRC R802.6)

6.88 ROOF FRAMING MEMBERS AND CEILING JOISTS WITH A NOMINAL DEPTH-TO-THICKNESS RATIO EXCEEDING 5:1 SHALL BE PROVIDED WITH LATERAL SUPPORT AT POINTS OF BEARING TO PREVENT ROTATION. (CRC R802.8)

6.89 RAFTERS AND CEILING JOISTS WITH A NOMINAL DEPTH-TO-THICKNESS RATIO EXCEEDING 6:1 SHALL BE SUPPORTED LATERALLY BY SOLID BLOCKING, DIAGONAL BRIDGING (WOOD OR METAL), OR A CONTINUOUS 1"X3" WOOD STRIP NAILED ACROSS THE RAFTERS OR CEILING JOISTS AT MAXIMUM 8' INTERVALS. (CRC R802.8.1)

6.90 OPENINGS IN ROOF AND CEILING FRAMING SHALL BE FRAMED WITH A HEADER AND TRIMMER JOISTS. WHEN THE HEADER JOIST SPAN DOES NOT EXCEED 4', THE HEADER JOIST MAY BE A SINGLE MEMBER THE SAME SIZE AS THE CEILING JOIST OR RAFTER. SINGLE TRIMMER JOISTS MAY BE USED TO CARRY A SINGLE HEADER JOIST LOCATED WITHIN 3' OF THE TRIMMER JOIST BEARING. WHEN THE HEADER JOIST SPAN EXCEEDS 4' THE TRIMMER JOISTS AND HEADER JOIST SHALL BE DOUBLED AND OF SUFFICIENT CROSS SECTION TO SUPPORT THE CEILING JOISTS OR RAFTERS FRAMING INTO THE HEADER. APPROVED HANGERS SHALL BE USED FOR THE HEADER-JOIST TO TRIMMER-JOIST CONNECTIONS WHEN THE HEADER JOIST SPAN EXCEEDS 6'. TAIL JOISTS OVER 12' LONG SHALL BE SUPPORTED AT THE HEADER BY FRAMING ANCHORS OR ON LEDGER STRIPS MINIMUM 2"x2". (CRC R502.10)

TRUSS FLOOR AND ROOF FRAMING

6.91 THE TRUSS SUPPLIER SHALL PROVIDE CALCULATIONS AND SHOP DRAWINGS OF ALL ROOF TRUSSES. ROOF TRUSSES SHALL COMPLY WITH T.P.I. SPECIFICATIONS. PRIOR TO TRUSS FABRICATION THE CALCULATIONS AND SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND MUNICIPAL JURISDICTION FOR APPROVAL (CBC 2303.4.1 & CRC R802.10.1).

6.92 EACH TRUSS SHALL BE LEGIBLY BRANDED, MARKED OR OTHERWISE HAVE PERMANENTLY AFFIXED THERETO THE FOLLOWING INFORMATION LOCATED WITHIN 2' OF THE CENTER OF THE SPAN ON THE FACE OF THE BOTTOM CHORD; THE IDENTITY OF THE COMPANY MANUFACTURING THE TRUSS, THE DESIGN LOAD OF THE TRUSS & THE REQUIRED SPACING OF THE TRUSSES. (CBC 2304 & CRC R802.10)

6.93 WHEN LATERAL BRACING OF WEB MEMBERS IN TRUSSES IS REQUIRED THE LATERAL BRACE SHALL END ON AN EXTERIOR BEARING WALL OR IN SOLID ROOF SHEATHING. (CBC 2303.4.1.2 & CRC R802.10.3)

6.94 MINIMUM 2" NOMINAL BLOCK REQUIRED BETWEEN TRUSSES AT RIDGE LINES & AT POINTS OF BEARING AT EXTERIOR WALLS.

6.95 MINIMUM 1/2-INCH CLEARANCE REQUIRED BETWEEN TOP PLATES OF INTERIOR NON-BEARING PARTITIONS AND BOTTOM CHORDS OF TRUSSES.

6.96 ROOF TRUSSES SHALL BE CONNECTED TO SHEAR WALL TOP PLATES WITH BLOCKING BETWEEN THE TRUSSES. (CRC R602.10.8)

6.97 ALL TRUSS SPAN DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO ORDERING AND PURCHASING OF TRUSSES.

ENGINEERED JOIST FRAMING

6.98 PREFABRICATED WOOD I-JOISTS & I-RAFTERS SHALL BE IN ACCORDANCE WITH CBC 2303.1.2, ASTM D5055 & ICC ESR-1153, OAE.

6.99 ALL PSL & LVL ENGINEERED FRAMING LUMBER SHOWN ON THE PLANS TO BE 2.2E PARALLAM (E=2200 KSI) & 1.9E MICROLAM BEAMS (E=1900 KSI), RESPECTIVELY, AS DESCRIBED IN ICC ESR-1153 & ICC ESR-1387.

GLUED-LAMINATED WOOD TIMBERS

6.100 GLUED-LAMINATED WOOD TIMBERS SHALL BE IN ACCORDANCE WITH CBC 2303.1.3, NSI/AITC A 190.1 AND ASTM D3737.

6.101 GLUED-LAMINATED TIMBERS SHALL BE INDUSTRIAL APPEARANCE GRADE, USING EXTERIOR GLUE, COMBINATION SYMBOL 24F-V4 FOR SIMPLE SPANS & 24F-V8 FOR CONTINUOUS SPAN OR CANTILEVERED MEMBERS, UON. GLUED-LAMINATED TIMBERS SHALL BE STAMPED WITH A QUALITY MARK INDICATING CONFORMANCE WITH AITC SPECIFICATIONS. MOISTURE CONTENT SHALL NOT EXCEED 14%.

6.102 WHERE GLUED-LAMINATED TIMBERS ARE EXPOSED TO WEATHER, FABRICATION AND ADHESIVES SHALL BE SUITABLE FOR WET USE COMPLYING WITH CBC 2303.1.3.1. GLUED-LAMINATED TIMBERS SHALL BE ALASKAN CEDAR ARCHITECTURAL GRADE, COMBINATION SYMBOL 20F-V12, UON.

6.103 ALL GLUED-LAMINATED WOOD TIMBER SPAN DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION.

6.104 GLUED-LAMINATED TIMBERS SHALL BE FABRICATED IN A PLANT WITH AN APPROVED QUALITY CONTROL SYSTEM & AN AITC FABRICATION LICENSE.

6.105 AN AITC CERTIFICATE OF CONFORMANCE FOR GLUED-LAMINATED TIMBERS IS REQUIRED TO BE SUBMITTED TO THE ARCHITECT AND/OR STRUCTURAL ENGINEER AND THE MUNICIPAL JURISDICTION PRIOR TO INSTALLATION.

6.106 GLUED-LAMINATED TIMBERS SHALL HAVE A STANDARD CAMBER, UON. RESIDENTIAL APPLICATIONS SHALL USE A STANDARD CAMBER BASED ON A RADIUS OF 3,500 FEET. COMMERCIAL & INDUSTRIAL APPLICATIONS SHALL USE A STANDARD CAMBER BASED ON A RADIUS OF 2,000 FEET.

DECK & BALCONY FRAMING

6.107 EXTERIOR LANDINGS, DECKS, BALCONIES, & STAIRS ELEMENTS SHALL BE POSITIVELY ANCHORED TO THE PRIMARY STRUCTURE TO RESIST BOTH VERTICAL AND LATERAL FORCES OR SHALL BE DESIGNED TO BE SELF-SUPPORTING. ATTACHMENT SHALL NOT BE ACCOMPLISHED BY USE OF TOENAILS OR NAILS SUBJECT TO WITHDRAWAL. (CRC R311.3)

7 ROOFING, THERMAL AND MOISTURE PROTECTION

STANDARDS

7.1 ALL ROOF COVERING SHALL BE INSTALLED PER APPLICABLE REQUIREMENTS OF CBC 1507. ROOF COVERINGS SHALL BE A MINIMUM CLASS A RATED IN ACCORDANCE WITH ASTM E 108 OR UL 790, WHICH SHALL INCLUDE COVERINGS OF SLATE, CLAY OR CONCRETE ROOF TILE, EXPOSED CONCRETE ROOF DECK, FERROUS OR COPPER SHINGLES OR SHEETS.

7.2 ROOFING MATERIAL & ITS APPLICATION SHALL BE PER MANUFACTURER'S SPECIFICATIONS, MATERIAL ICC ESR REPORT, & APPLICABLE CODES. (CBC CHAPTER 15 & CRC CHAPTER 9).

7.3 FLASHING SHALL BE INSTALLED AT WALL & ROOF INTERSECTIONS, AT GUTTERS, WHEREVER THERE IS A CHANGE IN ROOF SLOPE OR DIRECTION, & AROUND ROOF OPENINGS. WHERE FLASHING IS OF METAL, THE METAL SHALL BE CORROSION-RESISTANT WITH A THICKNESS OF NOT LESS THAN 0.019" (26 GALVANIZED SHEET). (CRC R903.2.1)

7.4 A CRICKET OR SADDLE SHALL BE INSTALLED ON THE RIDGE SIDE OF ANY CHIMNEY OR PENETRATION MORE THAN 30 INCHES WIDE AS MEASURED PERPENDICULAR TO THE SLOPE. CRICKET OR SADDLE COVERING SHALL BE SHEET METAL OR THE SAME MATERIAL AS THE ROOF COVERING. (CRC R903.2.2)

INSULATION

7.5 BATT, RIGID & OTHER INSULATION TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS & APPLICABLE CODES (CBC 720 &1508, CRC R906, 2022 CEC & 2022 CAL GREEN).

8 DOORS, WINDOWS AND SKYLIGHTS

8.1 DOOR & WINDOW SIZES AND OPERATION SHALL BE AS SHOWN IN THE PLANS AND SCHEDULES.

8.2 ALL DOORS & WINDOWS SHALL BE PROVIDED WITH HARDWARE FOR PROPER OPERATION.

8.3 ALL MANUFACTURED DOORS & WINDOWS MUST MEET ANSI AIR INFILTRATION STANDARDS.

8.4 PROVIDE WEATHERSTRIPPING AROUND ALL EXTERIOR DOORS & WINDOWS AS REQUIRED FOR A WEATHER RESISTIVE BARRIER.

8.5 NEW GLAZING SHALL BE INSTALLED WITH A U-VALUE & SHGC CERTIFICATE ATTACHED SHOWING COMPLIANCE WITH ENERGY REQUIREMENTS.

8.6 THE DOOR BETWEEN GARAGE & DWELLING SHALL BE A TIGHT FITTING SOLID WOOD DOOR 1- 3/8" IN THICKNESS WITH SELF-CLOSING ABILITY, UON. (CBC 406.3.2.1)

8.7 PROVIDE SAFETY TEMPERED GLAZING IN ALL DOORS & AS REQUIRED FOR HAZARDOUS LOCATIONS IN CBC §2406.

8.8 EXTERIOR OPENINGS EXPOSED TO WEATHER SHALL BE FLASHED IN A MANNER AS TO MAKE THEM WATERPROOF (CBC 1405.3).

8.9 PROVIDE SKYLIGHTS IN THE SIZES INDICATED ON THE PLANS. INSTALL SKYLIGHTS PER MANUFACTURER'S SPECIFICATIONS & APPLICABLE CODES. SKYLIGHTS SHALL HAVE AN APPROVED TESTING AGENCY REPORT. (CBC §2405).

9 FINISHES

9.1 EXTERIOR WALL COVERINGS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF CBC §1404 (CBC 1404.1) AND CRC §R703 (CRC R703.1)

9.2 A MINIMUM 0.019" (# 26 GALVANIZED SHEET GAUGE), CORROSION-RESISTANT WEEP SCREED OR PLASTIC WEEP SCREED WITH A MINIMUM VERTICAL ATTACHMENT FLANGE OF 3-1/2" SHALL BE PROVIDED AT OR BELOW THE FOUNDATION PLATE LINE ON EXTERIOR STUD WALLS IN ACCORDANCE WITH ASTM C 92. THE WEEP SCREED SHALL BE PLACED A MINIMUM 4 INCHES ABOVE THE EARTH OR 2 INCHES ABOVE PAVED AREAS & SHALL BE OF A TYPE ALLOWING TRAPPED WATER TO DRAIN TO THE EXTERIOR OF THE BUILDING. (CRC R703.7.2.1)

9.3 FLASHING SHALL BE INSTALLED IN SUCH A MANNER SO AS TO PREVENT MOISTURE FROM ENTERING THE WALL OR TO REDIRECT THAT MOISTURE TO THE EXTERIOR. FLASHING SHALL BE INSTALLED AT THE PERIMETERS OF EXTERIOR DOOR AND WINDOW ASSEMBLIES, PENETRATIONS AND TERMINATIONS OF EXTERIOR WALL ASSEMBLIES, EXTERIOR WALL INTERSECTIONS WITH ROOFS, CHIMNEYS, PORCHES, DECKS, BALCONIES AND SIMILAR PROJECTIONS AND AT BUILT-IN GUTTERS AND SIMILAR LOCATIONS WHERE MOISTURE COULD ENTER THE WALL. FLASHING WITH PROJECTING FLANGES SHALL BE INSTALLED ON BOTH SIDES AND THE ENDS OF COPINGS, UNDER SILLS AND CONTINUOUSLY ABOVE PROJECTING TRIM. WHERE SELF-ADHERED MEMBRANES ARE USED AS FLASHINGS OF FENESTRATION IN WALL ASSEMBLIES, THOSE SELF-ADHERED FLASHINGS SHALL COMPLY WITH AAMA 711. WHERE FLUID APPLIED MEMBRANES ARE USED AS FLASHING FOR EXTERIOR WALL OPENINGS, THOSE FLUID APPLIED MEMBRANE FLASHINGS SHALL COMPLY WITH AAMA 714. (CBC 1404.4 & CRC R703.4)

9.4 A MINIMUM OF ONE LAYER OF NO. 15 ASPHALT FELT SHALL BE ATTACHED TO STUDS OR SHEATHING OF ALL EXTERIOR WALLS. SUCH FELT OR MATERIAL SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER MINIMUM 2 INCHES. WHERE JOINTS OCCUR, FELT SHALL BE LAPPED MINIMUM 6". THE FELT SHALL BE CONTINUOUS TO THE TOP OF WALLS AND TERMINATED AT PENETRATIONS AND BUILDING APPENDAGES IN A MANNER TO MAINTAIN A WEATHER-RESISTANT EXTERIOR WALL ENVELOPE. (CRC R703.2)

9.5 WHEN CEMENT PLASTER IS INSTALLED OVER SOLID WOOD SHEATHING INSTALL 2 LAYERS GRADE D BUILDING PAPER OVER WOOD SHEATHING, OAE (CBC SECTION 2510.6).

9.6 INTERIOR WALL COVERINGS SHALL BE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF CRC §R702 (CRC R702.1)

9.7 USE 1/2" GYPSUM BOARD AT ALL INTERIOR WALLS & CEILINGS. USE 5/8" GYPSUM BOARD WHERE STUDS, JOISTS OR RAFTERS ARE SPACED 24" OC (CRC R702.3.1.1 & CRC TABLE R702.3.5).

9.8 USE 5/8" TYPE X GYPSUM BOARD AT ALL GARAGE SURFACES COMMON TO THE RESIDENCE, FROM FLOOR TO ROOF SHEATHING & AT CEILINGS (CBC SECTION 406.3.2.1; CRC TABLE R302.6).

9.8 GYPSUM BOARD ATTACHMENT SHALL BE 6d COOLER OR WALLBOARD NAIL; 1-5/8" LONG; 0.086" RING SHANK; 15/64" HEAD @ 7" OC OR #6 TYPE S OR W 1-1/4" LONG GYPSUM BOARD SCREWS @ 7" OC @ ALL STUDS, JOISTS, RAFTERS & PLATES. OR APPROVED EQUAL AS SHOWN IN CRC TABLE R702.3.5 (CBC TABLE 2508.6 & 2508.6.4; CRC TABLE R702.3.5 & CRC TABLE R702.3.6)

9.9 ALL SURFACES SHALL BE PAINTED WITH A CLASS III FLAME SPREAD MATERIAL, WITH 1 PRIMER COAT AND 2 FINISH COATS, EXCEPT FLAME SPREAD PROVISIONS ARE NOT APPLICABLE IN KITCHEN AND BATHROOMS (CBC 803.1).

9.10 SHOWER & TUB/SHOWER COMBINATIONS WALLS MUST BE FINISHED TO A HEIGHT OF 72" ABOVE THE DRAIN INLET WITH A SMOOTH, HARD, NON- ABSORBENT SURFACE MATERIAL (CBC SECTION 1209.2.3).

9.11 USE AN APPROVED BASE MATERIAL AT BATHTUB & SHOWER WALLS AND USE ASPHALTIC MEMBRANE MATERIAL AT SHOWER FLOORS & UP WALLS TO PROVIDE A WATERPROOF UNDERLAYMENT (CBC SECTION 1209.2).

9.12 PAINTED OR STAINED WOOD BASE BOARD SHALL BE PROVIDED AT THE BASE OF ALL INTERIOR WALLS EXCEPT WHERE MOISTURE RESISTANCE IS REQUIRED. PAINTED OR STAINED WOOD CASING SHOULD BE PROVIDED AT ALL INTERIOR OPENINGS AND AT THE INTERIOR SIDE OF EXTERIOR OPENINGS. THIS MAY BE SUPERCEDED IF SPECIFIC DETAILS ARE PROVIDED ON THE PLANS FOR BASEBOARD AND CASING DIFFERENT FROM THIS SPECIFICATION.

10 SPECIALTIES

FIREPLACES

10.1 CONSTRUCTION OF MASONRY FIREPLACES AND/OR CHIMNEYS, CONSISTING OF CONCRETE OR MASONRY, SHALL BE IN ACCORDANCE WITH CBC §2111 & CBC §2113 (CBC 2111.1 & 21113.1) AND CRC §R1001 & CRC §1003 (CRC R1001.1 & CRC R1003.1)

10.2 FACTORY-BUILT ELECTRIC FIREPLACES SHALL BE LISTED & LABELED AND SHALL BE INSTALLED IN ACCORDANCE WITH THE CONDITIONS OF THE LISTING AND APPLICABLE BUILDING CODES.

10.3 CHIMNEY CLEARANCE OF MINIMUM 2-FOOT REQUIRED ABOVE BUILDING WITHIN 10-FOOT HORIZONTALLY OF CHIMNEY. THE CHIMNEY SHALL EXTEND MINIMUM 3 FEET ABOVE HIGHEST POINT WHERE CHIMNEY PASSES THROUGH ROOF. (CRC R1003.9)

10.4 DECORATIVE SHROUDS SHALL NOT BE INSTALLED AT THE TERMINATION OF CHIMNEYS, WITH CODE APPROVED SPARK ARRESTORS, FOR FACTORY-BUILT FIREPLACES EXCEPT WHERE THE SHROUDS ARE LISTED AND LABELED FOR USE WITH THE SPECIFIC FACTORY-BUILT FIREPLACE SYSTEM AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. (CRC R1004.3 & R1005.2)

INTERIOR ACCESSORIES

10.7 EACH BATHROOM SHALL HAVE A MINIMUM OF 1 TOWEL BAR, ROBE HOOK AND BATH TISSUE HOLDER.

10.8 EACH CLOSET SHALL HAVE A SHELF AND POLE AS SHOWN IN THE PLANS. DOUBLE SHELF AND POLE AT WALK IN CLOSETS, TYP.

11 EQUIPMENT

11.1 ALL ELECTRIC APPLIANCES SHALL COMPLY WITH THE CURRENT CEC TITLE 20, DIVISION 2, CHAPTER 4, ARTICLE 4, SECTIONS 1601-1609, APPLIANCE EFFICIENCY STANDARDS. APPLIANCES MUST HAVE THE CALIFORNIA ENERGY COMMISSION SEAL ATTACHED FOR APPROVAL BEFORE INSTALLATION. (CEC 110.1)

11.2 SEE T24 DOCUMENTATION SHEETS AND CALCULATIONS FOR MORE INFORMATION ON WATER HEATING, SPACE HEATING, AND COOLING EQUIPMENT SPECIFICATIONS AND REQUIREMENTS.

12 FURNISHINGS

12.1 INSTALL KITCHEN, BATH & OTHER CABINETS AS SHOWN ON THE DRAWINGS. CABINET TYPE, FINISH & DESIGN TO BE AS SHOWN ON THE DRAWINGS OR AS SELECTED BY THE PROJECT OWNER.

12.2 INSTALL KITCHEN, BATH & OTHER CABINET COUNTERTOPS & SPLASHES AS SHOWN ON THE DRAWINGS. COUNTERTOP & SPLASH TYPE, FINISH & DESIGN TO BE AS SHOWN ON THE DRAWINGS OR AS SELECTED BY THE PROJECT OWNER.

13 SPECIAL CONSTRUCTION & ENERGY REQUIREMENTS

13.1 COMPLIANCE WITH THE DOCUMENTATION REQUIREMENTS OF THE 2022 ENERGY EFFICIENCY STANDARDS IS NECESSARY FOR THIS PROJECT. REGISTERED, SIGNED, AND DATED COPIES OF THE APPROPRIATE CF1R, CF2R, AND CF3R FORMS SHALL BE MADE AVAILABLE AT NECESSARY INTERVALS FOR BUILDING INSPECTOR REVIEW. FINAL COMPLETED FORMS WILL BE AVAILABLE FOR THE PROJECT OWNER.

14 PLUMBING

STANDARDS

14.1 THE PLUMBING SYSTEM INSTALLATION & OPERATION SHALL BE PER MANUFACTURER'S SPECIFICATIONS & SHALL MEET CALIFORNIA BUILDING, RESIDENTIAL & PLUMBING CODE REQUIREMENTS. (CBC, CRC, CPC)

14.2 PROVIDE A MINIMUM CLEARANCE OF 30" WIDE BY 24" DEEP IN FRONT OF WATER CLOSETS. (CPC 402.5)

14.3 SHOWER COMPARTMENTS SHALL HAVE MINIMUM AREA OF 1024 SQUARE INCHES & BE ABLE TO ENCOMPASS A 30" Ø CIRCLE. SHOWER DOORS SHALL HAVE A MINIMUM 22-INCH UNOBSTRUCTED WIDTH. (CPC 408.5 AND CPC 408.6)

14.4 ALL PLUMBING FIXTURES AND FITTINGS SHALL COMPLY WITH THE FOLLOWING WATER CONSERVING REQUIREMENTS PER CALGREEN 4.303.1 & CPC 401.3:
A. WATER CLOSETS: MAXIMUM 1.28 GALLONS PER FLUSH
B. URINALS: MAXIMUM 0.5 GALLONS PER FLUSH EXCEPT WALL MOUNTED URINALS AT 0.125 GALLONS PER FLUSH
C. SINGLE SHOWERHEADS: MAXIMUM FLOW RATE OF 1.8 GALLONS PER MINUTE AT 80 PSI
D. MULTIPLE SHOWERHEADS SERVING ONE SHOWER: MAXIMUM COMBINED FLOW RATE OF 1.8 GALLONS PER MINUTE AT 80 PSI
E. LAVATORY FAUCETS: MAXIMUM FLOW RATE OF 1.2 GALLONS PER MINUTE AT 60 PSI, MINIMUM FLOW RATE OF 0.8 GALLONS PER MINUTE AT 20 PSI
F. KITCHEN FAUCETS: MAXIMUM FLOW RATE OF 1.8 GALLONS PER MINUTE AT 60 PSI
EXEMPTION TO F: TEMPORARY INCREASE ALLOWED TO MAXIMUM 2.2 GALLONS PER MINUTE AT 60 PSI IF FAUCET DEFAULTS BACK TO MAXIMUM 1.8 GALLONS PER MINUTE AT 60 PSI

14.5 FOR ADDITIONS OR IMPROVEMENTS TO A RESIDENCE BUILT BEFORE 1994 - EXISTING "NONCOMPLIANT" FIXTURES (TOILETS THAT USE MORE THAN 1.6 GALLONS OF WATER PER FLUSH, URINALS THAT USE MORE THAN ONE GALLON OF WATER PER FLUSH, SHOWER HEADS THAT HAVE A FLOW CAPACITY OF MORE THAN 2.5 GALLONS OF WATER PER MINUTE, AND INTERIOR FAUCETS THAT EMIT MORE THAN 2.2 GALLONS OF WATER PER MINUTE) SHALL BE REPLACED. CERTIFICATION OF COMPLIANCE SHALL BE GIVEN TO THE BUILDING INSPECTOR PRIOR TO FINAL PERMIT APPROVAL. CALIFORNIA SB407.

14.6 ALL HOT WATER PIPING SIZED ¾" OR LARGER IS REQUIRED TO BE INSULATED AS FOLLOWS: 1" PIPE SIZE OR LESS: 1'' THICK INSULATION; LARGER PIPE SIZES REQUIRE 1½" THICK INSULATION. NOTE: IN ADDITION, THE ½" SIZE HOT WATER PIPE TO THE KITCHEN SINK IS REQUIRED TO BE INSULATED. (CPC 609.11 & CEC 120.3)

14.7 BATHTUBS AND WHIRLPOOL BATHS SHALL BE PROVIDED WITH A TRAP DOOR OR ACCESS WITHIN 20 FEET OF THE PUMP. (CPC 409.6)

PROTECTIONS

14.8 A MINIMUM OF TWO 3/4" BY 24 GAUGE STRAPS ARE REQUIRED AROUND TANK WATER HEATERS, WITH 1/4" BY 3" LAG BOLTS ATTACHED DIRECTLY TO FRAMING. STRAPS SHALL BE AT POINTS WITHIN UPPER 1/3 & LOWER 1/3 THIRD OF THE WATER HEATER VERTICAL DIMENSION. LOWER CONNECTION SHALL OCCUR A MINIMUM OF 4" ABOVE CONTROLS. (CPC 507.2)

14.9 PROVIDE IMPACT PROTECTION OF APPLIANCES IN GARAGES. WATER HEATERS & HEATING/COOLING EQUIPMENT SUBJECT TO VEHICULAR IMPACT SHALL BE PROTECTED BY BOLLARDS OR AN EQUIVALENT MEASURE. (CPC 507.13.1 & CMC 305.11)

14. 10 PROVIDE RAISED PLATFORM FOR APPLIANCES IN GARAGES. WATER HEATERS AND HEATING/COOLING EQUIPMENT CAPABLE OF IGNITING FLAMMABLE VAPORS SHALL BE PLACED ON A MINIMUM 18" HIGH PLATFORM UNLESS LISTING REPORT NUMBER PROVIDED SHOWING IGNITION RESISTANT APPLIANCE. (CBC 406.2.9.1, CPC 507.13 & CMC 305.1)

14. 11 IN SHOWERS, TUB-SHOWER COMBINATIONS, BATHTUBS & WHIRLPOOL BATHTUBS, CONTROL VALVES MUST BE PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES (CPC SECTION 408.3).

14. 12 ALL HOSE BIBBS & LANDSCAPE IRRIGATION SYSTEMS SHALL HAVE APPROVED BACKFLOW PREVENTION DEVICES. (CPC 603.3)

15 MECHANICAL AND VENTILATION

STANDARDS

15.1 ALL BATHROOMS, LAUNDRY ROOMS & SIMILAR ROOMS SHALL BE PROVIDED WITH NATURAL VENTILATION OR A MECHANICAL VENTILATION SYSTEM CAPABLE OF PROVIDING 5 AIR CHANGES PER HOUR. ALL SUCH ENERGY STAR COMPLIANT FAN SYSTEMS EXHAUSTING AIR FROM THE BUILDING ENVELOPE TO THE OUTSIDE SHALL BE PROVIDED WITH BACKDRAFT DAMPERS INSTALLED TO PREVENT AIR LEAKAGE (CBC 1202.5.2.1 & CMC 402.5 CALGREEN 4.506).

15.2 CLOTHES DRYER SHALL BE VENTED OUTSIDE THE BUILDING ENVELOPE. USE 4"Ø SHEET METAL PIPE MINIMUM WITH A MAXIMUM PIPE LENGTH OF 14'- 0" WITH TWO 90 DEGREE ELBOWS (CMC SECTION 504.4).

15.3 THE DISCHARGE POINT FOR EXHAUST AIR WILL BE AT LEAST 3 FEET FROM ANY OPENING WHICH ALLOWS AIR ENTRY INTO OCCUPIED PORTIONS OF THE BUILDING. (CMC 502.2.2)

15.4 ATTIC VENTING AREA SHALL BE NOT LESS 1/150 OF THE AREA OF THE SPACE VENTILATED, EXCEPT THAT THE AREA MAY BE 1/300 PROVIDED AT LEAST 50% OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTS LOCATED IN THE UPPER PORTION OF THE SPACE TO BE VENTILATED AT LEAST 3' ABOVE EAVE & CORNICE VENTS WITH THE BALANCE OF THE REQUIRED VENTING PROVIDED BY EAVE & CORNICE VENTS (CBC SECTION 1202.2.1).

15.5 VENT OPENINGS SHALL BE COVERED WITH CORROSION-RESISTANCE METAL MESH WITH OPENINGS 1/8" IN DIMENSION MAXIMUM. (CBC SECTION 1202.2.2)

15.6 PASSAGEWAY TO THE MECHANICAL EQUIPMENT IN ATTIC OR UNDER FLOOR SHALL BE UNOBSTRUCTED & HAVE CONTINUOUS SOLID FLOORING NOT LESS THAN 24" WIDE, NOT MORE THAN 20' IN LENGTH THROUGH THE SPACE TO A 30" SQUARE WORK PLATFORM WITH A LIGHT FIXTURE AND OUTLET. (CMC 304.4)

MECHANICAL VENTILATION AND INDOOR AIR QUALITY (ASHRAE 62.2-2010)

15.7 VENTILATION AIR SHALL BE PROVIDED DIRECTLY FROM THE OUTDOORS AND NOT AS TRANSFER AIR FROM ADJACENT DWELLING UNITS OR OTHER SPACES, SUCH AS GARAGES, UNCONDITIONED CRAWLSPACES, OR UNCONDITIONED ATTICS. (CBEES 150.0(O))

15.8 VENTILATION SYSTEM CONTROLS SHALL BE LABELED AND THE HOME OWNER SHALL BE PROVIDED WITH INSTRUCTIONS ON HOW TO OPERATE THE SYSTEM. (CBEES 150.0(O))

15.9 COMBUSTION APPLIANCES SHALL BE PROPERLY VENTED AND AIR SYSTEMS SHALL BE DESIGNED TO PREVENT BACK DRAFTING. (CBEES 150.0(O))

15. 10 THE WALL AND OPENINGS BETWEEN OCCUPIABLE SPACES & THE GARAGE SHALL BE SEALED. HVAC SYSTEMS THAT INCLUDE AIR HANDLERS OR RETURN DUCTS LOCATED IN GARAGES SHALL HAVE TOTAL AIR LEAKAGE OF NO MORE THAN 6% OF TOTAL FAN FLOW WHEN MEASURED AT 0.1 IN. W.C. USING CALIFORNIA TITLE 24 OR EQUIVALENTS. (CBEES 150.0(O))

15. 11 MECHANICAL SYSTEMS SUPPLYING AIR TO OCCUPIABLE SPACE THROUGH DUCTWORK SHALL BE PROVIDED WITH A FILTER HAVING A MINIMUM EFFICIENCY OF MERV 6 OR BETTER. (CBEES 150.0(O))

15. 12 AIR MOVING EQUIPMENT USED TO MEET EITHER THE WHOLE-BUILDING VENTILATION REQUIREMENT OR THE LOCAL VENTILATION EXHAUST REQUIREMENT SHALL BE RATED IN TERMS OF AIRFLOW AND SOUND. (CBEES 150.0(O))
A. ALL CONTINUOUSLY OPERATING FANS SHALL BE RATED AT A MAXIMUM OF 1.0 SONE.
B. INTERMITTENTLY OPERATED WHOLE-BUILDING VENTILATION FANS SHALL BE RATED AT A MAXIMUM OF 1.0 SONE.
C. INTERMITTENTLY OPERATED LOCAL EXHAUST FANS SHALL BE RATED AT MAXIMUM OF 3.0 SONE, UNLESS THEIR MAXIMUM RATED AIRFLOW EXCEEDS 400 CFM.
D. REMOTELY LOCATED AIR-MOVING EQUIPMENT (MOUNTED OUTSIDE OF HABITABLE SPACES) NEED NOT MEET SOUND REQUIREMENTS IF AT LEAST 4' OF DUCTWORK BETWEEN FAN AND INTAKE GRILL.

16 ELECTRICAL

STANDARDS

16.1 ALL ELECTRICAL INSTALLATION SHALL MEET 2022 CALIFORNIA ELECTRICAL CODE REQUIREMENTS. (CEC)

16.2 PROVIDE UFER GROUND AT ELECTRIC SERVICE LOCATION IN FOUNDATION. GROUND SHALL BE A 20' LONG #4 REINFORCING BAR, OAE. (CEC 210.50(3) ONE SHOULD BE PROVIDED AT EACH SEPARATE STRUCTURE ON THE PROPERTY.

POWER

16.3 RECEPTACLE OUTLET LOCATION PER CEC ARTICLE 210 BRANCH CIRCUITS, SECTION 210.52. (CEC 210.52)

16.4 ELECTRICAL CIRCUITS IN BEDROOMS, LIVING ROOMS, DINING ROOMS, DENS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS MUST BE PROTECTED BY ARC FAULT CIRCUIT INTERRUPTERS (AFCI). (CEC 210.12)

16.5 GROUND FAULT CIRCUIT INTERRUPTER (GFCI) OUTLETS ARE REQUIRED IN BATHROOMS, AT KITCHEN COUNTERTOPS, AT LAUNDRY AND WET BAR SINKS, IN GARAGES, IN CRAWLSPACES, IN UNFINISHED BASEMENTS, & OUTDOORS. (CEC 210.8)

16.6 BATH RECEPTACLE OUTLETS SHALL BE SUPPLIED BY A MINIMUM OF ONE 20 AMP CIRCUIT. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS. THIS CIRCUIT MAY SERVE MULTIPLE BATHS (CEC 210-52(D)).

16.7X TAMPER RESISTANT RECEPTACLES ARE REQUIRED FOR ALL LOCATIONS DESCRIBED IN 210.52 (I.E. ALL RECEPTACLES IN A DWELLING). (CEC 406.12)

16.8 WEATHER RESISTANT TYPE FOR RECEPTACLES INSTALLED IN DAMP, WET OR EXTERIOR LOCATIONS. (CEC 210-52(E)).

16.9 OUTLETS WILL BE WITHIN 6' OF ANY OPENING & NOT TO EXCEED A SPACING OF 12' A PART. ANY ISOLATED WALL 2' OR WIDER TO HAVE AN OUTLET. (CEC 210.52)

LIGHTING

16. 10 INSTALLED LUMINAIRES SHALL MEET THE EFFICACY & FIXTURE REQUIREMENTS OF CBEES 150.0(K).

16. 11 ALL LUMINAIRES INSTALLED IN LOW-RISE RESIDENTIAL CONSTRUCTION MUST BE HIGH EFFICACY. PERMANENTLY INSTALLED LUMINAIRES INCLUDE CEILING LUMINAIRES, CHANDELIERS, VANITY LAMPS, WALL SCONCES, UNDER CABINET LUMINAIRES, AND ANY OTHER TYPE OF LUMINAIRE THAT IS ATTACHED TO THE HOUSE. PERMANENTLY INSTALLED LUMINAIRES INCLUDE HARD WIRED OR PLUG-IN LUMINAIRES. (CEC 6.2)

16. 12 ALL PERMANENTLY INSTALLED LUMINAIRES WITH INTERCHANGEABLE LAMPS MUST CONTAIN LAMPS THAT COMPLY WITH THE REQUIREMENTS OF, AND BE MARKED AS, JA8-2019 HIGH EFFICACY LUMINAIRES. (CEC 6.2.1 & 6.2.2)

16. 13 LIGHT SOURCES MUST BE MARKED JA8-2016-E OR JA8-2019-E IF THEY ARE INSTALLED IN ENCLOSED OR RECESSED LUMINAIRES. AN ENCLOSED LUMINAIRE IS DEFINED AS HAVING VENTILATION OPENINGS < 3 SQUARE INCHES PER LAMP. (CEC 6.2.3)

16. 14 AT LEAST ONE LUMINAIRE IN EACH BATHROOM, GARAGE, LAUNDRY ROOM, AND UTILITY ROOM MUST BE CONTROLLED BY A VACANCY SENSOR. PRESET SCENE CONTROLLERS AND EMCS CAN TAKE THE PLACE OF SENSORS AND DIMMERS AS LONG AS THE FUNCTIONALITY MEETS THE ENERGY CODE REQUIREMENTS. (CEC 6.3.1 F)

16. 15 RECESSED LIGHTS SHOWN IN SLOPED CEILINGS SHALL BE A MODEL DESIGNED TO PROVIDE A PERPENDICULAR LIGHT SOURCE IN A SLOPED CEILING.

16. 16 ALL EXTERIOR PROJECT LIGHTING SHALL COMPLY WITH THE LIGHTING ORDINANCE OF THE GOVERNING MUNICIPALITY.

16. 17 ALL EXTERIOR LIGHTING SHALL BE HIGH EFFICACY, OAE (CEC 6.5.1)

16. 18 ALL EXTERIOR LIGHTING MUST BE CONTROLLED BY A MANUAL ON AND OFF SWITCH AND ONE OF THE FOLLOWING AUTOMATIC CONTROL TYPES:
A. PHOTO CONTROL AND MOTION SENSOR; OR
B. PHOTO CONTROL AND AUTOMATIC TIME SWITCH CONTROL; OR
C. ASTRONOMICAL TIME CLOCK CONTROL THAT AUTOMATICALLY TURNS THE OUTDOOR LIGHT OFF DURING DAYLIGHT HOURS; OR
D. EMCS THAT PROVIDES THE FUNCTIONALITY OF AN ASTRONOMICAL TIME CLOCK, DOES NOT HAVE AN OVERRIDE OR BYPASS SWITCH THAT ALLOWS THE LUMINAIRE TO BE ALWAYS ON, & IS PROGRAMMED TO AUTOMATICALLY TURN THE OUTDOOR LIGHT OFF DURING DAYLIGHT HOURS. (CEC 6.5.2)

16. 19 A COMPLETE LIST OF INSTALLED LIGHTING SYSTEMS, INCLUDING THE LIGHTING SCHEDULE, ALL INFORMATION NECESSARY TO OPERATE AND MAINTAIN THE LIGHTING SYSTEM, AND REFERENCES TO SUPPORT FUTURE UPGRADES TO THE LIGHTING SYSTEM, MUST BE PROVIDED TO THE HOMEOWNER PRIOR TO A FINAL INSPECTION. (CEC 6.9.1)

16. 20 FORM CF2R-LTG-01-E MUST BE COMPLETED & A COPY BE PROVIDED TO THE INSPECTOR AT THE FINAL INSPECTION. (CEC 6.8.1)

SAFETY

16. 21 SMOKE DETECTORS ARE REQUIRED IN EACH EXISTING SLEEPING ROOM, OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF SLEEPING ROOMS, & ON EACH STORY OF A DWELLING INCLUDING BASEMENTS. BATTERY-OPERATED DETECTORS ARE ACCEPTABLE IN EXISTING AREAS WITH NO CONSTRUCTION TAKING PLACE & IN ALTERATIONS NOT RESULTING IN REMOVAL OF INTERIOR WALL OR CEILING FINISHES & WITHOUT ACCESS VIA AN ATTIC, CRAWL SPACE, OR BASEMENT. (CRC R314.3)

16. 22 SMOKE DETECTORS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING & SHALL BE EQUIPPED WITH A BATTERY BACKUP. SMOKE DETECTORS MAYBE SOLELY BATTERY POWERED WHEN INSTALLED IN EXISTING BUILDINGS. (CRC R314.6)

16. 23 CARBON MONOXIDE DETECTORS ARE REQUIRED OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF SLEEPING ROOMS & ON EACH STORY OF A DWELLING INCLUDING BASEMENTS. BATTERY-OPERATED DETECTORS ARE ACCEPTABLE IN EXISTING AREAS WITH NO CONSTRUCTION TAKING PLACE & IN ALTERATIONS NOT RESULTING IN REMOVAL OF INTERIOR WALL OR CEILING FINISHES & WITHOUT ACCESS VIA AN ATTIC, CRAWL SPACE, OR BASEMENT. (CRC R315.3)

16. 24 CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER-CURRENT PROTECTION. (CRC R315.6)

16. 25 WHERE MORE THAN ONE SMOKE , CARBON MONOXIDE OR COMBINATION SMOKE/CARBON MONOXIDE DETECTOR IS REQUIRED, THE ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL THE ALARMS IN THE RESIDENCE. (CRC R314.4 & R315.5)

16. 26 COMBUSTIBLE INSULATION CLEARANCE. COMBUSTIBLE INSULATION SHALL BE SEPARATED MINIMUM 3 INCHES FROM RECESSED LUMINAIRES, FAN MOTORS, AND OTHER HEAT-PRODUCING DEVICES. (CRC R302.14)

PREPARER SIGNATURE

FOR CITY STAMPS

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CITY: ANAHEIM

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GENERAL SPECIFICATIONS

a0.2

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2023)

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

PREPARER SIGNATURE

FOR CITY STAMPS

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.

The mandatory provision of Section 4.106.4.2 may apply to additions or alterations of existing parking facilities or the addition of new parking facilities serving existing multifamily buildings. See Section 4.106.4.3 for application.

Note: Repairs including, but not limited to, resurfacing, restriping and repairing or maintaining existing lighting fixtures are not considered alterations for the purpose of this section.

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] - NOT USED

SECTION 302 MIXED OCCUPANCY BUILDINGS

302.1 MIXED OCCUPANCY BUILDINGS. - NOT USED

DIVISION 4.1 PLANNING AND DESIGN

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
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. - NOT USED

4.106.4.2 New multifamily dwellings, hotels and motels and new residential parking facilities. - NOT USED

4.106.4.3 Electric vehicle charging for additions and alterations of parking facilities serving existing multifamily buildings. - NOT USED

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. - NOT USED

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. - NOT USED

4.303.1.4.3 Metering Faucets. - NOT USED

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.

4.303.1.4.5 Pre-rinse spray valves. - NOT USED

4.303.2 Submeters for multifamily buildings and dwelling units in mixed-used residential/commercial buildings. - NOT USED

4.303.3 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).

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.
11. Information from the Department of Forestry and Fire Protection on maintenance of defensible space around residential structures.
12. Information and/or drawings identifying the location of grab bar reinforcements.

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 trichloroethylene), 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.

4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the requirements of 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 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of 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 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

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 meet the requirements of 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 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

hhttps://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

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.

DZN PARTNERS
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ENCINITAS, CA
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2 BEDROOM PRADU

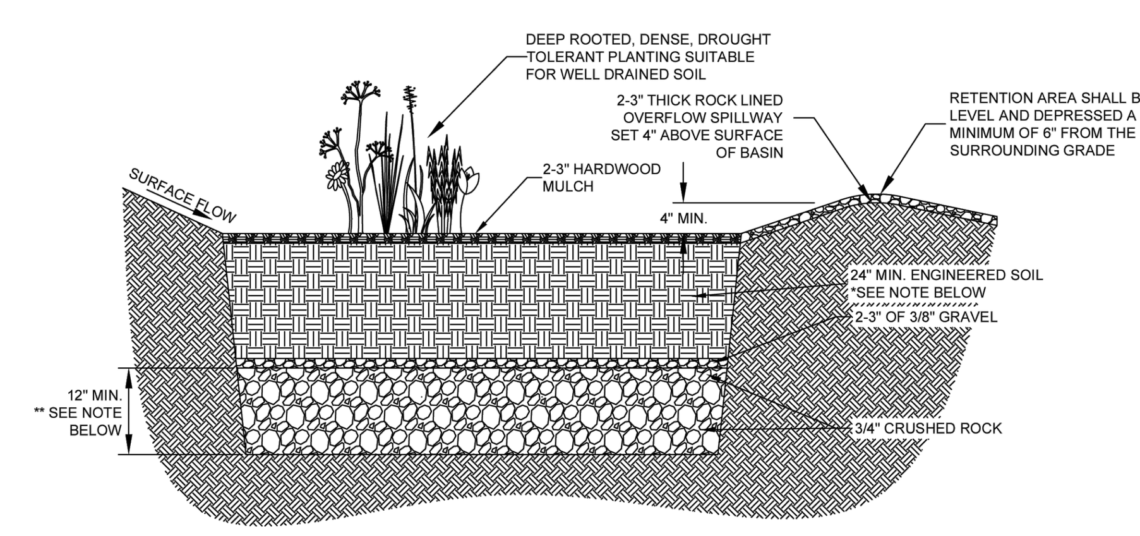
CITY: ANAHEIM

JOB: 202409R

CAL GREEN CHECKLIST

a0.3

BIORETENTION DETAIL FOR STANDARD PROJECTS ONLY



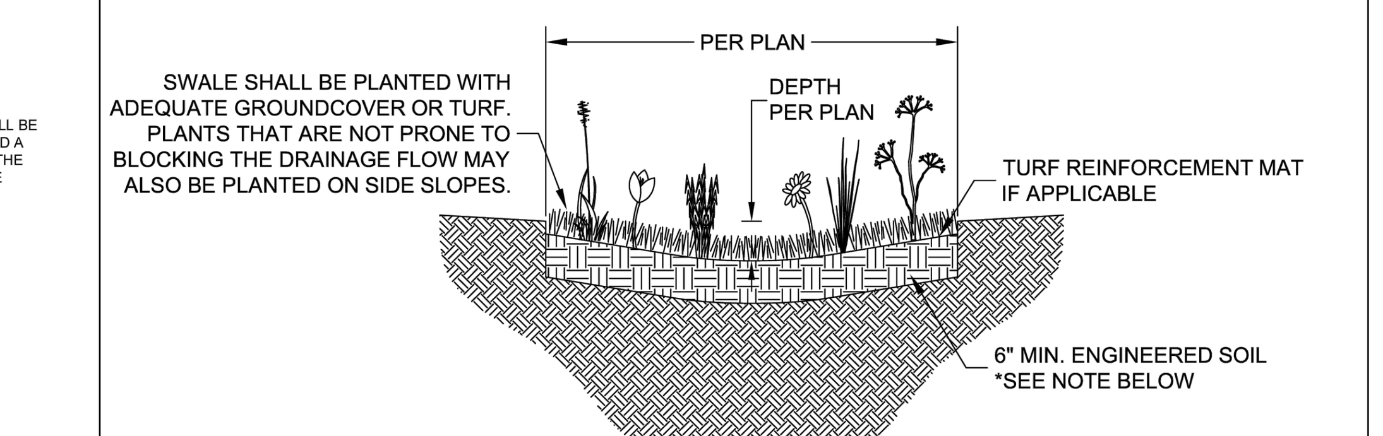
*BIORETENTION "ENGINEERED SOIL" LAYER SHALL BE MINIMUM 24" DEEP "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50-60% SAND, 20-30% COMPOST OR HARDWOOD MULCH, AND 20-30% TOPSOIL.

