



NEW WALL (2X4 STUDS @ 16" O.C.)

EGRESS WINDOW OR SLIDING DOOR FOR BEDROOM: 1. MINIMUM 5.7 SQ. FT. OF CLEAR OPENABLE AREA. 2. NET OPENABLE HEIGHT SHALL BE 24" MIN. 3. NET OPENABLE WIDTH SHALL BE 20" MIN. 4. FINISHED SILL HEIGHT OF 44" MAX. ABOVE FLOOR.

NEW WATER CLOSETS TO BE 15" CLEAR MIN. AT EACH SIDE AND 24" CLEAR MIN. AT FRONT OF TOILET.

BATHTUB AND SHOWER FLOORS: WALLS ABOVE BATHTUB WITH A SHOWERHEAD, AND SHOWER COMPARTMENT SHALL BE FINISHED WITH A NONABSORBENT SURFACE EXTENDING TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR.

INSTALL MOIST RESISTANT BOARD @ WHERE AREA OF WALLS NEAR SINK AND BATHTUB, OR SHOWER.

HEATING APPLIANCES (WATER HEATER, FURNACE...) CREATE A GLOW, SPARK OR FLAME SHALL BE INSTALLED AT LEAST 18 IN. ABOVE THE FLOOR.

ATTIC ACCESS, 30"X22" MIN. THE LARGEST PIECE OF EQUIPMENT CAN BE MOVED THROUGH THE OPENING. 30" VERTICAL CLEARANCE.

EXTERIOR CONDENSER UNIT, LG OR SIMILAR, 36000 BTU, 14 SEER MINIMUM, 11.5 EER MINIMUM

NEW HEAT PUMP WATER HEATER, RHEEM, XE40T10HS45U0, 40 GAL., UEF: 3.75, 4.5 KW, OR EQUIVALENT

EXHAUST FAN (IAQ), PANASONIC MODEL # FV-0511VH1, 50/80/100 CFM VARIABLE SPEED, 1 SONE MAXIMUM INTERIOR MINISPLIT HEAD, LG OR SIMILAR, 36000 BTU, HSPF

PROPOSED NEW 125 AMPS ELECTRICAL PANEL BY SDGE

ADU--INDOOR AIR QUALITY (Per Title 24 Compliance): 58 cfm

One exhaust fan, PANASONIC Model# FV-0511VH1, 50/80/100 cfm, adjustable speed will be installed and run continuously to accomplish the indoor quality air required.

80 cfm proposed > 58 cfm required therefore comply

# WATER FIXTURES COUNT

8.2 MINIMUM

08/29/2024 10:26:31 AM

WATER TIXTORES COUNT					
FIXTURE	9404 Leticia Dr (EXISTING)	ADU (NEW)			
KITCHEN SINK	1	1			
BATHTUB	2	0			
TOILET	2	2			
HOSE BIB	1	0			
ADDITIONAL HOSE BIB	0	1			
LAVATORY	2	2			
SHOWER	0	2			
DISHWASHER	1	1			
CLOTHES WASHER	1	0			
	Do	or Schedule	<u>.                                    </u>		

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Type	Width	Height	Description
1	2' - 8"	7'-0""	INTERIOR DOOR
2	2' - 6"	7'-0""	INTERIOR DOOR
3	3' - 0"	7'-0"	EXTERIOR DOOR
4	11'-0"	6'-8"	SLIDING CLOSET DOOR
5	9' - 0"	6'-8"	SLIDING CLOSET DOOR
6	3' - 0"	7'-0"	INTERIOR DOOR

ALL NEW PROPOSED WINDOWS WILL HAVE U-FACTOR OF LESS THAN OR EQUAL TO .30 AND SHGC OF LESS THAN OR EQUAL TO .23.

# AGING IN PLACE NOTES

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

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

1. DEDICATED RECEPTACLE OUTLETS; FLOOR RECEPTACLE OUTLETS; CONTROLS MOUNTED ON CEILING FANS AND CEILING LIGHTS; AND CONTROLS LOCATED ON 2. RECEPTACLE OUTLETS REQUIRED BY THE CALIFORNIA ELECTRICAL CODE ON A

WALL SPACE WHERE THE DISTANCE BETWEEN THE FINISHED FLOOR AND A BUILT-IN FEATURE ABOVE THE FINISH FLOOR, SUCH AS WINDOW, IS LESS THAN

3. PROVIDE AGING-IN-PLACE DESIGN AND FALL PREVENTION (CRC SECTION R327.1.1 THROUGH R327.1.4) 1. REINFORCEMENT SHALL BE SOLID LUMBER OR OTHER APPROVED

**CONSTRUCTION MATERIAL** 2. REINFORCEMENT FOR GRAB BARS SHALL NOT BE LESS THAN 2 BY 8 INCH NOMINAL LUMBER (1.5 INCH 7.25 INCH ACTUAL DIMENSION) OR OTHER APPROVED CONSTRUCTION MATERIAL PROVIDING EQUAL HEIGHT AND LOAD CAPACITY. REINFORCEMENT SHALL BE LOCATED BETWEEN 32 INCHES AND 39-1/4 INCHES ABOVE THE FINISHED FLOOR FLUSH WITH THE WALL FRAMING 3. WATER CLOSET REINFORCEMENT SHALL BE INSTALLED ON BOTH SIDES WALLS

OR THE FIXTURE. OR ONE SIDE WALL AND THE BACK WALL 4. SHOWER REINFORCEMENT SHALL BE CONTINUOUS WHERE WALL FRAMING IS

5. BATHTUB AND COMBINATION BATHTUB/SHOWER REINFORCEMENT SHALL BE CONTINUOUS ON EACH END OF THE BATHTUB AND THE BACK WALL. ADDITIONALLY, BACK WALL REINFORCEMENT FOR A LOWER GRAB BAR SHALL BE PROVIDED WITH THE BOTTOM EDGE LOCATED TO NO MORE THAN 6 INCHES ABOVE

THE BATHTUB RIM. 4. EFFECTIVE JULY1, 2024, AT LEAST ONE BATHROOM AND ONE BEDROOM ON THE ENTRY LEVEL SHALL PROVIDE A DOORWAY WITH A NET CLEAR OPENING OF NOT LESS. THAN 32" MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM THE CLOSED POSITION; OR, IN THE CASE OF THE TWO-OR-THREE-STORY SINGLE FAMILY DWELLING, ON THE SECOND OR THIRD FLOOR OF THE DWELLING IF A BATHROOM OR BEDROOM IS NOT LOCATED ON THE ENTRY LEVEL.

FLOOR PLAN NOTES:

1. EXTERIOR WALLS WITHIN 3 FEET OF PROPERTY LINE (SPRINKLERS) OR 5 FEET OF PROPERTY LINE (WITHOUT SPRINKLERS) REQUIRE 1-HOUR FIRE RATING FOR EXPOSURE TO BOTH SIDES 2. PROJECTIONS:

- PROHIBITED WITHIN 2 FEET OF PROPERTY LINE

- 1-HOUR FIRE RATING ON THE UNDERSIDE WITHIN 3FT OF PROPERTY LINE (SPRINKLERS) - 1-HOUR FIRE RATING ON THE UNDERSIDE WITHIN 5FT OF PROPERTY LINE

(WITHOUT SPRINKLERS) 3. OPENINGS:

- PROHIBITED WITHIN 3FT OF PROPERTY LINE - MAXIMUM 25% OF WALL AREA WITHIN 5 FEET OF PROPERTY LINE (WITHOUT SPRINKLERS)

4. PENETRATIONS: - 1-HOUR FIRE-RATED PENETRATIONS OF WALLS WITHIN 3FT OF PROPERTY

LINE (SPRINKLERS) - 1-HOUR FIRE-RATED PENETRATIONS OF WALLS WITHIN 5FT OF PROPERTY LINE (WITHOUT SPRINKLERS)

5. CONCRETE LANDING WITH MIN 36" DEPTH AND A MAXIMUM OF 1-1/2" LOWER THAN TOP OF DOOR THRESHOLD

# **OPTIONAL ROLL-IN SHOWER PLAN NOTES:**

1. SHOWER COMPARTMENT SEAT

- MUST BE FOLDING TYPE, NOT TO EXCEED MORE THAN 6 INCHES FROM MOUNTING WALL WHEN FOLDED

- LOCATED WITHIN 27 INCHES OF SHOWER CONTROLS

- MOUNTED MINIMUM 17 INCHES AND MAXIMUM 19 INCHES ABOVE BATHROOM FINISHED FLOOR - SEAT INSTALLED ON SIDE WALL ADJACENT TO CONTROLS AND EXTENDING

FROM BACK WALL TO POINT WITHIN 3 INCHES OF SHOWER COMPARTMENT **ENTRY** - STRUCTURAL ADEQUACY OF MOUNTING HARDWARE AND FASTENERS TO

ACCOMMODATE 250 POUND POINT LOAD APPLIED AT ANY POINT ON THE GRAB BAR, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE 2. SHOWER GRAB BARS

- MOUNTED MINIMUM 33 INCHES AND MAXIMUM 36 INCHES ABOVE SHOWER - NOT EXTENDING OVER SHOWER SEAT

- IF CROSS SECTION IS CIRCULAR, MINIMUM 1-1/4" AND MAXIMUM 2" OUTSIDE

- IF CROSS SECTION IS NON-CIRCULAR, MINIMUM 4" AND MAXIMUM 4.8" PERIMETER AND MAXIMUM 2-1/4" CROSS SECTION DIMENSION - GRAB BARS MOUNTED ADJACENT TO A WALL, 1-1/2" ABSOLUTE SPACE

BETWEEN WALL AND GRAB BAR - MINIMUM 1-1/2" SPACE BETWEEN GRAB BAR AND PROJECTING OBJECTS

BELOW AND AT ENDS - MINIMUM 12 INCH SPACE BETWEEN GRAB BAR AND PROJECTING OBJECTS

- SURFACE MATERIAL OF ANY WALLS OR OBJECTS ADJACENT TO GRAB BARS MUST BE FREE OF SHARP OR ABRASIVE ELEMENTS AND HAVE ROUNDED

- STRUCTURAL ADEQUACY OF MOUNTING HARDWARE AND FASTENERS TO ACCOMMODATE 250 POUND POINT LOAD APPLIED AT ANY POINT ON THE GRAB BAR, FASTENER, MOUNTING DEVICE, OR SUPPORTING STRUCTURE - WALL REINFORCEMENT TO BE PROVIDED AT LOCATION OF GRAB BARS (E.G.