**3/4" CRUSHED ROCK LAYER SHALL BE A MINIMUM OF 12" BUT MAY BE DEEPENED TO INCREASE THE INFILTRATION AND STORAGE ABILITY OF THE BASIN.

THE EFFECTIVE AREA OF THE BASIN SHALL BE LEVEL AND SHALL BE SIZED BASED ON CITY OF ENCINITAS BMP DESIGN MANUAL CALCULATIONS.

A - SURFACE FLOW WITH SPILL WAY

VEGETATED SWALE



*"ENGINEERED SOIL" LAYER SHALL BE MINIMUM 6" DEEP "SANDY LOAM" SOIL MIX WITH NO MORE THAN 5% CLAY CONTENT. THE MIX SHALL CONTAIN 50-60% SAND, 20-30% COMPOST OR HARDWOOD MULCH, AND 20-30% TOPSOIL.

NOTE: VEGETATED SWALES ON GRADES OF MORE THAN 2.5% MUST INSTALL CHECK DAMS TO LIMIT THE SLOPE OF THE SWALE TO 2.5% UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF ENGINEERING SERVICES.

NOTE: NO FILTER FABRIC IS TO BE USED IN THIS SECTION.

B - VEGETATED SWALE

THE APPLICANT SHALL IMPLEMENT SITE DESIGN STORMWATER BEST MANAGEMENT PRACTICES (BMP) AND LOW IMPACT DEVELOPMENT (LID) CONCEPTS SUCH AS IMPERVIOUS AREA DISPERSION, DRAINAGE TO NATURAL VEGETATION, REDUCTION IN IMPERVIOUS SURFACES, BREAKING UP HARDSCAPE AREA, ETC. APPLICANT IS REQUIRED TO INCORPORATE THESE CONCEPTS WITH NEW CONSTRUCTION IN LIEU OF SELECTIONS A OR B.

C - SITE DESIGN + LID CONCEPTS

department notes:

BUILDING

B1 SURFACE WATER WILL DRAIN AWAY FROM BUILDING. THE GRADE SHALL FALL A MINIMUM OF 6" WITHIN THE FIRST 10 FEET. SECTION R401.3

B2 COMPLIANCE WITH THE DOCUMENTATION REQUIREMENTS OF THE 2022 ENERGY EFFICIENCY STANDARDS IS NECESSARY FOR THIS PROJECT. REGISTERED, SIGNED, AND DATED COPIES OF THE APPROPRIATE CF1R, CF2R, AND CF3R FORMS SHALL BE MADE AVAILABLE AT NECESSARY INTERVALS FOR BUILDING INSPECTOR REVIEW. FINAL COMPLETED FORMS WILL BE AVAILABLE FOR THE BUILDING OWNER.

B3 PROJECTIONS, INCLUDING EAVES, MUST BE AT LEAST 24" FROM A PROPERTY LINE. TABLE R302.1

ENGINEERING

E1 OWNER IS TO OBTAIN A CONSTRUCTION PERMIT FROM THE ENGINEERING DEPARTMENT AT LEAST 48 HOURS PRIOR TO WORKING IN THE PUBLIC RIGHT OF WAY. FAILURE TO DO SO WILL RESULT IN AN ISSUANCE OF A STOP WORK NOTICE AND DOUBLE PERMIT FEES. IT IS THE RESPONSIBILITY OF THE OWNER TO KNOW THE LOCATION OF THE PROPERTY LINES.

E2 ALL UTILITIES SERVING THE ADU FROM THE RESIDENCE SHALL BE INSTALLED UNDERGROUND.

E3 **N**O CONCENTRATED DRAINAGE FLOWS ARE PERMITTED OVER ADJACENT PROPERTY LINES. WATER IS TO DRAIN AWAY FROM STRUCTURES FOR A MINIMUM OF 5 FEET AT 2 PERCENT AND BE CONVEYED TO AN APPROVED DRAINAGE FACILITY.

E4 EARTHWORK, CUT OR FILL, WHICH IS OVER 50 CUBIC YARDS, REQUIRES AN ADDITIONAL ENGINEERING GRADING PERMIT. PROVIDE EARTHWORK QUANTITIES:
_ CUBIC YARDS CUT, _ CUBIC YARDS FILL, _ CUBIC YARDS IMPORT/EXPORT
_ CUBIC YARDS OVER-EXCAVATION AND RE-COMPACTION

E5 EROSION CONTROL MEASURES (E.G. BONDED FIBER MATRIX, VEGETATIVE COVER, JUTE MATTING) MUST BE IMPLEMENTED WHERE APPLICABLE TO PREVENT SOIL EROSION ON SITE. SEDIMENT CONTROL MEASURES (E.G. SILT FENCING, FIBER ROLLS, DETENTION BASINS) MUST BE IN PLACE TO PREVENT ERODED SOIL FROM LEAVING SITE. MATERIALS MANAGEMENT BMP MUST ALSO BE FOLLOWED TO ENSURE NO CONTACT OF RAINWATER WITH MATERIALS THAT MAY CONTRIBUTE TO WATER QUALITY DEGRADATION DOWNSTREAM (E.G. CONCRETE OR STUCCO WASHOUT AREAS, COVERED STORAGE AREAS FOR HAZARDOUS MATERIALS, PLACEMENT OF PORTABLE TOILETS OVER A PERVIOUS SURFACE).

E6 NO DIRECTLY CONNECTED IMPERVIOUS AREAS (DCIA) SHALL BE ALLOWED. DCIA MEANS STORM RUNOFF GENERATED AND CONVEYED VIA IMPERVIOUS AREAS, SUCH AS ROOF, ROOF DRAIN, DRIVEWAY, AND STREET. BMP MEASURES SHALL BE IDENTIFIED ON THE SITE PLAN. MOST COMMON MEASURES ARE DESIGNATED TURF AREAS, WHICH RECEIVE ROOF DRAINS AND RUNOFF FROM IMPERVIOUS AREAS. TURF AND LANDSCAPED AREAS THAT ARE DESIGNED FOR BMP'S SHALL BE DELINEATED ON PLANS AND A NOTE PLACED ON PLANS PROHIBITING MODIFICATION OR REMOVAL OF THE BMP LANDSCAPE AREAS WITHOUT A CITY PERMIT.

E7 RAIN GUTTERS FOR STORM WATER POLLUTION CONTROL PURPOSES, ALL RUNOFF FROM ALL ROOF DRAINS SHALL DISCHARGE ONTO GRASS AND LANDSCAPE AREAS PRIOR TO COLLECTION AND DISCHARGE ONTO THE STREET AND/OR INTO THE PUBLIC STORM DRAIN SYSTEM. GRASS AND LANDSCAPE AREAS DESIGNATED FOR STORM WATER POLLUTION CONTROL SHALL NOT BE MODIFIED WITHOUT A PERMIT FROM THE CITY.

E8 TOTAL AREA OF NEW IMPERVIOUS SURFACE: ______________SQ. FT.
TOTAL AREA OF REPLACED IMPERVIOUS SURFACES: ________SQ. FT.

FIRE DEPARTMENT

F1 ADDRESS NUMBERS: STREET NUMBERS: APPROVED NUMBERS AND/OR ADDRESSES SHALL BE PLACED ON ALL NEW AND EXISTING BUILDINGS AND AT APPROPRIATE ADDITIONAL LOCATIONS AS TO BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET OR ROADWAY FRONTING THE PROPERTY FROM EITHER DIRECTION OF APPROACH. SAID NUMBERS SHALL CONTRAST WITH THEIR BACKGROUND, AND SHALL MEET THE FOLLOWING MINIMUM STANDARDS AS TO SIZE: 4" HIGH WITH A 3/8" STROKE FOR RESIDENTIAL BUILDINGS, 8" HIGH WITH A 1/2" STROKE FOR COMMERCIAL AND MULTI-FAMILY RESIDENTIAL BUILDINGS, 12" HIGH WITH A 1" STROKE FOR INDUSTRIAL BUILDINGS. ADDITIONAL NUMBERS SHALL BE REQUIRED WHERE DEEMED NECESSARY BY THE FIRE MARSHAL, SUCH AS REAR ACCESS DOORS, BUILDING CORNERS, AND ENTRANCES TO COMMERCIAL CENTERS.

F2 **SECURITY GATES.** AN AUTOMATIC GATE ACROSS A FIRE ACCESS ROADWAY OR DRIVEWAY SHALL BE EQUIPPED WITH AN APPROVED EMERGENCY KEY-OPERATED SWITCH OVERRIDING ALL COMMAND FUNCTIONS & OPENING THE GATE. WHERE THIS SECTION REQUIRES AN APPROVED KEY-OPERATED SWITCH, IT MAY BE DUAL-KEYED OR EQUIPPED WITH DUAL SWITCHES PROVIDED TO FACILITATE ACCESS BY LAW ENFORCEMENT PERSONNEL. CFC SECTION 503.6 AMENDMENT
• ALL GATES PROVIDING ACCESS FROM A ROAD TO A DRIVEWAY SHALL BE AT LEAST TWO FEET WIDER THAN THE WIDTH OF THE TRAFFIC LANE(S) SERVING THE GATE.

F3 SHOW THE LOCATIONS OR PROVIDE NOTES OF ALL CARBON MONOXIDE ALARMS TO MEET THE REQUIREMENTS OF CALIFORNIA RESIDENTIAL CODE SECTION R315.
• INSTALLED IN DWELLING UNITS AND IN SLEEPING UNITS WITHIN WHICH FUEL-BURNING APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.
• WHERE MORE THAN ONE CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED THE ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL THE ALARMS IN THE INDIVIDUAL UNIT.
*WHERE AREAS OF NO CONSTRUCTION IS TAKING PLACE CARBON MONOXIDE DETECTORS CAN BE SOLELY BATTERY POWERED

F4 CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER-CURRENT PROTECTION.

F5 SHOW THE LOCATIONS OR PROVIDE NOTES OF ALL SMOKE ALARMS MEETING THE REQUIREMENTS OF CRC SECTION R314.
• ON THE CEILING OR WALL OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BED ROOMS.
• IN EACH ROOM USED FOR SLEEPING PURPOSES.
• IN EACH STORY WITHIN A DWELLING UNIT, INCLUDING BASEMENTS.
• IN DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.
*WHERE AREAS OF NO CONSTRUCTION IS TAKING PLACE SMOKE DETECTORS CAN BE SOLELY BATTERY POWERED ONLY.

F6 VENT OPENINGS SHALL BE COVERED WITH A NONCOMBUSTIBLE AND CORROSION RESISTANT WIRE MESH WITH MESH OPENINGS OF A MINIMUM OF 1/16" AND SHALL NOT EXCEED 1/8"

PLANNING DEPARTMENT

P1 THE AVERAGE LOT SLOPE IS _____% WITHIN THE BUILDING ENVELOPE AREA.

P2 THE DETACHED ACCESSORY UNIT MUST BE SEPARATED FROM THE MAIN RESIDENCE BY A DISTANCE OF SIX FEET [6'] OR GREATER.

P3 THE DETACHED ACCESSORY UNIT ROOF EAVES MUST BE SEPARATED FROM THE MAIN RESIDENCE ROOF EAVES BY A DISTANCE OF FOUR FEET [4'] OR GREATER.

P4 A DETACHED ACCESSORY UNIT CAN BE PLACED A MINIMUM OF FOUR FEET [4'-0"] FROM THE SIDE & REAR PROPERTY LINES.

P5 THE MAXIMUM HEIGHT FOR A DETACHED ADU IS SIXTEEN FEET [16'-0"] UNLESS IT IS WITHIN A 1/2 MILE OF A MAJOR TRANSIT STATION WHICH ALLOWS A HEIGHT OF EIGHTEEN FEET [18'-0"].

P6 ALLOWABLE HEIGHT IS MEASURED FROM THE LOWER OF EXISTING OR FINISH GRADE.

P7 PROJECTIONS, INCLUDING EAVES, MUST BE NO GREATER THAN 12" INTO A REQUIRED 4' SETBACK.

site plan notes:

1. THE APPLICANT SHALL PROVIDE A DIMENSIONED SITE PLAN DRAWN TO SCALE SHOWING THE FOLLOWING: NORTH ARROW, PROPERTY LINES, EASEMENTS, STREETS, EXISTING AND PROPOSED BUILDINGS, AND STRUCTURES, LOCATION OF YARDS USED FOR ALLOWABLE INCREASE OF BUILDING AREA, DIMENSIONED SETBACKS, MINIMUM SEPARATION FROM EXISTING STRUCTURES AND FUEL MODIFICATION ZONES. UNIFORM ADMINISTRATIVE CODE SECTION 302.
2. IF A GRADING PLAN IS REQUIRED, INCORPORATE THE ENTIRE APPROVED GRADING/IMPROVEMENT PLAN (ALL SHEETS) WITH THE BUILDING PLANS.
3. SITE PLAN SHALL PROVIDE DIMENSIONS SHOWING REQUIRED FIRE APPARATUS ACCESS ROADS. FIRE ACCESS ROADWAYS SHALL HAVE AN UNOBSTRUCTED IMPROVED WIDTH OF NOT LESS THAN 24 FEET, EXCEPTIONS: 1. RESIDENTIAL DWELLINGS NOT IN THE VERY HIGH FIRE HAZARD SEVERITY ZONE SHALL HAVE A MINIMUM OF 20 FEET OF UNOBSTRUCTED IMPROVED WIDTH. 2. SINGLE-FAMILY RESIDENTIAL DRIVEWAYS SERVING NO MORE THAN TWO SINGLE-FAMILY DWELLINGS SHALL HAVE A MINIMUM OF 16 FEET OF UNOBSTRUCTED IMPROVED WIDTH.
FIRE ACCESS ROADWAYS
• SURFACE FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS NOT LESS THAN 75,000 LBS. AND SHALL BE PROVIDED WITH AN APPROVED PAVED SURFACE TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.
• GATED ENTRANCES WITH CARD READERS, GUARD STATIONS OR CENTER MEDIANS, WHICH HAVE SEPARATED LANES OF ONE-WAY TRAFFIC, SHALL BE NOT LESS THAN 14 FEET WIDE PER LANE.
• EXISTING LEGAL LOTS THAT HAVE EASEMENT ACCESS ROADWAYS LESS THAN 20 FEET WIDE THAT PROVIDE PRIMARY ACCESS TO OTHER LOTS SHALL RECORD A COVENANT GRANTING EASEMENT RIGHTS FOR EMERGENCY VEHICLE INGRESS AND EGRESS PURPOSES AND SHALL RELINQUISH RIGHTS TO BUILD ANY BUILDING, WALL, FENCE OR OTHER STRUCTURE WITHIN 5 FEET OF THE EXISTING ACCESS EASEMENT.
• ALL DEAD END FIRE APPARATUS ACCESS ROADWAYS IN EXCESS OF 150 FEET IN LENGTH SHALL BE PROVIDED WITH AN APPROVED AREA FOR TURNING AROUND FIRE APPARATUS. ACCESS ROADS SERVING MORE THAN FOUR (4) DWELLING UNITS SHALL BE PROVIDED WITH A CUL-DE-SAC. THE MINIMUM UNOBSTRUCTED PAVED RADIUS WIDTH FOR A CUL-DE-SAC SHALL BE 36 FEET CURB LINE TO CURB LINE WITH NO PARKING. ALTERNATE TYPES OF TURN-AROUND (HAMMERHEADS, ETC.) MAY BE CONSIDERED BY THE FIRE MARSHAL AS NEEDED TO ACCOMPLISH THE INTENT OF THE FIRE CODE.
4. AN ADU PLACED CLOSER THAN 5'-0" TO PROPERTY LINES IS REQUIRED TO PROVIDE A BOUNDARY SURVEY REPORT. CONCRETE PLACEMENT WILL NOT BE APPROVED UNTIL A BOUNDARY SURVEY SHOWING COMPLIANCE TO THE APPROVED PLANS IS PROVIDED TO THE BUILDING DIVISION. A CALIFORNIA LICENSED SURVEYOR IS REQUIRED TO COMPLETE ENCINITAS BOUNDARY LAND SURVEY FORM AND PROVIDE IT TO THE BUILDING INSPECTOR AT THE FOUNDATION INSPECTION.
5. THE CITY OF ANAHEIM REQUIRES A SOILS REPORT, PER CBC SEC. 1803.5.12 WHICH REQUIRES A SOILS REPORT FOR ALL PROJECTS, WITH EXCEPTIONS GRANTED ON A CASE-BY-CASE BASIS.
THE CITY MAY EXEMPT A PROJECT FROM THE SOILS REPORT REQUIREMENTS FOR ROOM ADDITIONS UNDER 500 SQUARE FEET IN ACCORDANCE WITH CBC, SEC. 1803.1.1.1, WHICH STATES THAT IF THE BUILDING DIVISION HAS KNOWLEDGE OF THE SOIL QUALITIES FOR THAT PROPERTY, THEN A REPORT IS NOT REQUIRED. THAT POLICY MAY BE APPLIED TO AN ADU UNDER 500 SQUARE FEET.
ALL INDEPENDENT STRUCTURES OUTSIDE OF A CERTIFIED PAD WILL REQUIRE A LIMITED SOILS REPORT INCLUDING DETACHED ADUs. ALTERNATIVELY, A SOILS LETTER SHALL BE PREPARED THAT REPRESENTS THE SUITABILITY OF THE SITE SOILS FOR THE PROPOSED ADU, BASED ON THE SOIL ENGINEER'S KNOWLEDGE OF THE NEIGHBORING PROPERTIES. IN ADDITION TO THE ABOVE, THE BUILDING OFFICIAL MAY WAIVE THE SOILS REPORT REQUIREMENT IN CERTAIN SCENARIOS ON A CASE-BY-CASE BASIS.
A SOILS REPORT OR SOILS LETTER PREPARED BY A SOIL'S ENGINEER THAT ADDRESSES THE SUITABILITY OF THE SITE SOIL FOR THE PROPOSED ADU IS REQUIRED BY THE CITY OF ANAHEIM.
EXCEPTION:
A. STRUCTURE IS TO BE CONSTRUCTED ON A CERTIFIED PAD.
B. THE CITY HAS A COMPACTION REPORT ON RECORD FOR THE SITE.
C. THE CITY HAS A SOIL'S REPORT ON FILE FOR THE SITE.
D. OTHER CIRCUMSTANCES SUBJECT TO REVIEW AND APPROVAL BY THE BUILDING OFFICIAL ON A CASE-BY-CASE BASIS.

swimming pool notes:

IF THE PROPERTY WHERE THE ADU IS TO BE LOCATED HAS A SWIMMING POOL, THE POOL MUST MEET THE RULES BELOW:

SWIMMING POOL SAFETY SHALL COMPLY WITH SECTION 3109.4 CBC (INCLUDING 3109.4.4) INCLUDING:

• POOL SHALL BE COMPLETELY ENCLOSED BY A BARRIER COMPLYING WITH SECTIONS 3109.4.1 THRU 3109.4.3.

• SHALL COMPLY WITH SECTION 3109.4.4.2: POOL SHALL BE EQUIPPED WITH ***TWO*** OF THE FOLLOWING SEVEN DROWNING PREVENTION SAFETY FEATURES:

SP1 THE POOL SHALL BE ISOLATED FROM ACCESS TO A HOME BY AN ENCLOSURE THAT MEETS THE REQUIREMENTS OF SECTION 3109.4.4.3.

SP2 THE POOL SHALL INCORPORATE REMOVABLE MESH POOL FENCING THAT MEETS AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) SPECIFICATIONS F2286 STANDARDS IN CONJUNCTION WITH A GATE THAT IS SELF CLOSING AND SELF-LATCHING AND CAN ACCOMMODATE A KEY LOCKABLE DEVICE.

SP3 THE POOL SHALL BE EQUIPPED WITH AN APPROVED SAFETY POOL COVER THAT MEETS ALL REQUIREMENTS OF THE ASTM SPECIFICATIONS F1346.

SP4 THE RESIDENCE SHALL BE EQUIPPED WITH EXIT ALARMS ON THOSE DOORS PROVIDING DIRECT ACCESS TO THE POOL.

SP5 ALL DOORS PROVIDING DIRECT ACCESS FROM THE HOME TO THE SWIMMING POOL SHALL BE EQUIPPED WITH A SELF-CLOSING, SELF-LATCHING DEVICE WITH A RELEASE MECHANISM PLACED NO LOWER THAN 54 INCHES (1372 MM) ABOVE THE FLOOR.

SP6 SWIMMING POOL ALARMS THAT, WHEN PLACED IN POOLS, WILL SOUND UPON DETECTION OF ACCIDENTAL OR UNAUTHORIZED ENTRANCE INTO THE WATER. THESE POOL ALARMS SHALL MEET AND BE INDEPENDENTLY CERTIFIED TO THE ASTM STANDARD 2208 "STANDARDS SPECIFICATION FOR POOL ALARMS" WHICH INCLUDES SURFACE MOTION, PRESSURE, SONAR, LASER AND INFRARED TYPE ALARMS. FOR PURPOSES OF THIS ARTICLE, "SWIMMING POOL ALARMS" SHALL NOT INCLUDE SWIMMING PROTECTION ALARM DEVICES DESIGNED FOR INDIVIDUAL USE, SUCH AS AN ALARM ATTACHED TO A CHILD THAT SOUNDS WHEN THE CHILD EXCEEDS A CERTAIN DISTANCE OR BECOMES SUBMERGED IN WATER.

SP7 OTHER MEANS OF PROTECTION, IF THE DEGREE OF PROTECTION AFFORDED IS EQUAL TO OR GREATER THAN THAT AFFORDED BY ANY OF THE DEVICES SET FORTH IN ITEMS 1-4, & HAVE BEEN INDEPENDENTLY VERIFIED BY AN APPROVED TESTING LABORATORY AS MEETING STANDARDS FOR THOSE DEVICES ESTABLISHED BY THE ASTM OR THE AMERICAN SOCIETY OF TESTING MECHANICAL ENGINEERS (ASME).

stormwater notes:

STORMWATER POLLUTION CONTROL BMP NOTES RELATIVE TO CONSTRUCTION ACTIVITIES

CONCRETE WASHOUT

SW1 CONTRACTOR SHALL ESTABLISH AND USE AN ADEQUATELY SIZED CONCRETE WASHOUT AREA TO CONTAIN WASHOUT WASTES ON SITE. IT IS ILLEGAL TO WASH CONCRETE, SLURRY, MORTAR, STUCCO, PLASTER AND THE LIKE INTO THE STORMWATER CONVEYANCE SYSTEM OR ANY RECEIVING WATER. CONTRACTOR SHALL POST A SIGN DESIGNATING THE WASHOUT LOCATION.

CONSTRUCTION SITE ACCESS

SW2 A STABILIZED CONSTRUCTION SITE ACCESS SHALL BE PROVIDED FOR VEHICLES EGRESS AND INGRESS TO PREVENT TRACKING DIRT OFF SITE. THIS SHALL INCLUDE USING MATERIAL SUCH AS GRAVEL AND/OR CORRUGATED STEEL PANELS/PLATES.

CONSTRUCTION VEHICLES

SW3 A SPECIFIC AREA AWAY FROM GUTTERS AND STORMDRAIN SHALL BE DESIGNATED FOR CONSTRUCTION VEHICLES PARKING, VEHICLE REFUELING, AND ROUTINE EQUIPMENT MAINTENANCE. ALL MAJOR REPAIRS SHALL BE MADE OFF-SITE.

EROSION CONTROL

SW4 EROSION CONTROL MUST BE PROVIDED FOR ALL EROSIVE SURFACES. SLOPED SURFACES ESPECIALLY SHALL BE PROTECTED AGAINST EROSION BY INSTALLING EROSION RESISTANT SURFACES SUCH AS EROSION CONTROL MATS, ADEQUATE GROUND COVER VEGETATION, AND BONDED FIBER MATRIX.

SW5 NO EXCAVATION AND GRADING ACTIVITIES ARE ALLOWED DURING WET WEATHER.

SW6 DIVERSION DIKES SHALL BE CONSTRUCTED TO CHANNEL RUNOFF AROUND THE CONSTRUCTION SITE. CONTRACTOR SHALL PROTECT CHANNELS AGAINST EROSION USING PERMANENT AND TEMPORARY EROSION CONTROL MEASURES.

SW7 REMOVE EXISTING VEGETATION ONLY WHEN ABSOLUTELY NECESSARY. LARGE PROJECTS SHALL BE CONDUCTED IN PHASES TO AVOID UNNECESSARY REMOVAL OF THE NATURAL GROUND COVER. DO NOT REMOVE TREES OR SHRUBS UNNECESSARILY; THEY HELP DECREASE EROSION.

SW8 PLANT PERMANENT VEGETATION AS SOON AS POSSIBLE, ONCE EXCAVATION AND GRADING ACTIVITIES ARE COMPLETE.

SW9 WATER USAGE FOR DUST CONTROL SHALL BE MINIMIZED.

ON-SITE CONSTRUCTION MATERIAL STORAGE

SW10 STORED MATERIALS SHALL BE CONTAINED IN A SECURE PLACE TO PREVENT SEEPAGE AND SPILLAGE. CONTRACTOR SHALL STORE THESE PRODUCTS WHERE THEY WILL STAY DRY OUT OF THE RAIN. CONTRACTOR SHALL PROVIDE SECONDARY CONTAINMENT FOR ALL FUEL STORED ON-SITE.

SW11 ELIMINATE OR REDUCE POLLUTION OF STORMWATER FROM STOCKPILES KEPT ON-SITE. STOCKPILES MAY INCLUDE SOIL, PARING MATERIALS, ASPHALT CONCRETE, AGGREGATE BASE, ETC. STOCKPILES SHALL BE LOCATED AWAY FROM CONCENTRATED STORMWATER FLOWS AND STORMDRAIN INLETS. STOCKPILES SHALL BE COVERED OR PROTECTED WITH SOIL STABILIZATION MEASURES AND PROVIDED WITH A TEMPORARY SEDIMENT BARRIER AROUND THE PERIMETER AT ALL TIMES.

TRAINING

SW12 CONTRACTORS' EMPLOYEES WHO PERFORM CONSTRUCTION IN THE CITY OF ENCINITAS SHALL BE TRAINED TO BE FAMILIAR WITH THE CITY OF ENCINITAS STORMWATER POLLUTION CONTROL REQUIREMENTS. THESE BMP NOTES SHALL BE AVAILABLE TO EVERYONE WORKING ON SITE. THE PROPERTY OWNER(S) AND THE PRIME CONTRACTOR MUST INFORM SUBCONTRACTORS ABOUT STORMWATER REQUIREMENTS AND THEIR OWN RESPONSIBILITIES.

WASTE MANAGEMENT

SW13 CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY DISPOSING OF ALL WASTE AND UNUSED CONSTRUCTION MATERIALS. DUMPING OF UNUSED OR WASTE PRODUCTS ON THE GROUND, WHERE WATER CAN CARRY THEM INTO THE CONVEYANCE SYSTEM IS STRICTLY PROHIBITED.

SW14 NO SEEPAGE FROM DUMPSTERS SHALL BE DISCHARGED INTO STORMWATER. BERMS/DIKES SHALL BE PLACED AROUND DUMPSTERS TO DIVERT THE NATURAL STORM RUNOFF. DUMPSTERS SHALL BE CHECKED FREQUENTLY FOR LEAKS. DUMPSTER LIDS SHALL REMAIN CLOSED AT ALL TIMES. DUMPSTERS WITHOUT LIDS SHALL BE PLACED WITHIN STRUCTURES WITH IMPERVIOUS ROOFING OR COVERED WITH TARPS IN ORDER TO AVOID RAIN CONTACT WITH ANY TRASH MATERIAL.

SW15 MANY CONSTRUCTION MATERIALS, INCLUDING SOLVENTS, WATER-BASED PAINTS, VEHICLE FLUIDS, BROKEN ASPHALT AND CONCRETE, WOOD, AND CLEARED VEGETATION CAN BE RECYCLED. NON-RECYCLABLE MATERIALS MUST BE TAKEN TO AN APPROPRIATE LANDFILL OR DISPOSED OF AS HAZARDOUS WASTE. FOR INFORMATION ON DISPOSAL OF HAZARDOUS MATERIAL, CALL THE **HAZARDOUS WASTE HOTLINE** TOLL FREE AT (800) 714-1195. FOR INFORMATION ON LANDFILLS AND TO ORDER DUMPSTERS CALL **EDCO** AT (760) 436-4151.

SW16 POLLUTANTS SHALL BE KEPT OFF EXPOSED SURFACES. PLACE TRASH CANS AND RECYCLING RECEPTACLES AROUND THE SITE.

SW17 PORTABLE TOILETS MUST BE IN GOOD WORKING ORDER AND CHECKED FREQUENTLY FOR LEAKS. CONTRACTOR SHALL PROVIDE SECONDARY CONTAINMENT AND LOCATE PORTABLE TOILETS AWAY FROM STORMDRAIN INLETS ON PERVIOUS SURFACES.

SW18 ALL CONSTRUCTION DEBRIS SHALL BE KEPT AWAY FROM THE STREET, GUTTER, AND STORMDRAIN. CONTRACTOR MUST ROUTINELY CHECK AND CLEAN UP MATERIAL THAT MAY HAVE TRAVELED AWAY FROM CONSTRUCTION SITE.

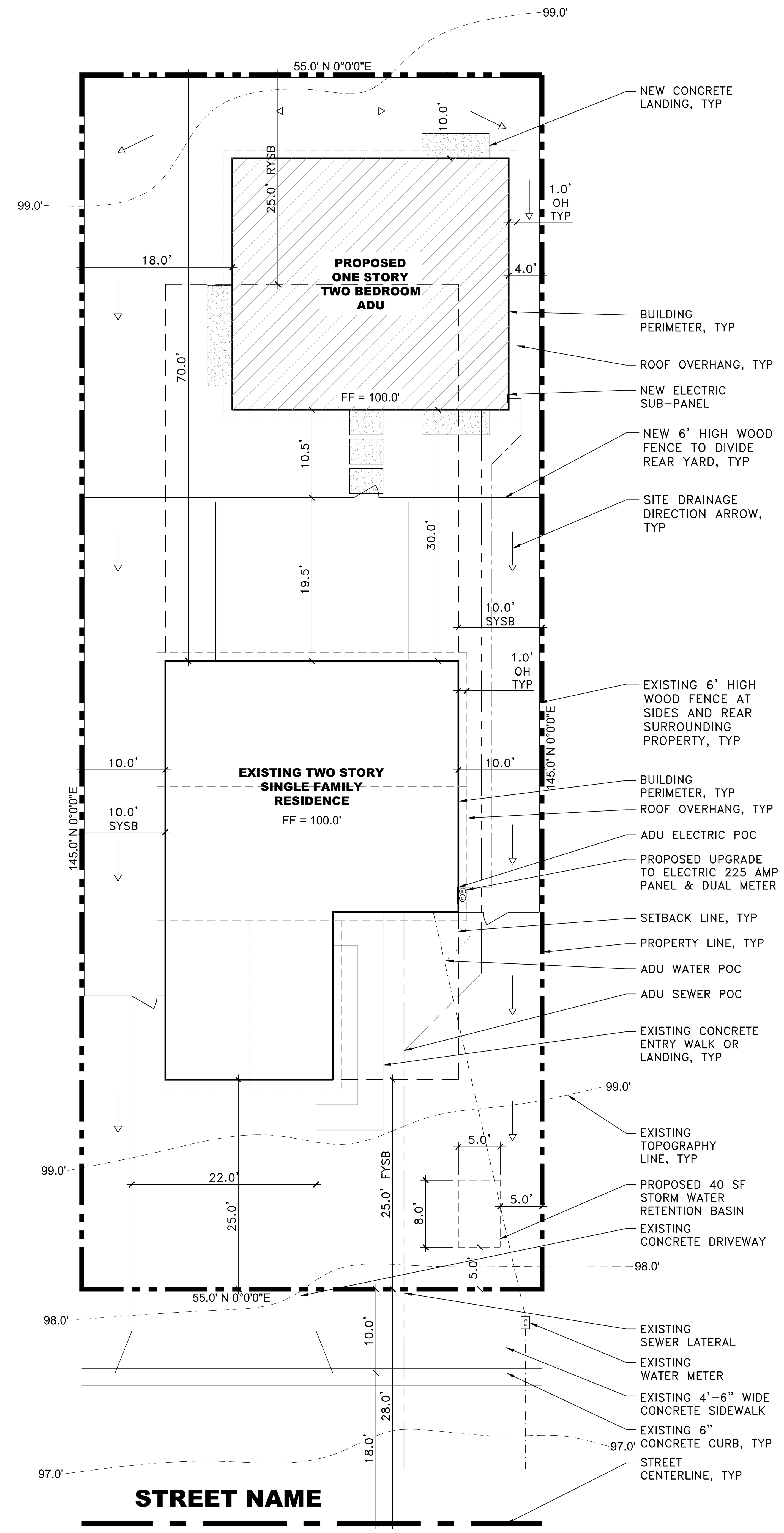
site plan note:

THE APPLICANT SHALL PROVIDE A DIMENSIONED SITE PLAN DRAWN TO SCALE SHOWING THE FOLLOWING: NORTH ARROW, PROPERTY LINES, EASEMENTS, STREETS, EXISTING AND PROPOSED BUILDINGS, AND STRUCTURES, LOCATION OF YARDS USED FOR ALLOWABLE INCREASE OF BUILDING AREA, DIMENSIONED SETBACKS, MINIMUM SEPARATION FROM EXISTING STRUCTURES AND FUEL MODIFICATION ZONES. UNIFORM ADMINISTRATIVE CODE SECTION 302.

site plan information:

√ CHECKLIST TO BE INCLUDED ON SITE PLAN

- ☐ ALL EXTERIOR SITE BOUNDARIES CORRECTLY SCALED & DIMENSIONED
- ☐ NORTH ARROW
- ☐ SCALE OF PLAN, GRAPHIC & WRITTEN
- ☐ LEGEND OF SYMBOLS, LINES, ABBREVIATIONS, ETC. USED ON PLAN
- ☐ SITE CONTOURS, GRADE ELEVATIONS & OTHER TOPOGRAPHIC FEATURES
- ☐ LOCATE & DIMENSION ALL DRIVEWAYS, ACCESS ROADS, & CURB CUTS
- ☐ ULTIMATE RIGHT OF WAY DIMENSION TO CENTERLINE OF ROAD
- ☐ SHOW FIRE ACCESS ROADS / DRIVEWAY & MAXIMUM FIRE HOSE PULL LENGTH OF 150 FT
- ☐ LOCATION & DIMENSIONS OF ALL EASEMENTS (ROAD, ELECTRIC, WATER, SEWER, GAS & OPEN SPACE ETC.)
- ☐ SHOW & DIMENSION REQUIRED & PROPOSED BUILDING SETBACKS
- ☐ LOCATION OF EXISTING & PROPOSED BUILDINGS AND STRUCTURES WITH NUMBER OF STORIES
- ☐ SHOW & DIMENSION HORIZONTAL PROJECTIONS (EAVES, DECKS, BAY WINDOWS, ETC)
- ☐ DISTANCE OF ALL EXISTING & PROPOSED STRUCTURES FROM EACH OTHER & FROM PROPERTY LINES
- ☐ LOCATION & HEIGHT OF ALL FENCES & RETAINING WALLS
- ☐ LOCATION & SIZE OF OFF-STREET PARKING
- ☐ LOCATION OF EXISTING & PROPOSED VEGETATION
- ☐ LOCATION OF EXISTING & PROPOSED UTILITIES TO NEW ADU
- ☐ LOCATION OF EXISTING & NEW UTILITIES (SEWER LATERAL WITH CLEANOUTS, WATER LINES WITH SHUT OFF, GAS LINES, ELECTRICAL OVERHEAD OR UNDERGROUND CONDUITS)
- ☐ LOCATE & NOTE NEW SEWER LATERAL SERVING THE PROPOSED ADU. REFER TO CPC 311.1
- ☐ ADU SEWER LINE CANNOT BE CONNECTED DIRECTLY TO THE EXISTING MAIN DWELLING UNIT EXCEPT AS SPECIFIED IN GOVERNMENT CODE SECTION 65852.2
- ☐ LOCATION OF EXISTING AND NEW METER LOCATIONS (ELECTRICAL, GAS & WATER.)
- ☐ SITE PLAN SIGNED BY PREPARER.
- ☐ IF REQUIRED, INCORPORATE THE APPROVED GRADING PLAN/IMPROVEMENT PLAN WITH THE BUILDING PLANS.
- ☐ IF REQUIRED, PROVIDE A FUEL MODIFICATION ZONE PER UNIFORM ADMINISTRATION CODE SECTION 302, SEE SHEET a0.1F FOR MORE MORE INFORMATION
- ☐ LOCATION OF APPLICABLE PERMANENT SOURCE CONTROL & SITE DESIGN BMPs PER STORM WATER INTAKE FORM & STANDARD PROJECT SWQMP (CITY FORM)



1 **sample site plan**
SCALE: 1"=10'-0"

0 1' 10' 20' 50'

PREPARER SIGNATURE

FOR CITY STAMPS

DZN PARTNERS
682 SECOND ST
ENCINITAS, CA
(760) 753 2464
DZNPARTNERS.COM

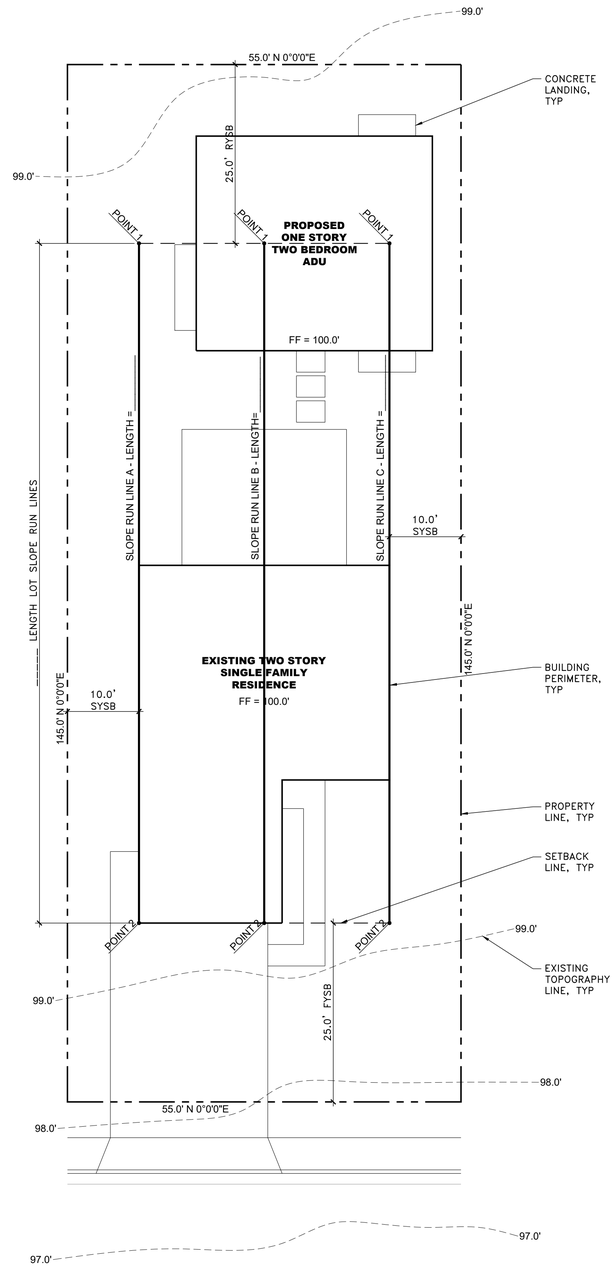
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

SITE PLAN + NOTES

a0.4



1 sample average lot slope diagram

SCALE: 1"=10'-0"

0 1' 5' 10' 20'

average lot slope calcs:

A.	LENGTH LOT SLOPE RUN LINE A =	FT
	LOT SLOPE RUN LINE A ELEVATION AT POINT 1 =	FT
	LOT SLOPE RUN LINE A ELEVATION AT POINT 2 =	FT
	POINT 1 (FT) - POINT 2 (FT) / LENGTH (FT) =	% SLOPE AT RUN LINE A
B.	LENGTH LOT SLOPE RUN LINE B =	FT
	LOT SLOPE RUN LINE B ELEVATION AT POINT 1 =	FT
	LOT SLOPE RUN LINE B ELEVATION AT POINT 2 =	FT
	POINT 1 (FT) - POINT 2 (FT) / LENGTH (FT) =	% SLOPE AT RUN LINE B
C.	LENGTH LOT SLOPE RUN LINE C =	FT
	LOT SLOPE RUN LINE A ELEVATION AT POINT 1 =	FT
	LOT SLOPE RUN LINE A ELEVATION AT POINT 2 =	FT
	POINT 1 (FT) - POINT 2 (FT) / LENGTH (FT) =	% SLOPE AT RUN LINE C
T.	RUN LINE A % + RUN LINE B % + RUN LINE C % / 3 =	% TOTAL
	AVERAGE LOT SLOPE IS	%

NOTES:

1. SEE SAMPLE AVERAGE LOT SLOPE EXHIBIT ON SHEET a0.5
2. FOR LOTS THAT EXCEED AN AVERAGE LOT SLOPE OF 10% ADDITIONAL HEIGHT RESTRICTIONS WILL APPLY AS PER EMC 30.16

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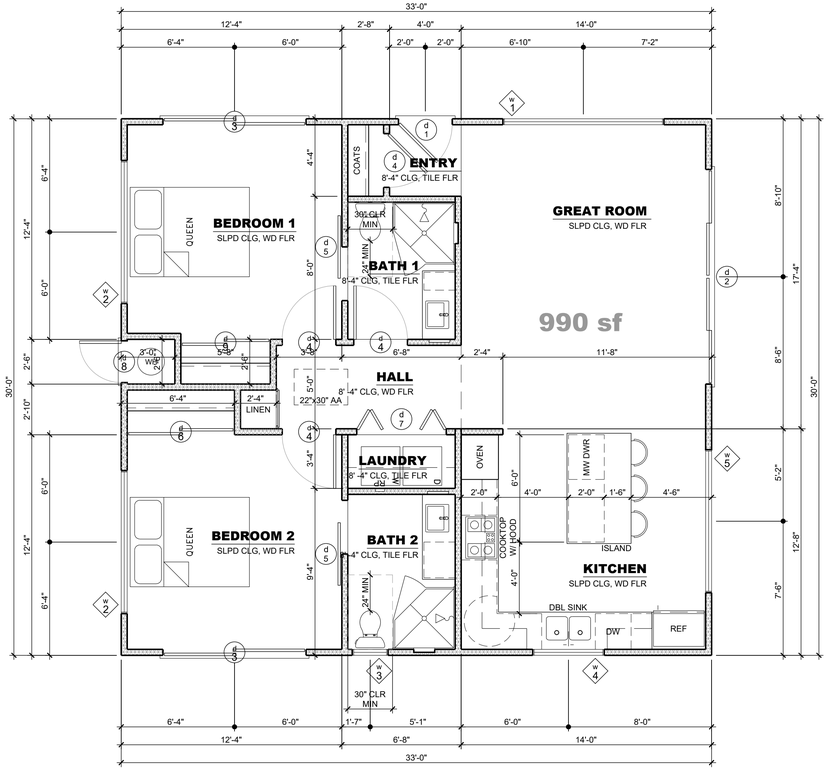
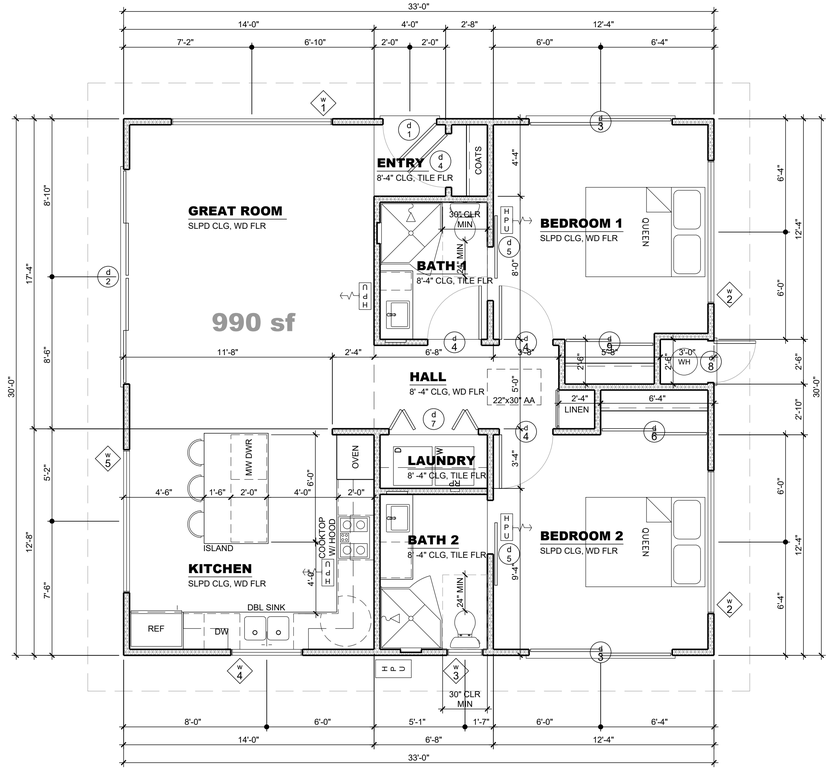
AVERAGE LOT SLOPE DIAGRAM

a0.5





1 reverse floor plan a

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

2 floor plan a

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

drawing:

SYMBOL	=	DESCRIPTION
(N)	=	NEW
(E)	=	EXISTING
	=	EXISTING WALL REMOVED
	=	EXISTING WALL TO REMAIN
	=	NEW 4" WALL
	=	NEW 6" WALL
	=	NEW 8" WALL
	=	NEW 8" CMU WALL
	=	NEW DWELLING UNIT SEPARATION WALL
	=	BEARING WALL
	=	NON-BEARING WALL AT FRAMING PLANS

drawing:

SYMBOL	=	DESCRIPTION
	=	EXISTING FOOTING
	=	NEW FOOTING
	=	NORTH ARROW
+ 100.0	=	NEW POINT ELEVATION
+ 100.0	=	EXISTING POINT ELEVATION
100.0	=	NEW CONTOUR
100.0	=	EXISTING CONTOUR
	=	PROPERTY LINE
	=	CENTER LINE
	=	SET BACK LINE
	=	FLOOR MATERIAL CHANGE

drawing:

SYMBOL	=	DESCRIPTION
A A-1	=	BUILDING SECTION LETTER SHEET NUMBER
A A-1	=	WALL SECTION LETTER SHEET NUMBER
1 D-1	=	DETAIL NUMBER SHEET NUMBER
1 A-1	=	INTERIOR ELEVATION
	=	LEVEL CHANGE
101	=	ROOM OR SPACE NUMBER
ROOM 0" CLG, FLOORING	=	ROOM NAME CEILING HEIGHT, FLOORING
W1	=	WINDOW NUMBER
D1	=	DOOR NUMBER
#	=	REVISION NUMBER
1	=	KEYNOTE NUMBER

drawing:

SYMBOL	=	DESCRIPTION
A SP 0'	=	SHEAR PANEL LETTER SHEAR PANEL LENGTH
T 1	=	TRUSS NUMBER
1	=	STRUCTURAL GRID LINE
DL	=	SHEAR DRAG LINE
P-1	=	PAD FOOTING
	=	POST
	=	HOLD DOWN
	=	FACTORY BUILT SHEAR PANEL
	=	FLOOR JOISTS
	=	CEILING JOISTS
	=	RAFTER OR TRUSS

floor plan notes:

1. SEE LEGENDS TO THE LEFT FOR SYMBOLS RELATING TO THE FLOOR PLAN.
2. SEE SHEET a0.1 FOR SCHEDULES RELATING TO THE FLOOR PLAN.
3. THE KITCHEN SHALL HAVE UPPER CABINETS, BASE CABINETS, AND COUNTERTOPS AS DEPICTED ON THIS FLOOR PLAN AND IN THE INTERIOR ELEVATIONS.
4. BATHROOMS
   LAVATORIES:
   - SHALL BE PLACED IN A VANITY BASE CABINET WITH A COUNTERTOP.
   - SHALL HAVE A MIRROR AT THE WALL BEHIND THE LAVATORY.
   - SHALL HAVE A MIRRORED MEDICINE CABINET AT THE SIDE WHEN DEPICTED WITH A RECTANGLE IN THE WALL.