3. OPERABLE PARTS OF SHOWER CONTROLS AND FAUCETS:

- INSTALLED ON BACK WALL OF SHOWER COMPARTMENT ADJACENT TO SEAT - LOCATED MINIMUM 19 INCHES AND MAXIMUM 27 INCHES FROM SEAT WALL - LOCATED ABOVE GRAB BAR BUT NO HIGHER THAN 48 INCHES ABOVE

CENTERLINE AT MINIMUM 39 INCHES AND MAXIMUM 41 INCHES ABOVE

SHOWER FLOOR

- SINGLE-LEVER DESIGN OPERABLE WITH MAXIMUM 5 POUNDS OF FORCE

TWISTING OF WRIST 4. SPRAYER UNIT AND ASSOCIATED OPERABLE PARTS SHALL BE PROVIDED

- OPERABLE WITH ONE HAND AND WITHOUT TIGHT GRASPING, PINCHING, OR

PER THE FOLLOWING: - OPERABLE PARTS, INCLUDING HANDLE, TO BE INSTALLED ON BACK WALL OF SHOWER COMPARTMENT MINIMUM 19 INCHES AND MAXIMUM 27 INCHES

FROM SEAT WALL - OPERABLE PARTS LOCATED ABOVE GRAB BAR BUT NO HIGHER THAN 48

INCHES ABOVE SHOWER FLOOR, MEASURED TO TOP OF MOUNTING

- MINIMUM 59 INCH LONG HOSE - CAPABLE FOR USE AS FIXED SHOWER HEAD AND HAND HELD SHOWER

- ON/OFF CONTROL WITH NON-POSITIVE SHUT OFF - ADJUSTABLE -HEIGHT SHOWER HEADS ON VERTICAL BAR SHALL NOT OBSTRUCT USE OF BATHTUB GRAB BARS

5. WHERE SOAP DISHES ARE PROVIDED, MAXIMUM 40 INCHES ABOVE SHOWER FLOOR AND WITHIN REACH LIMITS FROM THE SHOWER SEAT 6. MAXIMUM 2.1% SLOPE IN ALL DIRECTIONS OF ROLL-IN SHOWER FLOORS 7. MAXIMUM 1/2" HIGH THRESHOLDS WITH MAXIMUM 50% BEVELED SLOPE AT

ROLL-IN SHOWERS 8. WHERE DRAINS ARE PROVIDED AT ROLL-IN SHOWERMAXIMUM 1/4" GRATE

OPENINGS FLUSH WITH SHOWER FLOOR SURFACE

## PLUMBING NOTES

1. FOR ADDITION OF AN ADU 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 1 GALLON OF WATER PER FLUSH, SHOWERHEADS 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.

2. THE CONTROL VALVES IN SHOWERS, TUB/SHOWERS, BATHTUBS, AND BIDETS MUST BE PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES. CPC SECTIONS 408, 409, 410.

3. ALL NEW FIXTURES INSTALLED WILL BE COMPLIED WITH THIS TABLE:

FIXTURE TYPE	MAXIMUM FLOW RATE
WATER CLOSETS	1.28 GALLONS/FLUSH
URINALS (WALL-MOUNTED)	0.125 GALLON/FLUSH
URINALS (OTHER)	0.5 GALLON/FLUSH
SHOWERHEADS	1.8 GPM @ 80 PSI
LAVATORY FAUCETS	1.2 GPM @ 60 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
METERING FAUCETS	.20 GALLONS PER CYCLE

**REVISION S**antee ANS APPROVED BY THE CITY OF SAN

OVED FOR CONSTRUCTION

Date: **Sept. 5th**, 2024

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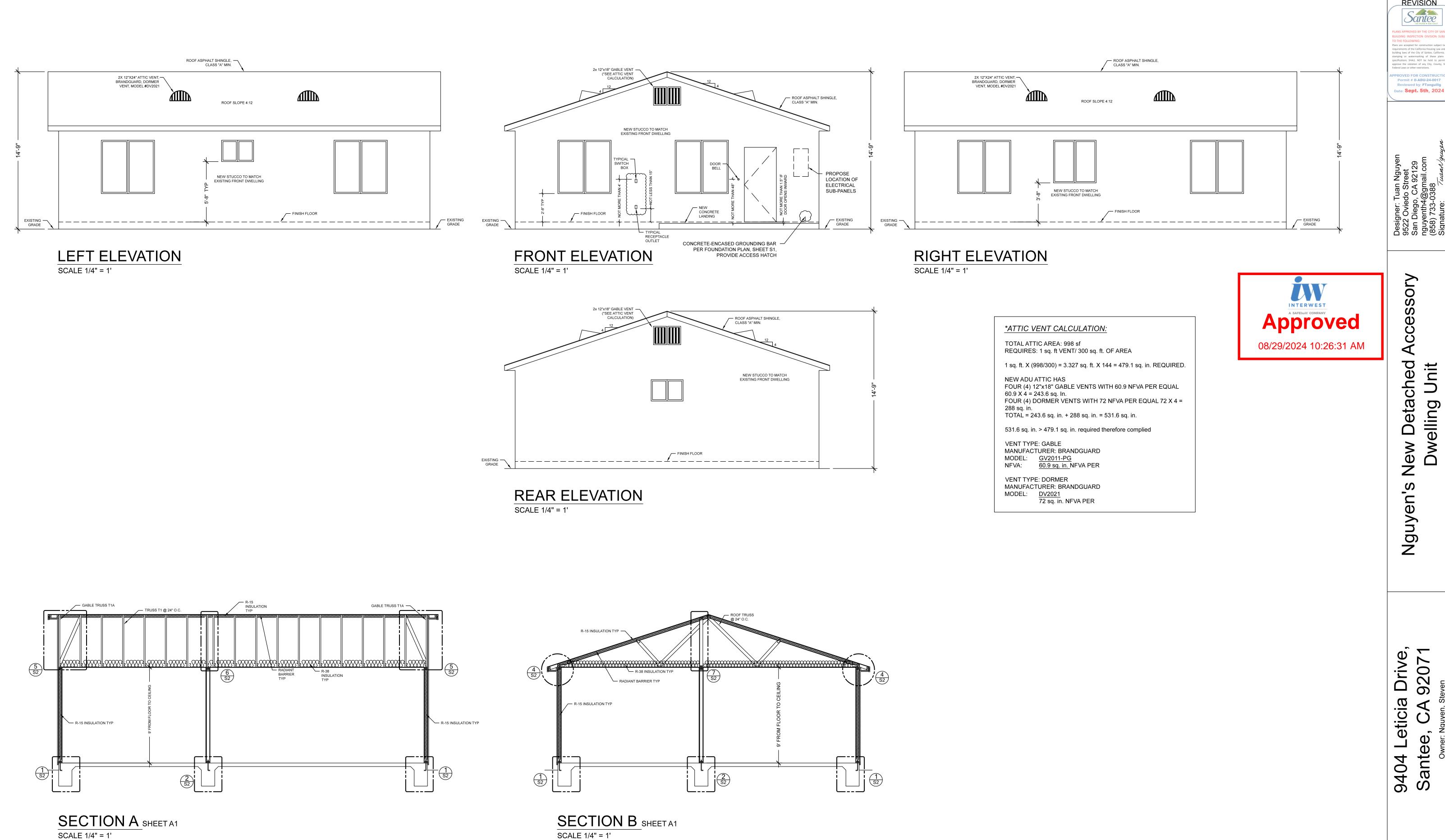
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> DATE 06/2024 **DESIGN BY** TN DRAWN BY

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SCALE 1/4" = 1'

9207 Leticia 9404 Le Santee,

REVISION

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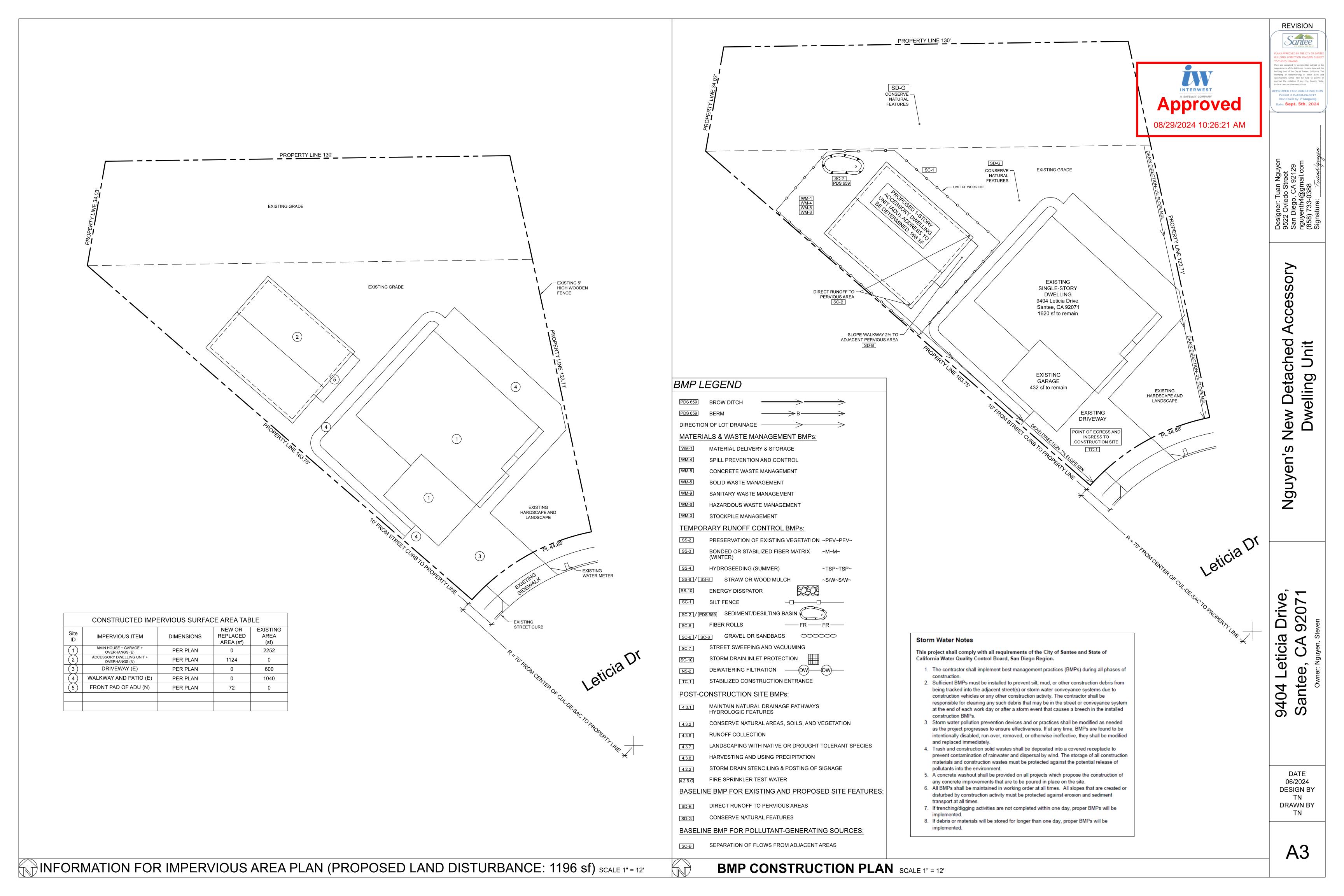
Detached

Nguye

New Detached Dwelling Unit

06/2024 **DESIGN BY** DRAWN BY

**A2** 



OUTLET BELOW SINK

TYPICAL NO

MORE THAN 6' HORIZONTALLY

LOCATE -NOT

THAN

6.5' GFCI, ABOVE WEATHE

GRADE RATED

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22" X 30" ATTIC ACCESS

PROPOSED ADU ELECTRICAL PLAN

SCALE 1/4" = 1'

→ → NO MORE THAN 24"