   TOILETS:
   - SHALL BE FLUSH TANK.
   - SHALL BE PLACED IN A SPACE WITH 30" CLEAR WIDTH.
   - SHALL HAVE 24" CLEAR IN FRONT OF THE FIXTURE.

   BATHTUB/SHOWER COMBINATIONS
   - BATHTUB SHALL BE PORCELAIN OVER CAST IRON.
   - PROVIDE FULL HEIGHT TILE WAINSCOT ON WALLS WITHIN TUB AREA.
   - PROVIDE SLIDING CLEAR TEMPERED GLASS TUB/SHOWER ENCLOSURE OR EQUAL.

   SHOWERS
   - FLOOR TO BE TILE OVER ASPHALTIC WATERPROOF MEMBRANE LINER, TYPICAL.
   - DRAIN TO BE LINEAR OR ROUND AS DEPICTED ON THE FLOOR PLAN.
   - ENTRY CURB SHALL BE 4" WIDE AND TALL WITH TILE FINISH, TYP.
   - SHALL HAVE A CLEAR TEMPERED GLASS SHOWER ENCLOSURE WITH OPENING AS SHOWN ON THE FLOOR PLAN OR EQUAL.
   - WALLS IN SHOWER AREA WILL HAVE A FULL HEIGHT TILE WAINSCOT.
   - SEATS SHOWN IN SHOWERS SHALL BE 16" HIGH AND WILL BE TILED TO MATCH THE WALLS.
   - EACH SHOWER SHALL HAVE A 12" WIDE X 16" HIGH NICHE FOR SOAP AND SHAMPOO BOTTLES IN A WAINSCOT WALL.
5. CLOSETS SHALL HAVE A SHELF AND POLE AS SHOWN ON THE FLOOR PLAN.

0 1' 5' 10' 20'

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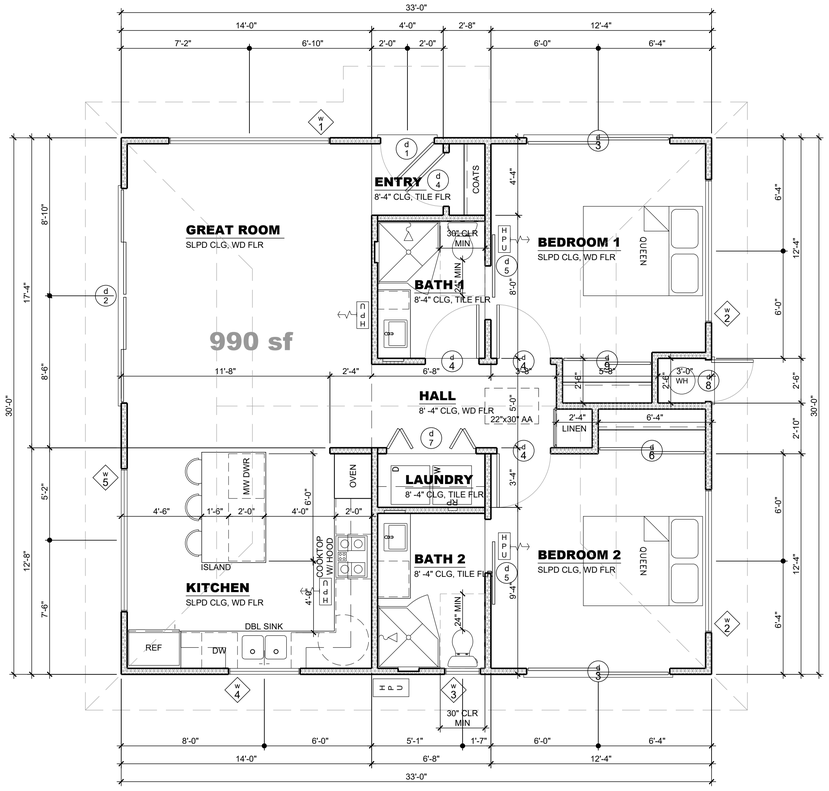
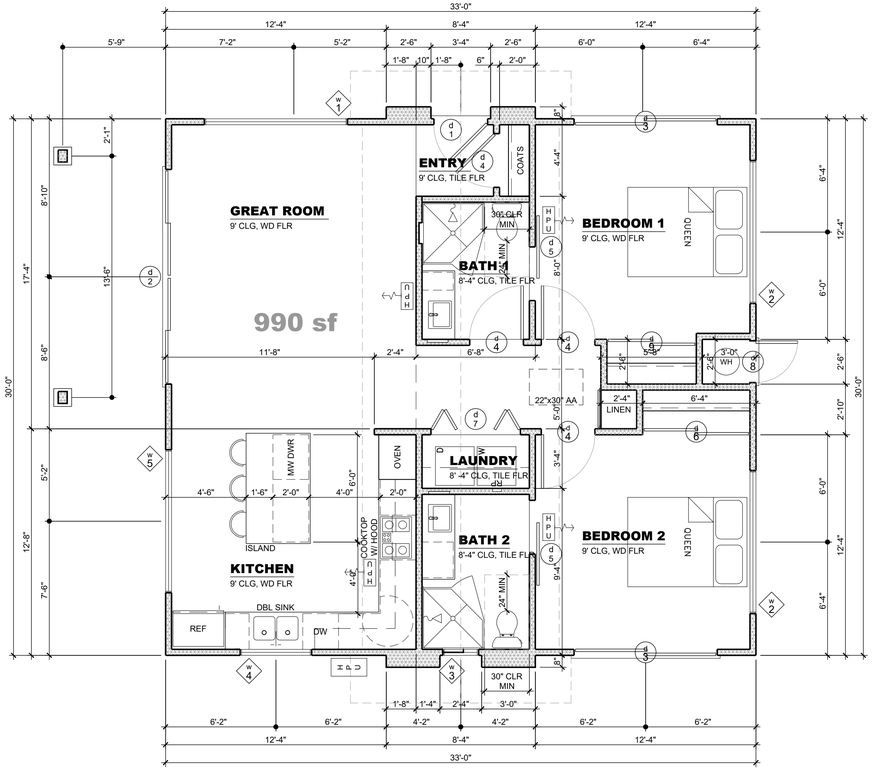
FLOOR PLAN A + REVERSE A

a1.0



1 floor plan c

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



2 floor plan b

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2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

FLOOR PLAN B + FLOOR PLAN C

a1.1

photovoltaic requirements:

2022 CALIFORNIA ENERGY CODE SECTION 150.1(c)14:

ALL LOW-RISE RESIDENTIAL BUILDINGS SHALL HAVE A PHOTOVOLTAIC (PV) SYSTEM MEETING THE MINIMUM QUALIFICATION REQUIREMENTS AS SPECIFIED IN JOINT APPENDIX JA11, WITH ANNUAL ELECTRICAL OUTPUT EQUAL TO OR GREATER THAN THE DWELLING'S ANNUAL ELECTRICAL USAGE AS DETERMINED BY EQUATION 150.1-C:

EQUATION 150.1-C

ANNUAL PHOTOVOLTAIC ELECTRICAL OUTPUT

$kW_{PV} = (CFA \times A)/1000 + (NDwell \times B)$

WHERE:

kW_{PV} = KWDC SIZE OF THE PV SYSTEM

CFA = CONDITIONED FLOOR AREA

NDwell = NUMBER OF DWELLING UNITS

A = ADJUSTMENT FACTOR FROM TABLE 150.1-C

B = DWELLING ADJUSTMENT FACTOR FROM TABLE 150.1-C

EXCEPTION 1 TO SECTION 150.1(C)14: NO PV SYSTEM IS REQUIRED IF THE EFFECTIVE ANNUAL SOLAR ACCESS IS RESTRICTED TO LESS THAN 80 CONTIGUOUS SQUARE FEET BY SHADING FROM EXISTING PERMANENT NATURAL OR MANMADE BARRIERS EXTERNAL TO THE DWELLING, INCLUDING BUT NOT LIMITED TO TREES, HILLS, AND ADJACENT STRUCTURES. THE EFFECTIVE ANNUAL SOLAR ACCESS SHALL BE 70 PERCENT OR GREATER OF THE OUTPUT OF AN UNSHADED PV ARRAY ON AN ANNUAL BASIS.

EXCEPTION 2 TO SECTION 150.1(C)14: IN CLIMATE ZONE 15, THE PV SYSTEM SIZE SHALL BE THE SMALLER OF A SIZE THAT CAN BE ACCOMMODATED BY THE EFFECTIVE ANNUAL SOLAR ACCESS OR A PV SYSTEM SIZE REQUIRED BY THE EQUATION 150.1-C, BUT NO LESS THAN 1.5 WATT DC PER SQUARE FOOT OF CONDITIONED FLOOR AREA.

EXCEPTION 3 TO SECTION 150.1(C)14: IN ALL CLIMATE ZONES, FOR DWELLING UNITS WITH TWO HABITABLE STORIES, THE PV SYSTEM SIZE SHALL BE THE SMALLER OF A SIZE THAT CAN BE ACCOMMODATED BY THE EFFECTIVE ANNUAL SOLAR ACCESS OR A PV SYSTEM SIZE REQUIRED BY THE EQUATION 150.1-C, BUT NO LESS THAN 1.0 WATT DC PER SQUARE FOOT OF CONDITIONED FLOOR AREA

EXCEPTION 4 TO SECTION 150.1(C)14: IN ALL CLIMATE ZONES, FOR LOW-RISE RESIDENTIAL DWELLINGS WITH THREE HABITABLE STORIES AND SINGLE-FAMILY DWELLINGS WITH THREE OR MORE HABITABLE STORIES, THE PV SYSTEM SIZE SHALL BE THE SMALLER OF A SIZE THAT CAN BE ACCOMMODATED BY THE EFFECTIVE ANNUAL SOLAR ACCESS OR A PV SYSTEM SIZE REQUIRED BY THE EQUATION 150.1-C, BUT NO LESS THAN 0.8 WATT DC PER SQUARE FOOT OF CONDITIONED FLOOR AREA.

EXCEPTION 5 TO SECTION 150.1(C)14: FOR A DWELLING UNIT PLAN THAT IS APPROVED BY THE PLANNING DEPARTMENT PRIOR TO JANUARY 1, 2020 WITH AVAILABLE SOLAR READY ZONE BETWEEN 80 AND 200 SQUARE FEET, THE PV SYSTEM SIZE IS LIMITED TO THE LESSER OF THE SIZE THAT CAN BE ACCOMMODATED BY THE EFFECTIVE ANNUAL SOLAR ACCESS OR A SIZE THAT IS REQUIRED BY THE EQUATION 150.1-C.

EXCEPTION 6 TO SECTION 150.1(C)14: PV SYSTEM SIZES FROM EQUATION 150.1-C MAY BE REDUCED BY 25 PERCENT IF INSTALLED IN CONJUNCTION WITH A BATTERY STORAGE SYSTEM. THE BATTERY STORAGE SYSTEM SHALL MEET THE QUALIFICATION REQUIREMENTS SPECIFIED IN JOINT APPENDIX JA12 AND HAVE A MINIMUM CAPACITY OF 7.5 KWH.

residential ventilation requirements:

1. KITCHENS REQUIRE EXHAUST FANS WITH A MINIMUM 100 CFM DUCTED TO THE EXTERIOR. DETAIL COMPLIANCE BY INCLUDING A COMPLYING EXHAUST FAN OR A DUCTED RANGE HOOD TO THE EXTERIOR. 3 SONES MAXIMUM.
2. EACH BATHROOM CONTAINING A BATHTUB, SHOWER OR TUB/SHOWER COMBINATION SHALL BE MECHANICALLY VENTILATED FOR PURPOSES OF HUMIDITY CONTROL IN ACCORDANCE WITH THE CALIFORNIA MECHANICAL CODE, CHAPTER 4; AND THE CALIFORNIA GREEN BUILDING STANDARDS CODE, CHAPTER 4, DIVISION 4.5.
3. BATHROOMS REQUIRE EXHAUST FANS (MINIMUM 50 CFM SWITCHED OR 20 CM CONTINUOUS) TO BE DUCTED TO THE EXTERIOR. *A BATHROOM IS DEFINED "AS A ROOM WITH A BATHTUB, SHOWER, OR SPA OR SOME SIMILAR SOURCE OF MOISTURE".*
4. RESIDENTIAL BATHROOM EXHAUST FANS SHALL BE ENERGY STAR RATED AND SHALL BE CONTROLBY A HUMIDISTAT CAPABLE OF AN ADJUSTMENT BETWEEN 50 AND 80% HUMIDITY. CALGREEN 4.506.1. EXCEPTION: CONTROL BY A HUMIDISTAT *IS NOT* REQUIRED IF THE BATHROOM EXHAUST FAN IS ALSO THE DWELLING WHOLE HOUSE VENTILATION. A) *ALL FANS INSTALLED TO MEET ALL OF THE PRECEDING VENTILATION REQUIREMENTS MUST BE SPECIFIED AT A NOISE RATING OF A MAXIMUM 1 "SONE" (CONTINUOUS USE) OR 3 "SONE" (INTERMITTENT).*
5. EXHAUST DUCT SIZE, LENGTH AND OUTLET LOCATION FOR FANS AND HOODS TO BE NOTED ON THE PLANS.

electric:

√ SELECTION

☐ NEW METER WITH _____ AMP PANEL

☐ SUBPANEL _____ AMP TO EXISTING _____ AMP MAIN PANEL

DISTANCE TO CONNECTION =_____FEET

CONTACT SDG&E REGARDING ELECTRIC SERVICE TO THIS DETACHED ADU. ANY EXISTING SERVICE UPGRADE OR NEW SERVICE FOR THE ADU WILL REQUIRE A SEPARATE PERMIT FROM THE CITY OF ENCINITAS.

SINGLE FAMILY DWELLING
ELECTRICAL SERVICE LOAD CALCULATION

OPTIONAL METHOD NEC 220-30

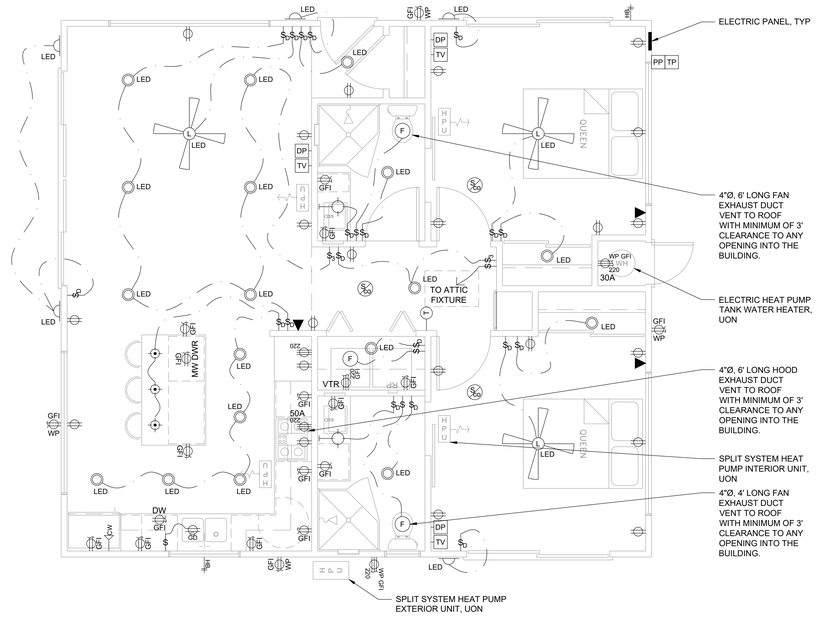
As an alternative method, the STANDARD METHOD, found in ARTICLE 220 of the National Electric Code, may be used

1. GENERAL LIGHTING LOADS
   Dwelling ___990___ sq. ft. x 3 VA = 2970 VA
   Small appliance loads -220-16 (a) 1500 VA x __2__ circuits = 3000 VA
   Laundry load -220-16(b) 1500 VA x __1__ circuits = 1500 VA
   General Lighting Total 7470 VA
2. COOKING EQUIPMENT LOADS - Nameplate Value
   Range ___5000___ VA = 5000 VA
   Cooktop _____ VA = _____ VA
   Oven(s) _____ VA = _____ VA
   Cooking Equipment Total 5000 VA
3. ELECTRIC DRYER 220-18 (Nameplate, 5000 VA minimum)
   Dryer ___5000___ VA = Dryer Total 5000 VA
4. FIXED APPLIANCE LOADS 230-30(b3)
   Dishwasher = 1500 VA
   Disposal = 1000 VA
   Compactor = _____ VA
   Water Heater = 4500 VA
   Hydromassage Bathtub = _____ VA
   Microwave Oven = _____ VA
   Built-in Vacuum = 1500 VA
   _____ = _____ VA
   Fixed Appliance Total 8500 VA
5. OPTIONAL SUBTOTAL (Add all of the above totals) 25970 VA
6. APPLYING DEMAND FACTORS - TABLE 220-30
   Optional Subtotal (from line 5) { First 10,000 VA x 100% = 10,000 VA; Remaining ___15970___ VA x 40% = 6388 VA }
7. HEATING OR AC LOAD - TABLE 220-30
   Larger of the Heating or AC Load = 8000 VA
8. OPTIONAL LOADS TOTAL (Add totals from lines 6 and 7) = 24388 VA
9. MINIMUM SERVICE SIZE = Optional Loads Total / 240 Volt = 102 Ampere

(Please put total on front of card under Computed Load)

utility plan notes:

1. SEE LEGENDS BELOW FOR SYMBOLS RELATING TO THE UTILITY PLAN.
2. SEE SHEET a0.1 FOR SCHEDULES RELATING TO THE UTILITY PLAN.
3. RECEPTACLE OUTLET LOCATION PER NEC ARTICLE 210.52.
4. GFCI PROTECTED OUTLETS FOR LOCATIONS DESCRIBED IN NEC 210.8(A): LAUNDRY AREAS, KITCHEN DISHWASHERS, KITCHENS, GARAGES, BATH ROOMS, OUTDOORS, WITHIN 6' OF A SINK, ETC. RECEPTACLE OUTLET LOCATION PER NEC ARTICLE 210.52.
5. BATH RECEPTACLE OUTLETS SHALL BE SUPPLIED BY A MINIMUM OF ONE 20 AMP CIRCUIT. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS. THIS CIRCUIT MAY SERVE MULTIPLE BATHS (NEC ART. 210-52(D)).
6. TAMPER RESISTANT RECEPTACLES ARE REQUIRED FOR ALL LOCATIONS DESCRIBED IN 210.52 (IE ALL RECEPTACLES IN A DWELLING).
7. WEATHER RESISTANT TYPE FOR RECEPTACLES INSTALLED IN DAMP OR WET LOCATIONS.
8. ARC-FAULT PROTECTION FOR ALL OUTLETS (NOT JUST RECEPTACLES) LOCATED IN ROOMS DESCRIBED IN NEC 210.12(A): KITCHENS, LAUNDRY AREAS, FAMILY, LIVING BEDROOMS, DINING, HALLS, ETC.
9. OUTLETS MUST BE WITHIN 6FT OF ANY OPENING AND NOT TO EXCEED 12FT APART. ANY ISOLATED WALL 2FT OR WIDER TO HAVE OUTLET(S).
10. ALL EXTERIOR LIGHTING SHALL BE HIGH EFFICACY, OAE
11. RECESSED LIGHTS SHOWN IN SLOPED CEILINGS SHALL BE A MODEL DESIGNED TO PROVIDE A PERPENDICULAR LIGHT SOURCE IN A SLOPED CEILING.
12. PROVIDE UFER GROUND AT ELECTRIC SERVICE LOCATION IN FOUNDATION. GROUND SHALL BE A 20' LONG #4 REINFORCING BAR, OAE.
13. PROVIDE SMOKE DETECTORS IN EACH SLEEPING ROOM AND AT A POINT CENTRALLY LOCATED IN AN AREA GIVING ACCESS TO EACH SEPARATE SLEEPING AREA. SMOKE DETECTORS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING AND SHALL BE EQUIPPED WITH A BATTERY BACKUP. SMOKE DETECTORS MAYBE SOLELY BATTERY POWERED WHEN INSTALLED IN EXISTING BUILDINGS. (CRC §R314.6)
14. WHERE MORE THAN ONE COMBINATION SMOKE/CARBON MONOXIDE DETECTOR IS REQUIRED, THE ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL THE ALARMS IN THE RESIDENCE.
15. CONTROL VALVES IN BATHTUBS, WHIRLPOOL BATHTUBS, SHOWERS AND TUB-SHOWER COMBINATIONS MUST BE PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES. CPC SECTION 414.5 AND 418.0.
16. ALL HOT WATER PIPING SIZED ¾" OR LARGER IS REQUIRED TO BE INSULATED AS FOLLOWS: 1" PIPE SIZE OR LESS: 1" THICK INSULATION; LARGER PIPE SIZES REQUIRE 1½" THICK INSULATION. NOTE: IN ADDITION, THE ½" SIZE HOT WATER PIPE TO THE KITCHEN SINK IS REQUIRED TO BE INSULATED. ES 150.0(J)2
17. SEE T24 DOCUMENTATION SHEET FOR MORE INFORMATION ON WATER HEATING, SPACE HEATING, AND COOLING EQUIPMENT SPECIFICATIONS.
18. SHOW THE LOCATIONS OR PROVIDE NOTES OF ALL CARBON MONOXIDE ALARMS TO MEET THE REQUIREMENTS OF CALIFORNIA RESIDENTIAL CODE SECTION R315.
    • INSTALLED IN DWELLING UNITS AND IN SLEEPING UNITS WITHIN WHICH FUEL-BURNING APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.
    • WHERE MORE THAN ONE CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED THE ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL THE ALARMS IN THE INDIVIDUAL UNIT.
    *WHERE AREAS OF NO CONSTRUCTION IS TAKING PLACE CARBON MONOXIDE DETECTORS CAN BE SOLELY BATTERY POWERED
19. CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER-CURRENT PROTECTION.
20. SHOW THE LOCATIONS OR PROVIDE NOTES OF ALL SMOKE ALARMS MEETING THE REQUIREMENTS OF CRC SECTION R314.
    • ON THE CEILING OR WALL OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF BED ROOMS.
    • IN EACH ROOM USED FOR SLEEPING PURPOSES.
    • IN EACH STORY WITHIN A DWELLING UNIT, INCLUDING BASEMENTS.
    • IN DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.
    *WHERE AREAS OF NO CONSTRUCTION IS TAKING PLACE SMOKE DETECTORS CAN BE SOLELY BATTERY POWERED ONLY.



1 **utility plan**

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

0 1' 5' 10' 20'

electrical:

SYMBOL	=	DESCRIPTION
LED	=	LIGHT EMITTING DIODE
E	=	ELECTRICAL METER
	=	ELECTRICAL PANEL
	=	DUPLEX OUTLET
	=	HALF HOT DUPLEX OUTLET
	=	QUADRAPLEX OUTLET
GFI	=	GROUND FORCE OUTLET
WP	=	WATERPROOF GFI OUTLET
	=	IN-FLOOR OUTLET
GD	=	GARBAGE DISPOSAL OUTLET
DG	=	DEDICATED GROUND OUTLET
	=	220V OUTLET
WP GFI 220	=	WATERPROOF 220V OUTLET
$	=	1 WAY SWITCH
$3	=	3 WAY SWITCH

electrical:

SYMBOL	=	DESCRIPTION
$D	=	DIMMER SWITCH
$K	=	KEY OPERATED SWITCH
$WP	=	WEATHERPROOF SWITCH
$VS	=	VACANCY SENSOR SWITCH
D	=	DOOR OPERATED SWITCH
F	=	VENT FAN
F IAQ	=	INDOOR AIR QUALITY FAN
F WH	=	WHOLE HOUSE FAN
M	=	RECESSED MOISTURE RESISTANT CEILING FIXTURE
H	=	HEAT LAMP
J	=	JUNCTION BOX
L	=	LIGHT
M	=	MOTION DETECTOR
P	=	PHOTOELECTRIC SENSOR
H F	=	HEAT LAMP/FAN COMBO
L F	=	LED LIGHT/FAN COMBO

electrical:

SYMBOL	=	DESCRIPTION
L H F	=	LED LIGHT/HEAT LAMP/FAN COMBO
	=	CEILING SURFACE MOUNT FIXTURE
	=	WALL MOUNTED FIXTURE
	=	HANGING FIXTURE
	=	WALL SCONCE
	=	RECESSED CEILING FIXTURE
	=	RECESSED CEILING WALL WASH FIXTURE
	=	RECESSED MOISTURE RESISTANT CEILING FIXTURE
	=	FLOOD FIXTURE
	=	TRACK LIGHT FIXTURE
	=	FLOURESCENT TUBE FIXTURE
	=	LED UNDERCABINET FIXTURE
	=	CEILING FAN WITH LIGHT
	=	STEP LIGHT
	=	GRID CEILING LIGHT

plumbing:

SYMBOL	=	DESCRIPTION
WM	=	WATER METER
FWM	=	FIRE WATER METER
WH	=	TANK WATER HEATER
HP WH	=	ELECTRIC HEAT PUMP WATER HEATER
WH	=	TANKLESS WATER HEATER
WC	=	WATER CONDITIONER
SO	=	WATER SERVICE SHUTOFF
HB	=	HOSE BIB
CW	=	COLD WATER VALVE
RP	=	RECESSED PLUMBING
	=	SHOWERHEAD
	=	OVERHEAD SHOWERHEAD
	=	ADJUSTABLE SHOWERHEAD

plumbing:

SYMBOL	=	DESCRIPTION
	=	FIRE SPRINKLER
	=	ROUND SHOWER DRAIN
	=	LINEAR SHOWER DRAIN
CO	=	CLEAN OUT
FD	=	FLOOR DRAIN
FS	=	FLOOR SINK
	=	DECK OR ROOF DRAIN
OS	=	OVERFLOW SCUPPER
	=	DECK OR ROOF DRAIN + OVERFLOW SCUPPER
DS	=	DOWNSPOUT
	=	URINAL
	=	BIDET
	=	TOILET - FLOOR MOUNT

plumbing:

SYMBOL	=	DESCRIPTION
	=	TOILET - WALL MOUNT
	=	FAUCET
	=	PEDESTAL SINK
	=	BATH SINK
	=	BATHTUB
	=	FREESTANDING BATHTUB
	=	BAR OR HAND SINK
	=	SINGLE SINK
	=	DOUBLE SINK
	=	TRIPLE SINK
	=	APRON SINK

mechanical:

SYMBOL	=	DESCRIPTION
SYS	=	SPLIT SYSTEM HEAT PUMP EXTERIOR UNIT
HPU	=	SPLIT SYSTEM HEAT PUMP INTERIOR UNIT
T	=	THERMOSTAT
SA	=	SUPPLY AIR WALL REGISTER
	=	SUPPLY AIR CEILING REGISTER
	=	SUPPLY AIR FLOOR REGISTER
RA	=	RETURN AIR WALL REGISTER
	=	RETURN AIR CEILING REGISTER
	=	RETURN AIR FLOOR REGISTER

mechanical:

SYMBOL	=	DESCRIPTION
	=	RIGID SUPPLY AIR DUCT
	=	RIGID RETURN AIR DUCT
	=	FLEXIBLE SUPPLY AIR DUCT
FE	=	FIRE EXTINGUISHER
VM	=	VACUUM MOTOR
V	=	VACUUM OUTLET
DV	=	DRYER VENT
FV	=	FAN VENT
RV	=	RANGE / OVEN VENT

media+safety:

SYMBOL	=	DESCRIPTION
ALARM	=	ALARM SOURCE
AUDIO	=	AUDIO SOURCE
DATA	=	DATA SOURCE
PP	=	PHONE PANEL
TP	=	TELEVISION PANEL
VP	=	VIDEO PANEL
TV	=	CABLE TELEVISION JACK
DP	=	DATAPORT NETWORK JACK
	=	TELEPHONE JACK
	=	DOORBELL OR GARAGE DOOR

media+safety:

SYMBOL	=	DESCRIPTION
	=	DOORBELL CHIMES
DB	=	DOORBELL TRANSFORMER
A	=	ALARM SYSTEM PAD
CO	=	CARBON MONOXIDE DETECTOR
S	=	SMOKE DETECTOR
S CO	=	SMOKE & CARBON MONOXIDE DETECTOR
	=	EMERGENCY LIGHT FIXTURE
EXIT	=	ILLUMINATED EXIT SIGN
SP	=	SPEAKER
	=	VIDEO CAMERA

PREPARER SIGNATURE

FOR CITY STAMPS

DZN PARTNERS
682SECONDST
ENCINITAS,CA
(760)7532464
DZNPARTNERS.COM

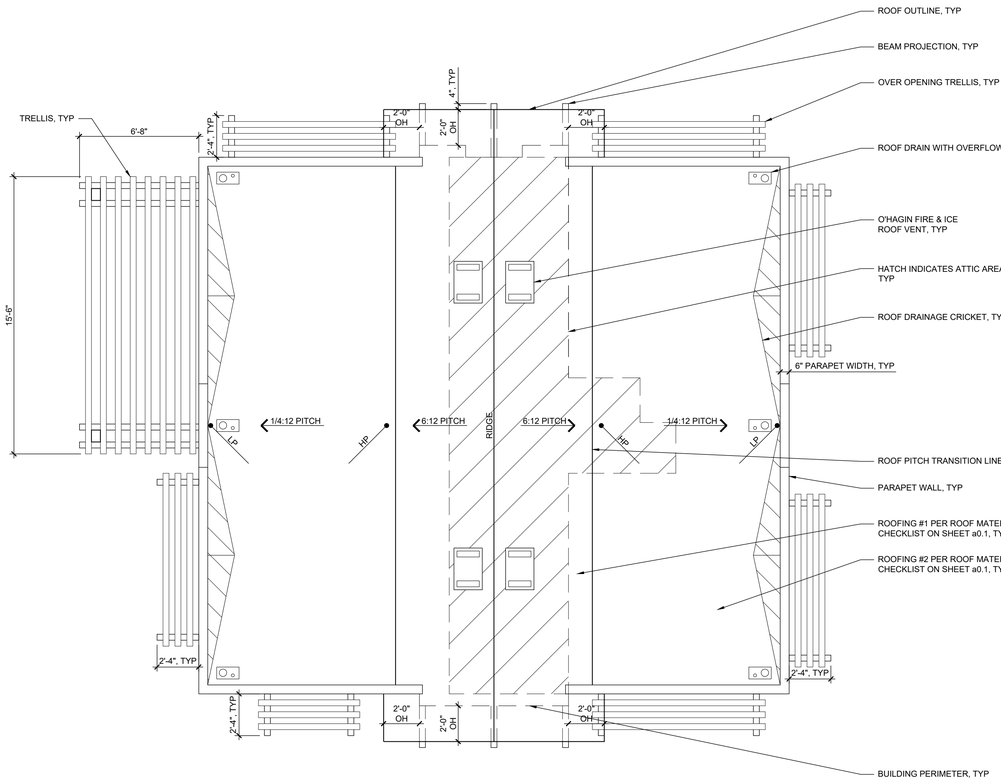
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

UTILITY PLAN

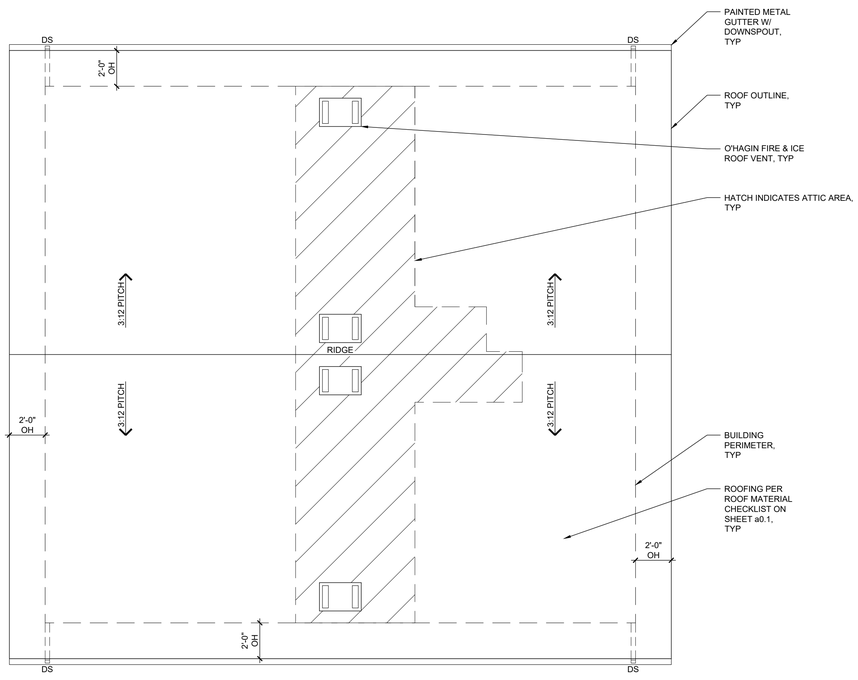
a2.0



1 roof plan b

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

0 1' 5' 10' 20'



2 roof plan a

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

0 1' 5' 10' 20'

roof plan notes:

1. ALL ROOFING SHALL BE CLASS A RATED.
2. ROOFING SELECTIONS PER ROOF MATERIAL CHECKLIST ON SHEET a0.1.
3. ATTIC PROPOSED OF 227 sf
   ATTIC VENTING REQUIRED: 227 sf / 150 = 1.51 sf VENT AREA
   ATTIC VENTING PROVIDED: 2 sf [4 O'HAGIN VENTS @ 1/2 sf EACH]
4. IF THE ADU IS IN THE VHFHSZ THE O'HAGIN ROOF VENTS SHALL BE O'HAGIN FIRE & ICE® LINE – FLAME AND EMBER RESISTANT ROOF VENTS
5. WHERE NO ATTIC IS PROPOSED DETAILS 86, 87 & 88/d0.4 PROVIDE INSULATION ALTERNATIVES.

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2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

ROOF PLAN A + ROOF PLAN B

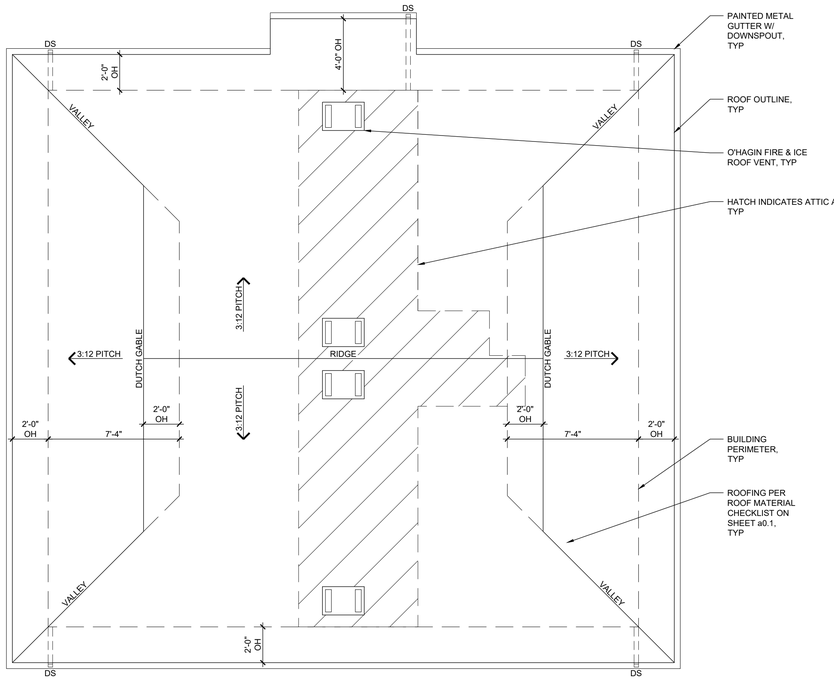
a3.0

roof plan notes:

1. ALL ROOFING SHALL BE CLASS A RATED.
2. ROOFING SELECTIONS PER ROOF MATERIAL CHECKLIST ON SHEET a0.1.
3. ATTIC PROPOSED OF 227 sf

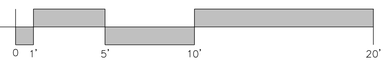
   ATTIC VENTING REQUIRED: 227 sf / 150 = 1.51 sf VENT AREA

   ATTIC VENTING PROVIDED: 2 sf [4 O'HAGIN VENTS @ 1/2 sf EACH]
4. IF THE ADU IS IN THE VHFHSZ THE O'HAGIN ROOF VENTS SHALL BE O'HAGIN FIRE & ICE® LINE – FLAME AND EMBER RESISTANT ROOF VENTS
5. WHERE NO ATTIC IS PROPOSED DETAILS 86, 87 & 88/d0.4 PROVIDE INSULATION ALTERNATIVES.



3 roof plan c

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



PREPARER SIGNATURE

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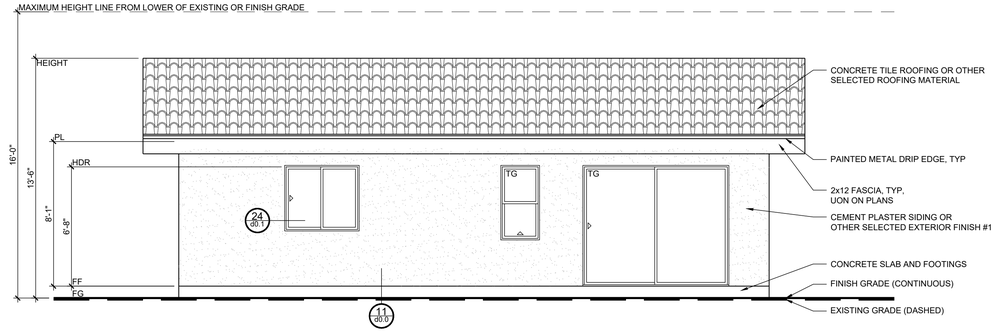
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

ROOF PLAN C

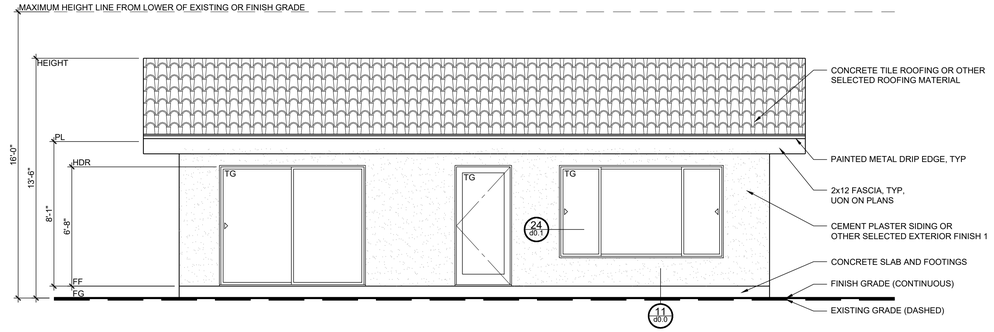
a3.1



1 rear elevation a

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

0 1" 5" 10" 20"



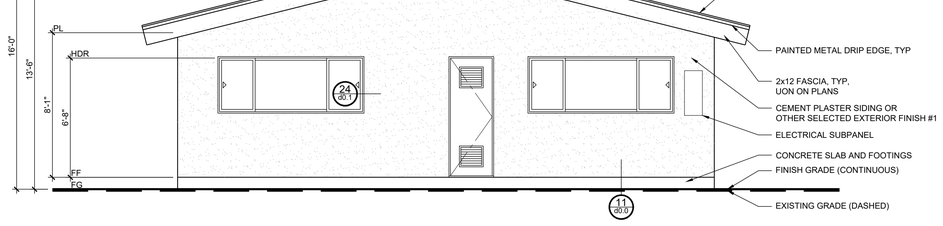
4 front elevation a

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

0 1" 5" 10" 20"

elevation + section notes:

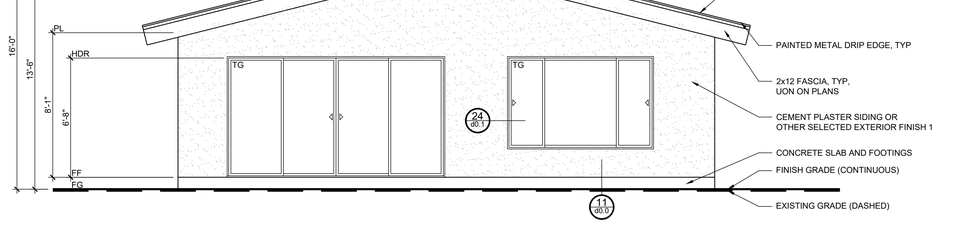
1. ROOF PLAN NOTES THE LOCATION OF GUTTERS, DOWNSPOUTS & ROOF MOUNTED ATTIC VENTS.
2. ADJUSTMENT OF ROOF PITCH OR PLATE HEIGHT MAY BE REQUIRED IF RAISED FLOOR FOUNDATION IS SELECTED TO MEET HEIGHT REQUIREMENTS.
3. ELEVATIONS & SECTIONS SHALL SHOW BOTH FINISH (CONTINUOUS) & EXISTING (DASHED) GRADE AND THE CORRESPONDING HEIGHT LIMITATION LINE FROM THE LOWER OF THE FINISH OR EXISTING GRADE.
4. IF THE AVERAGE LOT SLOPE EXCEEDS 10% (NOT INCLUDING RR ZONED LOTS) THAN THE ADDITIONAL SLOPED LOT HEIGHT LIMITATION LINES SHALL BE SHOWN AS WELL.