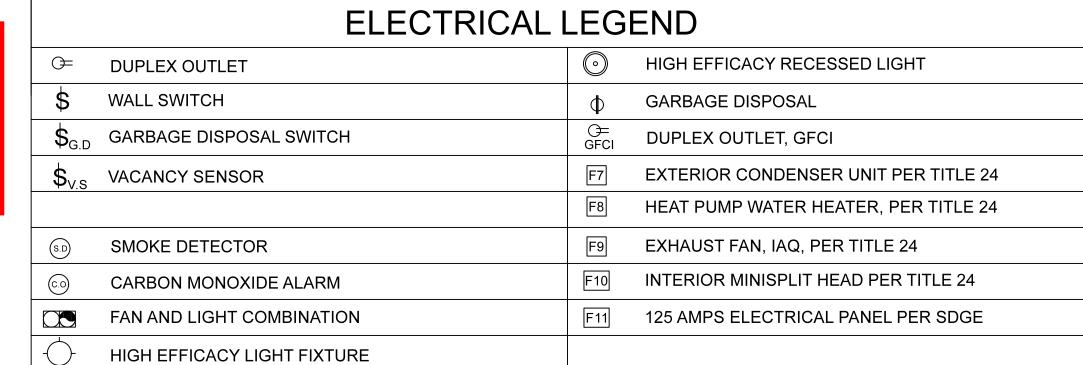
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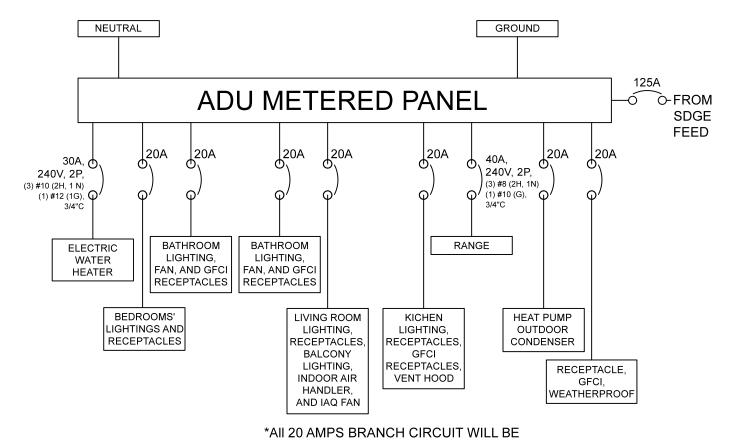
ABOVE GRADE

**₩EATHER** 

RATED



ELECTRICAL LOAD CALCULATION (RESIDENTIAL) Leticia D	rive ADU	
,		1
Plan		ADU
Area(sqft)		998
Residential Load-Table		
General Lighting (3w/sf)		2994
Two small appliance		3000
Laundry		0
Lighting and Appliance Load Total		5994
Garbage disposal		1200
Microwave		1500
Bathroom Fans		200
Garage Door Opener		0
<u>Dryer</u>		5000
Oven		8000
Refrigerator		1000
Subtotal = Lighting Load + Appliance Load Total		22894
Demand Factor Load		
First 10 KVA at 100% (Per NEC Section 220.82(b))		10000
Remaining at 40% (Per NEC Section 220.82(b))		5157.6
Total Demand Load (KVA)		15.2
	Equip 1	Heat Pum
	VA Load	857
Mechanical Loads	Equip 2	Range Ho
	VA Load	100
	Water Heater	4500
Service Size-Table		
Total Number of Unit		1
Sub-Total Unit Loads (Without Demand Factor+Mechanical Load)+Washer/Dryer+Kitchen		28351
Total Number of Unit For Residential Service		1
Sub-Total Residential Loads (W/O Demand Factor)		28351
Demand Factor For Residential Service (Per NEC Table 220.84)		.45
Total Residential Demand Load (KVA)		12.8
House Load		0
Total Residential Demand + House Load (KVA)		12.8
AMPS @ 120/240 1 PH		53.3
Recommended Service Size (AMPS)		125



# ADU ELECTRICAL DISTRIBUTION

(3) #12 (1H, 1N, 1G). 1/2" C

PANEL  PANEL  SCHEDULE  Bus Rating: 125A  Main Breaker  Main-Lugs Only  Fed-Thru Lugs  Double Lugs  Single Phase  4-wire  3-wire  Iso. GN	Voltage  ⊠ 240/120 □ 208/120
Single Phase	
	K □ 200K
Breaker Breaker Code LOAD (W) Circuit De	ription
1 20 A 20 A R OUTDOOR RECE	cles 2
1 20 A 40 A S RANGE, 240	٠ 4
20 A 30 A S WATER HEATER.	OV, 2P 6
20 A 20 A HVAC HEAT PUMP CON	NSER 8
20 A 20 A R HEAT PUMP MAINTENAN	RECEPTACLE 10
20 A 20 A R KITCHEN (RECEPTACLE	RAPPLIANCE) 12
	14
	16
	18
	20
	22
	24

I M- LARGEST SINGLE SPEED L- LIGHTING LOADS M- TOTAL MOTOR LOAD H- HVAC R- GENERAL USE RECEPTACLES S- DEDICATED CIRCUIT K- KITCHEN EQUIPMENT Z- MISC OR APPLIANCES

**UTILITY PLAN NOTES:** 

- 1. LOCAL EXHAUST FANS TO EXTERIOR TO PROVIDE MINIMUM 50 CFM INTERMITTENT OR 20 CFM CONTINUOUS VENTILATION.
- 2. SMOKE DETECTORS TO BE INTERCONNECTED PER CRC R314.4 AND HARD-WIRED WITH BATTERY BACK-UP PER CRC R314.6
- 3. CARBON MONOXIDE ALARMS TO BE INTERCONNECTED PER CRC R315.7 AND HARD-WIRED WITH BATTERY BACK-UP PER CRC R315.5
- 4. A MECHANICAL EXHAUST VENTILATION SYSTEM, SUPPLY VENTILATION SYSTEM, OR COMBINATION THEREOF SHALL BE INSTALLED FOR EACH DWELLING UNIT TO PROVIDE WHOLE-BUILDING VENTILATION WITH OUTDOOR AIR IN COMPLIANCE WITH ASHRAE STANDARD 62.2 AS ADOPTED BY THE CALIFORNIA ENERGY COMMISSION
- 5. AN INTERMITTENTLY OR CONTINUOUSLY OPERATING LOCAL MECHANICAL EXHAUST VENTILATION SYSTEM SHALL BE INSTALLED IN EACH BATHROOM WITH A BATHTUB. SHOWER. OR SIMILAR MOISTURE SOURCE AND IN EACH KITCHEN IN COMPLIANCE WITH ASHRAE STANDARD 62.2 AS ADOPTED BY THE CALIFORNIA ENERGY COMMISSION. INTERMITTENT LOCAL EXHAUST VENTILATION AIRFLOW RATES SHALL BE 50 CFM IN BATHROOMS AND 100 CFM IN KITCHENS. CONTINUOUS LOCAL EXHAUST VENTILATION AIRFLOW RATES SHALL BE 20 CFM IN BATHROOMS AND 5 AIR CHANGES PER HOUR IN KITCHENS BASED ON KITCHEN VOLUME.
- 6. WATER HEATER OR FURNACE SHALL BE A DIRECT-VENT APPLIANCE.
- 7. THERE WILL BE A MINIMUM OF 2 SMALL APPLIANCE BRANCH CIRCUITS WITHIN THE LOCATIONS SPECIFIED IN ARTICLE 210.52(B), I.E., KITCHEN AND DINING AREAS.

# **ELECTRICAL NOTES:**

a) Provide tamper resistant receptacles for all locations described in 210.52 and 550.13.(i.e. all receptacles in a

b) Provide weather resistant type for receptacles installed in damp or wet locations (outside). 406.4(D)(6). c) Provide 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. d) Provide GFCI protected outlets for locations described in NEC 210.8(A): Laundry areas, kitchen dishwashers,

# **LIGHTING PLAN NOTES:**

kitchens, garages, bathrooms, outdoors, within 6' of a sink, etc.

- 1. ALL LUMINAIRES SHALL BE HIGH-EFFICACY IN ACCORDANCE WITH CBEES TABLE 150.0-A
- 2. ALL LED LUMINAIRES AND LAMPS SHALL BE MARKED "JA8-2022" AND LISTED IN THE CALIFORNIA ENERGY COMMISSION DATABASE AT HTTPS://CACERTAPPLIANCES. ENERGY.CA.GOV/PAGES/ APPLIANCESEARCH.ASPX
- 3. ALL RECESSED DOWNLIGHT AND ENCLOSED LUMINAIRES SHALL BE MARKED "JA8-2022-E" AND LISTED IN THE CALIFORNIA ENERGY COMMISSION DATABSE AT HTTPS://CACERTAPPLIANCES.ENERGY.CA.GOV/PAGES/APPLIANCESEARCH.ASPX
- 4. RECESSED DOWNLIGHT LUMINAIRES IN CEILINGS SHALL NOT BE SCREW-BASED
- 5. BATHROOMS, GARAGES, LAUNDRY ROOMS, AND UTILITY ROOMS: AT LEAST ONE LUMINAIRE IN EACH SPACE SHALL BE CONTROLLED BY A VACANCY SENSOR
- 6. ALL LUMINAIRES REQUIRING "JA8-2022" OR "JA8-2022-E" MARKING SHALL BE CONTROLLED BY A DIMMER OR VACANCY SENSOR **EXCEPTION**: CLOSETS LESS THAN 70 S.F. & HALLWAYS
- 7. OUTDOOR LIGHTING PERMANENTLY MOUNTED TO BUILDINGS SHALL BE CONTROLLED BY ONE OF THE FOLLOWING:
  - PHOTOCONTROL AND MOTION SENSOR
  - PHOTOCONTROL AND AUTOMATIC TIME-SWITCH CONTROL - ASTRONOMICAL TIME CLOCK
  - ENERGY MANAGEMENT CONTROL SYSTEM PER CBEES 150.0(K)3AIIIC
- 8. RECEPTACLE OUTLET LOCATIONS WILL COMPLY WITH CEC ARTICLE 210.52.
- 9. A RECEPTACLE OUTLET MUST BE INSTALLED IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, SUNROOM, PARLOR, LIBRARY, DEN, BEDROOM, RECREATION ROOM, AND SIMILAR ROOM OR AREA SO THAT NO POINT ALONG THE WALL SPACE IS MORE THAN 6 FEET, MEASURED HORIZONTALLY ALONG THE FLOOR LINE, FROM A RECEPTACLE OUTLET, CEC 210.52(A).
- 10. THERE WILL BE A MINIMUM OF 2 SMALL APPLIANCE BRANCH CIRCUITS WITHIN THE LOCATIONS
- SPECIFIED IN ARTICLE 210.52(B). i.e., KITCHEN AND DINING AREAS. 11. BATHROOM CIRCUITING SHALL BE EITHER:
- a) A 20-AMPERE CIRCUIT DEDICATED TO EACH BATHROOM, OR
- b) AT LEAST ONE 20 AMPERE CIRCUIT SUPPLYING ONLY BATHROOM RECEPTACLES OUTLETS.