2 left elevation a

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

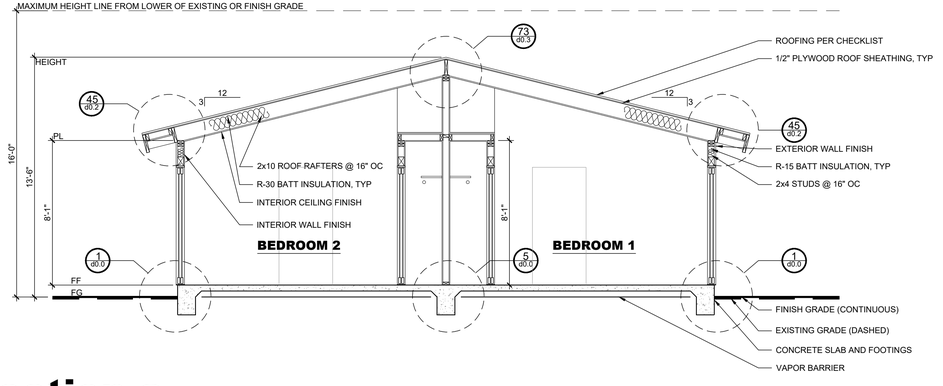
0 1" 5" 10" 20"



5 right elevation a

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

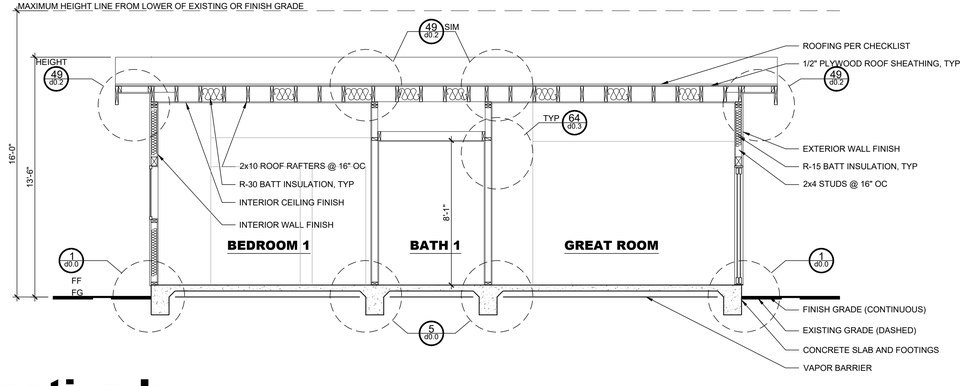
0 1" 5" 10" 20"



3 section a

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

0 1" 5" 10" 20"



6 section b

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

0 1" 5" 10" 20"

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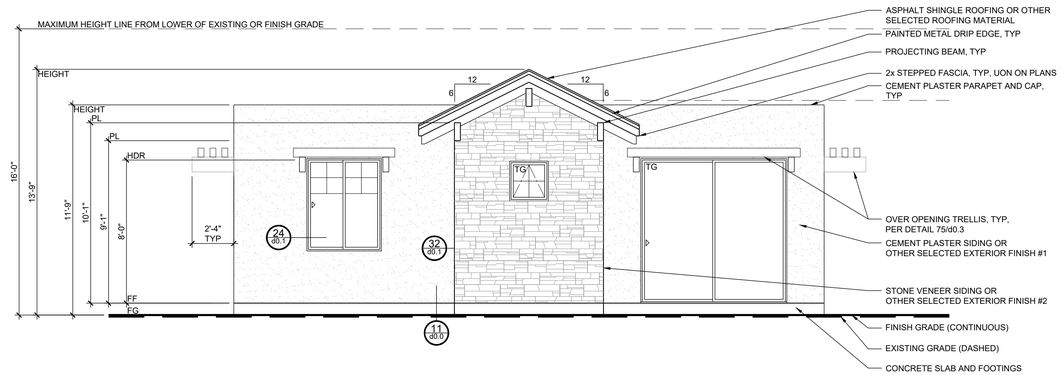
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

ELEVATION A + SECTION

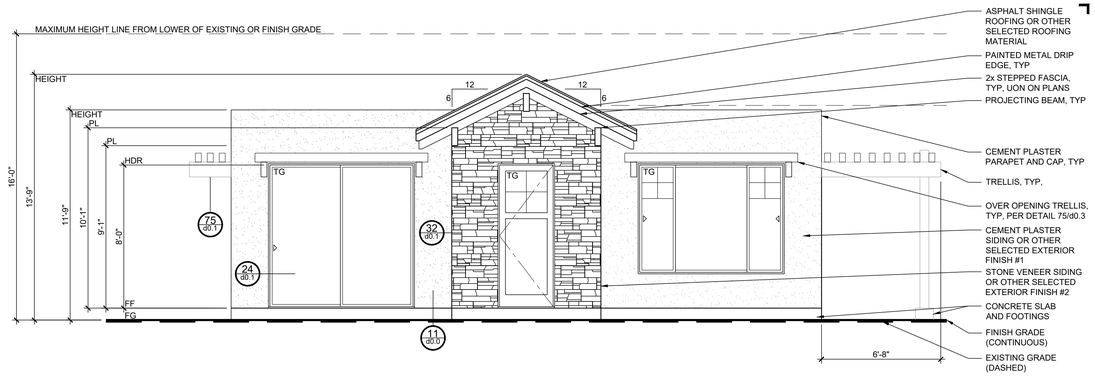
a4.0



1 rear elevation b

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

0 1" 5" 10" 20"



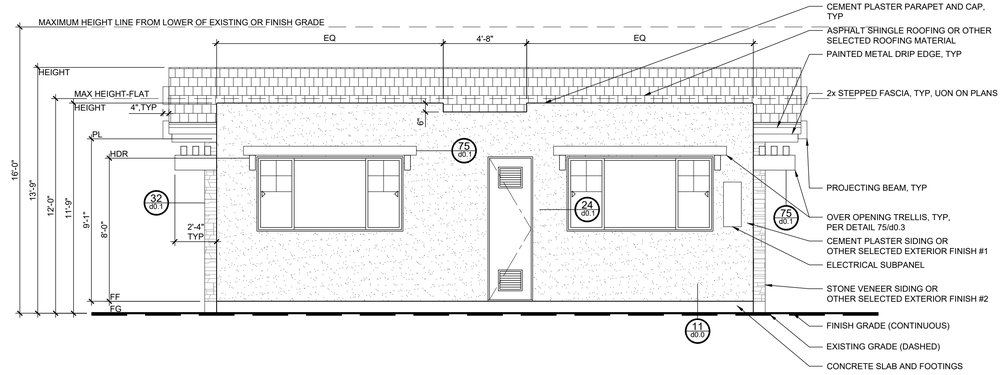
4 front elevation b

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

0 1" 5" 10" 20"

elevation + section notes:

1. ROOF PLAN NOTES THE LOCATION OF GUTTERS, DOWNSPOUTS & ROOF MOUNTED ATTIC VENTS.
2. ADJUSTMENT OF ROOF PITCH OR PLATE HEIGHT MAY BE REQUIRED IF RAISED FLOOR FOUNDATION IS SELECTED TO MEET HEIGHT REQUIREMENTS.
3. ELEVATIONS & SECTIONS SHALL SHOW BOTH FINISH (CONTINUOUS) & EXISTING (DASHED) GRADE AND THE CORRESPONDING HEIGHT LIMITATION LINE FROM THE LOWER OF THE FINISH OR EXISTING GRADE.
4. IF THE AVERAGE LOT SLOPE EXCEEDS 10% (NOT INCLUDING RR ZONED LOTS) THAN THE ADDITIONAL SLOPED LOT HEIGHT LIMITATION LINES SHALL BE SHOWN AS WELL.



2 left elevation b

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

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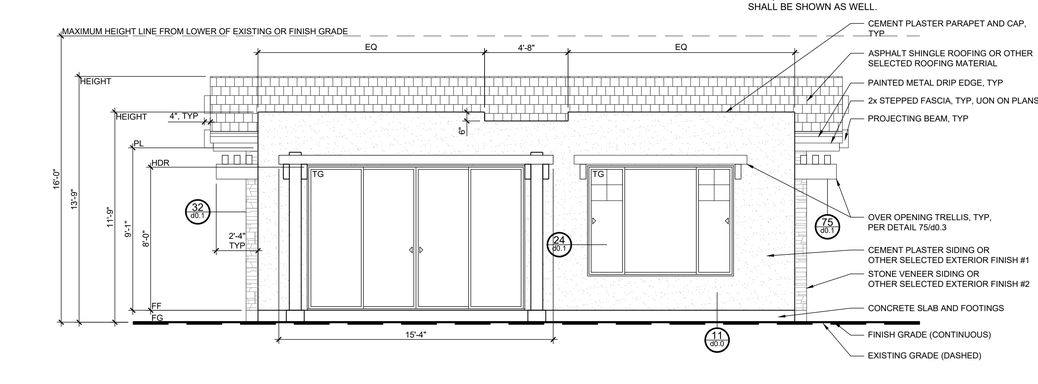
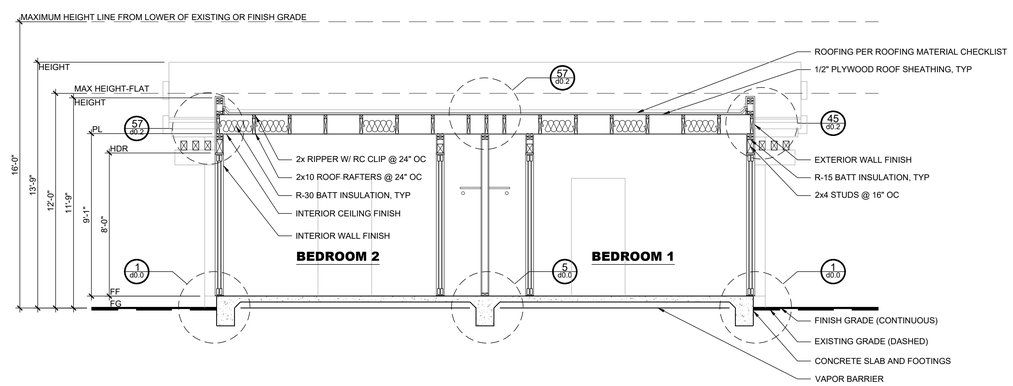


5 right elevation b

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

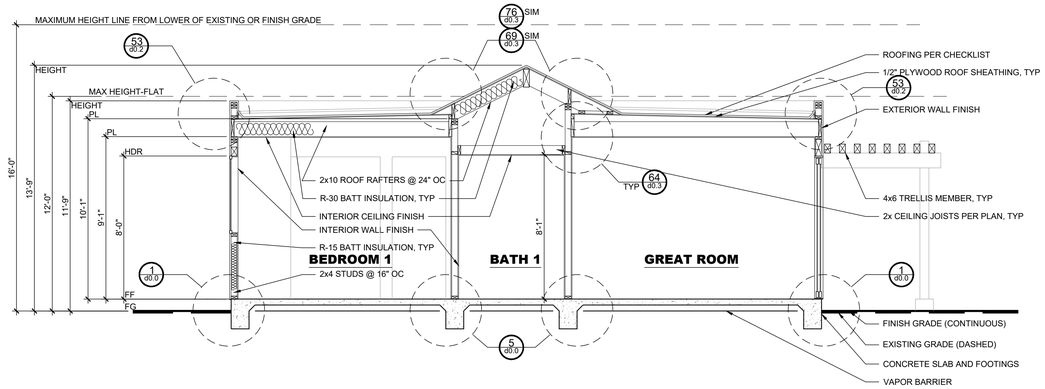
0 1" 5" 10" 20"



3 section c

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

0 1" 5" 10" 20"



6 section d

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

0 1" 5" 10" 20"

PREPARER SIGNATURE

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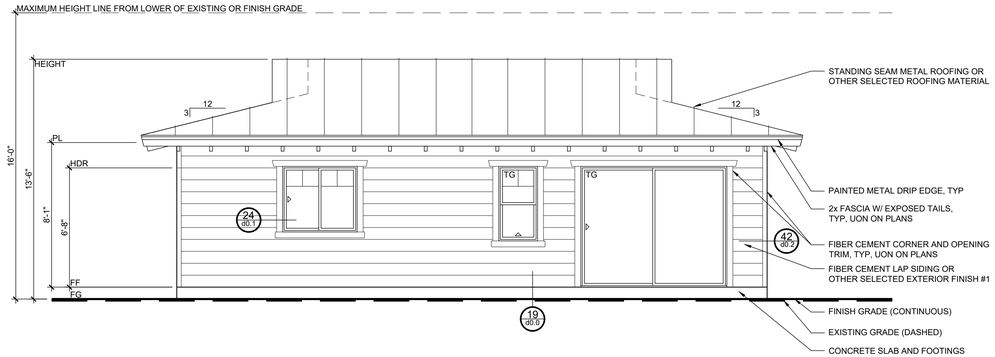
CITY: ANAHEIM

JOB: 202409R

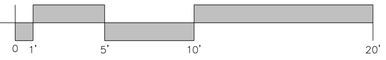
ELEVATION B + SECTION

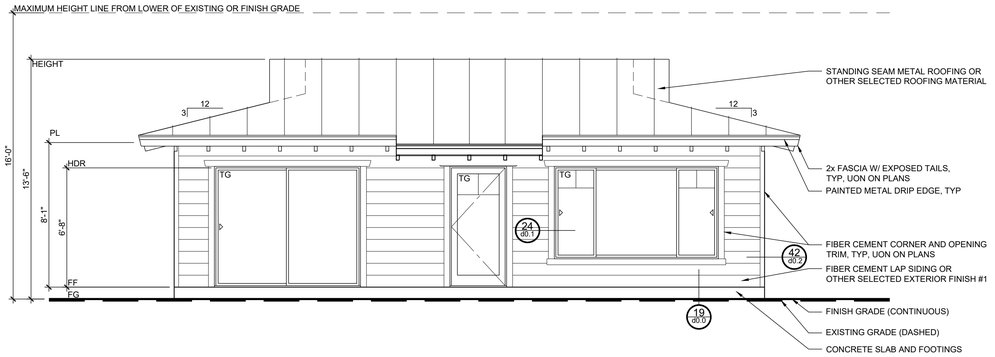
a4.1



1 rear elevation c

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





4 front elevation c

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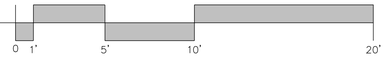
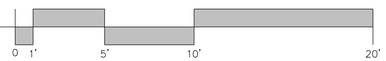


elevation + section notes:

1. ROOF PLAN NOTES THE LOCATION OF GUTTERS, DOWNSPOUTS & ROOF MOUNTED ATTIC VENTS.
2. ADJUSTMENT OF ROOF PITCH OR PLATE HEIGHT MAY BE REQUIRED IF RAISED FLOOR FOUNDATION IS SELECTED TO MEET HEIGHT REQUIREMENTS.
3. ELEVATIONS & SECTIONS SHALL SHOW BOTH FINISH (CONTINUOUS) & EXISTING (DASHED) GRADE AND THE CORRESPONDING HEIGHT LIMITATION LINE FROM THE LOWER OF THE FINISH OR EXISTING GRADE.
4. IF THE AVERAGE LOT SLOPE EXCEEDS 10% (NOT INCLUDING RR ZONED LOTS) THAN THE ADDITIONAL SLOPED LOT HEIGHT LIMITATION LINES SHALL BE SHOWN AS WELL.

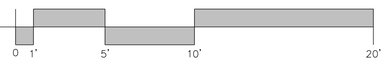
2 left elevation c

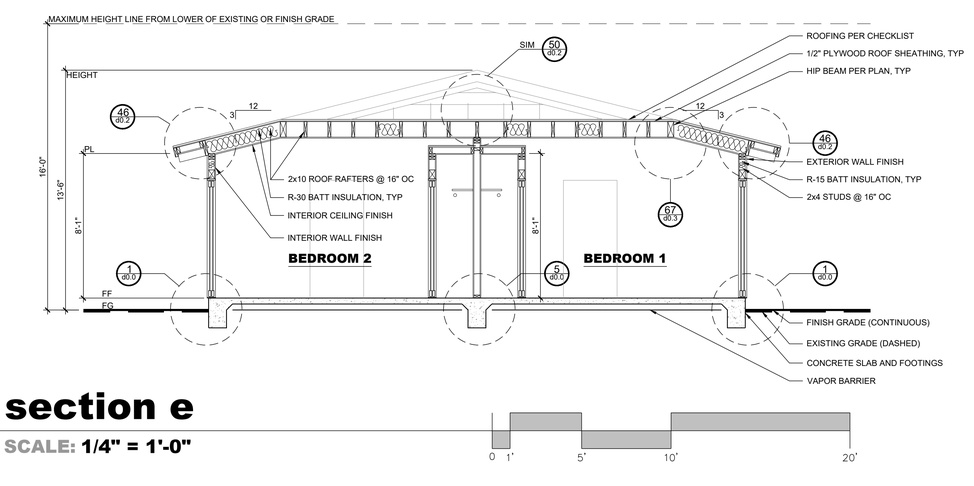
SCALE: 1/4" = 1'-0"



5 right elevation c

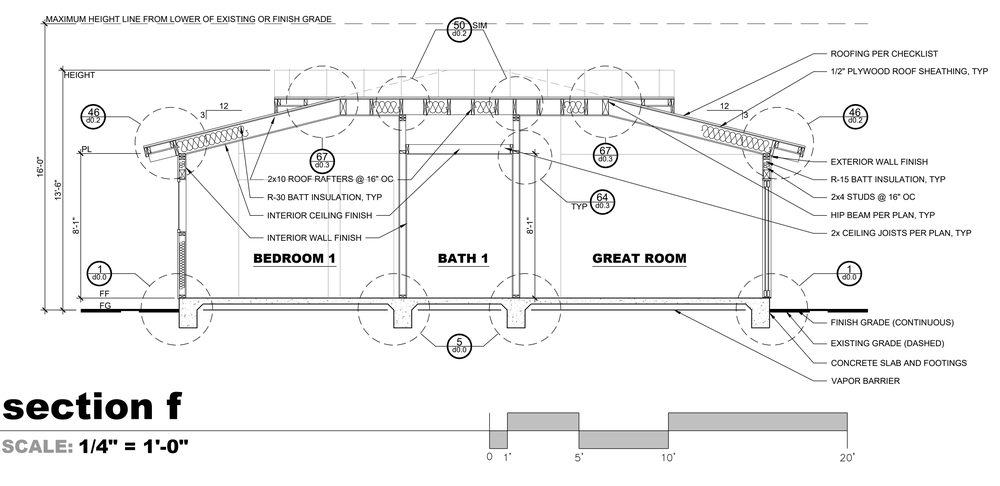
SCALE: 1/4" = 1'-0"





3 section e

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



6 section f

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

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JOB: 202409R

ELEVATION C + SECTION

a4.2

safety glazing notes:

2406.4 HAZARDOUS LOCATIONS.

- THE LOCATIONS SPECIFIED IN SECTIONS 2406.4.1 THROUGH 2406.4.7 SHALL BE CONSIDERED SPECIFIC HAZARDOUS LOCATIONS REQUIRING SAFETY GLAZING MATERIALS.

2406.4.1 GLAZING IN DOORS.

- GLAZING IN ALL FIXED & OPERABLE PANELS OF SWINGING, SLIDING, & BIFOLD DOORS SHALL BE CONSIDERED A HAZARDOUS LOCATION.

EXCEPTIONS:

1. GLAZED OPENINGS OF A SIZE THROUGH WHICH A 3" Ø SPHERE IS UNABLE TO PASS.
2. DECORATIVE GLAZING.
3. GLAZING MATERIALS USED AS CURVED GLAZED PANELS IN REVOLVING DOORS.
4. COMMERCIAL REFRIGERATED CABINET GLAZED DOORS.

2406.4.2 GLAZING ADJACENT TO DOORS.

- GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE OF THE GLAZING IS WITHIN A 24" ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION & WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE THE WALKING SURFACE SHALL BE CONSIDERED A HAZARDOUS LOCATION.

EXCEPTIONS:

1. DECORATIVE GLAZING.
2. WHERE THERE IS AN INTERVENING WALL OR OTHER PERMANENT BARRIER BETWEEN THE DOOR & GLAZING.
3. WHERE ACCESS THROUGH THE DOOR IS TO A CLOSET OR STORAGE AREA 3 FEET (914 MM) OR LESS IN DEPTH. GLAZING IN THIS APPLICATION SHALL COMPLY WITH SECTION 2406.4.3.
4. GLAZING IN WALLS ON THE LATCH SIDE OF & PERPENDICULAR TO THE PLANE OF THE DOOR IN A CLOSED POSITION IN ONE- & TWO-FAMILY DWELLINGS OR WITHIN DWELLING UNITS IN GROUP R-2.

2406.4.3 GLAZING IN WINDOWS.

GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL THAT MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION:

1. THE EXPOSED AREA OF AN INDIVIDUAL PANE IS GREATER THAN 9 SQUARE FEET.
2. THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 18" ABOVE THE FLOOR.
3. THE TOP EDGE OF THE GLAZING IS GREATER THAN 36" ABOVE THE FLOOR.
4. ONE OR MORE WALKING SURFACE(S) ARE WITHIN 36", MEASURED HORIZONTALLY & IN A STRAIGHT LINE, OF THE PLANE OF THE GLAZING.

EXCEPTIONS:

1. DECORATIVE GLAZING.
2. WHERE A HORIZONTAL RAIL IS INSTALLED ON THE ACCESSIBLE SIDE(S) OF THE GLAZING 34" TO 38" ABOVE THE WALKING SURFACE. THE RAIL SHALL BE CAPABLE OF WITHSTANDING A HORIZONTAL LOAD OF 50 POUNDS PER LINEAR FOOT WITHOUT CONTACTING THE GLASS & BE NOT LESS THAN 1 1/2" IN CROSS-SECTIONAL HEIGHT.
3. OUTBOARD PANES IN INSULATING GLASS UNITS OR MULTIPLE GLAZING WHERE THE BOTTOM EXPOSED EDGE OF THE GLASS IS 25'-0" OR MORE ABOVE ANY GRADE, ROOF, WALKING SURFACE OR OTHER HORIZONTAL OR SLOPED (WITHIN 45° OF HORIZONTAL) SURFACE ADJACENT TO THE GLASS EXTERIOR.

2406.4.4 GLAZING IN GUARDS AND RAILINGS.

- GLAZING IN GUARDS & RAILINGS, INCLUDING STRUCTURAL BALUSTER PANELS & NONSTRUCTURAL IN-FILL PANELS, REGARDLESS OF AREA OR HEIGHT ABOVE A WALKING SURFACE SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

2406.4.5 GLAZING AND WET SURFACES

- GLAZING IN WALLS, ENCLOSURES OR FENCES CONTAINING OR FACING HOT TUBS, SPAS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS, SHOWERS & INDOOR OR OUTDOOR SWIMMING POOLS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" MEASURED VERTICALLY ABOVE ANY STANDING OR WALKING SURFACE SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION. THIS SHALL APPLY TO SINGLE GLAZING AND ALL PANES IN MULTIPLE GLAZING.

EXCEPTION:

1. GLAZING THAT IS MORE THAN 60", MEASURED HORIZONTALLY & IN A STRAIGHT LINE, FROM THE WATER'S EDGE OF A BATHTUB, HOT TUB, SPA, WHIRLPOOL OR SWIMMING POOL.

2406.4.6 GLAZING ADJACENT TO STAIRWAYS AND RAMPS

- GLAZING WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE OF STAIRWAYS, LANDINGS BETWEEN FLIGHTS OF STAIRS & RAMPS SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

EXCEPTIONS:

1. THE SIDE OF A STAIRWAY, LANDING OR RAMP THAT HAS A GUARD COMPLYING WITH THE PROVISIONS OF SECTIONS 1015 AND 1607.9, AND THE PLANE OF THE GLASS IS GREATER THAN 18" FROM THE RAILING.
2. GLAZING 36" OR MORE MEASURED HORIZONTALLY FROM THE WALKING SURFACE.

2406.4.7 GLAZING ADJACENT TO THE BOTTOM STAIRWAY LANDING

- GLAZING ADJACENT TO THE LANDING AT THE BOTTOM OF A STAIRWAY WHERE THE GLAZING IS LESS THAN 60" ABOVE THE LANDING & WITHIN A 60" HORIZONTAL ARC THAT IS LESS THAN 180° FROM THE BOTTOM TREAD NOSING SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

EXCEPTION:

1. GLAZING THAT IS PROTECTED BY A GUARD COMPLYING WITH CBC SECTIONS 1015 AND 1607.9 WHERE THE PLANE OF THE GLASS IS GREATER THAN 18" FROM THE GUARD.

structural design basis:

VERTICAL DESIGN			LATERAL DESIGN						FOUNDATION DESIGN		
			SEISMIC			WIND					
LOAD		#/SF	ITEM		VALUE	ITEM		VALUE	ITEM		VALUE
ROOF DEAD	=	18	SITE CLASS	=	D	BASIC WIND SPEED	=	110 MPH	SOIL	=	TYPE 5
ROOF LIVE	=	20	IMPORTANCE FACTOR, I	=	1.0	IMPORTANCE FACTOR	=	1.0	SITE CLASS	=	D, LATERAL DESIGN
ROOF SNOW	=	N/A	OCCUPANCY CATEGORY	=	II	OCCUPANCY CATEGORY	=	II	SOIL BEARING PRESSURE	=	1,000 #/SF
FLOOR DEAD	=	15	SEISMIC DESIGN CATEGORY	=	D	WIND EXPOSURE CATEGORY	=	B	RETAINING WALLS		
FLOOR LIVE	=	40	Ss	=	1.104	HEIGHT & EXPOSURE ADJ. COEFF.	=	1.0	RESTRAINED LOAD (EFP)	=	N/A
			SI	=	0.425	TOPO ADJ. FACTOR	=	1.0	CANTILEVER LOAD (EFP)	=	N/A
			Sds	=	0.779	SIMPLIFIED DESIGN WIND PRESSURE	=	26.6 #/SF (Ps30)	PASSIVE SOIL PRESSURE	=	N/A
			Sdl	=	0.446	DESIGN WIND PRESSURE	=	16.0 #/SF	COEFFICIENT OF FRICTION	=	N/A
			LATITUDE	=	33.191				SOILS REPORT		
			LONGITUDE	=	-117.423				BY	=	N/A
			PLYWOOD SHEAR, R	=	6.5						
			SEISMIC FORCE RESISTING SYSTEMS :								
			Cs = Sds/(R/I) = 0.120/1.4 (ASD)								
			V = Cs • W (ASD) = 0.086 • W								

2022 cbc/crc shear panel schedule:

SHEAR PANEL DESIGNATION (X) SP LENGTH (FT)	STRUCTURAL 1 APA-RATED WOOD STRUCTURAL PANEL THICKNESS	COMMON NAIL SPACING @ BOUNDARIES & EDGES (BN &EN) FIELD NAILING (FN) @ 12" OC OC (INCH)	ALLOWABLE SHEAR/FT W/ WOOD STUDS @ 16" OC #/FT	SLIDING ANCHOR SYSTEM [4] 5/8" Ø ANCHOR BOLT SPACING [2] 2x SILL - V=1184# 3x SILL - V=1520# OC (INCH)	FRAMING CLIP SPACING V=450# - SIMPSON CO A35, OAE OC (INCH)	16d COMMON NAIL SPACING [3] 2x SOLE PLATE ONLY V=121# OC (INCH)	1/2"Ø LAG SCREW SPACING [5] 2x SOLE PLATE ONLY V=880# OC (INCH)
A	3/8"	8d@6	280	48	18	5	23
B [1]	15/32"	8d@4	430	42	12	3	15
C [1]	15/32"	8d@3	550	32	9	2	12
D [1]	15/32"	8d@2	730	24	7	→	9
E [1]	15/32"	8d@2	870	20	6	→	6
SW	SIMPSON CO. STRONGWALL (SEE ATTACHED DETAIL SHEETS IF SPECIFIED FOR PROJECT)						
WSW	SIMPSON CO. WOOD STRONGWALL (SEE ATTACHED DETAIL SHEETS IF SPECIFIED FOR PROJECT)						
SSW	SIMPSON CO. STEEL STRONGWALL (SEE ATTACHED DETAIL SHEETS IF SPECIFIED FOR PROJECT)						
HF	HARDY FRAME (SEE ATTACHED DETAIL SHEETS IF SPECIFIED FOR PROJECT)						

FOOTNOTES:

1. FRAMING AT FOUNDATION SILL PLATES AND ADJOINING PANEL EDGE STUDS SHALL BE A SINGLE 3X NOMINAL MEMBER, AND ALL NAILS SHALL BE STAGGERED W/ 1/2" EDGE DISTANCE. 2X NOMINAL SOLE PLATE MAY BE USED AT RAISED FLOOR AND UPPER LEVELS.
2. SIMPSON CO BP 5/8 BEARING PLATES (LARR 25293), OR EQUAL, SHALL BE USED WITH ALL 5/8"Ø ANCHORS. 5/8"Ø SIMPSON WEDGE-ALL WEDGE ANCHORS (ICBO ER-3631) MAY BE USED IN LIEU OF 5/8"Ø ANCHOR BOLTS AT EXISTING FOOTINGS WITH SAME SPACING PER TABLE ABOVE.
3. ALL SILL NAILING SHALL BE STAGGERED A 1/2" MINIMUM, TYPICAL.
4. WHEN A SHEAR PANEL IS SPECIFIED ON BOTH SIDES OF A WALL, ALL SLIDING ANCHOR CONNECTORS SHALL BE ATTACHED WITH SPACINGS FROM THE TABLE ABOVE TO BE REDUCED BY HALF.
5. MINIMUM 4" PENETRATION INTO 4x MATERIAL.

2022 CBC TABLE 2304.10.2 FASTENING SCHEDULE

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[2]	SPACING AND LOCATION
ROOF		
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS OR TRUSSES TO TOP PLATE OR OTHER FRAMING BELOW	4-8d BOX (2-1/2"x0.113"); OR 3-8d COMMON (2-1/2"x0.131"); OR 3-10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	EACH END, TOENAIL
BLOCKING BETWEEN RAFTERS OR TRUSS NOT AT THE WALL TOP PLATE, TO RAFTER OR TRUSS	2-8d COMMON (2-1/2"x0.131"); OR 2-3"x0.131" NAILS; OR 2-3" 14 GAGE STAPLES 2-16d COMMON (3-1/2"x0.162"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	EACH END, TOENAIL END NAIL
FLAT BLOCKING TO TRUSS AND WEB FILLER	16d COMMON (3-1/2"x0.162") @ 6"OC; OR 3"x0.131" NAILS @ 6" OC; OR 3"x14 GAGE STAPLES @ 6" OC	FACE NAIL
2. CEILING JOISTS TO TOP PLATE	3-8d COMMON (2-1/2"x0.131"); OR 3-10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	EACH JOIST, TOENAIL
3. CEILING JOIST NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITIONS (NO THRUST) (SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1)	3-16d COMMON (3-1/2"x0.162"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-3" 14 GAGE STAPLES,7/16" CROWN	FACE NAIL
4. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT) (SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1)	PER TABLE 2308.7.3.1	FACE NAIL
5. COLLAR TIE TO RAFTER	3-10d COMMON (3"x0.148"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-3"x14 GAGE STAPLES,7/16" CROWN	FACE NAIL
6. RAFTER OR TRUSS TO TOP PLATE (SEE SECTION 2308.7.5, TABLE 2308.7.5)	3-10d COMMON (3"x0.148"); OR 3-16d BOX (3-1/2"x0.135"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-3" 14 GAGE STAPLES,7/16" CROWN	2 TOENAILS ON ONE SIDE AND 1 TOENAIL ON OPPOSITE SIDE OF RAFTER OR TRUSS[c]
7. ROOF RAFTERS TO RIDGE, VALLEY OR HIP RAFTERS; OR ROOF RAFTER TO 2-INCH RIDGE BEAM	2-16d COMMON (3-1/2"x0.162"); OR 3-16d BOX (3-1/2"x0.135"); OR 3-10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN; OR	END NAIL
	3-16d BOX (3-1/2"x0.135"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-3" 14 GAGE STAPLES,7/16" CROWN	TOENAIL
WALL		
8. STUD TO STUD (NOT AT BRACED WALL PANELS)	16d COMMON (3-1/2"x0.162"), 10d BOX (3"x0.128"); OR 3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	24" OC, FACE NAIL 16" OC, FACE NAIL
9. STUD TO STUD AND ABUTTING STUDS AT INTERSECTING WALL CORNERS (AT BRACED WALL PANELS)	16d COMMON (3-1/2"x0.162") 16d BOX (3-1/2"x0.135"); OR 3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	16" OC, FACE NAIL 12" OC, FACE NAIL
10. BUILT-UP HEADER (2" TO 2" HEADER)	16d COMMON (3-1/2"x0.162"); OR	16" OC, EA EDGE, FACE NAIL
11. CONTINUOUS HEADER TO STUD	16d BOX (3-1/2"x0.135"); OR 4-8d COMMON (2-1/2"X.131"); OR 4-10d BOX (3"x0.128"); OR 5-8d BOX (2-1/2"x0.113")	12" OC, EA EDGE; FACE NAIL TOENAIL
12. TOP PLATE TO TOP PLATE	16d COMMON (3-1/2"x0.162") 10d BOX (3"x0.128"); OR 3"x0.131" NAILS; OR 3" 14 GAGE STAPLES,7/16" CROWN	16" OC, FACE NAIL 12" OC, FACE NAIL
13. TOP PLATE TO TOP PLATE, AT END JOINTS	8-16d COMMON (3-1/2"x0.162"); OR 12-16d BOX (3-1/2"x0.135"); OR 12-10d BOX (3"x0.128"); OR 12-3"x0.131" NAILS; OR 12-3" 14 GAGE STAPLES,7/16" CROWN	EA SIDE OF END JOINT, FACE NAIL (MINIMUM 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT)
14. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING (NOT AT BRACED WALL PANELS)	16d COMMON (3-1/2"x0.162") 16d BOX (3"x0.135"); OR 3" 14 GAGE STAPLES,7/16" CROWN	16" OC, FACE NAIL 12" OC, FACE NAIL
15. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING AT BRACED WALL PANELS	2- 16d COMMON (3-1/2"x0.162"); OR 3-16d BOX (3"x0.135"); OR 4-3"x0.131" NAILS; OR 4-3" 14 GAGE STAPLES,7/16" CROWN	16" OC, FACE NAIL
16. STUD TO TOP OR BOTTOM PLATE	3-16d BOX (3-1/2"x0.135"); OR 4-8d COMMON (2-1/2"x0.131"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-8d BOX (2-1/2"x0.113"); OR 4-3" 14 GAGE STAPLES,7/16" CROWN; OR	TOENAIL
	2-16d COMMON (3-1/2"x0.162"); OR 3- 16d BOX (3"x0.135"); OR 3- 10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	END NAIL
17. TOP PLATES, LAP AT CORNERS AND INTERSECTIONS	2-16d COMMON (3-1/2"x0.162"); OR 3-10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	END NAIL
18. 1" BRACE TO EACH STUD AND PLATE	3-8d BOX (2-1/2"x0.131"); OR 2-8d COMMON (2-1/2"x0.113"); OR 2-10d BOX (3"x0.128"); OR 2-3"x0.131" NAILS; OR 2-3" 14 GAGE STAPLES,7/16" CROWN	FACE NAIL
19. 1"x6" SHEATHING TO EACH BEARING	3-8d BOX (2-1/2"x0.113"); OR 2-8d COMMON (2-1/2"x0.131"); OR 2-10d BOX (3"x0.128") 2-1-3/4" 16 GAGE STAPLES,1" CROWN	FACE NAIL
20. 1"x8" AND WIDER SHEATHING TO BEARING	3-8d COMMON (2-1/2"x0.131"); OR 3-8d BOX (2-1/2"x0.113"); OR 3-10d BOX (3"x0.128"); OR 3-1-3/4" 16 GAGE STAPLES,1" CROWN WIDER THAN 1 2: 4-8d COMMON (2-1/2"x0.131"); OR 4-8d BOX (2-1/2"x0.113"); OR 4-10d BOX (3"x0.128"); OR 4-1-3/4" 16 GAGE STAPLES,1" CROWN	FACE NAIL
FLOOR		
21. JOIST TO SILL, TOP PLATE OR GIRDER	4-8d BOX (2-1/2"x0.113"); OR 3-8d COMMON (2-1/2"x0.131"); OR FLOOR 3-10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	TOENAIL
	8d BOX (2-1/2"x0.113"); OR	4" OC, TOENAIL
22. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER FRAMING BELOW	8d COMMON (2-1/2"x0.131"); OR 10d BOX (3"x0.128"); OR 3"x0.131" NAILS; OR 3"x14 GAGE STAPLES,7/16" CROWN	6" OC, TOENAIL
23. 1"x6" SUBFLOOR OR LESS TO EACH JOIST	3-8d BOX (2-1/2"x0.113"); OR 2-8d COMMON (2-1/2"x0.131"); OR 3-10d BOX (3"x0.128"); OR 2-1-3/4" 16 GAGE STAPLES,1" CROWN	FACE NAIL
24. 2" SUBFLOOR TO JOIST OR GIRDER	3- 16d BOX (3-1/2"x0.135"); OR 2- 16d COMMON (3-1/2"x0.162");	BLIND & FACE NAIL
25. 2" PLANKS (PLANK & BEAM - FLOOR & ROOF)	3- 16d BOX (3-1/2"x0.135"); OR 2- 16d COMMON (3-1/2"x0.162")	EACH BEARING, FACE NAIL
26. BUILT-UP GIRDERS AND BEAMS, 2" LUMBER LAYERS	20d COMMON (4"x0.192") 10d BOX (3"x0.128"); OR 3"x0.131" NAILS; OR 3" 14 GAGE STAPLES,7/16" CROWN AND: 2- 20d COMMON (4"x0.192") 3- 10d BOX (3"x0.128"); OR 3-3"x0.131" NAILS; OR 3-3" 14 GAGE STAPLES,7/16" CROWN	32" OC, FACE NAIL AT TOP & BOTTOM STAGGERED ON OPPOSITE SIDES 24" OC, FACE NAIL AT TOP & BOTTOM STAGGERED ON OPPOSITE SIDES ENDS AND AT EACH SPLICE, FACE NAIL
27. LEDGER STRIP SUPPORTING JOISTS OR RAFTERS	3- 16d COMMON (3-1/2"x0.162"); OR 4-16d BOX (3-1/2"x0.135"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-3" 14 GAGE STAPLES,7/16" CROWN	EACH JOIST OR RAFTER, FACE NAIL
28. JOIST TO BAND JOIST OR RIM JOIST	3- 16d COMMON (3-1/2"x0.162"); OR 4-10d BOX (3"x0.128"); OR 4-3"x0.131" NAILS; OR 4-3"x14 GAGE STAPLES,7/16" CROWN	END NAIL
29. BRIDGING OR BLOCKING TO JOIST, RAFTER OR TRUSS	2-8d COMMON (2-1/2"x0.131"); OR 2-10d BOX (3"x0.128"); OR 2-3"x0.131" NAILS; OR 2-3"x14 GAGE STAPLES,7/16" CROWN	EACH END, TOE NAIL
WOOD STRUCTURAL PANELS (WSP), SUBFLOOR, ROOF AND INTERIOR WALL SHEATHING TO FRAMING AND PARTICLE BOARD WALL SHEATHING TO FRAMING[d]		
	FIELD = INTERMEDIATE SUPPORTS	EDGES - FIELD (INCHES)
30. 3/8" - 1/2"	6d COMMON OR DEFORMED (2" x 0.113"); OR 2-3/8" x 0.113" NAIL (SUBFLOOR & WALL)	6 - 12
	8d COMMON OR DEFORMED (2-1/2"x0.131"x 0.281" HEAD) (ROOF) OR RSRS-01 (2-3/8"x0.113") NAIL (ROOF)[d]	6" - 6"
	1-3/4" 16 GAGE STAPLE, 7/16" CROWN (SUBFLOOR & WALL)	4 - 8
	2-3/8" x 0.113" x 0.266" HEAD NAIL (ROOF)	3" - 3"
	1-3/4" 16 GAGE STAPLE, 7/16" CROWN (ROOF)	3" - 3"
31. 19/32" - 3/4"	8d COMMON (2-1/2"x0.131"); OR DEFORMED (2" x 0.113")(SUBFLOOR &WALL)	6 - 12
	8d COMMON OR DEFORMED (2-1/2" x 0.113" x 0.281" HEAD) (ROOF) OR RSRS-01 (2-3/8" x 0.113") NAIL (ROOF)[d]	6" - 6"
	2-3/8" x 0.131" x 0.266" HEAD NAIL; OR 2" 16 GAGE STAPLE, 7/16" CROWN	4 - 8
32. 7/8" - 1-1/4"	10d COMMON (3" x 0.148"); OR DEFORMED (2-1/2" x 0.131" x 0.281" HEAD)	6-12
OTHER EXTERIOR WALL SHEATHING		
33. 1/2" FIBERBOARD SHEATHING [h]	1-1/2" x 0.120" GALVANIZED ROOFING NAIL (7/16" HEAD) (I); OR 1-1/4" 16 GAGE STAPLE W/ 7/16" OR 1" CROWN	3 - 6
34. 5/8" FIBERBOARD SHEATHING [h]	1-3/4" x 0.120" GALVANIZED ROOFING NAIL (7/16" HEAD (I); OR 1-1/2" 16 GAGE STAPLE W/ 7/16" OR 1" CROWN	3 - 6
WOOD STRUCTURAL PANELS, COMBINATION SUBFLOOR UNDERLAYMENT TO FRAMING		
35. 3/4" AND LESS	8d COMMON (2-1/2" x 0.131"); OR DEFORMED (2" x 0.113"); OR DEFORMED (2" x 0.120")	6 - 12
36. 7/8" - 1"	8d COMMON (2-1/2" x 0.131"); OR DEFORMED (2-1/2" x 0.113"); OR DEFORMED (2-1/2" x 0.120")	6 - 12
37. 1- 1/8" - 1- 1/4"	10d COMMON (3" x 0.148"); OR DEFORMED (2-1/2" x 0.131") DEFORMED (2-1/2" x 0.120")	6 - 12
PANEL SIDING TO FRAMING		
38. 1/2" OR LESS	6d CORROSION-RESISTANT SIDING (1-7/8" x 0.106"); OR 6d CORROSION-RESISTANT CASING (2" x 0.099")	6 - 12
39. 5/8"	8d CORROSION-RESISTANT SIDING (2-3/8" x 0.128"); OR 8d CORROSION-RESISTANT CASING (2-1/2" x 0.113")	6 - 12
INTERIOR PANELING		
40. 1/4"	4d CASING (1-1/2" x 0.080"); OR 4d FINISH (1-1/2" x 0.072")	6 - 12
41. 3/8"	6d CASING (2" x 0.099"); OR 6d FINISH (2" x 0.092") (PANEL SUPPORTS @ 24")	6 - 12

FOR SI: 1 INCH = 25.4 MM

a. NAILS SPACED @ 6" AT INTERMEDIATE SUPPORTS (FIELD) WHERE SPANS ARE 48" OR MORE. FOR NAILING OF WOOD STRUCTURAL PANEL & PARTICLE BOARD DIAPHRAGMS & SHEAR WALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX OR CASING.

b. SPACING SHALL BE @ 6" OC ON THE EDGES & @ 12" OC @ INTERMEDIATE SUPPORTS (FIELD) FOR NON-STRUCTURAL APPLICATIONS. PANEL SUPPORTS @ 16" OC (20" OC IF STRENGTH AXIS IS IN THE LONG DIRECTION OF THE PANEL, UNLESS OTHERWISE MARKED)

c. WHERE A RAFTER IS FASTENED TO AN ADJACENT PARALLEL CEILING JOIST IN ACCORDANCE WITH THIS SCHEDULE & THE CEILING JOIST IS FASTENED TO THE TOP PLATE ACCORDING TO THIS SCHEDULE, THE NUMBER OF TOENAILS IN THE RAFTER SHALL BE PERMITTED TO BE REDUCED BY 1 NAIL.

d. RSRS-01 IS A ROOF SHEATHING RING SHANK NAIL MEETING SPECIFICATIONS IN ASTM F1667.

e. TABULATED FASTENER REQUIREMENTS APPLY WHERE THE ULTIMATE DESIGN WIND SPEED IS LESS THAN 140 MPH. FOR WOOD STRUCTURAL PANEL ROOF SHEATHING ATTACHED TO GABLE-END ROOF FRAMING & TO INTERMEDIATE SUPPORTS (FIELD) WITHIN 48" OF ROOF EDGES & RIDGES, NAILS SHALL BE SPACED @ 4" OC WHERE THE ULTIMATE DESIGN WIND SPEED IS GREATER THAN 130 MPH IN EXPOSURE B OR GREATER THAN 110 MPH IN EXPOSURE C. SPACING EXCEEDING 6" OC @ INTERMEDIATE SUPPORTS (FIELD) SHALL BE PERMITTED WHERE THE FASTENING IS DESIGNED PER THE AWC NDS.

f. FASTENING IS ONLY PERMITTED WHERE THE ULTIMATE DESIGN WIND SPEED IS LESS THAN OR EQUAL TO 110 MPH.

g. NAILS & STAPLES ARE CARBON STEEL MEETING THE SPECIFICATIONS OF ASTM F1667. CONNECTIONS USING NAILS & STAPLES OF OTHER MATERIALS, SUCH AS STAINLESS STEEL, SHALL BE DESIGNED BY ACCEPTABLE ENGINEERING PRACTICE OR APPROVED PER SECTION104.11.

2304.10.2.1 ADDITIONAL REQUIREMENTS. FASTENERS USED FOR THE ATTACHMENT OF EXTERIOR WALL COVERINGS SHALL BE HOT-DIPPED ZINC-COATED GALVANIZED STEEL, MECHANICALLY DEPOSITED ZINC-COATED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. THE COATINGS WEIGHTS FOR HOT-DIPPED ZINC-COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A153. THE COATING WEIGHTS FOR MECHANICALLY DEPOSITED ZINC-COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM B695, CLASS 55 MINIMUM.