# **SOLAR-READY KEY NOTES:**

THE REQUIRED ELECTRICAL JUNCTION BOX

- (1) THE MAIN ELECTRICAL SERVICE PANEL SHALL NOT BE OF A TYPE WITH A CENTER-FED MAIN CIRCUIT BREAKER AND SHALL INCLUDE RESERVED SPACE ALLOWING FOR INSTALLATION OF DOUBLE-POLE CIRCUIT BREAKERS FOR A FUTURE SOLAR PHOTOVOLTAIC SYSTEM. SUCH RESERVED SPACE SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER OR MAIN CIRCUIT BREAKER LOCATION. THE RESERVED SPACE SHALL BE PERMANENTLY AND VISIBLY MARKED AS "FOR FUTURE SOLAR PHOTOVOLTAIC"
- APPROVED MINIMUM 4-INCH SQUARE ELECTRICAL JUNCTION BOX LOCATED WITHIN 72 INCHES HORIZONTALLY AND 12 INCHES VERTICAL OF MAIN ELECTRICAL SERVICE PANEL
- MINIMUM 1 INCH DIAMETER LISTED ELECTRICAL METALLIC RACEWAY ORIGINATING AT READILY ACCESSIBLE ATTIC LOCATION WITH PROXIMITY TO SOLAR ZONE AREA AND TERMINATING AT
- MINIMUM 1 INCH DIAMETER LISTED ELECTRICAL METALLIC RACEWAY ORIGINATING AT THE REQUIRED ELECTRICAL JUNCTION BOX AND TERMINATING AT THE MAIN ELECTRICAL SERVICE PANEL
- ELECTRICAL JUNCTION BOX AND SEGMENT OF METALLIC RACEWAY IN THE ATTIC SHALL BE PERMANENTLY AND VISIBLY MARKED AS "FOR FUTURE SOLAR PHOTOVOLTAIC"

CAS Santee S APPROVED BY THE CITY OF SAN THE FOLLOWING: Plans are accepted for construction subject to th requirements of the California Housing Law and th building laws of the City of Santee, California. Th stamping or watermarking of these plans an specifications SHALL NOT be held to permit c approve the violation of any City, County, State Federal Laws or other restrictions. PPROVED FOR CONSTRUCTION Permit # B-ADU-24-0017 Date: **Sept. 5th**, 2024

**REVISION** 

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> DATE 06/2024 **DESIGN BY** TN DRAWN BY TN

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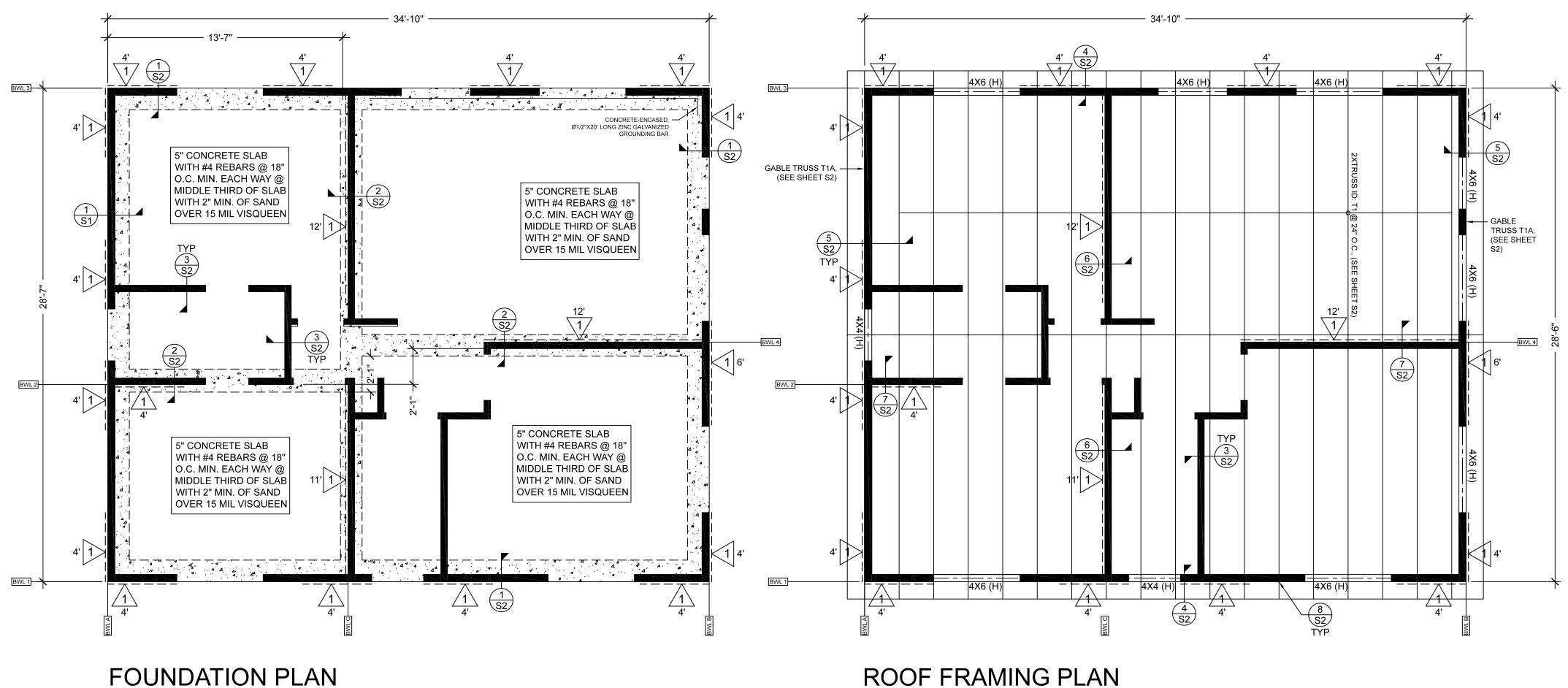
12" MIN. OVERHANG ALL AROUND 🗡 🗡

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SCALE 1/4" = 1'

**ROOF PLAN** ROOF FRAMING PLAN SCALE 1/4" = 1'

ROOF SHEATHING SHALL BE 15/32"

THICK ATTACHED W/ 8d COMMON

NAILS @ 6" O.C. BOUNDARY NAILS (B.N.) AND EDGE NAILS (E.N.) @ 12"

FIELD NAILS (F.N.) UNBLOCKED

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.