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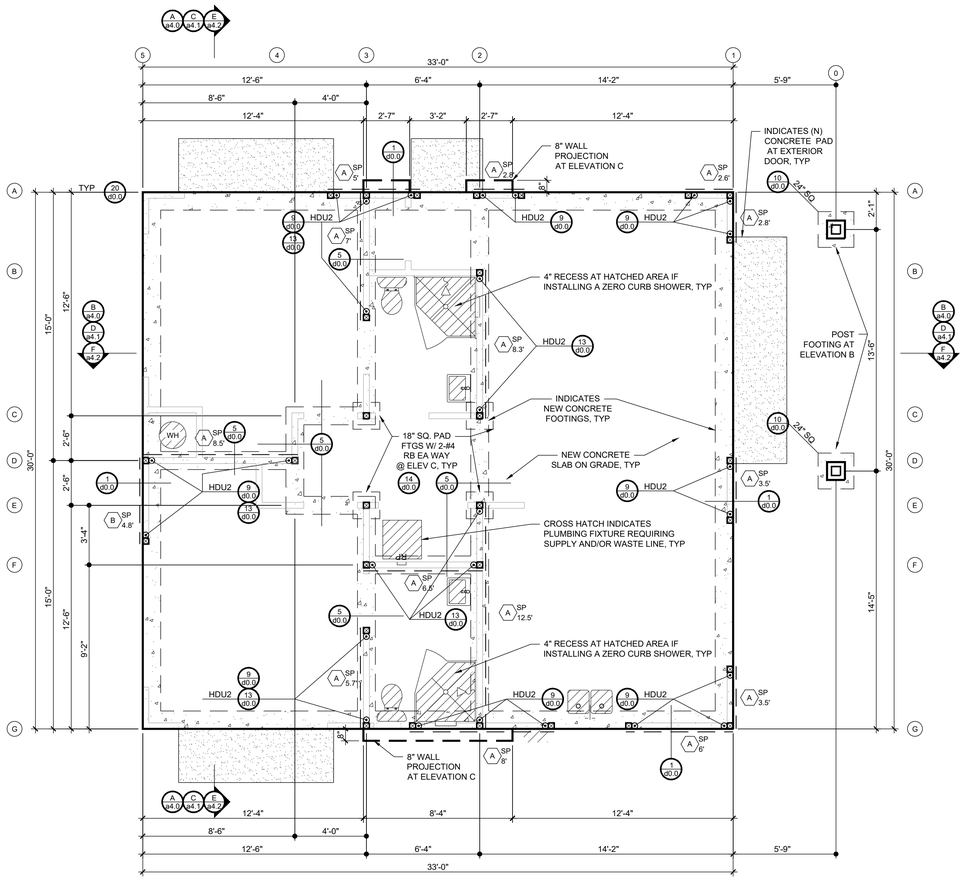
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

STRUCTURAL NOTES

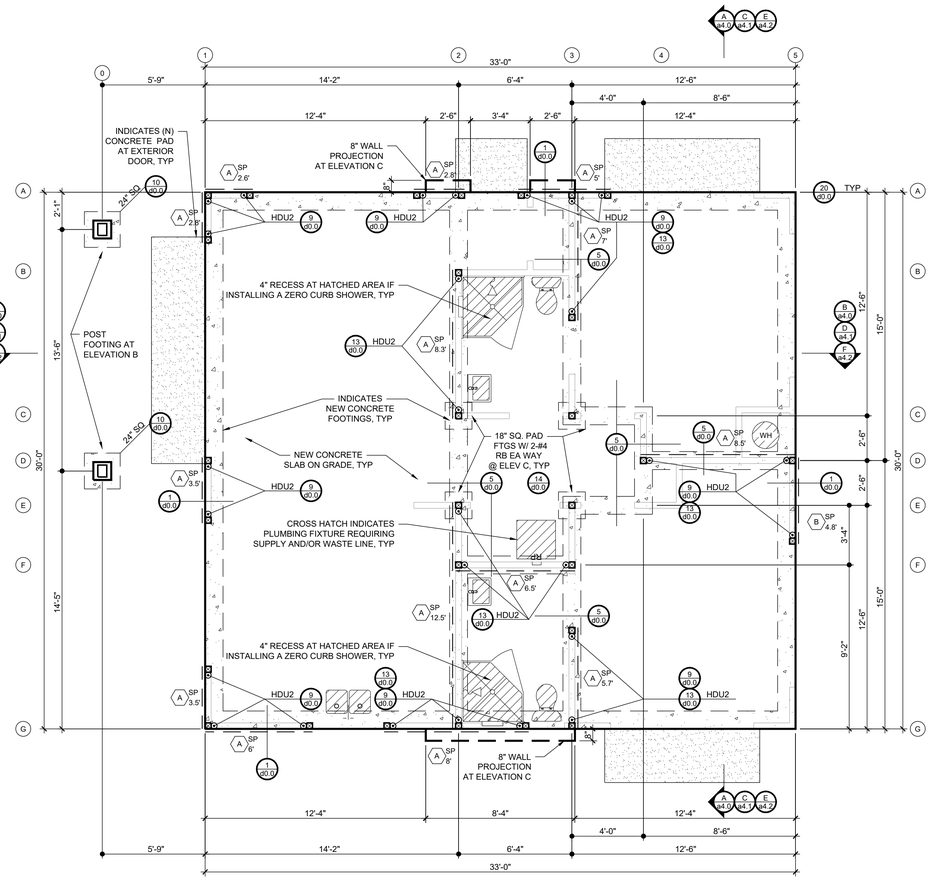
s0.0



1 reverse foundation plan

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

0 1' 5' 10' 20'



2 foundation plan

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

0 1' 5' 10' 20'

foundation plan notes:

1. EXPANSIVE SOIL LOCATIONS SHALL SUBSTITUTE DETAIL 2/d0.0 FOR DETAIL 1/d0.0 AT PERIMETER FOOTINGS.
2. EXPANSIVE SOIL LOCATIONS SHALL SUBSTITUTE DETAIL 6/d0.0 FOR DETAIL 5/d0.0 AT INTERIOR FOOTINGS.
3. ROOF FRAMING PLAN FOR OTHER ELEVATIONS [B] MAY HAVE DIFFERENT SHEAR PANEL LENGTHS. VERIFY SHEAR PANEL LENGTHS WITH ROOF FRAMING PLAN PRIOR TO PLACING HOLD DOWN AND/OR ANCHOR BOLTS.
4. SLAB ON GRADE TO HAVE 6 MIL MINIMUM POLYETHYLENE OR APPROVED VAPOR RETARDER WITH JOINTS LAPPED NOT LESS THAN 6 INCHES BELOW THE SLAB ON GRADE PER CRC SECTION R506.2.3

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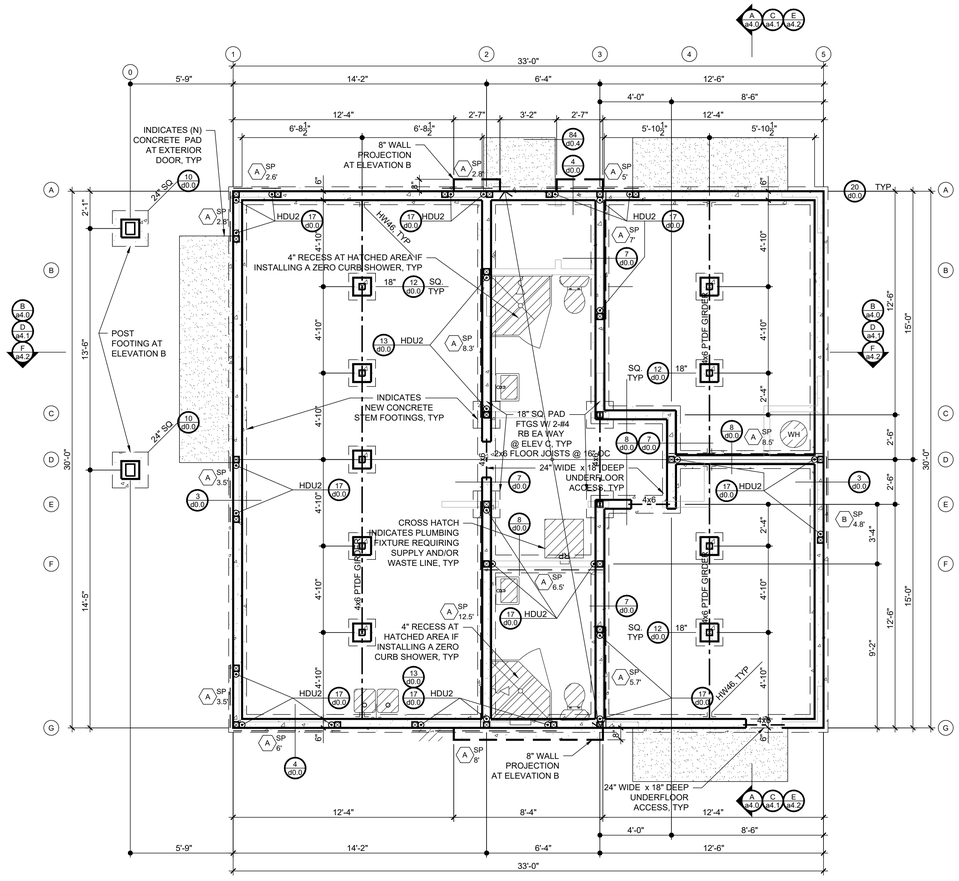
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

FOUNDATION PLAN + REVERSE FOUNDATION PLAN

s1.0



1 raised floor foundation

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

0 1" 5" 10" 20"

raised floor foundation notes:

1. EXPANSIVE SOIL LOCATIONS SHALL PROVIDE FOOTING DIMENSIONS SPECIFIED IN DETAILS 3, 4, 7, 8 & 12/d0.0 FOR EXPANSIVE SOILS.
2. ROOF FRAMING PLAN FOR OTHER ELEVATIONS [B] MAY HAVE DIFFERENT SHEAR PANEL LENGTHS. VERIFY SHEAR PANEL LENGTHS WITH ROOF FRAMING PLAN PRIOR TO PLACING HOLD DOWN AND/OR ANCHOR BOLTS.
3. PROVIDE FOUNDATION VENTS FOR RAISED FLOOR AREA AT 1 SQ. FT. OF VENT AREA FOR EVERY 150 SQ. FT. OF RAISED FLOOR AREA. 990/150 = 6.6 SQ. FT. EIGHTEEN [18] 4"x14" FOUNDATION VENTS ARE REQUIRED AND SHALL BE EVENLY DISTRIBUTED AT THE FOUNDATION PERIMETER. CRC §408.1
4. PROVIDE A 18"x24" FOUNDATION ACCESS TO RAISED FLOOR FOUNDATION AREAS. CRC §408.4
5. PROVIDE R-19 BATT INSULATION AT UNDER-FLOOR JOISTS, TYP.
6. FLOOR DIAPHRAGM SHALL BE 23/32" APA STURD-I-FLOOR, EXPOSURE 1, 40/20, TONGUE & GROOVE WITH 10d COMMON NAILS @ 6" OC AT BOUNDARY (BN) & PANEL EDGE NAILING (EN) AND 12" OC AT INTERMEDIATE FRAMING MEMBERS (FN).

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2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

RAISED FLOOR FOUNDATION PLAN

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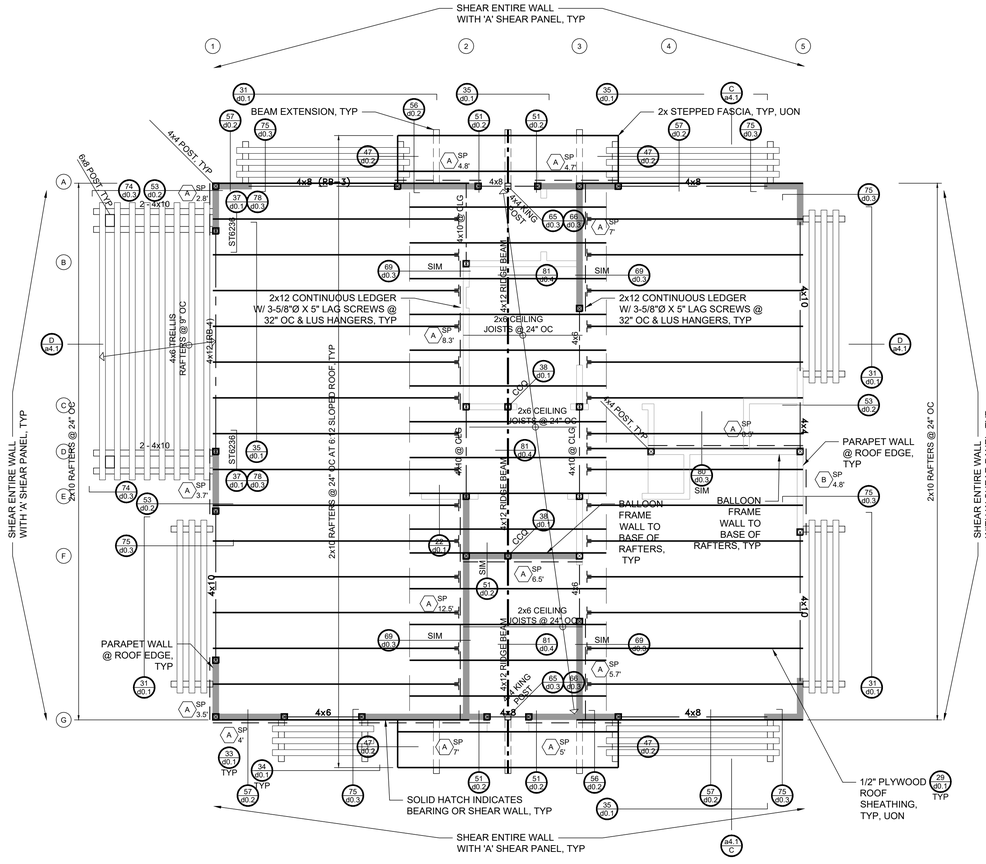
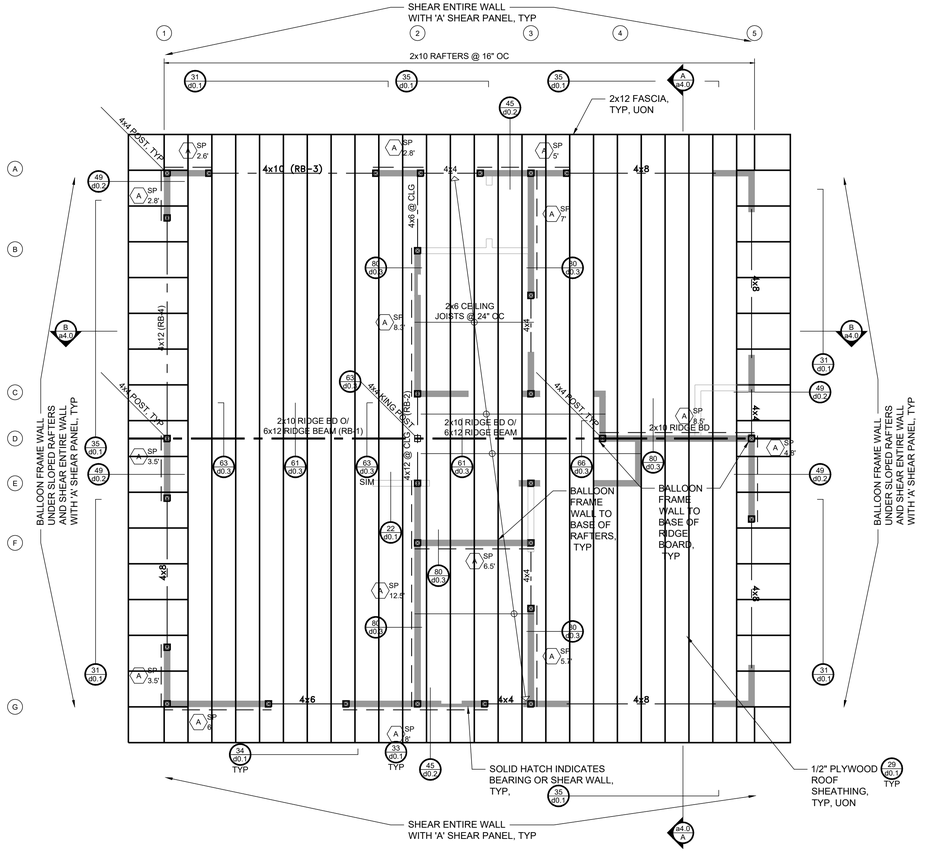


1 roof framing plan b

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

0 1' 5' 10' 20'



2 roof framing plan a

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

0 1' 5' 10' 20'

roof framing plan notes:

1. ENCLOSED RAFTER SPACES DO NOT REQUIRE VENTING IF THE FOLLOWING SPECIFIC INSULATION DESIGN IS USED, PER SECTIONS R806.5/EM3.9.6:
   a. IF THE INSULATION IS AIR-**PERMEABLE** AND IT IS INSTALLED DIRECTLY BELOW THE ROOF SHEATHING WITH RIGID BOARD OR SHEET INSULATION WITH A MINIMUM R-5 VALUE INSTALLED ABOVE THE ROOF SHEATHING. (OR)
   b. IF THE INSULATION IS AIR-**IMPERMEABLE** AND IT IS IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING. (OR)
   c. IF **TWO LAYERS** OF INSULATION ARE INSTALLED BELOW THE ROOF SHEATHING: AN **AIR-IMPERMEABLE** LAYER IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING AND AN ADDITIONAL LAYER **OF AIR PERMEABLE** INSULATION INSTALLED DIRECTLY UNDER THE AIR-IMPERMEABLE INSULATION.

   DETAILS 86, 87 & 88/d0.4 PROVIDE MORE INFORMATION ABOUT THESE ROOF INSULATION ALTERNATIVES.
2. ROOF DIAPHRAGM SHALL BE 15/32" APA RATED SHEATHING (MIN), EXPOSURE 1, 24/0 MAXIMUM SPAN RATING WITH 8d COMMON NAILS @ 6" OC AT BOUNDARY (BN) & PANEL EDGE NAILING (EN) AND 12" OC AT INTERMEDIATE FRAMING MEMBERS (FN).
3. 4X6 IS THE MINIMUM MEMBER ALLOWED AT A TRELLIS.
4. TRELLIS MEMBERS AND OTHER WEATHER EXPOSED MEMBERS SHALL BE PRESSURE TREATED DOUGLAS FIR (PTDF) OR NATURALLY PEST AND ROT RESISTANT WOOD SPECIES SUCH AS REDWOOD OR CEDAR, TYP,OAE

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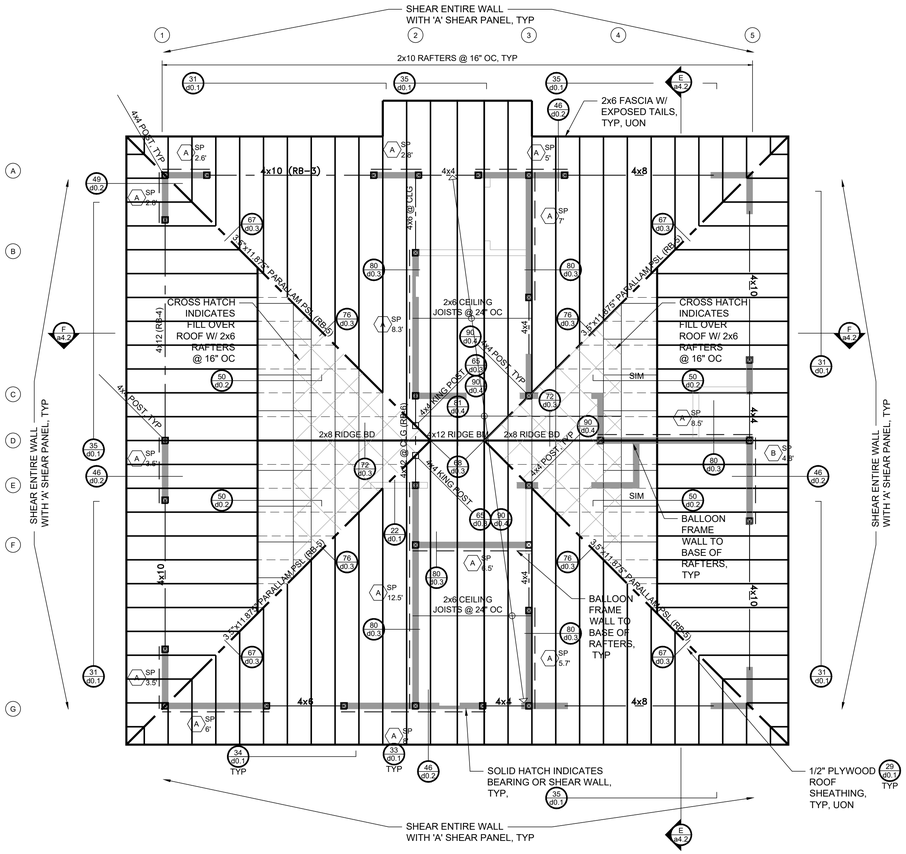
2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

ROOF FRAMING PLAN A + B

s2.0



3 roof framing plan c

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

0 1' 5' 10' 20'

roof framing plan notes:

1. ENCLOSED RAFTER SPACES DO NOT REQUIRE VENTING IF THE FOLLOWING SPECIFIC INSULATION DESIGN IS USED, PER SECTIONS R806.5/EM3.9.6:
   a. IF THE INSULATION IS AIR-**PERMEABLE** AND IT IS INSTALLED DIRECTLY BELOW THE ROOF SHEATHING WITH RIGID BOARD OR SHEET INSULATION WITH A MINIMUM R-5 VALUE INSTALLED ABOVE THE ROOF SHEATHING. (OR)
   b. IF THE INSULATION IS AIR-**IMPERMEABLE** AND IT IS IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING. (OR)
   c. IF **TWO LAYERS** OF INSULATION ARE INSTALLED BELOW THE ROOF SHEATHING: AN **AIR-IMPERMEABLE** LAYER IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING AND AN ADDITIONAL LAYER **OF AIR PERMEABLE** INSULATION INSTALLED DIRECTLY UNDER THE AIR-IMPERMEABLE INSULATION.

   DETAILS 86, 87 & 88/d0.4 PROVIDE MORE INFORMATION ABOUT THESE ROOF INSULATION ALTERNATIVES.
2. ROOF DIAPHRAGM SHALL BE 15/32" APA RATED SHEATHING (MIN), EXPOSURE 1, 24/0 MAXIMUM SPAN RATING WITH 8d COMMON NAILS @ 6" OC AT BOUNDARY (BN) & PANEL EDGE NAILING (EN) AND 12" OC AT INTERMEDIATE FRAMING MEMBERS (FN).
3. 4X6 IS THE MINIMUM MEMBER ALLOWED AT A TRELLIS.
4. TRELLIS MEMBERS AND OTHER WEATHER EXPOSED MEMBERS SHALL BE PRESSURE TREATED DOUGLAS FIR (PTDF) OR NATURALLY PEST AND ROT RESISTANT WOOD SPECIES SUCH AS REDWOOD OR CEDAR, TYP,OAE

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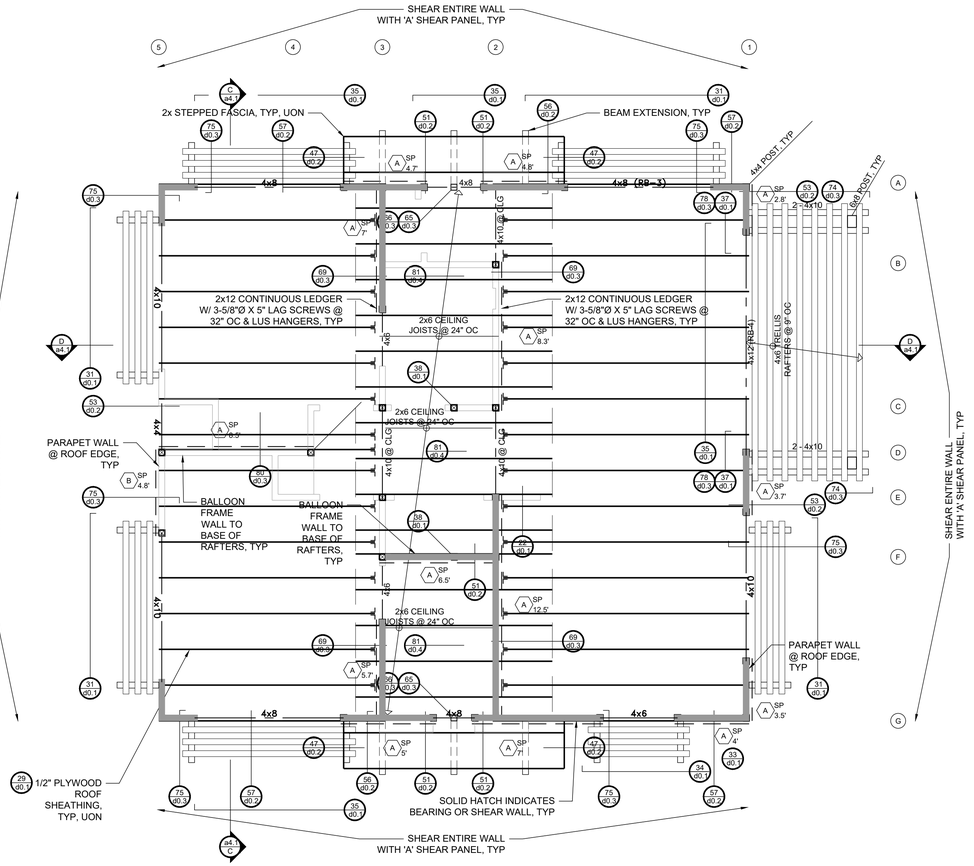
ROOF FRAMING PLAN C

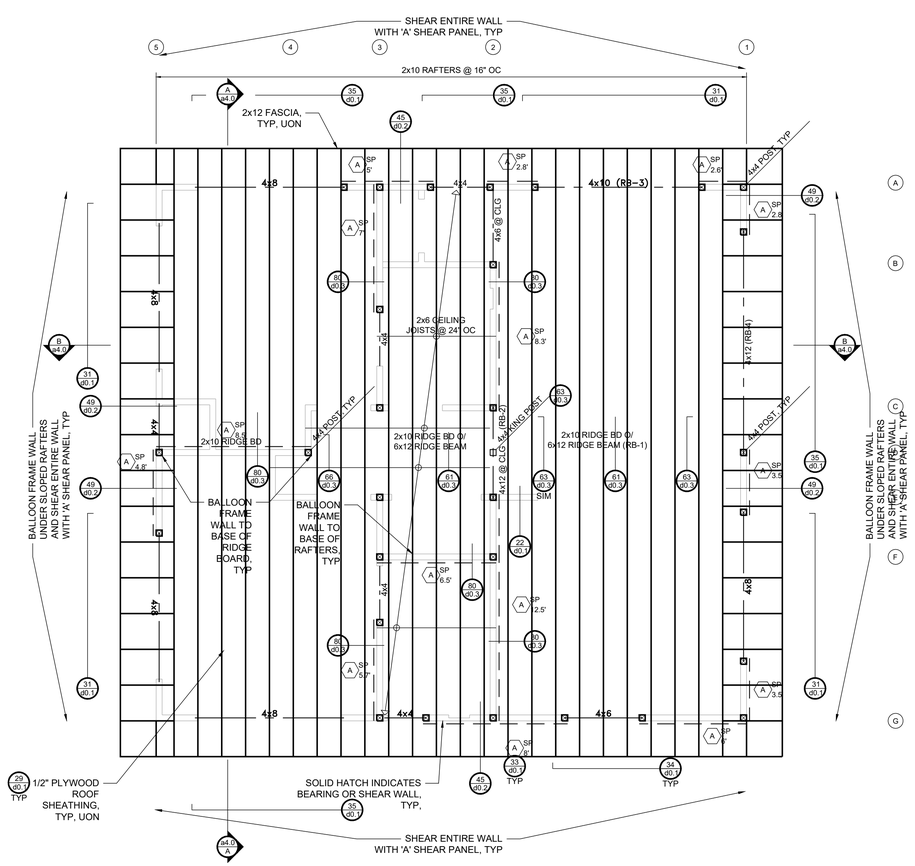
s2.1



1 reverse roof framing plan b

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

0 1' 5' 10' 20'



2 reverse roof framing plan a

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

0 1' 5' 10' 20'

roof framing plan notes:

1. ENCLOSED RAFTER SPACES DO NOT REQUIRE VENTING IF THE FOLLOWING SPECIFIC INSULATION DESIGN IS USED, PER SECTIONS R806.5/EM3.9.6:
   a. IF THE INSULATION IS AIR-**PERMEABLE** AND IT IS INSTALLED DIRECTLY BELOW THE ROOF SHEATHING WITH RIGID BOARD OR SHEET INSULATION WITH A MINIMUM R-5 VALUE INSTALLED ABOVE THE ROOF SHEATHING. (OR)
   b. IF THE INSULATION IS AIR-**IMPERMEABLE** AND IT IS IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING. (OR)
   c. IF **TWO LAYERS** OF INSULATION ARE INSTALLED BELOW THE ROOF SHEATHING: AN **AIR-IMPERMEABLE** LAYER IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING AND AN ADDITIONAL LAYER **OF AIR PERMEABLE** INSULATION INSTALLED DIRECTLY UNDER THE AIR-IMPERMEABLE INSULATION.

   DETAILS 86, 87 & 88/d0.4 PROVIDE MORE INFORMATION ABOUT THESE ROOF INSULATION ALTERNATIVES.
2. ROOF DIAPHRAGM SHALL BE 15/32" APA RATED SHEATHING (MIN), EXPOSURE 1, 24/0 MAXIMUM SPAN RATING WITH 8d COMMON NAILS @ 6" OC AT BOUNDARY (BN) & PANEL EDGE NAILING (EN) AND 12" OC AT INTERMEDIATE FRAMING MEMBERS (FN).
3. 4X6 IS THE MINIMUM MEMBER ALLOWED AT A TRELLIS.
4. TRELLIS MEMBERS AND OTHER WEATHER EXPOSED MEMBERS SHALL BE PRESSURE TREATED DOUGLAS FIR (PTDF) OR NATURALLY PEST AND ROT RESISTANT WOOD SPECIES SUCH AS REDWOOD OR CEDAR, TYP,OAE

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CITY: ANAHEIM

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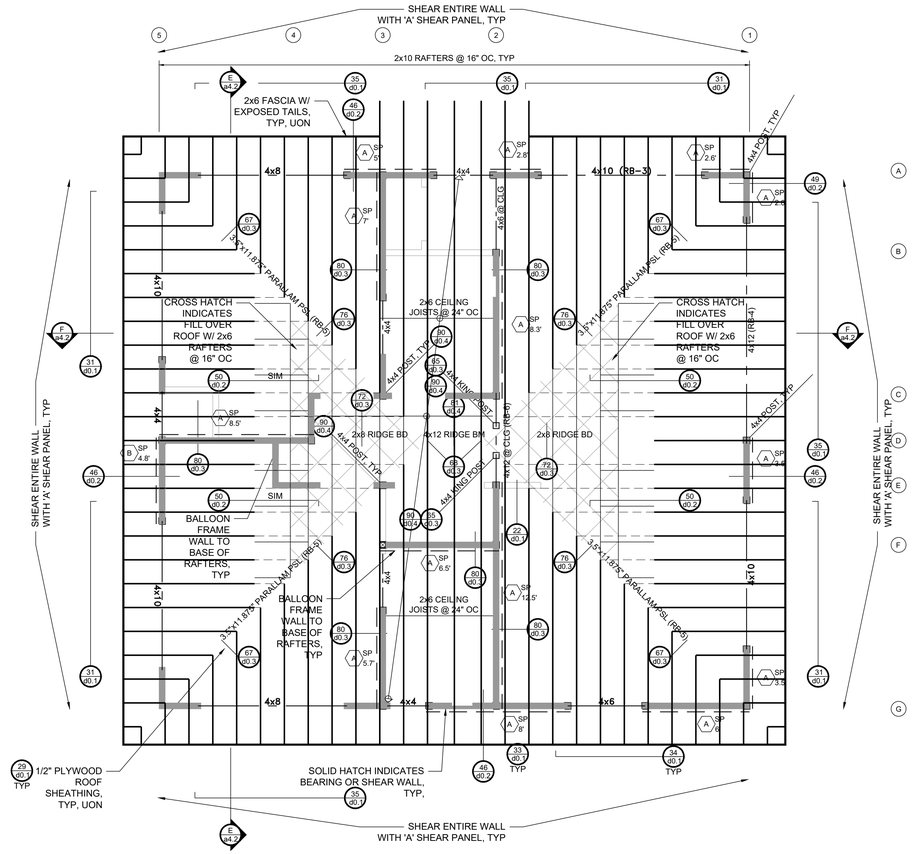
REVERSE ROOF FRAMING PLAN A + B

s2.2



3 reverse roof framing plan c

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

0 1' 5' 10' 20'

roof framing plan notes:

1. ENCLOSED RAFTER SPACES DO NOT REQUIRE VENTING IF THE FOLLOWING SPECIFIC INSULATION DESIGN IS USED, PER SECTIONS R806.5/EM3.9.6:
   a. IF THE INSULATION IS AIR-**PERMEABLE** AND IT IS INSTALLED DIRECTLY BELOW THE ROOF SHEATHING WITH RIGID BOARD OR SHEET INSULATION WITH A MINIMUM R-5 VALUE INSTALLED ABOVE THE ROOF SHEATHING. (OR)
   b. IF THE INSULATION IS AIR-**IMPERMEABLE** AND IT IS IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING. (OR)
   c. IF **TWO LAYERS** OF INSULATION ARE INSTALLED BELOW THE ROOF SHEATHING: AN **AIR-IMPERMEABLE** LAYER IN DIRECT CONTACT WITH THE UNDERSIDE OF THE ROOF SHEATHING AND AN ADDITIONAL LAYER **OF AIR PERMEABLE** INSULATION INSTALLED DIRECTLY UNDER THE AIR-IMPERMEABLE INSULATION.

   DETAILS 86, 87 & 88/d0.4 PROVIDE MORE INFORMATION ABOUT THESE ROOF INSULATION ALTERNATIVES.
2. ROOF DIAPHRAGM SHALL BE 15/32" APA RATED SHEATHING (MIN), EXPOSURE 1, 24/0 MAXIMUM SPAN RATING WITH 8d COMMON NAILS @ 6" OC AT BOUNDARY (BN) & PANEL EDGE NAILING (EN) AND 12" OC AT INTERMEDIATE FRAMING MEMBERS (FN).
3. 4X6 IS THE MINIMUM MEMBER ALLOWED AT A TRELLIS.
4. TRELLIS MEMBERS AND OTHER WEATHER EXPOSED MEMBERS SHALL BE PRESSURE TREATED DOUGLAS FIR (PTDF) OR NATURALLY PEST AND ROT RESISTANT WOOD SPECIES SUCH AS REDWOOD OR CEDAR, TYP, OAE

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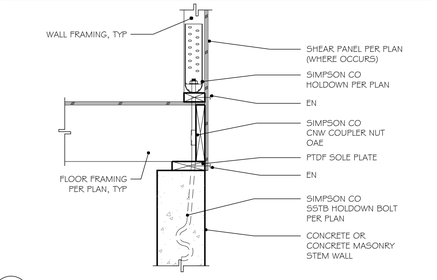
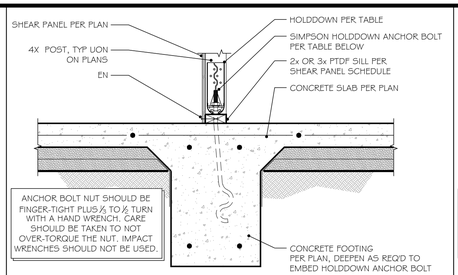
REVERSE ROOF FRAMING PLAN C

s2.3

MODEL NO.	ANCHOR BOLT	CONNECTION TO POST	EMBEDMENT	EDGE DISTANCE	MIN WD MEMBER THICKNESS
HDU2	⅝" (SSTB16)	6-SDS ¼"X2 ½"	12 ⅜"	1 ¾"	3"
HDU4	⅝" (SSTB20)	10-SDS ¼"X2 ½"	16 ⅜"	1 ¾"	3"
HDU5	⅝" (SSTB24)	14-SDS ¼"X2 ½"	20 ⅜"	1 ¾"	3"
HDU8	⅞" (SSTB28)	20-SDS ¼"X2 ½"	24 ⅛"	1 ¾"	3"
HDU11	1" (5B1x30)	30-SDS ¼"X2 ½"	24"	1 ¾"	5 ½"
HDU14	1" (5B1x30)	36-SDS ¼"X2 ½"	24"	1 ¾"	7 ¼"

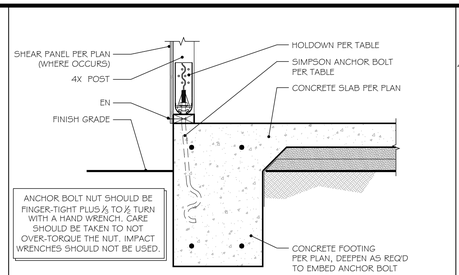


17 HOLDOWN AT STEM WALL FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SW-0096



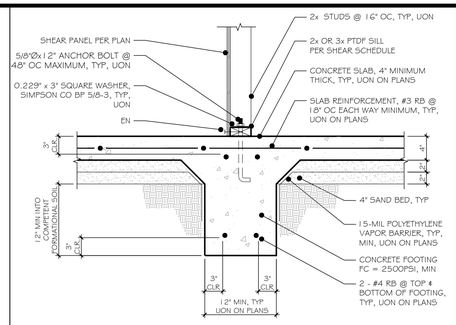
HOLD DOWN	ANCHOR Ø	POST SCREWS	EDGE DISTANCE	EMBED	MIN POST
HDU2	5/8" (SSTB20)	6 SDS ¼" X 2½"	1½"	12"	4X4
HDU4	5/8" (SSTB20)	10 SDS ¼" X 2½"	1½"	16"	4X4
HDU5	**5/8" (SSTB24)**	14 SDS ¼" X 2½"	1½"	20"	4X4
HDU8	**7/8" (SSTB28)**	20 SDS ¼" X 2½"	1½"	24"	4X4
HDU11	**1" (S81X30)**	30 SDS ¼" X 2½"	1½"	24"	4X6
HDU14	**1" (S81X30)**	36 SDS ¼" X 2½"	1½"	24"	4X6

13 HOLDOWN - INTERIOR FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-ANC-017

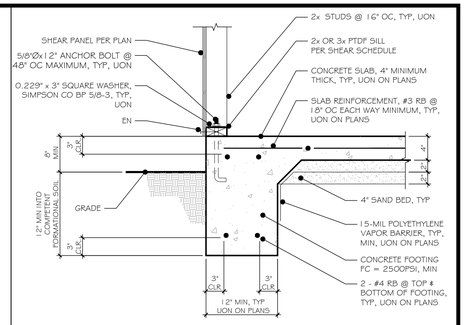


HOLD DOWN	ANCHOR Ø	POST SCREWS	EDGE DISTANCE	EMBED	MIN POST
HDU2	5/8" (SSTB16)	6 SDS ¼" X 2½"	1½"	12"	4X4
HDU4	5/8" (SSTB20)	10 SDS ¼" X 2½"	1½"	16"	4X4
HDU5	5/8" (SSTB24)	14 SDS ¼" X 2½"	1½"	20"	4X4
HDU8	7/8" (SSTB28)	20 SDS ¼" X 2½"	1½"	24"	4X4
HDU11	1" (S81X30)	30 SDS ¼" X 2½"	1½"	24"	4X6
HDU14	1" (S81X30)	36 SDS ¼" X 2½"	1½"	24"	4X6

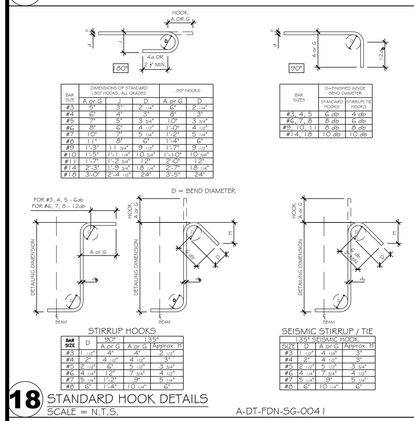
9 HOLDOWN - PERIMETER FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-ANC-013



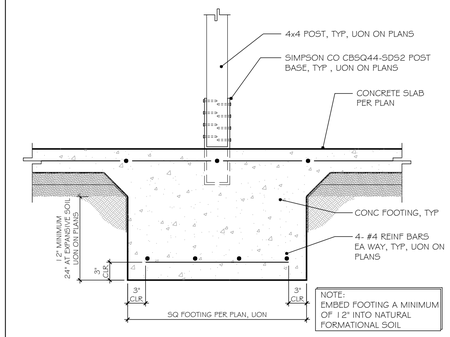
5 SLAB ON GRADE ONE STORY INTERIOR FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-INT-014



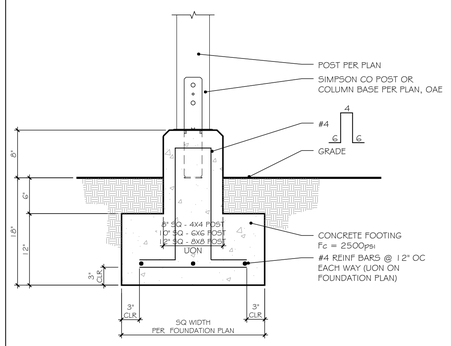
1 SLAB ON GRADE ONE STORY PERIMETER FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-PTR-025



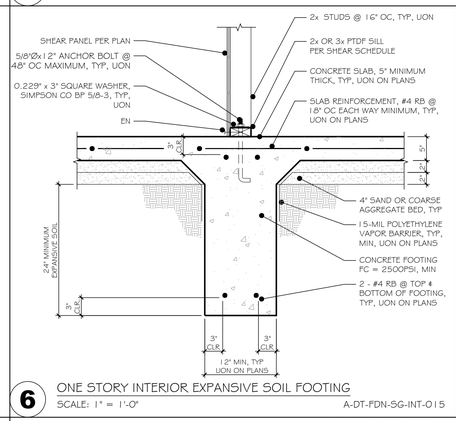
18 STANDARD HOOK DETAILS
SCALE = N.T.S. A-DT-FDN-SG-0041



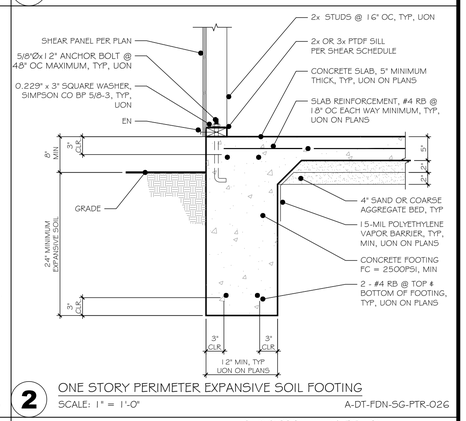
14 POST FOOTING WITHIN SLAB
SCALE : 1" = 1'-0" A-DT-FDN-CP-0020



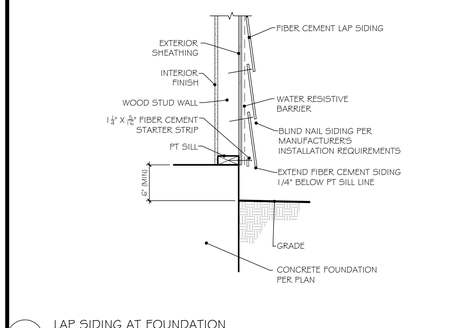
10 TYPICAL POST FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-CP-0003



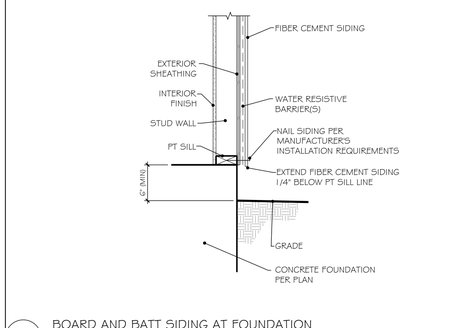
6 ONE STORY INTERIOR EXPANSIVE SOIL FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-INT-015



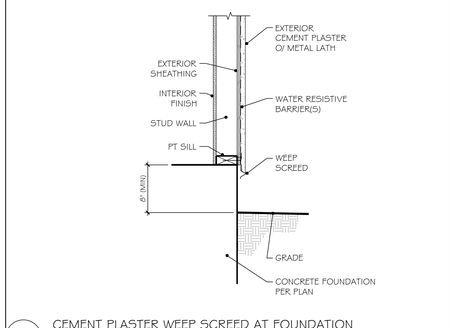
2 ONE STORY PERIMETER EXPANSIVE SOIL FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-PTR-026



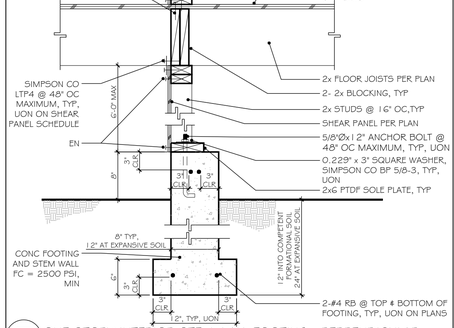
19 LAP SIDING AT FOUNDATION
SCALE: 1" = 1'-0" A-DT-FIN-FCS-LS-0001



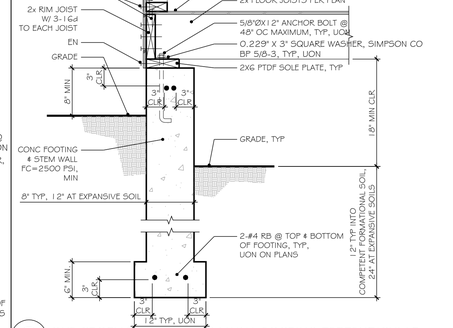
15 BOARD AND BATT SIDING AT FOUNDATION
SCALE: 1" = 1'-0" A-DT-FIN-FCS-BB-0001



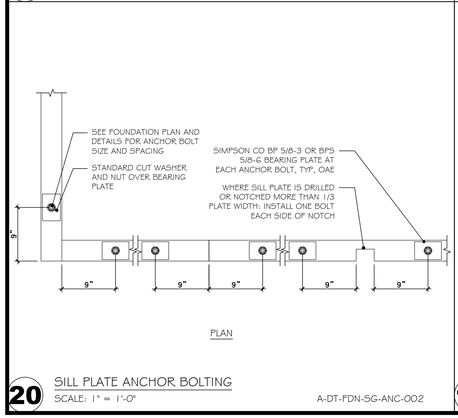
11 CEMENT PLASTER WEEP SCREED AT FOUNDATION
SCALE: 1" = 1'-0" A-DT-FIN-PL-0001



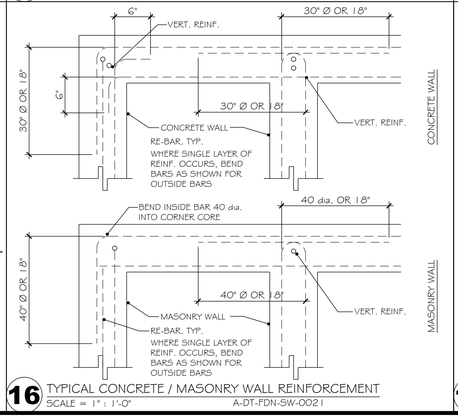
7 ONE-STORY INTERIOR STEM WALL FOOTING - PERPENDICULAR
SCALE = 1" : 1'-0" A-DT-FDN-SW-0073



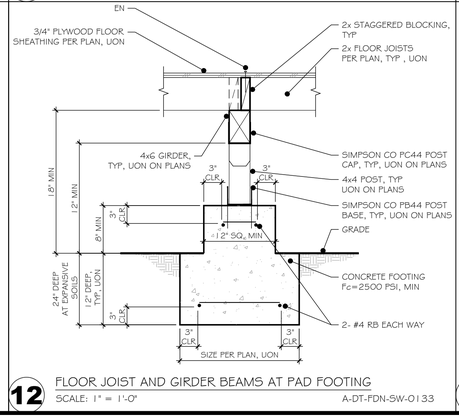
3 ONE STORY EXTERIOR STEM WALL FOOTING-PERPENDICULAR
SCALE = 1" : 1'-0" A-DT-FDN-SW-0002



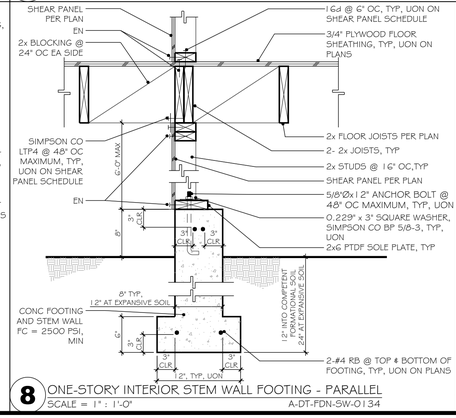
20 SILL PLATE ANCHOR BOLTING
SCALE: 1" = 1'-0" A-DT-FDN-SG-ANC-002



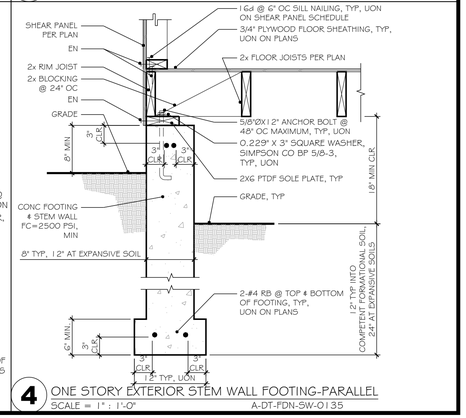
16 TYPICAL CONCRETE / MASONRY WALL REINFORCEMENT
SCALE = 1" : 1'-0" A-DT-FDN-SW-0021



12 FLOOR JOIST AND GIRDER BEAMS AT PAD FOOTING
SCALE: 1" = 1'-0" A-DT-FDN-SW-0133



8 ONE-STORY INTERIOR STEM WALL FOOTING - PARALLEL
SCALE = 1" : 1'-0" A-DT-FDN-SW-0134



4 ONE STORY EXTERIOR STEM WALL FOOTING-PARALLEL
SCALE = 1" : 1'-0" A-DT-FDN-SW-0135

PREPARER SIGNATURE

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ENCINITAS, CA
(760) 753 2464
DZNPARTNERS.COM

ANAHEIM PRADU

CITY: ANAHEIM

___/___/_____

JOB: 202409R

DETAILS

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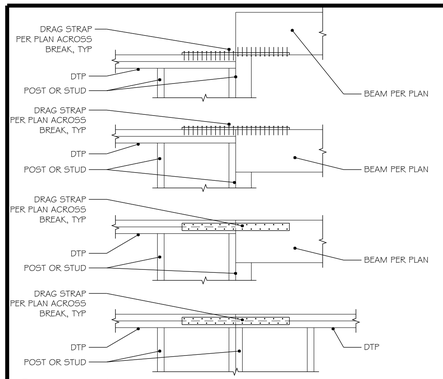
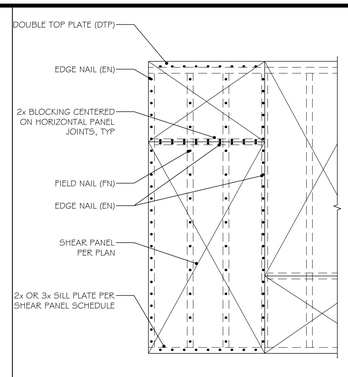
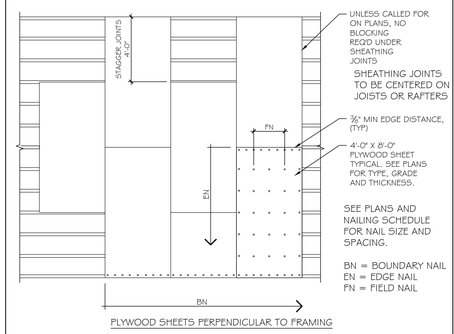


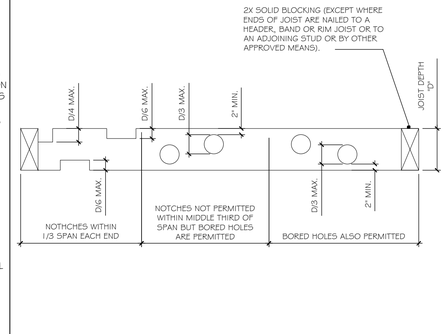
37 DRAG STRAP AT TOP PLATE TO BEAM OR TOP PLATE
SCALE: 3/4" = 1'-0" A-DT-FMG-WF-0013



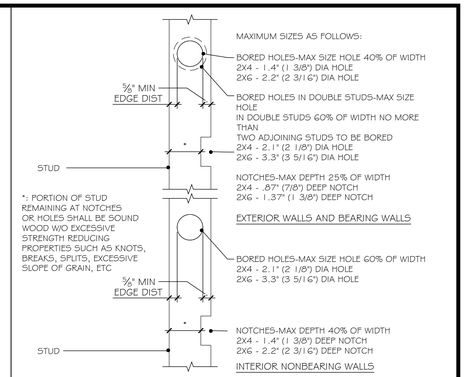
33 TYPICAL SHEAR PANEL
SCALE : NTS A-DT-FMG-WF-0018



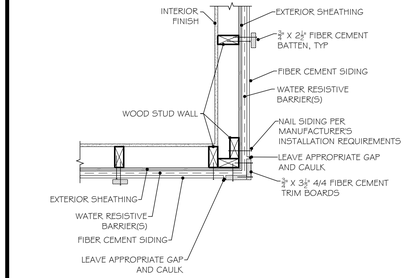
29 WOOD ROOF AND FLOOR SHEATHING LAYOUT
SCALE: 1" = 1'-0" A-DT-FMG-FF-0002



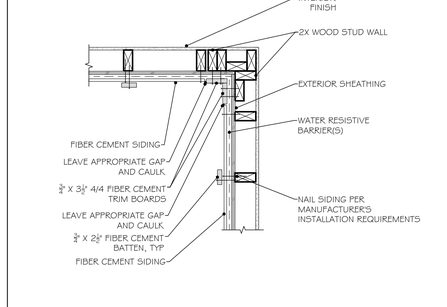
25 JOIST CUTTING, BORING AND NOTCHING
SCALE = N.T.S. A-DT-FMG-FF-0001



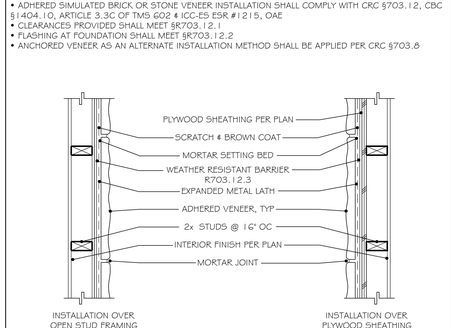
21 STUD CUTTING, BORING AND NOTCHING
SCALE = NTS A-DT-FMG-WF-0004



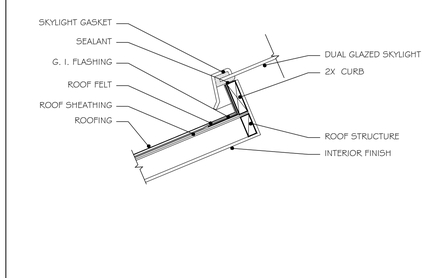
38 POST TO BEAM WITH CCQ/ECCQ
SCALE: 1" = 1'-0" A-DT-FMG-PB-0007



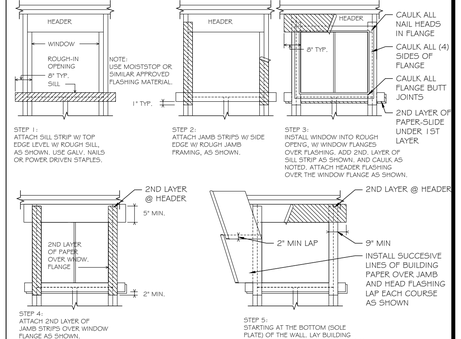
34 FRAMING FOR ROUGH WINDOW OR DOOR OPENING
SCALE: 1½" = 1'-0" A-DT-FMG-WF-0006



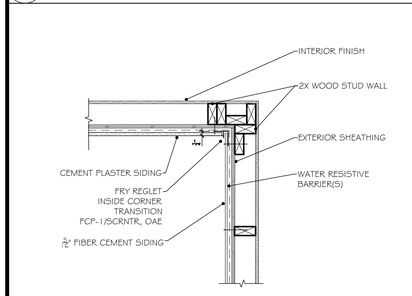
30 STUD WALL INTERSECTION
SCALE: 1" = 1'-0" A-DT-FMG-WF-0005



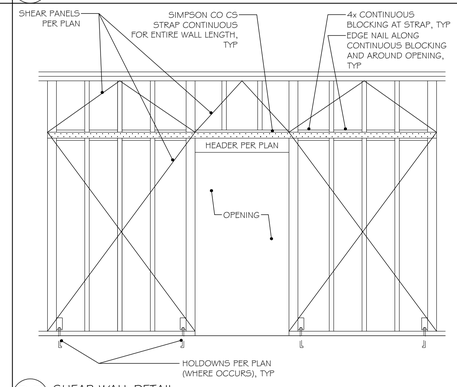
26 DOUBLE TOP-PLATE SPLICE
SCALE : NTS A-DT-FMG-WF-0019



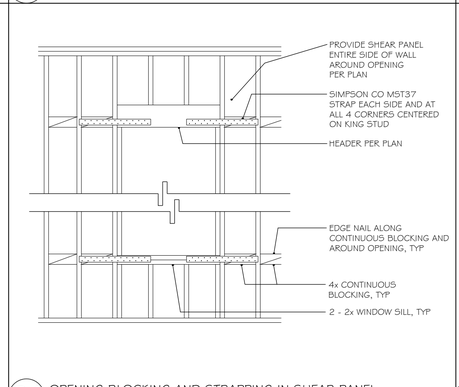
22 NON-BEARING/NON-SHEAR PARTITIONS AT TOP
SCALE: 1" = 1'-0" A-DT-FMG-WF-0008



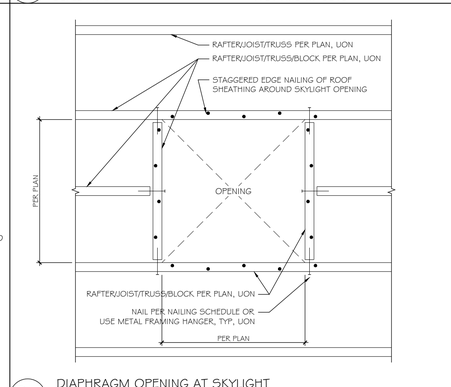
39 SIDING TO PLASTER AT INSIDE CORNER
SCALE: 1" = 1'-0" A-DT-FIN-FCS-BB-0004



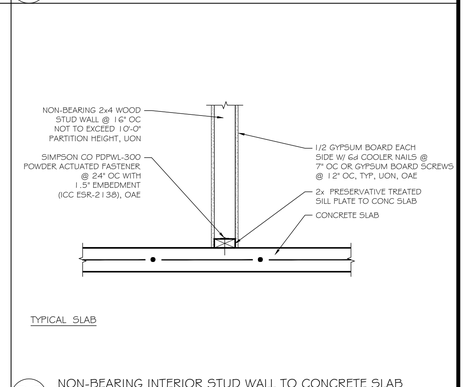
35 SHEAR WALL DETAIL
SCALE : NTS A-DT-FMG-WF-0020



31 OPENING BLOCKING AND STRAPPING IN SHEAR PANEL
SCALE : 1/2" = 1'-0" A-DT-FMG-WF-0009



27 DIAPHRAGM OPENING AT SKYLIGHT
SCALE: 1" = 1'-0" A-DT-FEN-SL-0007



23 NON-BEARING INTERIOR STUD WALL TO CONCRETE SLAB
SCALE: 1" = 1'-0" A-DT-FMG-WF-COM-005

40 SIDING AT OUTSIDE CORNER
SCALE: 1" = 1'-0" A-DT-FIN-FCS-BB-0002

36 SIDING AT INSIDE CORNER
SCALE: 1" = 1'-0" A-DT-FIN-FCS-BB-0003

NOTES
- SIMULATED BRICK OR STONE VENEER SHALL BE MANUFACTURED BY ELDORADO STONE, UON.
- ADHERED SIMULATED BRICK OR STONE VENEER INSTALLATION SHALL COMPLY WITH CRC §703.12, CBC §1404.10, ARTICLE 3.3C OF TMS 602 & ICC-ES ESR #1215, OAE
- CLEARANCES PROVIDED SHALL MEET §R703.12.1.
- FLASHING AT FOUNDATION SHALL MEET §R703.12.2
- ANCHORED VENEER AS AN ALTERNATE INSTALLATION METHOD SHALL BE APPLIED PER CRC §703.8

32 ADHERED SIMULATED BRICK OR STONE VENEER AT STUD WALL
SCALE: 1" = 1'-0" A-DT-FMG-WF-0026

28 CURB MOUNTED SKYLIGHT AT SLOPED ROOF
SCALE: 1" = 1'-0" A-DT-FEN-SL-0001

24 WINDOW FLASHING
SCALE: 1/2" = 1'-0" A-DT-FEN-WD-0002

PREPARER SIGNATURE

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ANAHEIM PRADU

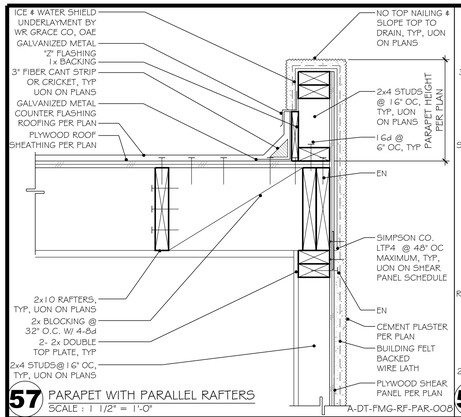
CITY: ANAHEIM

___/___/_____

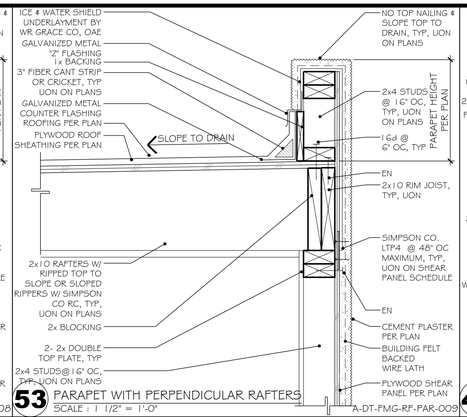
JOB: 202409R

DETAILS

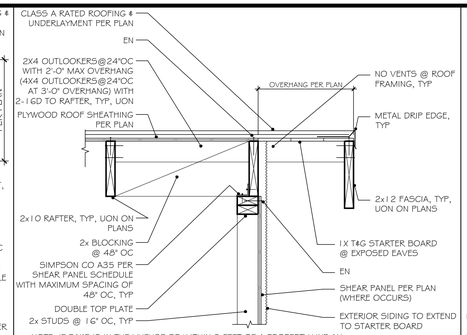
d0.1



57 PARAPET WITH PARALLEL RAFTERS
SCALE : 1 1/2" = 1'-0"
A-DT-FMG-RF-PAR-008

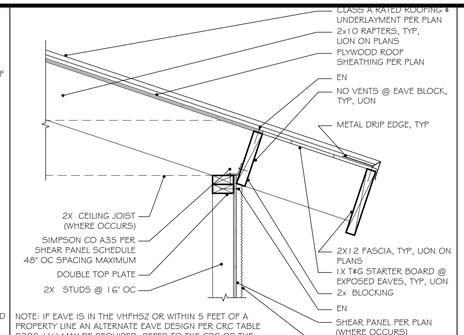


53 PARAPET WITH PERPENDICULAR RAFTERS
SCALE : 1 1/2" = 1'-0"
A-DT-FMG-RF-PAR-009



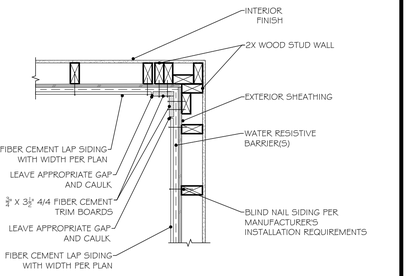
NOTE: IF RAKE IS IN THE VHFHSZ OR WITHIN 5 FEET OF A PROPERTY LINE AN ALTERNATE EAVE DESIGN PER CRC TABLE R302.1(1) MAY BE REQUIRED. REFER TO THE CRC OR THE CURRENT EDITION OF THE CITY OF ANAHEIM FIRE CODE FOR ADDITIONAL INFORMATION.

49 RAKE WITH 2x FASCIA
SCALE: 1" = 1'-0"
A-DT-FMG-RF-RAK-028

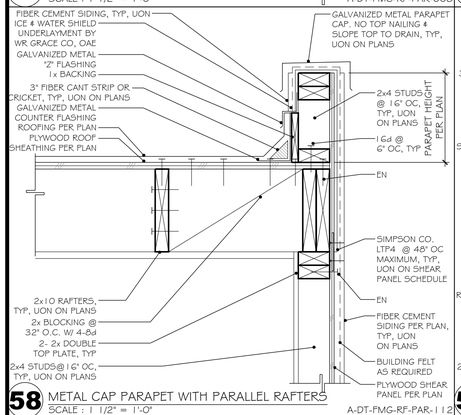


NOTE: IF EAVE IS IN THE VHFHSZ OR WITHIN 5 FEET OF A PROPERTY LINE AN ALTERNATE EAVE DESIGN PER CRC TABLE R302.1(1) MAY BE REQUIRED. REFER TO THE CRC OR THE CURRENT EDITION OF THE CITY OF ANAHEIM FIRE CODE FOR ADDITIONAL INFORMATION.

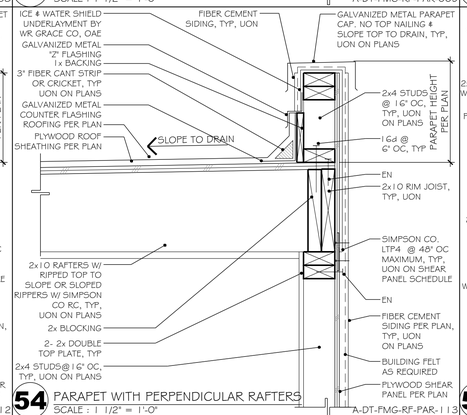
45 EAVE WITH 2x FASCIA
SCALE: 1" = 1'-0"
A-DT-FMG-RF-EAV-075



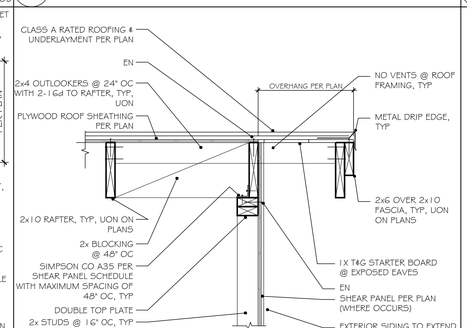
41 SIDING AT INSIDE CORNER
SCALE: 1" = 1'-0"
A-DT-FIN-FCS-LS-0003



58 METAL CAP PARAPET WITH PARALLEL RAFTERS
SCALE : 1 1/2" = 1'-0"
A-DT-FMG-RF-PAR-112

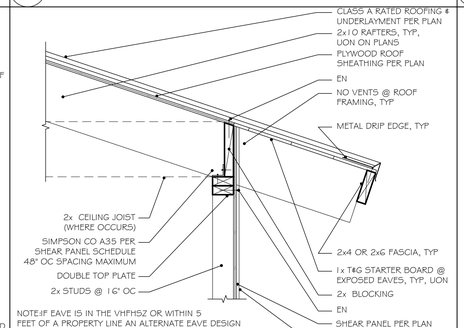


54 PARAPET WITH PERPENDICULAR RAFTERS
SCALE : 1 1/2" = 1'-0"
A-DT-FMG-RF-PAR-113



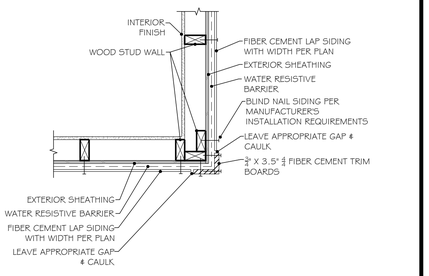
NOTE: IF RAKE IS IN THE VHFHSZ OR WITHIN 5 FEET OF A PROPERTY LINE AN ALTERNATE EAVE DESIGN PER CRC TABLE R302.1(1) MAY BE REQUIRED. REFER TO THE CRC OR THE CURRENT EDITION OF THE CITY OF ANAHEIM FIRE CODE FOR ADDITIONAL INFORMATION.

50 RAKE WITH DOUBLE FASCIA
SCALE: 1" = 1'-0"
A-DT-FMG-RF-RAK-029

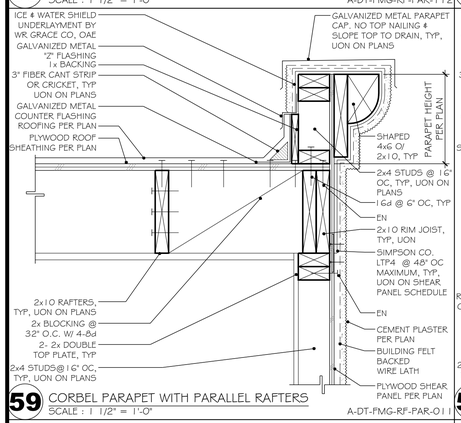


NOTE:IF EAVE IS IN THE VHFHSZ OR WITHIN 5 FEET OF A PROPERTY LINE AN ALTERNATE EAVE DESIGN PER CRC TABLE R302.1(1) MAY BE REQUIRED. REFER TO THE CRC OR THE CURRENT EDITION OF THE CITY OF ANAHEIM FIRE CODE FOR ADDITIONAL INFORMATION.

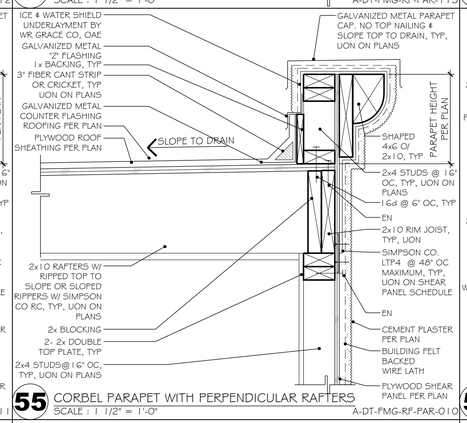
46 EXPOSED RAFTER EAVE
SCALE: 1" = 1'-0"
A-DT-FMG-RF-EAV-076



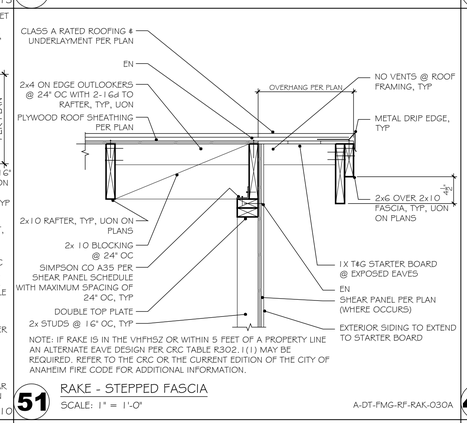
42 LAP SIDING AT OUTSIDE CORNER
SCALE: 1" = 1'-0"
A-DT-FIN-FCS-LS-0002



59 CORBEL PARAPET WITH PARALLEL RAFTERS
SCALE : 1 1/2" = 1'-0"
A-DT-FMG-RF-PAR-011

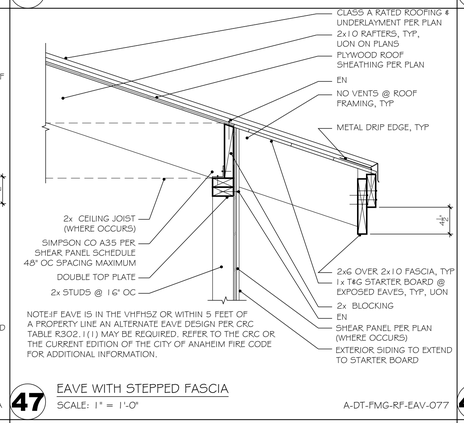


55 CORBEL PARAPET WITH PERPENDICULAR RAFTERS
SCALE : 1 1/2" = 1'-0"
A-DT-FMG-RF-PAR-010



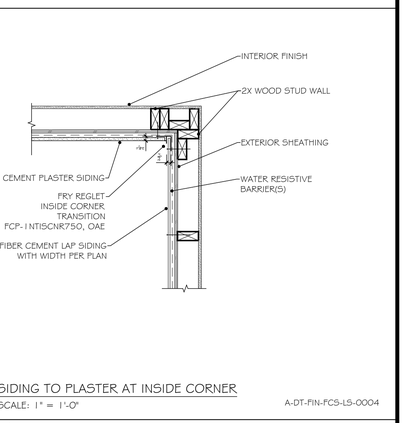
NOTE: IF RAKE IS IN THE VHFHSZ OR WITHIN 5 FEET OF A PROPERTY LINE AN ALTERNATE EAVE DESIGN PER CRC TABLE R302.1(1) MAY BE REQUIRED. REFER TO THE CRC OR THE CURRENT EDITION OF THE CITY OF ANAHEIM FIRE CODE FOR ADDITIONAL INFORMATION.

51 RAKE - STEPPED FASCIA
SCALE: 1" = 1'-0"
A-DT-FMG-RF-RAK-030A

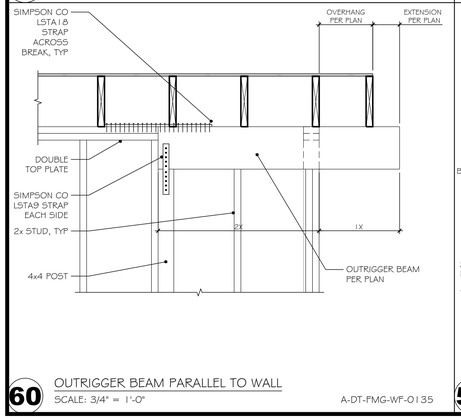


NOTE:IF EAVE IS IN THE VHFHSZ OR WITHIN 5 FEET OF A PROPERTY LINE AN ALTERNATE EAVE DESIGN PER CRC TABLE R302.1(1) MAY BE REQUIRED. REFER TO THE CRC OR THE CURRENT EDITION OF THE CITY OF ANAHEIM FIRE CODE FOR ADDITIONAL INFORMATION.

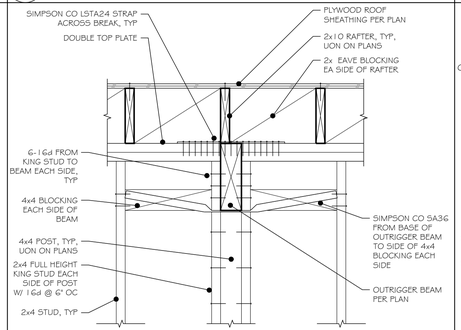
47 EAVE WITH STEPPED FASCIA
SCALE: 1" = 1'-0"
A-DT-FMG-RF-EAV-077



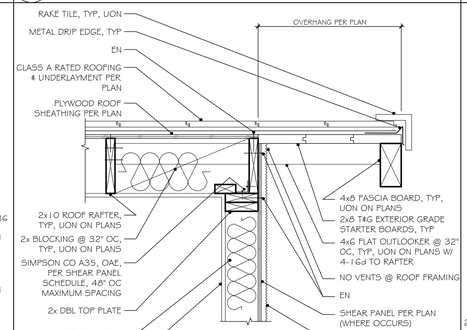
43 SIDING TO PLASTER AT INSIDE CORNER
SCALE: 1" = 1'-0"
A-DT-FIN-FCS-LS-0004



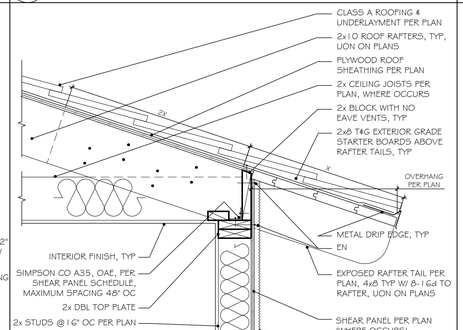
60 OUTRIGGER BEAM PARALLEL TO WALL
SCALE: 3/4" = 1'-0"
A-DT-FMG-WF-013S



56 OUTRIGGER BEAM PERPENDICULAR TO WALL
SCALE: 1" = 1'-0"
A-DT-FMG-PB-013S



52 HEAVY TIMBER IGNITION RESISTIVE RAKE
SCALE: 1" = 1'-0" [SD CO PDS-198, SHEET 7, DETAIL #4]
A-DT-FMG-RF-RAK-027



48 HEAVY TIMBER IGNITION RESISTANT EAVE
SCALE: 1" = 1'-0"
A-DT-FMG-RF-EAV-074

PREPARER SIGNATURE

FOR CITY STAMPS

DZN PARTNERS
682 SECOND ST
ENCINITAS, CA
(760) 753 2464
DZNPARTNERS.COM

ANAHEIM PRADU

CITY: ANAHEIM

__/__/____

JOB: 202409R

DETAILS

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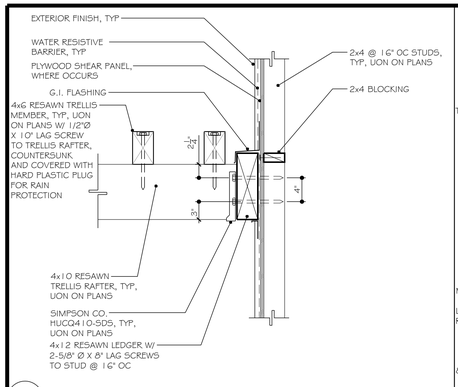
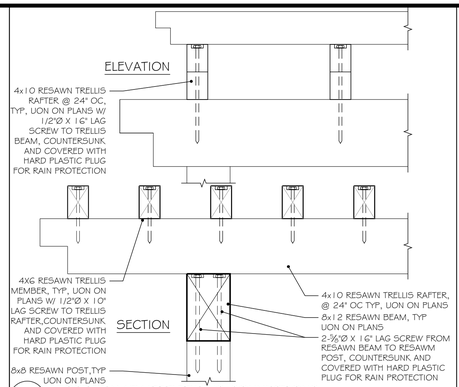
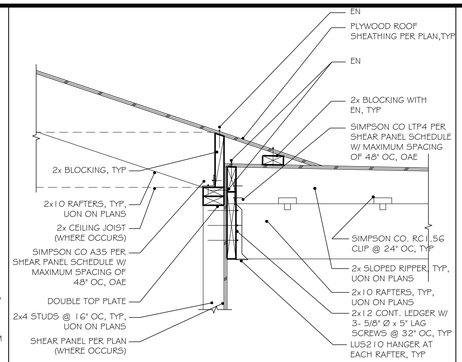


77 TRELLIS LEDGER AT WALL
SCALE : 1" = 1'-0" A-DT-FMG-RF-TRL-055

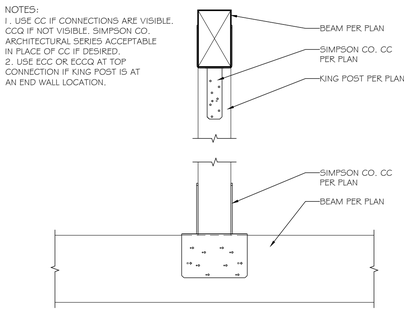


73 POST/BEAM/RAFTER/TRELLIS CONNECTIONS
SCALE: 1" = 1'-0" A-DT-FMG-RF-TRL-054

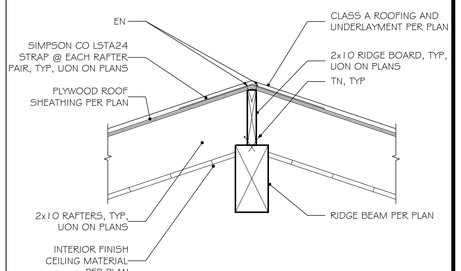


69 SLOPED TO LOW SLOPE ROOF TRANSITION
SCALE: 1" = 1'-0" A-DT-FMG-RF-0332

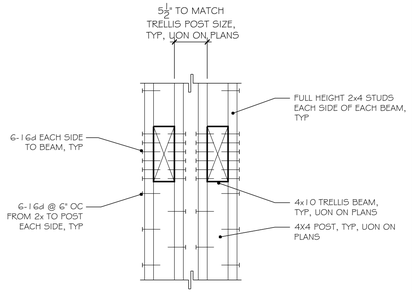
NOTES:
1. USE CC IF CONNECTIONS ARE VISIBLE. CCQ IF NOT VISIBLE. SIMPSON CO. ARCHITECTURAL SERIES ACCEPTABLE IN PLACE OF CC IF DESIRED.
2. USE ECC OR ECCQ AT TOP CONNECTION IF KING POST IS AT AN END WALL LOCATION.



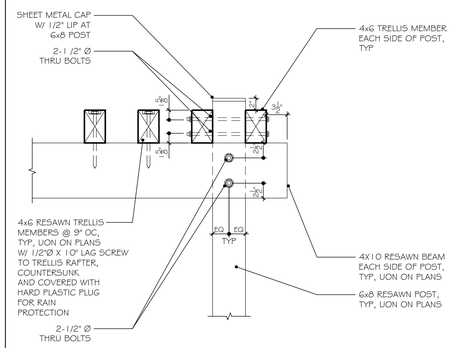
65 KING POST
SCALE: 1" = 1'-0" A-DT-FMG-PB-0006



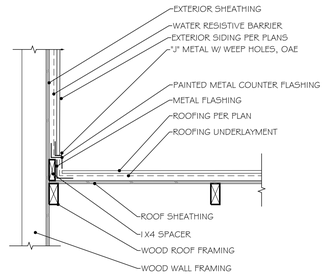
61 RAFTERS AT RIDGE BOARD OVER RIDGE BEAM
SCALE : 1" = 1'-0" A-DT-FMG-RF-RDG-003



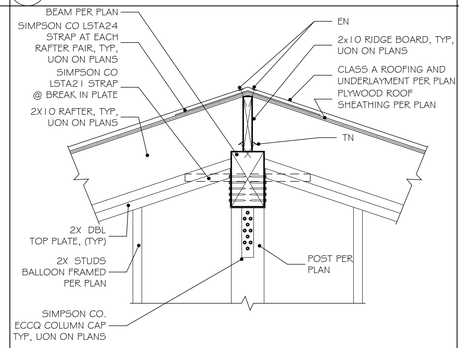
78 TRELLIS BEAMS TO STUD WALL
SCALE : 1" = 1'-0" A-DT-FMG-PB-0034



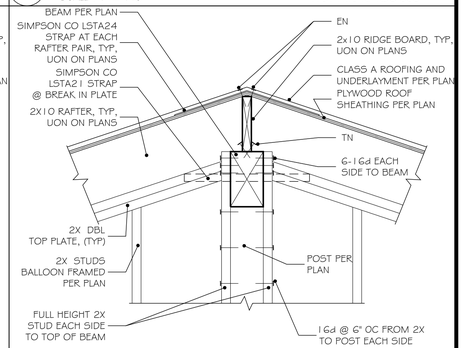
74 TRELLIS AT POST
SCALE: 1" = 1'-0" A-DT-FMG-PB-0136



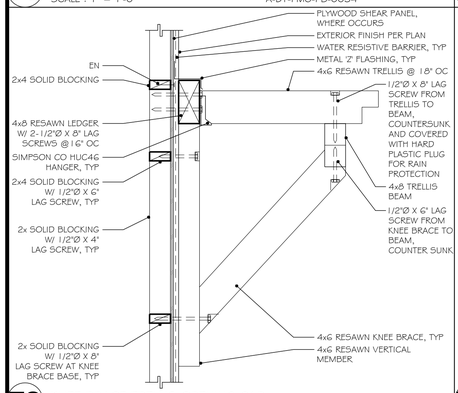
70 ROOF TO WALL - FIBER CEMENT LAP SIDING
SCALE: 1" = 1'-0" A-DT-FIN-WP-0004



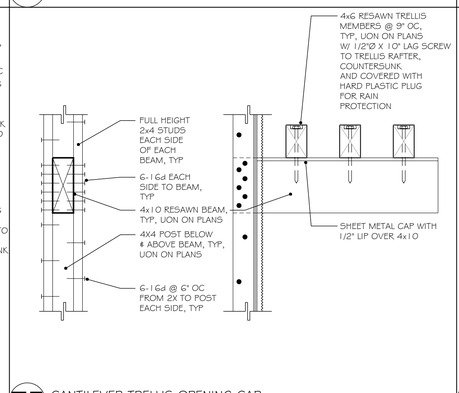
66 RIDGE BOARD & BEAM AT WALL POST W/ HARDWARE
SCALE : 1" = 1'-0" A-DT-FMG-RF-RDG-023



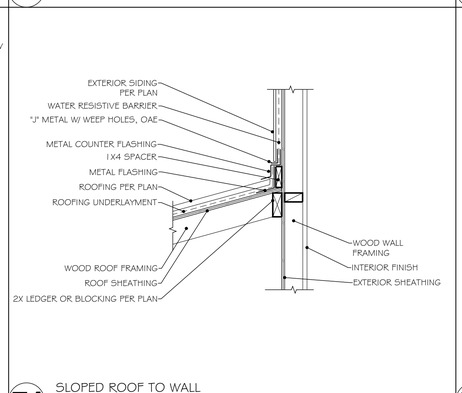
62 RIDGE BOARD & BEAM AT WALL POST W/O HARDWARE
SCALE : 1" = 1'-0" A-DT-FMG-RF-RDG-005B



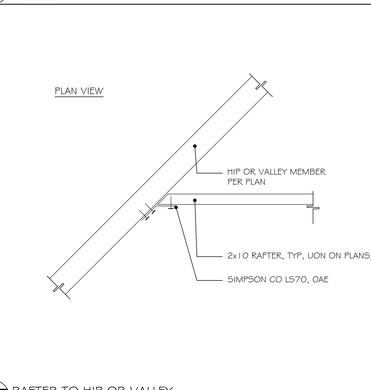
79 KNEE BRACE TRELLIS OPENING CAP
SCALE : 1" = 1'-0" A-DT-FMG-RF-0321



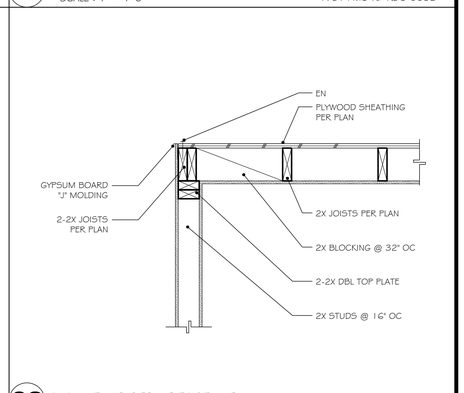
75 CANTILEVER TRELLIS OPENING CAP
SCALE : 1" = 1'-0" A-DT-FMG-PB-0137



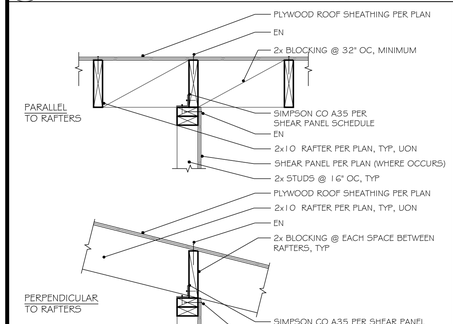
71 SLOPED ROOF TO WALL
SCALE: 1" = 1'-0" A-DT-FIN-WP-0003



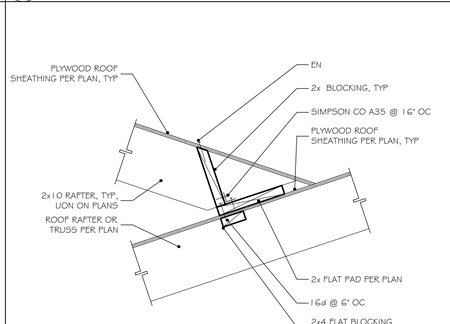
67 RAFTER TO HIP OR VALLEY
SCALE : 1" = 1'-0" A-DT-FMG-RF-0328



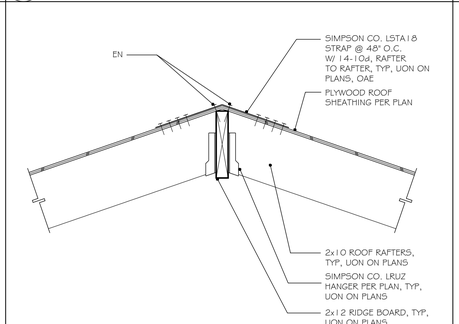
63 PARALLEL JOISTS AT EDGE WITH WALL
SCALE : 1" = 1'-0" A-DT-FMG-FF-0132



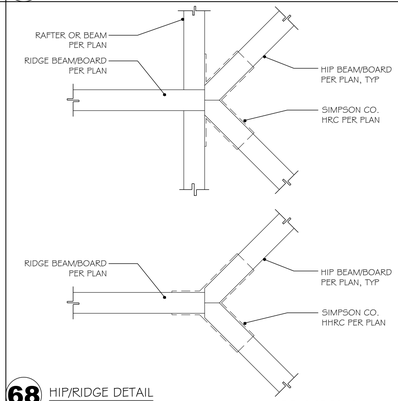
80 INTERIOR SHEAR WALL TO ROOF
SCALE: 1" = 1'-0" A-DT-FMG-RF-WAL-039



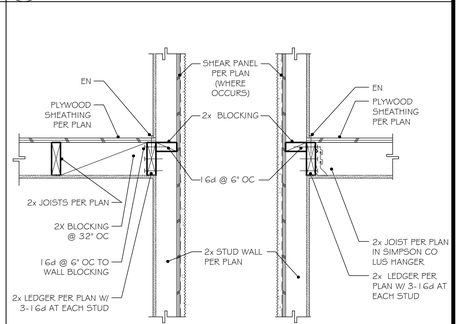
76 CALIFORNIA ROOF FILL CONNECTION
SCALE : 1" = 1'-0" A-DT-FMG-RF-0183



72 RIDGE BOARD DETAIL
SCALE = 1" : 1'-0" A-DT-FMG-RF-0074



68 HIP/RIDGE DETAIL
SCALE : 1" = 1'-0" A-DT-FMG-RF-0017



64 JOISTS TO LEDGER AT WALL
SCALE : 1" = 1'-0" A-DT-FMG-FF-0153

PREPARER SIGNATURE

FOR CITY STAMPS

BY USING THESE PERMIT READY CONSTRUCTION DOCUMENTS, THE USER AGREES TO RELEASE THE CITY OF ANAHEIM AND THE ARCHITECT WHO PREPARED THESE CONSTRUCTION DOCUMENTS FROM ANY AND ALL CLAIMS, LIABILITIES, SUITS AND DEMANDS ON ACCOUNT OF ANY INJURY, DAMAGE OR LOSS TO PERSONS OR PROPERTY, INCLUDING INJURY OR DEATH, OR ECONOMIC LOSSES, ARISING OUT OF THE USE OF THESE CONSTRUCTION DOCUMENTS.

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(760) 753 2464
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ANAHEIM PRADU

CITY: ANAHEIM

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JOB: 202409R

DETAILS

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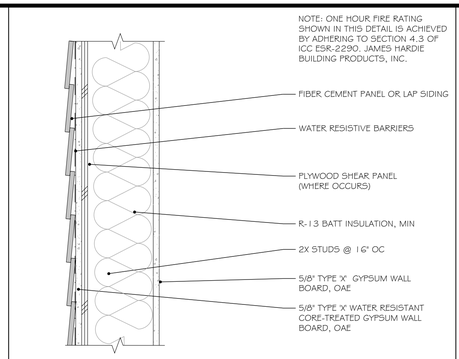
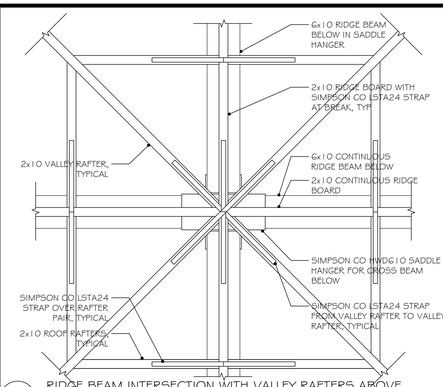
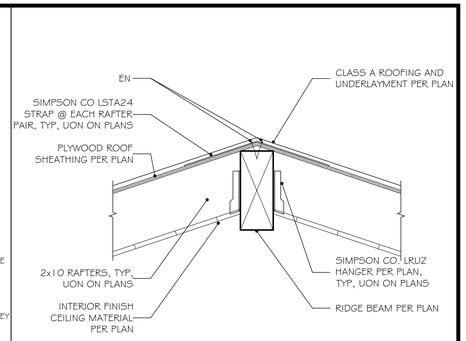


89 EXTERIOR ONE HOUR WALL - FIBER CEMENT SIDING EXTERIOR
SCALE: 2" = 1'-0" A-DT-FIN-FR-WAL-033



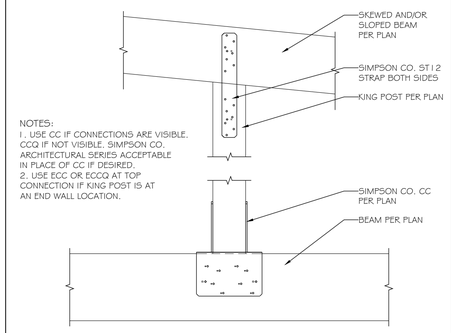
85 RIDGE BEAM INTERSECTION WITH VALLEY RAFTERS ABOVE
SCALE: 1" = 1'-0" A-DT-FMG-RF-RDG-026



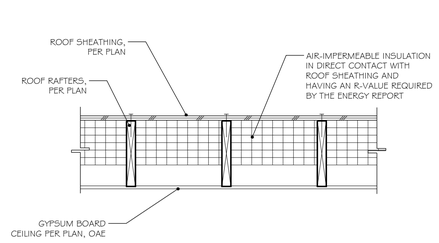
81 RAFTERS TO RIDGE BEAM
SCALE : 1" = 1'-0" A-DT-FMG-RF-RDG-024

98

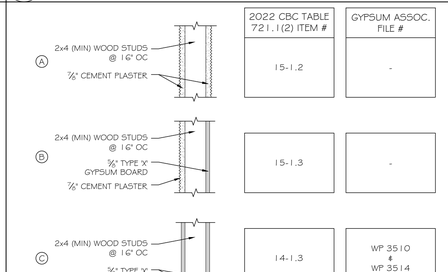
94



90 KING POST WITH SLOPED AND/OR SKEWED TOP BEAM
SCALE: 1" = 1'-0" A-DT-FMG-PB-0142



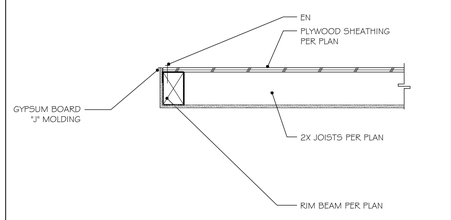
86 INSULATION AT UNVENTED ROOF ASSEMBLY - IMPERMEABLE ONLY
SCALE : 1" = 1'-0" CRC R806.5 A-DT-FMG-RF-0326



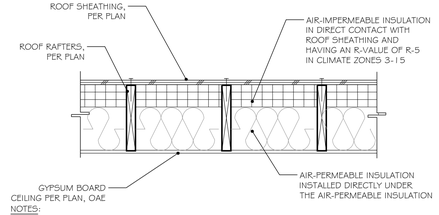
82 FIRE RESISTANCE - ONE HOUR WOOD FRAMED WALLS
SCALE: 1" = 1'-0" A-DT-FIN-FR-WAL-001

99

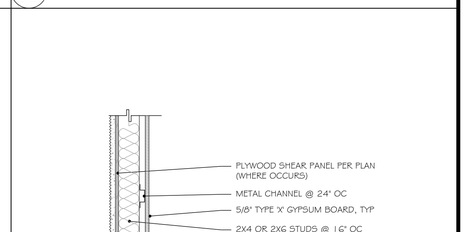
95



91 PERPENDICULAR JOISTS AT EDGE
SCALE : 1" = 1'-0" A-DT-FMG-FF-0154



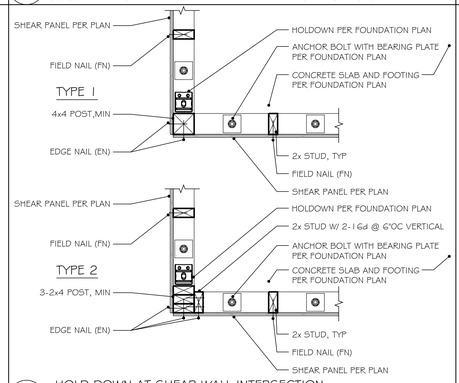
87 INSULATION AT UNVENTED ROOF ASSEMBLY - BOTH TYPES
SCALE : 1" = 1'-0" CRC R806.5 A-DT-FMG-RF-0325



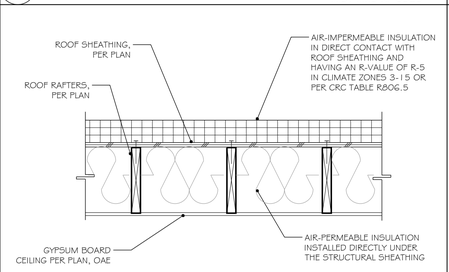
83 FIRE RESISTANCE: 1 HR EXTERIOR WALL, SOUND: STC 51
SCALE: 1" = 1'-0" A-DT-FIN-FR-WAL-025

100

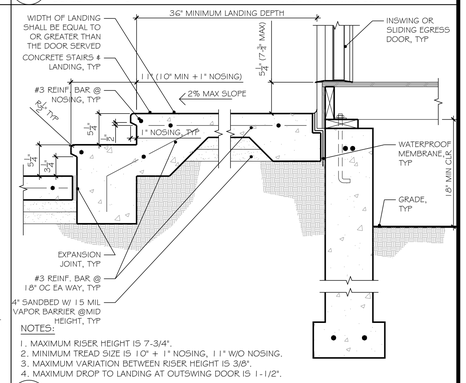
96



92 HOLD DOWN AT SHEAR WALL INTERSECTION
SCALE: 1" = 1'-0" A-DT-FDN-SG-ANC-018



88 INSULATION AT UNVENTED ROOF ASSEMBLY - OVER/UNDER
SCALE : 1" = 1'-0" CRC R806.5 A-DT-FMG-RF-0327



84 EXTERIOR STAIRS AT STEM WALL FOOTING
SCALE = 1" : 1'-0" A-DT-FDN-SW-0136

PREPARER SIGNATURE

FOR CITY STAMPS

DZN PARTNERS
682SECONDST
ENCINITAS,CA
(760)7532464
DZNPARTNERS.COM

ANAHEIM PRADU

CITY: ANAHEIM

___/___/_____

JOB: 202409R

DETAILS

d0.4

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan A
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-17T11:52:45-08:00
Input File Name: 23Q1019-2BA.1-04.ribd22x

GENERAL INFORMATION					
01	Project Name	Anaheim PRADU - 2-Bedroom Plan A			
02	Run Title	Title 24 Analysis			
03	Project Location	Anaheim PRADU Street			
04	City	Anaheim	05	Standards Version	2022
06	Zip code	92805	07	Software Version	EnergyPro 9.0
08	Climate Zone	7	09	Front Orientation (deg/ Cardinal)	All orientations
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Newly Constructed	13	Number of Bedrooms	2
14	Addition Cond. Floor Area (ft^2)	0	15	Number of Stories	1
16	Existing Cond. Floor Area (ft^2)	n/a	17	Fenestration Average U-factor	0.56
18	Total Cond. Floor Area (ft^2)	990	19	Glazing Percentage (%)	37.50%
20	ADU Bedroom Count	n/a			

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

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan A
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-17T11:52:45-08:00
Input File Name: 23Q1019-2BA.1-04.ribd22x

ENERGY DESIGN RATINGS	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	31.6	44.4	30			
Proposed Design						
North Facing	31.6	43.1	29.4	0	1.3	0.6
East Facing	31.6	43.3	29.4	0	1.1	0.6
South Facing	30.1	40.3	28.3	1.5	4.1	1.7
West Facing	30.7	43.5	29.5	0.9	0.9	0.5
RESULT[3]: PASS						

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

- Standard Design PV Capacity: 1.90 kWdc
- Proposed PV Capacity Scaling: North (1.90 kWdc) East (1.90 kWdc) South (1.90 kWdc) West (1.90 kWdc)

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

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Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-17T11:52:45-08:00
Input File Name: 23Q1019-2BA.1-04.ribd22x

ENERGY USE SUMMARY						
Energy Use	**Standard Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Standard Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Proposed Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Compliance Margin (EDR1)**	**Compliance Margin (EDR2)**
Space Heating	0.25	1.12	0.8	5.59	-0.55	-4.47
Space Cooling	0.37	9.13	0.36	8.57	0.01	0.56
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.07	1.38	16.14	0.51	4.93
Self Utilization/Flexibility Credit				0		0
North Facing Efficiency Compliance Total	**2.91**	**35.65**	**2.94**	**34.63**	**-0.03**	**1.02**
Space Heating	0.25	1.12	0.85	5.94	-0.6	-4.82
Space Cooling	0.37	9.13	0.31	8.32	0.06	0.81
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.07	1.38	16.15	0.51	4.92
Self Utilization/Flexibility Credit				0		0
East Facing Efficiency Compliance Total	**2.91**	**35.65**	**2.94**	**34.74**	**-0.03**	**0.91**

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

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Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-17T11:52:45-08:00
Input File Name: 23Q1019-2BA.1-04.ribd22x

ENERGY USE SUMMARY						
Energy Use	**Standard Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Standard Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Proposed Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Compliance Margin (EDR1)**	**Compliance Margin (EDR2)**
Space Heating	0.25	1.12	0.42	2.95	-0.17	-1.83
Space Cooling	0.37	9.13	0.3	9.13	0.07	0
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.07	1.36	15.97	0.53	5.1
Self Utilization/Flexibility Credit				0		0
South Facing Efficiency Compliance Total	**2.91**	**35.65**	**2.48**	**32.38**	**0.43**	**3.27**
Space Heating	0.25	1.12	0.45	3.13	-0.2	-2.01
Space Cooling	0.37	9.13	0.45	11.5	-0.08	-2.37
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.07	1.36	15.96	0.53	5.11
Self Utilization/Flexibility Credit				0		0
West Facing Efficiency Compliance Total	**2.91**	**35.65**	**2.66**	**34.92**	**0.25**	**0.73**

General Notes

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

BEAR TECHNOLOGIES CONSULTING, INC.
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Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN A
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BA.1-04	T-01
Date: 01/23/2023	
Scale:	

ENERGY USE INTENSITY

	Standard Design (kBtu/ft² - yr)	Proposed Design (kBtu/ft² - yr)	Compliance Margin (kBtu/ft² - yr)	Margin Percentage
North Facing				
Gross EUI[1]	14.56	14.47	0.09	0.62
Net EUI[2]	4.22	4.13	0.09	2.13
East Facing				
Gross EUI[1]	14.56	14.55	0.01	0.07
Net EUI[2]	4.22	4.21	0.01	0.24
South Facing				
Gross EUI[1]	14.56	14.36	0.2	1.37
Net EUI[2]	4.22	4.02	0.2	4.74
West Facing				
Gross EUI[1]	14.56	14.59	-0.03	-0.21
Net EUI[2]	4.22	4.25	-0.03	-0.71

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

REQUIRED PV SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	**Exception**	**Module Type**	**Array Type**	**Power Electronics**	**CFI**	**Azimuth (deg)**	**Tilt Input**	**Array Angle (deg)**	**Tilt: (x in 12)**	**Inverter Eff. (%)**	**Annual Solar Access (%)**
1.9	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	98

REQUIRED SPECIAL FEATURES

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

- Whole house fan
- Exposed slab floor in conditioned zone
- Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)
- Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed

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.

- Indoor air quality ventilation
- Kitchen range hood
- Whole house fan airflow and fan efficacy
- Verified SEER/SEER2
- Verified Refrigerant Charge
- Airflow in habitable rooms (SC3.1.4.1.7)
- Verified HSPF2
- Verified heat pump rated heating capacity
- Wall-mounted thermostat in zones greater than 150 ft2 (SC3.4.5)
- Ductless indoor units located entirely in conditioned space (SC3.1.4.1.8)

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**
Anaheim PRADU - 2-Bedroom Plan A	990	1	2	1	1	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	**Zone Type**	**HVAC System Name**	**Zone Floor Area (ft²)**	**Avg. Ceiling Height**	**Water Heating System 1**	**Status**
ADU 2-Bedroom A	Conditioned	Ductless Mini-Split1	990	8.4	DHW Sys 1	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft²)**	**Window and Door Area (ft2)**	**Tilt (deg)**
Front Wall	ADU 2-Bedroom A	_WALL: 2x4 Exterior	0	Front	275	127.3	90
Left Wall	ADU 2-Bedroom A	_WALL: 2x4 Exterior	90	Left	229.2	48	90
Rear Wall	ADU 2-Bedroom A	_WALL: 2x4 Exterior	180	Back	275	76	90
Right Wall	ADU 2-Bedroom A	_WALL: 2x4 Exterior	270	Right	250	120	90
Roof 2	ADU 2-Bedroom A	_ROOF: CLG.	n/a	n/a	221	n/a	n/a

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Area (ft²)**	**Skylight Area (ft²)**	**Roof Rise (x in 12)**	**Roof Reflectance**	**Roof Emittance**	**Cool Roof**
Roof	ADU 2-Bedroom A	_ROOF: SLPD. CLG.	0	Front	769	0	3	0.1	0.85	No

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 ADU 2-Bedroom A	Attic RoofADU 2-Bedroom A	Ventilated	3	0.1	0.85	Yes	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft²)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**
w1	Window	Front Wall	Front	0			1	54	0.53	NFRC	0.5	NFRC	Bug Screen
d1	Window	Front Wall	Front	0			1	20	0.58	NFRC	0.65	NFRC	Bug Screen
d3	Window	Front Wall	Front	0			1	53.3	0.58	NFRC	0.58	NFRC	Bug Screen
w2	Window	Left Wall	Left	90			1	24	0.53	NFRC	0.5	NFRC	Bug Screen
w2 2	Window	Left Wall	Left	90			1	24	0.53	NFRC	0.5	NFRC	Bug Screen
d3 2	Window	Rear Wall	Back	180			1	53.3	0.58	NFRC	0.58	NFRC	Bug Screen
w3	Window	Rear Wall	Back	180			1	8	0.53	NFRC	0.5	NFRC	Bug Screen
w4	Window	Rear Wall	Back	180			1	14.7	0.53	NFRC	0.5	NFRC	Bug Screen
w5	Window	Right Wall	Right	270			1	40	0.53	NFRC	0.5	NFRC	Bug Screen
d2	Window	Right Wall	Right	270			1	80	0.58	NFRC	0.58	NFRC	Bug Screen

SLAB FLOORS

01	02	03	04	05	06	07	08
Name	**Zone**	**Area (ft²)**	**Perimeter (ft)**	**Edge Insul. R-value and Depth**	**Edge Insul. R-value and Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	ADU 2-Bedroom A	990	124	none	0	0%	No

General Notes

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

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3431 DON ARTURO DRIVE,
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Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN A
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BA.1-04	T-02
Date: 01/23/2023	
Scale:	

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
_WALL: 2x4 Exterior	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: All Other Siding
_ROOF: SLPD. CLG.	Cathedral Ceilings	Wood Framed Ceiling	2x10 @ 16 in. O. C.	R-30	None / None	0.037	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x10 Inside Finish: Gypsum Board
Attic RoofADU 2-Bedroom A	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / 0	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
_ROOF: CLG.	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

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

WATER HEATING SYSTEMS

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

WATER HEATERS - NEEA HEAT PUMP

01	02	03	04	05	06	07	08
Name	# of Units	Tank Vol. (gal)	NEEA Heat Pump Brand	NEEA Heat Pump Model	Tank Location	Duct Inlet Air Source	Duct Outlet Air Source
DHW Heater 1	1	50	AOSmith	AOSmithFPTU50	ADU 2-Bedroom A	ADU 2-Bedroom A	ADU 2-Bedroom A

WATER HEATING - HERS VERIFICATION

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

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type
Ductless Mini-Split1	Heat pump heating cooling	Heat Pump System 1	1	Heat Pump System 1	1	n/a	n/a	Setback

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11	12	13
Name	System Type	Number of Units	Heating				Cooling			Zonally Controlled	Compressor Type	HERS Verification
			Efficiency Type	HSPF / HSPF2 / COP	Cap 47	Cap 17	Efficiency Type	SEER / SEER2	EER / EER / CEER			
Heat Pump System 1	VCHP-ductless	1	HSPF2	10.9	43000	25800	EER2SEER2	18.9	10.5	Zonally Controlled	Multi-speed	Heat Pump System 1-hers-htpump

HVAC HEAT PUMPS - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER/EER2	Verified SEER/SEER2	Verified Refrigerant Charge	Verified HSPF/HSPF2	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump System 1-hers-htpump	Not Required	0	Not Required	Not Required	Yes	No	Yes	Yes

VARIABLE CAPACITY HEAT PUMP COMPLIANCE OPTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09	10
Name	Certified Low-Static VCHP System	Airflow to Habitable Rooms	Ductless Units in Conditioned Space	Wall Mount Thermostat	Air Filter Sizing & Pressure Drop Rating	Low Leakage Ducts in Conditioned Space	Minimum Airflow per RA3.3 and SC3.3.3.4.1	Certified non-continuous Fan	Indoor Fan not Running Continuously
Heat Pump System 1	Not required	Required	Required	Required	Not required	Not required	Not required	Not required	Not required

INDOOR AIR QUALITY (IAQ) FANS

01	02	03	04	05	06	07	08	09
Dwelling Unit	Airflow (CFM)	Fan Efficacy (W/CFM)	IAQ Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SRE	Includes Fault Indicator Display?	HERS Verification	Status
SFam IAQVentRpt	52	0.35	Exhaust	No	n/a	No	Yes	

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
WH Fan 1	0.03	25	0.04	1	1	Not a CFVCS	Outside	Required

PROJECT NOTES

****
This report is based on the drawings received on 01/03/2023.
****

SCOPE OF WORK: Construct a ADU - 2-Bedroom (A Elevation).

1) DO NOT USE FOR ACTUAL HEATING/COOLING DESIGN. 2) The Title 24 calculations used for this project are used for the purpose of complying with the current Title 24 code provisions and are intended to be used in order to obtain compliance per Title 24 regulations. They are NOT intended to be used as a substitute for the heating and cooling loads required for the structure(s) that are normally done by a mechanical engineer(s) or HVAC contractor(s) and in NO CIRCUMSTANCES is this to be used in lieu of the normal calculation methods used by a mechnical engineer(s) or HVAC contractor(s). 3) The assembly components found in this document are for modeling purposes only and may not reflect the actual conditions of the walls, roof(s), floor(s), windows and doors of the structure.

General Notes

CEA CERTIFIED ENERGY ANALYST

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

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ANAHEIM PRADU - 2 BEDROOM PLAN A
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BA.1-04	T-03
Date: 01/23/2023	
Scale:	

2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.
(04/2022)

Building Envelope:

§ 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):	**Roof Deck, Ceiling and Rafter Roof Insulation.** Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. 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 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 0.45, or area-weighted average U-factor of all fenestration must not exceed 0.45.

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 110.5(a):	**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:

§ 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-N. *
§ 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)3:	**Insulation.** Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 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.

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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.
§ 150.0(h)3A:	**Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five foot 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:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code. *
§ 150.0(j)2:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by §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(j)3:	**Gas or Propane Water Heating Systems.** Systems using gas or propane water heaters to serve individual dwelling units must designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2' higher than the base of the water heater
§ 150.0(j)1:	**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:

§ 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 CMC §§ 601.0-605.0 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 R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. 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 UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼". If mastic or tape is used. Building cavities, air handler support platforms, 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 these spaces must not be compressed. *
§ 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)9:	**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)10:	**Protection of Insulation.** Insulation must be protected from damage due to sunlight, moisture, equipment maintenance, and wind.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner cores of flex ducts must have a non-porous layer or air barrier 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 Reference Residential Appendix RA3.1.
§ 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. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan A
Calculation Date/Time: 2023-01-17T11:52:45-08:00 **(Page 13 of 13)**
Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BA.1-04.ribd22x

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Wayne Seward	Documentation Author Signature: Wayne Seward
Company: Bear Technologies Consulting Inc.	Signature Date: 2023-01-17 12:10:17
Address: 3431 Don Arturo Drive	CEA/ HERS Certification Identification (if applicable): R19-04-30011
City/State/Zip: Carlsbad, CA 92010	Phone: 760-635-2327

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: Bart M Smith	Responsible Designer Signature: Bart M Smith
Company: DZN Partners	Date Signed: 2023-01-17 13:11:13
Address: 682 2nd Street	License: C-22557
City/State/Zip: Encinitas, CA 92024	Phone: 760-753-2464

Digitally signed by CalCERTS. 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.

Easy to Verify at CalCERTS.com

Registration Number: 223-P010006678A-000-000-0000000-0000
Registration Date/Time: 2023-01-17 13:11:13
HERS Provider: CalCERTS inc.
CA Building Energy Efficiency Standards - 2022 Residential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220901
Report Generated: 2023-01-17 11:53:28

2022 Single-Family Residential Mandatory Requirements Summary

§ 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. *

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)1B:	**Central Fan Integrated (CFI) Ventilation Systems.** Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed and controlled per §150.0(o)1Bi&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	**Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses .** 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 specified in § 150.0(o)1Ci–iii.
§ 150.0(o)1G:	**Local Mechanical Exhaust.** Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of §150.0(o)1Gii,enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Gii–iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1Gvi. *
§ 150.0(o)1H&I:	**Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems.** The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G.

Pool and Spa Systems and Equipment:

§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDbS; 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:

§ 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, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.
150.0(k)1B:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	**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)1E:	**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 shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 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). *

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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)2A:	**Accessible Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off.
§ 150.0(k)2B:	**Multiple Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	**Mandatory Requirements.** Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	**Energy Management Control Systems.** An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	**Automatic Shutoff Controls.** In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	**Dimmers.** Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	**Independent controls.** Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 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 have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	**Internally illuminated address signs.** Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 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 §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.

Solar Readiness:

§ 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)-(e).
§110.10(b)1A:	**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. *
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° 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 horizontal distance 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)-(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."

Electric and Energy Storage Ready:

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2022 Single-Family Residential Mandatory Requirements Summary

§ 150.0(s):	**Energy Storage System (ESS) Ready.** All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, or a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(s); at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator; one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.
§ 150.0(t):	**Heat Pump Space Heater Ready.** Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(u):	**Electric Cooktop Ready.** Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(v):	**Electric Clothes Dryer Ready.** Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."

*Exceptions may apply.

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General Notes

CEA CERTIFIED ENERGY ANALYST

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

BEAR TECHNOLOGIES CONSULTING, INC.
3431 DON ARTURO DRIVE,
CARLSBAD, CALIFORNIA 92010
(760) 635-2327
wayne@beartechconsulting.com
http://www.beartechconsulting.com

Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN A
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project: 23Q1019-2BA.1-04	Sheet: T-04
Date: 01/23/2023	
Scale:	

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan B
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-16T11:47:28-08:00
Input File Name: 23Q1019-2BB.1-03.ribd22x

GENERAL INFORMATION					
01	Project Name	Anaheim PRADU - 2-Bedroom Plan B			
02	Run Title	Title 24 Analysis			
03	Project Location	Anaheim PRADU Street			
04	City	Anaheim	05	Standards Version	2022
06	Zip code	92805	07	Software Version	EnergyPro 9.0
08	Climate Zone	7	09	Front Orientation (deg/ Cardinal)	All orientations
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Newly Constructed	13	Number of Bedrooms	2
14	Addition Cond. Floor Area (ft^2)	0	15	Number of Stories	1
16	Existing Cond. Floor Area (ft^2)	n/a	17	Fenestration Average U-factor	0.51
18	Total Cond. Floor Area (ft^2)	990	19	Glazing Percentage (%)	44.20%
20	ADU Bedroom Count	n/a			

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

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan B
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-16T11:47:28-08:00
Input File Name: 23Q1019-2BB.1-03.ribd22x

ENERGY DESIGN RATINGS						
	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	36.9	44.7	33.2			
Proposed Design						
North Facing	36.6	43.7	32.7	0.3	1	0.5
East Facing	36.6	43.3	32.5	0.3	1.4	0.7
South Facing	35.5	41.6	31.8	1.4	3.1	1.4
West Facing	35.9	44.2	32.8	1	0.5	0.4
RESULT[3]: PASS						

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

- Standard Design PV Capacity: 2.00 kWdc
- Proposed PV Capacity Scaling: North (2.00 kWdc) East (2.00 kWdc) South (2.00 kWdc) West (2.00 kWdc)

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan B
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-16T11:47:28-08:00
Input File Name: 23Q1019-2BB.1-03.ribd22x

ENERGY USE SUMMARY						
Energy Use	**Standard Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Standard Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Proposed Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Compliance Margin (EDR1)**	**Compliance Margin (EDR2)**
Space Heating	0.19	0.81	0.6	4.17	-0.41	-3.36
Space Cooling	0.41	9.93	0.44	10.72	-0.03	-0.79
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.03	1.37	16.06	0.52	4.97
Self Utilization/Flexibility Credit				0		0
North Facing Efficiency Compliance Total	**2.89**	**36.1**	**2.81**	**35.28**	**0.08**	**0.82**
Space Heating	0.19	0.81	0.68	4.72	-0.49	-3.91
Space Cooling	0.41	9.93	0.36	9.79	0.05	0.14
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.03	1.38	16.1	0.51	4.93
Self Utilization/Flexibility Credit				0		0
East Facing Efficiency Compliance Total	**2.89**	**36.1**	**2.82**	**34.94**	**0.07**	**1.16**

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

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ENERGY USE SUMMARY						
Energy Use	**Standard Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Standard Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Proposed Design Source Energy (EDR1) ($kBtu/ft^2$-yr)**	**Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)**	**Compliance Margin (EDR1)**	**Compliance Margin (EDR2)**
Space Heating	0.19	0.81	0.34	2.34	-0.15	-1.53
Space Cooling	0.41	9.93	0.36	11.01	0.05	-1.08
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.03	1.36	15.92	0.53	5.11
Self Utilization/Flexibility Credit				0		0
South Facing Efficiency Compliance Total	**2.89**	**36.1**	**2.46**	**33.6**	**0.43**	**2.5**
Space Heating	0.19	0.81	0.32	2.23	-0.13	-1.42
Space Cooling	0.41	9.93	0.51	13.24	-0.1	-3.31
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.03	1.35	15.88	0.54	5.15
Self Utilization/Flexibility Credit				0		0
West Facing Efficiency Compliance Total	**2.89**	**36.1**	**2.58**	**35.68**	**0.31**	**0.42**

General Notes

CEA CERTIFIED ENERGY ANALYST

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

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Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN B
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BB.1-03	T-01
Date: 01/24/2023	
Scale:	

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ENERGY USE INTENSITY

	Standard Design (kBtu/ft² - yr)	Proposed Design (kBtu/ft² - yr)	Compliance Margin (kBtu/ft² - yr)	Margin Percentage
North Facing				
Gross EUI[1]	17.71	17.76	-0.05	-0.28
Net EUI[2]	6.87	6.92	-0.05	-0.73
East Facing				
Gross EUI[1]	17.71	17.77	-0.06	-0.34
Net EUI[2]	6.87	6.93	-0.06	-0.87
South Facing				
Gross EUI[1]	17.71	17.73	-0.02	-0.11
Net EUI[2]	6.87	6.89	-0.02	-0.29
West Facing				
Gross EUI[1]	17.71	17.93	-0.22	-1.24
Net EUI[2]	6.87	7.08	-0.21	-3.06

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

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

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REQUIRED PV SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	**Exception**	**Module Type**	**Array Type**	**Power Electronics**	**CFI**	**Azimuth (deg)**	**Tilt Input**	**Array Angle (deg)**	**Tilt: (x in 12)**	**Inverter Eff. (%)**	**Annual Solar Access (%)**
2	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	98

REQUIRED SPECIAL FEATURES

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

- Whole house fan
- Exposed slab floor in conditioned zone
- Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)
- Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed

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

- Indoor air quality ventilation
- Kitchen range hood
- Whole house fan airflow and fan efficacy
- Verified SEER/SEER2
- Verified Refrigerant Charge
- Airflow in habitable rooms (SC3.1.4.1.7)
- Verified HSPF2
- Verified heat pump rated heating capacity
- Wall-mounted thermostat in zones greater than 150 ft2 (SC3.4.5)
- Ductless indoor units located entirely in conditioned space (SC3.1.4.1.8)

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**
Anaheim PRADU - 2-Bedroom Plan B	990	1	2	1	1	1

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Calculation Date/Time: 2023-01-16T11:47:28-08:00

Calculation Description: Title 24 Analysis
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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**	**Status**
ADU 2-Bedroom B	Conditioned	Ductless Mini-Split1	990	8.4	DHW Sys 1	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft²)**	**Window and Door Area (ft2)**	**Tilt (deg)**
Front Wall	ADU 2-Bedroom B	_WALL: 2x4 Exterior	0	Front	205.6	118	90
Front Wall 2	ADU 2-Bedroom B	_WALL: 2x8 Exterior	0	Front	69.4	24	90
Left Wall	ADU 2-Bedroom B	_WALL: 2x4 Exterior	90	Left	229.2	64	90
Left Wall 2	ADU 2-Bedroom B	_WALL: 2x8 Exterior	90	Left	11.1	0	90
Rear Wall	ADU 2-Bedroom B	_WALL: 2x4 Exterior	180	Back	205.6	84	90
Rear Wall 2	ADU 2-Bedroom B	_WALL: 2x8 Exterior	180	Back	69.4	4	90
Right Wall	ADU 2-Bedroom B	_WALL: 2x4 Exterior	270	Right	250	144	90
Right Wall 2	ADU 2-Bedroom B	_WALL: 2x8 Exterior	270	Right	11.1	0	90
Roof 3	ADU 2-Bedroom B	_ROOF: CLG.	n/a	n/a	209	n/a	n/a
Roof 4	ADU 2-Bedroom B	_ROOF: CLG.	n/a	n/a	20	n/a	n/a

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Area (ft²)**	**Skylight Area (ft²)**	**Roof Rise (x in 12)**	**Roof Reflectance**	**Roof Emittance**	**Cool Roof**
Roof	ADU 2-Bedroom B	_ROOF: SLPD. CLG.	0	Front	131	0	6	0.1	0.85	No
Roof 2	ADU 2-Bedroom B	_ROOF: SLPD. CLG.	0	Front	650	0	0.3	0.1	0.85	No

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Calculation Date/Time: 2023-01-16T11:47:28-08:00

Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BB.1-03.ribd22x

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 ADU 2-Bedroom B	Attic RoofADU 2-Bedroom B	Ventilated	5.50218	0.1	0.85	Yes	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft²)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**
w1	Window	Front Wall	Front	0			1	54	0.48	NFRC	0.5	NFRC	Bug Screen
d3	Window	Front Wall	Front	0			1	64	0.53	NFRC	0.56	NFRC	Bug Screen
d1	Window	Front Wall 2	Front	0			1	24	0.53	NFRC	0.56	NFRC	Bug Screen
w2	Window	Left Wall	Left	90			1	32	0.48	NFRC	0.5	NFRC	Bug Screen
w2 2	Window	Left Wall	Left	90			1	32	0.48	NFRC	0.5	NFRC	Bug Screen
d3 2	Window	Rear Wall	Back	180			1	64	0.53	NFRC	0.56	NFRC	Bug Screen
w4	Window	Rear Wall	Back	180			1	20	0.48	NFRC	0.5	NFRC	Bug Screen
w3	Window	Rear Wall 2	Back	180			1	4	0.48	NFRC	0.5	NFRC	Bug Screen
w5	Window	Right Wall	Right	270			1	48	0.48	NFRC	0.5	NFRC	Bug Screen
d2	Window	Right Wall	Right	270			1	96	0.53	NFRC	0.56	NFRC	Bug Screen

General Notes

CERTIFIED ENERGY ANALYST CEA

R19-04-30011
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2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BB.1-03	T-02
Date: 01/24/2023	
Scale:	

SLAB FLOORS

01	02	03	04	05	06	07	08
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Slab On Grade	ADU 2-Bedroom B	990	124	none	0	0%	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
_WALL: 2x4 Exterior	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: All Other Siding
_WALL: 2x8 Exterior	Exterior Walls	Wood Framed Wall	2x8 @ 16 in. O. C.	R-25	None / None	0.056	Inside Finish: Gypsum Board Cavity / Frame: R-25 / 2x8 Exterior Finish: All Other Siding
_ROOF: SLPD. CLG.	Cathedral Ceilings	Wood Framed Ceiling	2x10 @ 24 in. O. C.	R-30	None / None	0.035	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x10 Inside Finish: Gypsum Board
Attic RoofADU 2-Bedroom B	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / 0	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
_ROOF: CLG.	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

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

WATER HEATING SYSTEMS

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

WATER HEATERS - NEEA HEAT PUMP

01	02	03	04	05	06	07	08
Name	# of Units	Tank Vol. (gal)	NEEA Heat Pump Brand	NEEA Heat Pump Model	Tank Location	Duct Inlet Air Source	Duct Outlet Air Source
DHW Heater 1	1	50	AOSmith	AOSmithFPTU50	ADU 2-Bedroom B	ADU 2-Bedroom B	ADU 2-Bedroom B

WATER HEATING - HERS VERIFICATION

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

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type
Ductless Mini-Split1	Heat pump heating cooling	Heat Pump System 1	1	Heat Pump System 1	1	n/a	n/a	Setback

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11	12	13
Name	System Type	Number of Units	Heating				Cooling			Zonally Controlled	Compressor Type	HERS Verification
			Efficiency Type	HSPF / HSPF2 / COP	Cap 47	Cap 17	Efficiency Type	SEER / SEER2	EER / EER / CEER			
Heat Pump System 1	VCHP-ductless	1	HSPF2	10.9	44400	26400	EER2SEER2	18.9	10.5	Zonally Controlled	Multi-speed	Heat Pump System 1-hers-htpump

HVAC HEAT PUMPS - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER/EER2	Verified SEER/SEER2	Verified Refrigerant Charge	Verified HSPF/HSPF2	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump System 1-hers-htpump	Not Required	0	Not Required	Not Required	Yes	No	Yes	Yes

VARIABLE CAPACITY HEAT PUMP COMPLIANCE OPTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09	10
Name	Certified Low-Static VCHP System	Airflow to Habitable Rooms	Ductless Units in Conditioned Space	Wall Mount Thermostat	Air Filter Sizing & Pressure Drop Rating	Low Leakage Ducts in Conditioned Space	Minimum Airflow per RA3.3 and SC3.3.3.4.1	Certified non-continuous Fan	Indoor Fan not Running Continuously
Heat Pump System 1	Not required	Required	Required	Required	Not required	Not required	Not required	Not required	Not required

INDOOR AIR QUALITY (IAQ) FANS

01	02	03	04	05	06	07	08	09
Dwelling Unit	Airflow (CFM)	Fan Efficacy (W/CFM)	IAQ Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SRE	Includes Fault Indicator Display?	HERS Verification	Status
SFam IAQVentRpt	52	0.35	Exhaust	No	n/a	No	Yes	

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
WH Fan 1	0.03	25	0.04	1	1	Not a CFVCS	Outside	Required

PROJECT NOTES

****
This report is based on the drawings received on 01/03/2023.
****

SCOPE OF WORK: Construct a ADU - 2-Bedroom (B Elevation).

1) DO NOT USE FOR ACTUAL HEATING/COOLING DESIGN. 2) The Title 24 calculations used for this project are used for the purpose of complying with the current Title 24 code provisions and are intended to be used in order to obtain compliance per Title 24 regulations. They are NOT intended to be used as a substitute for the heating and cooling loads required for the structure(s) that are normally done by a mechanical engineer(s) or HVAC contractor(s) and in NO CIRCUMSTANCES is this to be used in lieu of the normal calculation methods used by a mechnical engineer(s) or HVAC contractor(s). 3) The assembly components found in this document are for modeling purposes only and may not reflect the actual conditions of the walls, roof(s), floor(s), windows and doors of the structure.

General Notes

CEA CERTIFIED ENERGY ANALYST

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Scale:	

2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.
(04/2022)

Building Envelope:	
§ 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):	**Roof Deck, Ceiling and Rafter Roof Insulation.** Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. 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 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 0.45, or area-weighted average U-factor of all fenestration must not exceed 0.45. *
Fireplaces, Decorative Gas Appliances, and Gas Log:	
§ 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:	
§ 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-N. *
§ 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)3:	**Insulation.** Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 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.

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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.
§ 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:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code. *
§ 150.0(j)2:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by §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 designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2' higher than the base of the water heater
§ 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:	
§ 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 CMC §§ 601.3-605.0 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 R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. 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 UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼". If mastic or tape is used. Building cavities, air handler support platforms, 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 these spaces must not be compressed. *
§ 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)9:	**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)8:	**Protection of Insulation.** Insulation must be protected from damage due tosunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or painted with a water retardant and solar radiation-resistant coating.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner cores of flex ducts must have a non-porous layer or air barrier 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 Reference Residential Appendix RA3.1.
§ 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. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan B
Calculation Date/Time: 2023-01-16T11:47:28-08:00 **(Page 13 of 13)**
Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BB.1-03.ribd22x

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Wayne Seward	Documentation Author Signature: WayneSeward
Company: Bear Technologies Consulting Inc.	Signature Date: 2023-01-17 12:12:22
Address: 3431 Don Arturo Drive	CEA/ HERS Certification Identification (If applicable): R19-04-30011
City/State/Zip: Carlsbad, CA 92010	Phone: 760-635-2327

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: Bart M Smith	Responsible Designer Signature: BartMSmith
Company: DZN Partners	Date Signed: 2023-01-17 13:11:13
Address: 682 2nd Street	License: C-22557
City/State/Zip: Encinitas, CA 92024	Phone: 760-753-2464

Digitally signed by CalCERTS. 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.

Easy to Verify at CalCERTS.com

Registration Number: 223-P010006679A-000-000-0000000-0000
Registration Date/Time: 2023-01-17 13:11:13
HERS Provider: CalCERTS Inc.
CA Building Energy Efficiency Standards - 2022 Residential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220901
Report Generated: 2023-01-16 11:48:13

2022 Single-Family Residential Mandatory Requirements Summary

§ 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. *
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)1B:	**Central Fan Integrated (CFI) Ventilation Systems.** Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed andcontrolled per §150.0(o)1Bi&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	**Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses** . 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 specified in § 150.0(o)1C-i-ii.
§ 150.0(o)1G:	**Local Mechanical Exhaust.** Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of §150.0(o)1Gii;enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Gii-iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1GVi. *
§ 150.0(o)1H&I:	**Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems.** The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G
Pool and Spa Systems and Equipment:	
§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDNS; 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:	
§ 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, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.
§ 150.0(k)1B:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference *Joint Appendix JA8*. *
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	**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)1E:	**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 shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 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).

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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)2A:	**Accessible Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
§ 150.0(k)2B:	**Multiple Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	**Mandatory Requirements.** Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	**Energy Management Control Systems.** An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	**Automatic Shutoff Controls.** In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	**Dimmers.** Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	**Independent controls.** Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 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 have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	**Internally illuminated address signs.** Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 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 §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
Solar Readiness:	
§ 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)-(e).
§110.10(b)1A:	**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. *
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on sloped roofs must have an azimuth between 90-300° 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 horizontal distance 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)-(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."
Electric and Energy Storage Ready:	

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2022 Single-Family Residential Mandatory Requirements Summary

§ 150.0(s)	**Energy Storage System (ESS) Ready.** All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, or a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(s); at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator, one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.
§ 150.0(t)	**Heat Pump Space Heater Ready.** Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(u)	**Electric Cooktop Ready.** Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(v)	**Electric Clothes Dryer Ready.** Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."

*Exceptions may apply.

5/6/22

General Notes

CEA CERTIFIED ENERGY ANALYST

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

BEAR TECHNOLOGIES CONSULTING, INC.
3431 DON ARTURO DRIVE,
CARLSBAD, CALIFORNIA 92010
(760) 635-2327
wayne@beartechconsulting.com
http://www.beartechconsulting.com

Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN B
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project: 23Q1019-2BB.1-03	Sheet: T-04
Date: 01/24/2023	
Scale:	

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan C
Calculation Date/Time: 2023-01-16T11:59:42-08:00

Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BC.1-03.ribd22x

GENERAL INFORMATION					
01	Project Name	Anaheim PRADU - 2-Bedroom Plan C			
02	Run Title	Title 24 Analysis			
03	Project Location	Anaheim PRADU Street			
04	City	Anaheim	05	Standards Version	2022
06	Zip code	92805	07	Software Version	EnergyPro 9.0
08	Climate Zone	7	09	Front Orientation (deg/ Cardinal)	All orientations
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Newly Constructed	13	Number of Bedrooms	2
14	Addition Cond. Floor Area (ft^2)	0	15	Number of Stories	1
16	Existing Cond. Floor Area (ft^2)	n/a	17	Fenestration Average U-factor	0.56
18	Total Cond. Floor Area (ft^2)	990	19	Glazing Percentage (%)	37.50%
20	ADU Bedroom Count	n/a			

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

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan C
Calculation Date/Time: 2023-01-16T11:59:42-08:00

Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BC.1-03.ribd22x

ENERGY DESIGN RATINGS	Energy Design Ratings			Compliance Margins		
	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)	Source Energy (EDR1)	Efficiency[1] EDR (EDR2efficiency)	Total[2] EDR (EDR2total)
Standard Design	36.9	45	33.2			
Proposed Design						
North Facing	36.8	43.1	32.5	0.1	1.9	0.7
East Facing	36.9	43.2	32.4	0	1.8	0.8
South Facing	35.5	40.4	31.4	1.4	4.6	1.8
West Facing	36	43.6	32.6	0.9	1.4	0.6
RESULT[3]: PASS						

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

- Standard Design PV Capacity: 2.00 kWdc
- Proposed PV Capacity Scaling: North (2.00 kWdc) East (2.00 kWdc) South (2.00 kWdc) West (2.00 kWdc)

Registration Number: 223-P010006682A-000-000-0000000-0000
Registration Date/Time: 2023-01-17 13:11:13
HERS Provider: CalCERTS Inc.
CA Building Energy Efficiency Standards - 2022 Residential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220901
Report Generated: 2023-01-16 12:00:23

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan C
Calculation Date/Time: 2023-01-16T11:59:42-08:00

Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BC.1-03.ribd22x

ENERGY USE SUMMARY Energy Use	Standard Design Source Energy (EDR1) ($kBtu/ft^2$ -yr)	Standard Design TDV Energy (EDR2) ($kTDV/ft^2$ -yr)	Proposed Design Source Energy (EDR1) ($kBtu/ft^2$ -yr)	Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$ -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0.2	0.87	0.76	5.32	-0.56	-4.45
Space Cooling	0.42	10.11	0.37	9.02	0.05	1.09
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.02	1.38	16.12	0.51	4.9
Self Utilization/Flexibility Credit				0		0
North Facing Efficiency Compliance Total	**2.91**	**36.33**	**2.91**	**34.79**	**0**	**1.54**
Space Heating	0.2	0.87	0.82	5.69	-0.62	-4.82
Space Cooling	0.42	10.11	0.33	8.73	0.09	1.38
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.02	1.38	16.12	0.51	4.9
Self Utilization/Flexibility Credit				0		0
East Facing Efficiency Compliance Total	**2.91**	**36.33**	**2.93**	**34.87**	**-0.02**	**1.46**

Registration Number: 223-P010006682A-000-000-0000000-0000
Registration Date/Time: 2023-01-17 13:11:13
HERS Provider: CalCERTS Inc.
CA Building Energy Efficiency Standards - 2022 Residential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220901
Report Generated: 2023-01-16 12:00:23

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan C
Calculation Date/Time: 2023-01-16T11:59:42-08:00

Calculation Description: Title 24 Analysis
Input File Name: 23Q1019-2BC.1-03.ribd22x

ENERGY USE SUMMARY Energy Use	Standard Design Source Energy (EDR1) ($kBtu/ft^2$ -yr)	Standard Design TDV Energy (EDR2) ($kTDV/ft^2$ -yr)	Proposed Design Source Energy (EDR1) ($kBtu/ft^2$ -yr)	Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$ -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0.2	0.87	0.4	2.79	-0.2	-1.92
Space Cooling	0.42	10.11	0.31	9.59	0.11	0.52
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.02	1.36	15.95	0.53	5.07
Self Utilization/Flexibility Credit				0		0
South Facing Efficiency Compliance Total	**2.91**	**36.33**	**2.47**	**32.66**	**0.44**	**3.67**
Space Heating	0.2	0.87	0.42	2.95	-0.22	-2.08
Space Cooling	0.42	10.11	0.47	11.99	-0.05	-1.88
IAQ Ventilation	0.4	4.33	0.4	4.33	0	0
Water Heating	1.89	21.02	1.35	15.93	0.54	5.09
Self Utilization/Flexibility Credit				0		0
West Facing Efficiency Compliance Total	**2.91**	**36.33**	**2.64**	**35.2**	**0.27**	**1.13**

Registration Number: 223-P010006682A-000-000-0000000-0000
Registration Date/Time: 2023-01-17 13:11:13
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CA Building Energy Efficiency Standards - 2022 Residential Compliance
Report Version: 2022.0.000
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General Notes

CEA CERTIFIED ENERGY ANALYST

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

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Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN C
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BC.1-03	T-01
Date: 01/24/2023	
Scale:	

ENERGY USE INTENSITY

	Standard Design (kBtu/ft² - yr)	Proposed Design (kBtu/ft² - yr)	Compliance Margin (kBtu/ft² - yr)	Margin Percentage
North Facing				
Gross EUI[1]	17.74	17.65	0.09	0.51
Net EUI[2]	6.88	6.8	0.08	1.16
East Facing				
Gross EUI[1]	17.74	17.73	0.01	0.06
Net EUI[2]	6.88	6.88	0	0
South Facing				
Gross EUI[1]	17.74	17.56	0.18	1.01
Net EUI[2]	6.88	6.71	0.17	2.47
West Facing				
Gross EUI[1]	17.74	17.8	-0.06	-0.34
Net EUI[2]	6.88	6.94	-0.06	-0.87

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

REQUIRED PV SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	**Exception**	**Module Type**	**Array Type**	**Power Electronics**	**CFI**	**Azimuth (deg)**	**Tilt Input**	**Array Angle (deg)**	**Tilt: (x in 12)**	**Inverter Eff. (%)**	**Annual Solar Access (%)**
2	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	98

REQUIRED SPECIAL FEATURES

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

- Whole house fan
- Exposed slab floor in conditioned zone
- Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)
- Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed

HERS FEATURE SUMMARY

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

- Indoor air quality ventilation
- Kitchen range hood
- Whole house fan airflow and fan efficacy
- Verified SEER/SEER2
- Verified Refrigerant Charge
- Airflow in habitable rooms (SC3.1.4.1.7)
- Verified HSPF2
- Verified heat pump rated heating capacity
- Wall-mounted thermostat in zones greater than 150 ft2 (SC3.4.5)
- Ductless indoor units located entirely in conditioned space (SC3.1.4.1.8)

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**
Anaheim PRADU - 2-Bedroom Plan C	990	1	2	1	1	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	**Zone Type**	**HVAC System Name**	**Zone Floor Area (ft²)**	**Avg. Ceiling Height**	**Water Heating System 1**	**Status**
ADU 2-Bedroom C	Conditioned	Ductless Mini-Split1	990	8.4	DHW Sys 1	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft²)**	**Window and Door Area (ft2)**	**Tilt (deg)**
Front Wall	ADU 2-Bedroom C	_WALL: 2x4 Exterior	0	Front	275	127.3	90
Left Wall	ADU 2-Bedroom C	_WALL: 2x4 Exterior	90	Left	229.2	48	90
Rear Wall	ADU 2-Bedroom C	_WALL: 2x4 Exterior	180	Back	275	76	90
Right Wall	ADU 2-Bedroom C	_WALL: 2x4 Exterior	270	Right	250	120	90
Roof 2	ADU 2-Bedroom C	_ROOF: CLG.	n/a	n/a	227	n/a	n/a

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Area (ft²)**	**Skylight Area (ft²)**	**Roof Reflectance (x in 12)**	**Roof Reflectance**	**Roof Emittance**	**Cool Roof**
Roof	ADU 2-Bedroom C	_ROOF: SLPD. CLG.	0	Front	763	0	3	0.1	0.85	No

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 ADU 2-Bedroom C	Attic RoofADU 2-Bedroom C	Ventilated	3	0.1	0.85	Yes	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft²)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**
w1	Window	Front Wall	Front	0			1	54	0.53	NFRC	0.5	NFRC	Bug Screen
d1	Window	Front Wall	Front	0			1	20	0.58	NFRC	0.65	NFRC	Bug Screen
d3	Window	Front Wall	Front	0			1	53.3	0.58	NFRC	0.58	NFRC	Bug Screen
w2	Window	Left Wall	Left	90			1	24	0.53	NFRC	0.5	NFRC	Bug Screen
w2 2	Window	Left Wall	Left	90			1	24	0.53	NFRC	0.5	NFRC	Bug Screen
d3 2	Window	Rear Wall	Back	180			1	53.3	0.58	NFRC	0.58	NFRC	Bug Screen
w3	Window	Rear Wall	Back	180			1	8	0.53	NFRC	0.5	NFRC	Bug Screen
w4	Window	Rear Wall	Back	180			1	14.7	0.53	NFRC	0.5	NFRC	Bug Screen
w5	Window	Right Wall	Right	270			1	40	0.53	NFRC	0.5	NFRC	Bug Screen
d2	Window	Right Wall	Right	270			1	80	0.58	NFRC	0.58	NFRC	Bug Screen

SLAB FLOORS

01	02	03	04	05	06	07	08
Name	**Zone**	**Area (ft²)**	**Perimeter (ft)**	**Edge Insul. R-value and Depth**	**Edge Insul. R-value and Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	ADU 2-Bedroom C	990	124	none	0	0%	No

General Notes

R19-04-30011
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2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

Project	Sheet
23Q1019-2BC.1-03	T-02
Date: 01/24/2023	
Scale:	

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
_WALL: 2x4 Exterior	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: All Other Siding
_ROOF: SLPD. CLG.	Cathedral Ceilings	Wood Framed Ceiling	2x10 @ 24 in. O. C.	R-30	None / None	0.035	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x10 Inside Finish: Gypsum Board
Attic RoofADU 2-Bedroom C	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / 0	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
_ROOF: CLG.	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

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

WATER HEATING SYSTEMS

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

WATER HEATERS - NEEA HEAT PUMP

01	02	03	04	05	06	07	08
Name	# of Units	Tank Vol. (gal)	NEEA Heat Pump Brand	NEEA Heat Pump Model	Tank Location	Duct Inlet Air Source	Duct Outlet Air Source
DHW Heater 1	1	50	AOSmith	AOSmithFPTU50	ADU 2-Bedroom C	ADU 2-Bedroom C	ADU 2-Bedroom C

WATER HEATING - HERS VERIFICATION

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

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type
Ductless Mini-Split1	Heat pump heating cooling	Heat Pump System 1	1	Heat Pump System 1	1	n/a	n/a	Setback

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11	12	13
Name	System Type	Number of Units	Heating				Cooling			Zonally Controlled	Compressor Type	HERS Verification
			Efficiency Type	HSPF / HSPF2 / COP	Cap 47	Cap 17	Efficiency Type	SEER / SEER2	EER / EER / CEER			
Heat Pump System 1	VCHP-ductless	1	HSPF2	10.9	43000	25800	EER2SEER2	18.9	10.5	Zonally Controlled	Multi-speed	Heat Pump System 1-hers-htpump

HVAC HEAT PUMPS - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER/EER2	Verified SEER/SEER2	Verified Refrigerant Charge	Verified HSPF/HSPF2	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump System 1-hers-htpump	Not Required	0	Not Required	Not Required	Yes	No	Yes	Yes

VARIABLE CAPACITY HEAT PUMP COMPLIANCE OPTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09	10
Name	Certified Low-Static VCHP System	Airflow to Habitable Rooms	Ductless Units in Conditioned Space	Wall Mount Thermostat	Air Filter Sizing & Pressure Drop Rating	Low Leakage Ducts in Conditioned Space	Minimum Airflow per RA3.3 and SC3.3.3.4.1	Certified non-continuous Fan	Indoor Fan not Running Continuously
Heat Pump System 1	Not required	Required	Required	Required	Not required	Not required	Not required	Not required	Not required

INDOOR AIR QUALITY (IAQ) FANS

01	02	03	04	05	06	07	08	09
Dwelling Unit	Airflow (CFM)	Fan Efficacy (W/CFM)	IAQ Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SRE	Includes Fault Indicator Display?	HERS Verification	Status
5Fam IAQVentRpt	52	0.35	Exhaust	No	n/a	No	Yes	

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
WH Fan 1	0.03	25	0.04	1	1	Not a CFVCS	Outside	Required

PROJECT NOTES

****
This report is based on the drawings received on 01/03/2023.
****

SCOPE OF WORK: Construct a ADU - 2-Bedroom (C Elevation).

1) DO NOT USE FOR ACTUAL HEATING/COOLING DESIGN. 2) The Title 24 calculations used for this project are used for the purpose of complying with the current Title 24 code provisions and are intended to be used in order to obtain compliance per Title 24 regulations. They are NOT intended to be used as a substitute for the heating and cooling loads required for the structure(s) that are normally done by a mechanical engineer(s) or HVAC contractor(s) and in NO CIRCUMSTANCES is this to be used in lieu of the normal calculation methods used by a mechnical engineer(s) or HVAC contractor(s). 3) The assembly components found in this document are for modeling purposes only and may not reflect the actual conditions of the walls, roof(s), floor(s), windows and doors of the structure.

General Notes

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

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Project	Sheet
23Q1019-2BC.1-03	T-03
Date: 01/24/2023	
Scale:	

2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.
(04/2022)

Building Envelope:

§ 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):	**Roof Deck, Ceiling and Rafter Roof Insulation.** Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. 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 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(j):	**Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditionpd space or outdoors must have a maximum U-factor of 0.45; or area-weighted average U-factor of all fenestration must not exceed 0.45.

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 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:

§ 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-N. *
§ 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)3:	**Insulation.** Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 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.

5/6/22

2022 Single-Family Residential Mandatory Requirements Summary

§ 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.
§ 150.0(h)3A:	**Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five foot 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:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code. *
§ 150.0(j)2:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by §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 designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2" higher than the base of the water heater
§ 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:

§ 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 CMC §§ 601.0-605.0 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 R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. 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 UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and fabric and either mesh or tape must be used to seal openings greater than ¼". If mastic or tape is used. Building cavities, air handler support platforms, 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 these spaces must not be compressed. *
§ 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 due tosunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or painted with a water retardant and solar radiation-resistant coating.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner cores of flex ducts must have a non-porous layer or air barrier 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 Reference Residential Appendix RA3.1.
§ 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. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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. *

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)1B:	**Central Fan Integrated (CFI) Ventilation Systems.** Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed andcontrolled per §150.0(o)1Bii&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	**Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses** , 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 specified in § 150.0(o)1Ci-iii.
§ 150.0(o)1G:	**Local Mechanical Exhaust.** Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of §150.0(o)1Giii,enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Giii-iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1Gvi. *
§ 150.0(o)1Hii:	**Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems.** The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G

Pool and Spa Systems and Equipment:

§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDBS; 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:

§ 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, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.
§ 150.0(k)1B:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	**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)1E:	**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 shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 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).

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2022 Single-Family Residential Mandatory Requirements Summary

§ 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)2A:	**Accessible Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
§ 150.0(k)2B:	**Multiple Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.(k)2C:	**Mandatory Requirements.** Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	**Energy Management Control Systems.** An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	**Automatic Shutoff Controls.** In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	**Dimmers.** Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	**Independent controls.** Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 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 have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	**Internally Illuminated address signs.** Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 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 §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.

Solar Readiness:

§ 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)-(e).
§110.10(b)1A:	**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. *
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° 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 horizontal distance 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)-(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."

Electric and Energy Storage Ready:

5/6/22

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: Anaheim PRADU - 2-Bedroom Plan C
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2023-01-16T11:59:42-08:00
Input File Name: 23Q1019-2BC.1-03.ribd22x
(Page 13 of 13)

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Wayne Seward	Documentation Author Signature: Wayne Seward
Company: Bear Technologies Consulting Inc.	Signature Date: 2023-01-17 12:14:01
Address: 3431 Don Arturo Drive	CEA/ HERS Certification Identification (if applicable): R19-04-30011
City/State/Zip: Carlsbad, CA 92010	Phone: 760-635-2327

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: Bart M Smith	Responsible Designer Signature: Bart M Smith
Company: DZN Partners	Date Signed: 2023-01-17 13:11:13
Address: 682 2nd Street	License: C-22557
City/State/Zip: Encinitas, CA 92024	Phone: 760-753-2464

Digitally signed by CalCERTS. 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.

Easy to Verify at CalCERTS.com

Registration Number: 223-P010006682A-000-000-0000000-0000
Registration Date/Time: 2023-01-17 13:11:13
HERS Provider: CalCERTS inc.
CA Building Energy Efficiency Standards - 2022 Residential Compliance
Report Version: 2022.0.000
Schema Version: rev 20220901
Report Generated: 2023-01-16 12:00:23

2022 Single-Family Residential Mandatory Requirements Summary

§ 150.0(s)	**Energy Storage System (ESS) Ready.** All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, or a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(s); at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator; one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.
§ 150.0(t)	**Heat Pump Space Heater Ready.** Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(u)	**Electric Cooktop Ready.** Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(v)	**Electric Clothes Dryer Ready.** Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready;" and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."

*Exceptions may apply.

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General Notes

CEA CERTIFIED ANALYST ENERGY

R19-04-30011
NR19-04-30020

TITLE 24, PART 6 ENERGY COMPLIANCE DOCUMENTATION

No.	Revision/Issue	Date

Firm Name and Address

BEAR TECHNOLOGIES CONSULTING, INC.
3431 DON ARTURO DRIVE,
CARLSBAD, CALIFORNIA 92010
(760) 635-2327
wayne@beartechconsulting.com
http://www.beartechconsulting.com

Project Name and Address

ANAHEIM PRADU - 2 BEDROOM PLAN C
2 BEDROOM A STREET
ANAHEIM, CALIFORNIA 92805

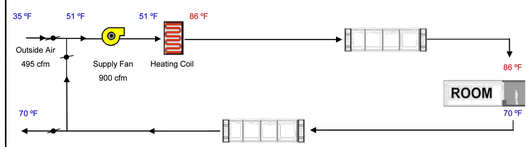
Project: 23Q1019-2BC.1-03	Sheet: T-04
Date: 01/24/2023	
Scale:	

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

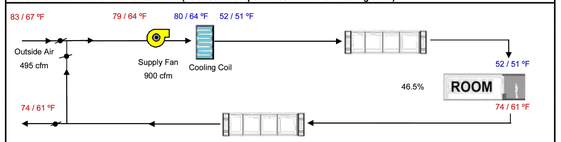
Project Name: PRADU - 2-Bedroom Plan C — Date: 1/17/2023
System Name: Ductless Mini-Split — Floor Area: 990

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	43,000	Total Room Loads	881	20,681	3,472	883	15,292
Total Output (Btuh)	43,000	Return Vented Lighting		0			
Output (Btuh/sqft)	43.4	Return Air Ducts		0			0
Cooling System		Return Fan		0			0
Output per System	26,200	Ventilation	495	4,803	4,838	495	18,677
Total Output (Btuh)	26,200	Supply Fan		596			-596
Total Output (Tons)	2.2	Supply Air Ducts		0			0
Total Output (Btuh/sqft)	26.5						
Total Output (sqft/Ton)	453.4	TOTAL SYSTEM LOAD		26,079	8,310		33,374
Air System							
CFM per System	900	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	900	_Ductless Mini-Split		26,526	0		33,666
Airflow (cfm/sqft)	0.91						
Airflow (cfm/Ton)	412.2						
Outside Air (%)	55.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		26,526	0		33,666
Outside Air (cfm/sqft)	0.50						
Note: values above given at ARI conditions		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)



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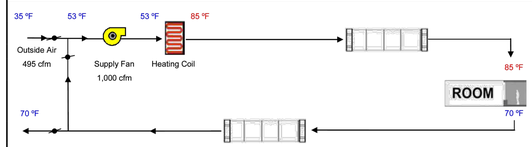
HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

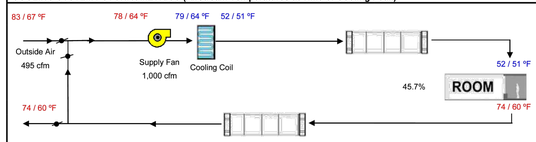
Project Name: PRADU - 2-Bedroom Plan B — Date: 1/17/2023
System Name: Ductless Mini-Split — Floor Area: 990

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	44,400	Total Room Loads	965	22,920	3,472	924	15,413
Total Output (Btuh)	44,400	Return Vented Lighting		0			
Output (Btuh/sqft)	44.8	Return Air Ducts		0			0
Cooling System		Return Fan		0			0
Output per System	29,000	Ventilation	495	4,803	5,210	495	18,677
Total Output (Btuh)	29,000	Supply Fan		596			-596
Total Output (Tons)	2.4	Supply Air Ducts		0			0
Total Output (Btuh/sqft)	29.3						
Total Output (sqft/Ton)	409.7	TOTAL SYSTEM LOAD		28,319	8,682		33,494
Air System							
CFM per System	1,000	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	1,000	_Ductless Mini-Split		29,156	0		34,763
Airflow (cfm/sqft)	1.01						
Airflow (cfm/Ton)	413.8						
Outside Air (%)	49.5%	Total Adjusted System Output (Adjusted for Peak Design conditions)		29,156	0		34,763
Outside Air (cfm/sqft)	0.50						
Note: values above given at ARI conditions		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)



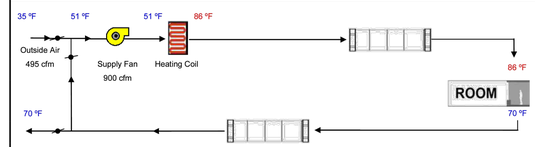
b

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

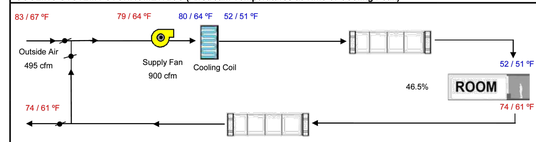
Project Name: PRADU - 2-Bedroom Plan A — Date: 1/17/2023
System Name: Ductless Mini-Split — Floor Area: 990

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK CFM	COIL COOLING PEAK Sensible	COIL COOLING PEAK Latent	COIL HTG. PEAK CFM	COIL HTG. PEAK Sensible
Number of Systems	1						
Heating System							
Output per System	43,000	Total Room Loads	881	20,688	3,472	879	15,215
Total Output (Btuh)	43,000	Return Vented Lighting		0			
Output (Btuh/sqft)	43.4	Return Air Ducts		0			0
Cooling System		Return Fan		0			0
Output per System	26,200	Ventilation	495	4,803	4,838	495	18,677
Total Output (Btuh)	26,200	Supply Fan		596			-596
Total Output (Tons)	2.2	Supply Air Ducts		0			0
Total Output (Btuh/sqft)	26.5						
Total Output (sqft/Ton)	453.4	TOTAL SYSTEM LOAD		26,086	8,310		33,296
Air System							
CFM per System	900	HVAC EQUIPMENT SELECTION					
Airflow (cfm)	900	_Ductless Mini-Split		26,526	0		33,666
Airflow (cfm/sqft)	0.91						
Airflow (cfm/Ton)	412.2						
Outside Air (%)	55.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		26,526	0		33,666
Outside Air (cfm/sqft)	0.50						
Note: values above given at ARI conditions		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)



a

PREPARER SIGNATURE

FOR CITY STAMPS

DZN PARTNERS
682SECONDST
ENCINITAS,CA
(760)7532464
DZNPARTNERS.COM

2 BEDROOM PRADU

CITY: ANAHEIM

JOB: 202409R

HVAC SYSTEM SUMMARIES

T-05

PCSD Engineering Corp
3529 Coastview Court
Carlsbad, CA 92010
Ph: 760-207-1885

Paul Christenson San Diego Engineering

Structural Design Calculations

Accessory Dwelling Unit - 2 Bedroom

Client

DZN Partners
682 Second Street
Encinitas, CA 92024

Project

PRADU-2 Bedroom
Anaheim, CA

Paul S. Christenson
RCE C57182, exp. 12/31/23

February 3, 2023

PCSD File #: 19-018-2

Paul Christenson San Diego Engineering

3529 Coastview Ct - Carlsbad, CA 92010

Telephone (760) 207-1885 - Email: paul.pcsd@gmail.com

1.0 Design Criteria: PRADU-2 Bedrm
22-404-2

Code:	2022 California Building Code - ASCE 7-10		
Timber:	Douglas Fir-Larch (DF-L), WWPA or WCLIB		
	2x Wall Framing:	DF-L #2 (unless noted otherwise)	
	2x Rafters & Joists:	DF-L #2 " "	
	Posts & Beams:	DF-L #1 " "	
Glue-Lam Beams:	Simple Span:	Grade 24F-V4 (DF/DF)	
	Cantilevers:	Grade 24F-V8 (DF/DF)	
Sheathing:	Min. APA-Rated Sheathing, Exposure 1, Plywood or OSB (U.N.O.)		
Engineered Framing	*Wood I-Joists:*	*TJI 110,210,230,360,560*	*ICC ESR-1153*
	LVL, PSL	1.9E Microllam, 2.0E Parallam	ICBO ER-4979
Concrete:	Compressive Strength @ 28 days per ASTM C39-96:		
	Footings:	f'c = 2500 psi	
	Grade Beams:	f'c = 3000 psi	
Concrete Block:	Grade N-I per ASTM C90-95, f'm = 1500 psi per ASTM E447-92		
Mortar:	Type S Mortar Cement per ASTM C270-95, Min. f'm = 1800 psi @ 28 days.		
Grout:	Coarse Grout w/ 3/8" Max. Aggregate per ASTM C476-91, Min. f'm = 2000 psi @ 28 days.		
Reinforcing Steel:	#4 & Larger:	ASTM A615-60 (Fy = 60 ksi)	
	#3 & Smaller:	ASTM A615-40 (Fy = 40 ksi)	
Structural Steel:	'W' Shapes:	ASTM A992, Fy= 50-65 ksi	
	Plates, Angles, Channels	ASTM A36, Fy = 36 ksi	
	Tube Shapes:	ASTM A500, Grade B, Fy= 46 ksi	
	Pipe Shapes:	ASTM A53, Grade B, Fy=35 ksi	
Welding Electrodes:	Structural Steel:	E70-T6	
	A615-60 Rebar:	E90 Series	
Bolts:	Sill Plate Anchor Botls & Threaded Rods:		A307 Quality Minimum
	Steel Moment & Braced Frames:		A325 (Bearing, U.N.O.)
Soils:	1500 psf Bearing Pressure		
References:			

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Telephone (760) 207-1885 - Email: paul.pcsd@gmail.com

JOB 22-404-S
SHEET NO 2 OF
CALCULATED BY PSC DATE 8/8/22
CHECK BY DATE
SCALE

2.0 LOAD LIST

2.1 Roof (Vaulted)

Roofing	6.0 psf
15/32" Sheathing	1.5 psf
Roof Framing	2.8 psf
5/8" Gyp. Bd.	2.8 psf
Insulation and PV Sys	4.9 psf
Σ_{DL} =	18.0 psf
Σ_{LL} =	20.0 psf
Total Load =	41.0 psf

2.2 Roof (w/ ceiling)

Roofing	6.0 psf
15/32" Sheathing	1.5 psf
Roof Framing	2.8 psf
Insulation and Misc.	1.7 psf
Σ_{DL} =	12.0 psf
Σ_{LL} =	20.0 psf
Total Load =	35.0 psf

2.3 Ceiling

Ceiling Joists	1.3 psf
5/8" Gyp. Bd.	2.8 psf
Insulation and Misc.	1.9 psf
Σ_{DL} =	6.0 psf
Σ_{LL} =	10.0 psf
Total Load =	16.0 psf

2.4 Walls

Exterior Wall

7/8" Stucco	9.0 psf
15/32" Sheathing	1.5 psf
2x4 Studs @ 16" o.c.	1.1 psf
5/8" Gypsum Bd.	2.8 psf
Misc.	0.6 psf
Σ_{DL} =	15.0 psf

Interior Wall

1/2" Gyp. Bd. (2 Sides)	4.6 psf
2x4 Studs @ 16" o.c.	1.1 psf
Misc.	2.3 psf
Σ_{DL} =	8.0 psf

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JOB 22-404-S
SHEET NO 3 OF
CALCULATED BY PSC DATE 8/8/22
CHECK BY DATE
SCALE

2.0 LOAD LIST (CONTIN)

2.5 Floor

Floor Cover	5.5 psf
Sheathing	2.3 psf
2x F.J.	3.1 psf
5/8" Gyp. Bd.	2.8 psf
Insulation and Misc.	1.3 psf
Σ_{DL} =	15.0 psf
Σ_{LL} =	40.0 psf
Total Load =	55.0 psf

2.6 Wind

WIND PARAMETERS

Basic Wind Speed = 110 mph Exposure Cat = B

$Ps = \lambda Kzt*I*Ps30$ (ASCE 7 - Equation 6-1)

λ = 1.00 (fig. 6-3) Ps30 = 26.6 psf (fig. 6-3)
Kzt = 1.00 (fig. 6-4) I = 1.0 (table 11.5-1)

P = 26.6 psf

P = 16.0 psf (*0.6 ASD)

2.7 Seismic

$S_{MS} = F_a S_s$

S_{MS} = 1.79

$S_{DS} = (2/3)\ S_{MS}$ (11.4-3)

S_{DS} = 1.194

$Cs = \frac{S_{DS}}{(R/I)}$

Cs = 0.184

USE:

$V = C_s W_{DL}$

$V = 0.184\ W_{DL}$

USGS APPLICATION

S_s =	1.492	S_1 =	0.503
F_a =	1.20	F_v =	0.00
R =	6.5	I =	1.00
h_n =	15.00		
Occupancy Category:			2
Site Class:			D

SEISMIC DESIGN CATEGORY

$S_{1<0.75}$ (11.6 ASCE 7-05)

$S_{1>0.04}$ $Ss_{>0.15}$ (11.4.1 ASCE 7-05)

$T_a = C_t * (h_n)^{0.75}$ = 0.152 Eqn. 12.8-1 Not Ol
Ts = S_{D1}/S_{DS} = 0
k = 1.0 Ta<0.5

Seismic Design Category: D

ASD BASE SHEAR

$V_{ASD} = \frac{C_s W_{DL}}{1.4}$

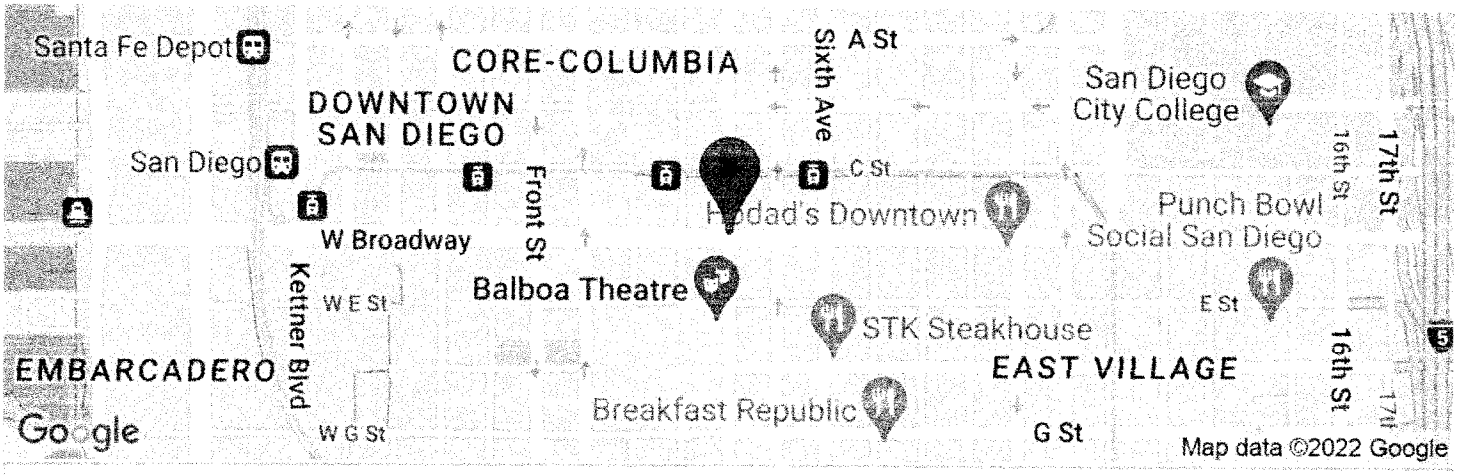
$V_{ASD} = 0.131\ W_{DL}$

OSHPD
3A

Berwin

San Diego, CA, USA

Latitude, Longitude: 32.715738, -117.1610838



Date	8/9/2022, 3:45:54 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.492	MCE_R ground motion. (for 0.2 second period)
S_1	0.503	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.79	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.193	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.678	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.814	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.492	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.728	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	2.269	Factored deterministic acceleration value. (0.2 second)
S1RT	0.503	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.574	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.799	Factored deterministic acceleration value. (1.0 second)
PGAd	0.941	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.678	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration

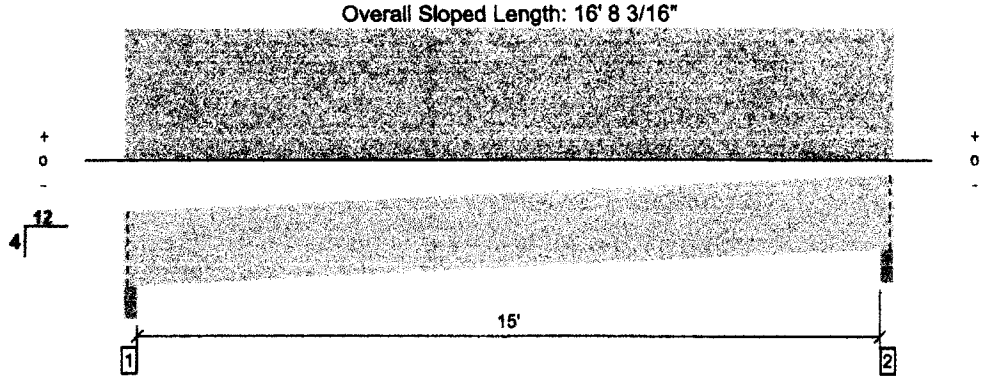
FORTE® **MEMBER REPORT** *Roof Framing, (RR-1) Rafters*

PASSED

4/

1 piece(s) 2 x 10 Douglas Fir-Larch No. 2 @ 24" OC

Overall Sloped Length: 16' 8 3/16"



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	607 @ 2 1/2"	2231 (3.50")	Passed (27%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	528 @ 1' 1/4"	2081	Passed (25%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	2241 @ 7' 9 1/2"	2537	Passed (88%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.334 @ 7' 9 1/2"	0.533	Passed (L/574)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.651 @ 7' 9 1/2"	0.799	Passed (L/295)	--	1.0 D + 1.0 Lr (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch: 4/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 4' 4" o/c unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 16' 5" o/c unless detailed otherwise.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Total	
1 - Beveled Plate - SPF	3.50"	3.50"	1.50"	296	312	608	Blocking
2 - Beveled Plate - SPF	3.50"	3.50"	1.50"	296	312	608	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Loads	Location (Side)	Spacing	Dead (0.90)	Roof Live (non-snow 1.25)	Comments
1 - Uniform (PSF)	0 to 15' 7"	24"	18.0	20.0	Roof

Weyerhaeuser Notes

SUSTAINABLE FORESTRY INITIATIVE

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The product application, input design loads, dimensions and support information have been provided by Forte Software Operator

Forte Software Operator	Job Notes
Paul Christenson PCSD Engineering (760) 207-1885 paul.pcsd@gmail.com	

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FORTEWEB

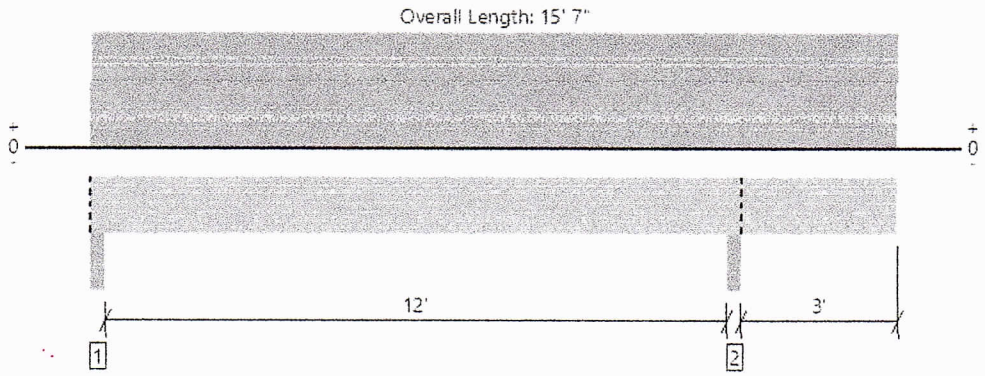
MEMBER REPORT

PASSED

5

Roof Framing, (RB-1) Ridge Bm

1 piece(s) 6 x 12 DF No.1



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	2189 @ 12' 5 1/4"	12031 (3.50")	Passed (18%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	1228 @ 11' 4"	8960	Passed (14%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	3853 @ 6' 1/16"	17048	Passed (23%)	1.25	1.0 D + 1.0 Lr (Alt Spans)
Live Load Defl. (in)	0.051 @ 6' 2 13/16"	0.409	Passed (L/999+)	--	1.0 D + 1.0 Lr (Alt Spans)
Total Load Defl. (in)	0.091 @ 6' 2 3/8"	0.614	Passed (L/999+)	--	1.0 D + 1.0 Lr (Alt Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Lumber grading provisions must be extended over the length of the member per NDS 4.2.5.5.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Factored	
1 - Column - DF	3.50"	3.50"	1.50"	625	732	1357	Blocking
2 - Column - DF	3.50"	3.50"	1.50"	1027	1162	2189	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	15' 7" o/c	
Bottom Edge (Lu)	15' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
0 - Self Weight (PLF)	0 to 15' 7"	N/A	16.0	--	
1 - Uniform (PSF)	0 to 15' 7" (Front)	6'	15.0	20.0	Roof

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
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Weyerhaeuser

8/17/2022 8:53:26 PM UTC
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File Name: ADU-2

FORTEWEB

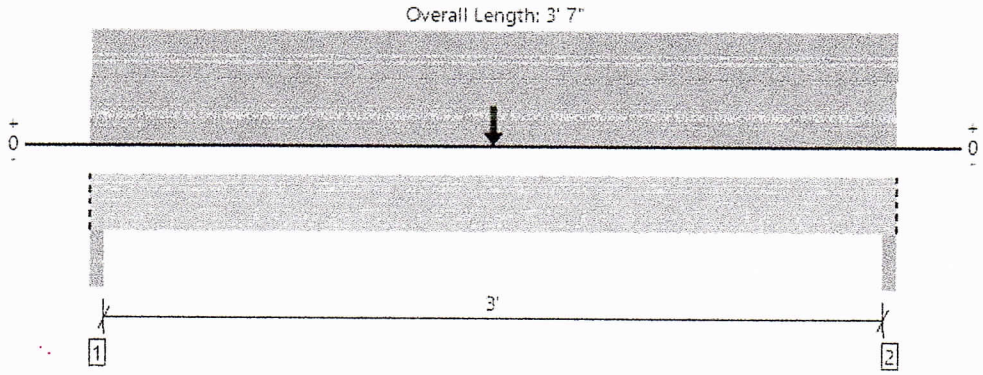
MEMBER REPORT

PASSED

61

Roof Framing, (RB-2) Hdr Bm

1 piece(s) 4 x 8 DF No.2



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1294 @ 2"	7656 (3.50")	Passed (17%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	1194 @ 10 3/4"	3806	Passed (31%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	1926 @ 1' 9 1/2"	3737	Passed (52%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.009 @ 1' 9 1/2"	0.108	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.017 @ 1' 9 1/2"	0.162	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Factored	
1 - Column - DF	3.50"	3.50"	1.50"	606	688	1294	Blocking
2 - Column - DF	3.50"	3.50"	1.50"	606	689	1294	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	3' 7" o/c	
Bottom Edge (Lu)	3' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
0 - Self Weight (PLF)	0 to 3' 7"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 3' 7" (Front)	3'	15.0	20.0	Roof
2 - Point (lb)	1' 9 1/2" (Front)	N/A	1027	1162	Roof

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ForteWEB Software Operator	Job Notes
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File Name: ADU-2

FORTEWEB

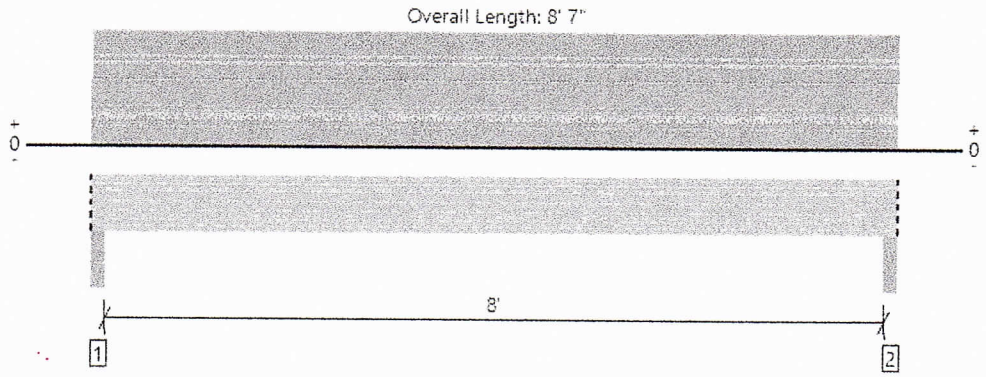
MEMBER REPORT

PASSED

7/

Roof Framing, (RB-3) Hdr Bm

1 piece(s) 4 x 10 DF No.2



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	1312 @ 2"	7656 (3.50")	Passed (17%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	987 @ 1' 3/4"	4856	Passed (20%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	2601 @ 4' 3 1/2"	5615	Passed (46%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.048 @ 4' 3 1/2"	0.275	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.086 @ 4' 3 1/2"	0.412	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Factored	
1 - Column - DF	3.50"	3.50"	1.50"	582	730	1312	Blocking
2 - Column - DF	3.50"	3.50"	1.50"	582	730	1312	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	8' 7" o/c	
Bottom Edge (Lu)	8' 7" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
0 - Self Weight (PLF)	0 to 8' 7"	N/A	8.2	--	
1 - Uniform (PSF)	0 to 8' 7" (Front)	8' 6"	15.0	20.0	Roof

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ForteWEB Software Operator	Job Notes
Paul Christenson PCSD Engineering (760) 207-1885 paul.pcsd@gmail.com	

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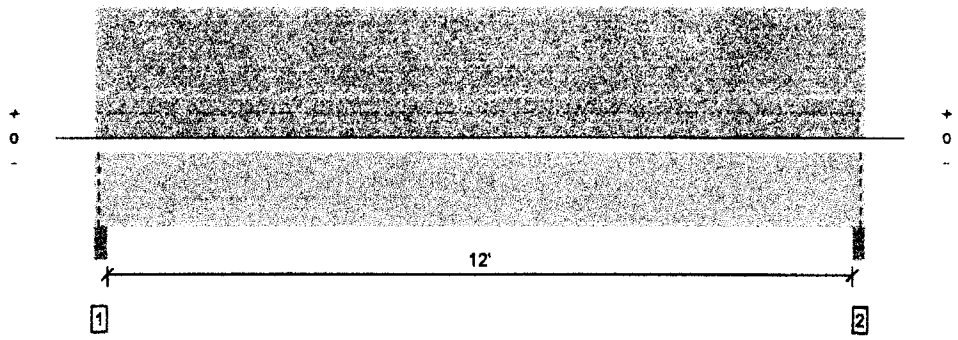
8/17/2022 9:03:27 PM UTC
ForteWEB v3.4, Engine: V8.2.2.122, Data: V8.1.2.2
File Name: ADU-2

FORTE **MEMBER REPORT** *Roof Framing, (RB-4) Hdr Bm* **PASSED**

1 piece(s) 4 x 12 Douglas Fir-Larch No. 2

Overall Length: 12' 7"



All locations are measured from the outside face of left support (or left cantilever end).All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load Combination (Pattern)
Member Reaction (lbs)	2215 @ 2"	7656 (3.50")	Passed (29%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	1782 @ 1' 2 3/4"	5906	Passed (30%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	6602 @ 6' 3 1/2"	7614	Passed (87%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.137 @ 6' 3 1/2"	0.408	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.268 @ 6' 3 1/2"	0.613	Passed (L/548)	--	1.0 D + 1.0 Lr (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch: 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Top Edge Bracing (Lu): Top compression edge must be braced at 12' 7" o/c unless detailed otherwise.
- Bottom Edge Bracing (Lu): Bottom compression edge must be braced at 12' 7" o/c unless detailed otherwise.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Total	
1 - Column - DF	3.50"	3.50"	1.50"	1082	1133	2215	Blocking
2 - Column - DF	3.50"	3.50"	1.50"	1082	1133	2215	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (non-snow 1.25)	Comments
0 - Self Weight (PLF)	0 to 12' 7"	N/A	10.0		
1 - Uniform (PSF)	0 to 12' 7" (Front)	9'	18.0	20.0	Roof

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The product application, input design loads, dimensions and support information have been provided by Forte Software Operator

SUSTAINABLE FORESTRY INITIATIVE

Forte Software Operator	Job Notes
Paul Christenson PCSD Engineering (760) 207-1885 paul.pcsd@gmail.com	

1/27/2019 9:04:57 AM
Forte v5.4, Design Engine: V7.1.1.3
ADU-2.4te

FORTEWEB

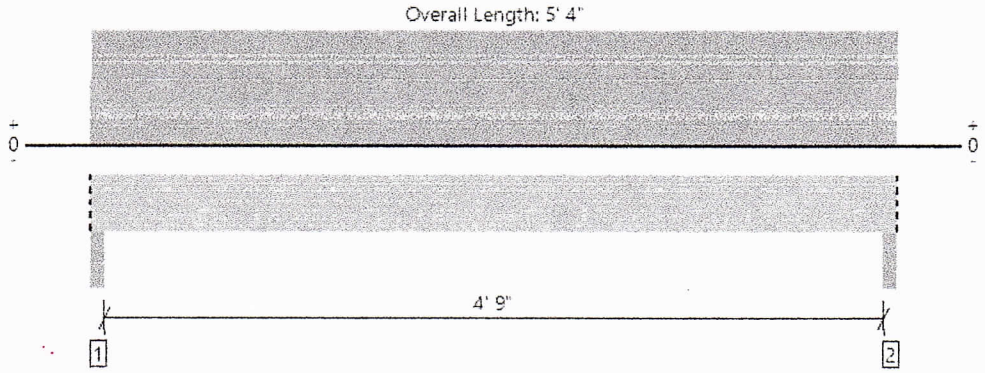
MEMBER REPORT

PASSED

9/

Roof Framing, (RB-5) Clg Bm

1 piece(s) 4 x 8 DF No.2



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	894 @ 2"	7656 (3.50")	Passed (12%)	--	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	594 @ 10 3/4"	3806	Passed (16%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	1047 @ 2' 8"	3737	Passed (28%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.013 @ 2' 8"	0.167	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.027 @ 2' 8"	0.250	Passed (L/999+)	--	1.0 D + 1.0 Lr (All Spans)

System : Roof
Member Type : Drop Beam
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 0/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Factored	
1 - Column - DF	3.50"	3.50"	1.50"	454	440	894	Blocking
2 - Column - DF	3.50"	3.50"	1.50"	454	440	894	Blocking

• Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 4" o/c	
Bottom Edge (Lu)	5' 4" o/c	

•Maximum allowable bracing intervals based on applied load.

Vertical Loads	Location (Side)	Tributary Width	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
0 - Self Weight (PLF)	0 to 5' 4"	N/A	6.4	--	
1 - Uniform (PSF)	0 to 5' 4" (Front)	8' 3"	15.0	20.0	Roof
2 - Uniform (PLF)	0 to 5' 4" (Front)	N/A	40.0	-	

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
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Weyerhaeuser

8/17/2022 9:09:32 PM UTC
ForteWEB v3.4, Engine: V8.2.2.122, Data: V8.1.2.2
File Name: ADU-2

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JOB 19-131.1-2
SHEET NO 11 OF
CALCULATED BY PSC DATE 3/25/20
CHECK BY DATE
SCALE

5.0 Lateral Design & Analysis

Wind: $P = \lambda\ Kzt\ I\ ps30$ (ASCE 7 - Equation 6-1)

λ = 1.00 (fig. 6-3)
Kzt = 1.0 (fig. 6-4)
PS30 = 26.6 psf (fig. 6-3)
I = 1.0 (table 11.5-1)

P = 16.0 psf

Seismic: $V = C_s W_{DL}$ (IBC Equation 12.8-1)

S_s = 1.245 S_1 = 0.442
F_a = 1.0 F_v = 0.0
R = 6.50 I = 1.00
V = 0.091 * Wt * ρ (ρ - Redundancy)

Criteria	1st Story	2nd Story
Each Story Resists > 35% Base Shear:	not satisfied	satisfied
Any Shear Wall w/ (h/l)>1.0 is < 33% Story Force:	satisfied	satisfied
ρ =	1	1

Wind Loads

P = 16.0 psf x Trib Area

Roof Level

Direction: N / S = 16.0 psf x 316 sq. ft. = 5043 lbs.
Direction: E / W = 16.0 psf x 278 sq. ft. = 4437 lbs.

Roof Weight

Roof Wt. =	18.0 psf x	1258 sq. ft. =	22644 lbs.
Exterior Wall Wt =	15.0 psf x	498 sq. ft. =	7470 lbs.
Interior Wall Wt =	8.0 psf x	379 sq. ft. =	3032 lbs.
Ceiling Wt =	3.0 psf x	990 sq. ft. =	2970 lbs.
		Total Trib. W_R =	36116 lbs.

Total Seismic Dead Load: W_t = 36116 lbs.
ASD Base Shear: V = 0.091 * W_t = 3301 lbs.

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5.1 Lateral Design & Analysis - 2nd Story Shear Walls

N / S										E / W									
Gridline	Length of Shearwalls						Total	Wall Ht.	Type	Gridline	Length of Shearwalls						Total	Wall Ht.	Type
1	3	4	4				9.8	9	A	A	5	5					9	9	A
2,3	8	13	6.5	7			20.8	9	A	D, F	8	6.5					7.5	9	A
5	4.8						4.8	9	A	G	6	8					14	9	A
							0.0		0.0								0		0
							0.0		0								0		0
							0.0		FALSE								0		#DIV/0!
							0.0		FALSE								0		#DIV/0!
							0.0		FALSE								0		#DIV/0!
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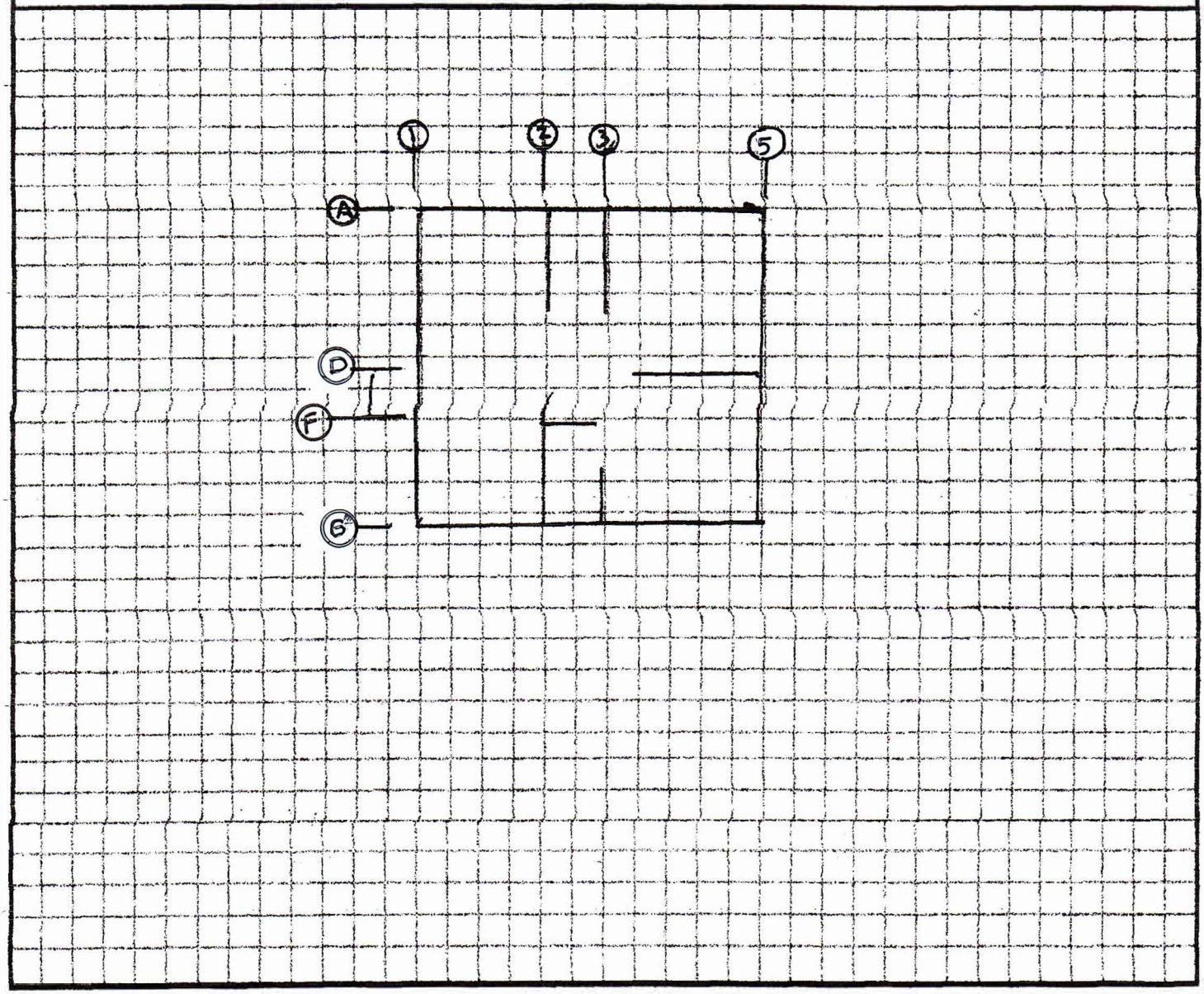

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5.1 Lateral Design & Analysis (cont.)

Gridline (1) , 21 % (5043 x 0.21 = 1059 #)

v = 1059 lbs. / 9.75 ft. = 109 plf × (9/2.26) = 176 PF

OTF = 923 lbs.

A

HDU2

Gridline (2,3) 50 % (5043 x 0.50 = 2522 #)

v = 2522 lbs / 33.25 ft. = 76 plf

OTF = 645 lbs.

A

HDU2

Gridline (4) 29 % (5043 x 0.29 = 1463 #)

v = 1463 lbs / 4.8' ft. = 305 / 1.2 plf = 254 PF

TWW10

OTF = 2716 lbs.

A

HDU2

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5.1 Lateral Design & Analysis (cont.)

Gridline (A) , 25 % (4437 x 0.25 = 1109 #)

v = 1109 lbs. / 9 ft. = 123 plf

(5'+2.6') (142)-(9'/2.22) = 228 PF

OTF = 1109 lbs.

(A) HDU2

Gridline (B) 50 % (4437 x 0.50 = 2218 #)

v = 2218 lbs. / 14' ft. = 158 plf

OTF = 1426 lbs.

(A) HDU2

Gridline (C) 25 % (4437 x 0.25 = 1109 #)

v = 1109 lbs. / 14 ft. = 79 plf

OTF = 713 lbs.

(A) HDU2

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JOB 19-131.1-2
SHEET NO 15 OF 15
CALCULATED BY PSC DATE 3/25/20
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SCALE

6.0 FOUNDATION DESIGN

6.1 CONTINUOUS FOOTING

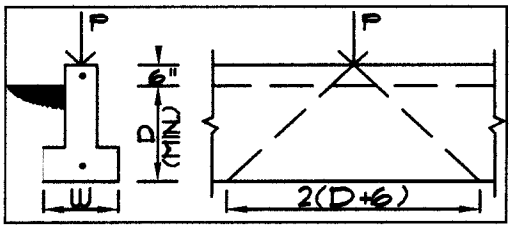
w = 1125 plf

ASBP = 1500 psf

width = $\frac{1125 \text{ plf}}{1500 \text{ psf}}$ = 0.75 ft (MIN.) => 9 INCHES (MIN.)

USE 12 " WIDE CONTIN. FTG W/
2 - # 4 TOP AND BOTTOM & EMBED.
12 " INTO UNDISTURBED SOIL (MIN.)

6.2 MAX POINT LOAD ON FOOTING



P_{all} = 1500 * $\frac{12}{12}$ * $\frac{36}{12}$

P_{all} = 4500 lbs

6.3 PAD DESIGN

PAD	SIZE	LOAD
P1	18 " SQUARE x 12 " THK W/ 2 -# 4 EACH WAY	P_{max} = 1500 * 2^2 P_{max} = 3375 lbs