-8X SOLAR PANEL PER TITLE 24

FINISH ROOF WITH

ASPHALT SHINGLE,

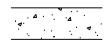
ESR-1475, CLASS "A", OVER GAF FELT PAPER,

MATCH ROOF OF EXISTING

ESR-2808. COLOR TO

DWELLING

NEW WALL (2X4 @ 16" O.C.)



SCALE 1/4" = 1'

NEW FOOTING PER PLAN

INDICATED BRACED WALL. NUMBER BELOW OR TO THE SIDE INDICATED TOTAL LENGTH OF BRACED WALL

BRACED WALL	R301.2.2.6 IRREGULAR BUILDING CHECKLIST
BRACED WALL PANEL METHOD USED: WSP	1. Shear wall or braced wall offsets out of plane. (Y or N)
BRACING REQUIREMENTS BASED ON WIND SPEED [TABLE R602.10.3(1)]	2. Lateral support of roofs and floors. (Y or N)
BRACED WALL LINE SPACING 30': MINIMUM 5' LENGTH BRACED WALL LINE SPACING 40': MINIMUM 6.5' LENGTH	3. Shear wall or braced wall offsets in plane. (Y or N)
WIND ADJUSTMENT FACTOR [TABLE R602.10.3(2)]: 1.2 BRACING REQUIREMENTS BASED ON SEISMIC	4. Floor and roof opening. (Y or N)
[TABLE R602.10.3(3)] BRACED WALL LINE SPACING 30': MINIMUM 7.5' LENGTH	5. Floor level offset. (Y or N)
BRACED WALL LINE SPACING 40': MINIMUM 10' LENGTH SEISMIC ADJUSTMENT FACTORS TO THE REQUIRED	6. Perpendicular shear wall and wall bracing. (Y or N)
LENGTH OF WALL BRACING [TABLE 602.10.3(4) > 25' ≤ 30' : 1.2	7. Wall bracing in stories containing masonry or concrete construction. (Y or N)
> 30' ≤ 35' : 1.4 7.5' X 1.2 = 9' TOTAL LENGTH BRACED WALL MIN. ON 28'-7" WALL LINE 10' X 1.4 = 14' TOTAL LENGTH BRACED WALL MIN. ON 34'-10" WALL LINE	8. Hillside light-frame construction. (Y or N)

- 1. ALL ANCHORS BOLTS SHALL BE 5/8" DIAMETER AND HAVE A MINIMUM EMBEDMENT OF 7 INCHES INTO CONCRETE (UNO) AND NOT SPACED MORE THAN 6 FEET APART
- 2. 3"X3"X0.229" PLATE WASHERS SHALL BE USED ON EACH SILL PLATE ANCHOR BOLT
- 3. FOR STANDARD CUT WASHERS PLACED BETWEEN PLATE WASHER AND NUT, HOLE IN PLATE WASHER MAY BE DIAGONALLY SLOTTED WITH MAXIMUM 3/16" LARGER WIDTH THAN BOLT DIAMETER AND MAXIMUM 1-3/4" SLOT LENGTH
- 4. PROVIDE A MINIMUM OF TWO ANCHOR BOLTS PER SILL PLATE WITH ONE BOLT LOCATED MAXIMUM 12" AND MINIMUM 7 BOLT DIAMETERS FROM EACH END OF EACH SECTION.
- 5. BOLTS LOCATED IN THE MIDDLE THIRD OF THE SILL PLATE WIDTH

**FOUNDATION PLAN NOTES:** 

- 6. FASTENERS FOR PRESSURE-PRESERVATIVE TREATED AND FIRE RETARDANT TREATED WOOD SHALL BE HOT-DIPPED ZINC COATED GALVANIZED, STAINLESS STEEL OR COPPER
- 7. NO LPG PIPING ASSEMBLIES ALLOWED IN OR BENEATH SLABS WITHIN THE STRUCTURE
- 8. PROVIDE HOLD DOWN ANCHOR (1800# MINIMUM) EACH END OF ALL WSP BRACED WALL PANEL. TWO HOLD DOWN ANCHORS PER PANEL MINIMUM.
- 9. Prior to the contractor requesting a Building Department foundation inspection, the soils engineer shall advise the building official in writing that: a) The building pad was prepared in accordance with the soils report, b) The utility trenches have been properly backfilled and compacted, and
- c) The foundation excavations, the soils expansive characteristics and bearing capacity conform to the soils report.
- 10. Geotechnical report prepared by Applied Consultants dated May 24, 2024.
- 11. Please also see Table 1705.6 REQUIRED SPECIAL INSPECTIONS AND TEST OF SOILS on right.

٧	WOOD STRUCTURAL PANEL SHEATHING							
M	ARK	MINIMUM NAIL						
			PENETRATION (in)				EDGES (inches o/c)	FIELD (inches o/c)
	$\wedge$	6D COMMON	1.5	24:0	<u>3</u> 11 8	16	6	12
	<u>/1</u> \	8D COMMON	1.75	24:16	7" 16	16	6	12

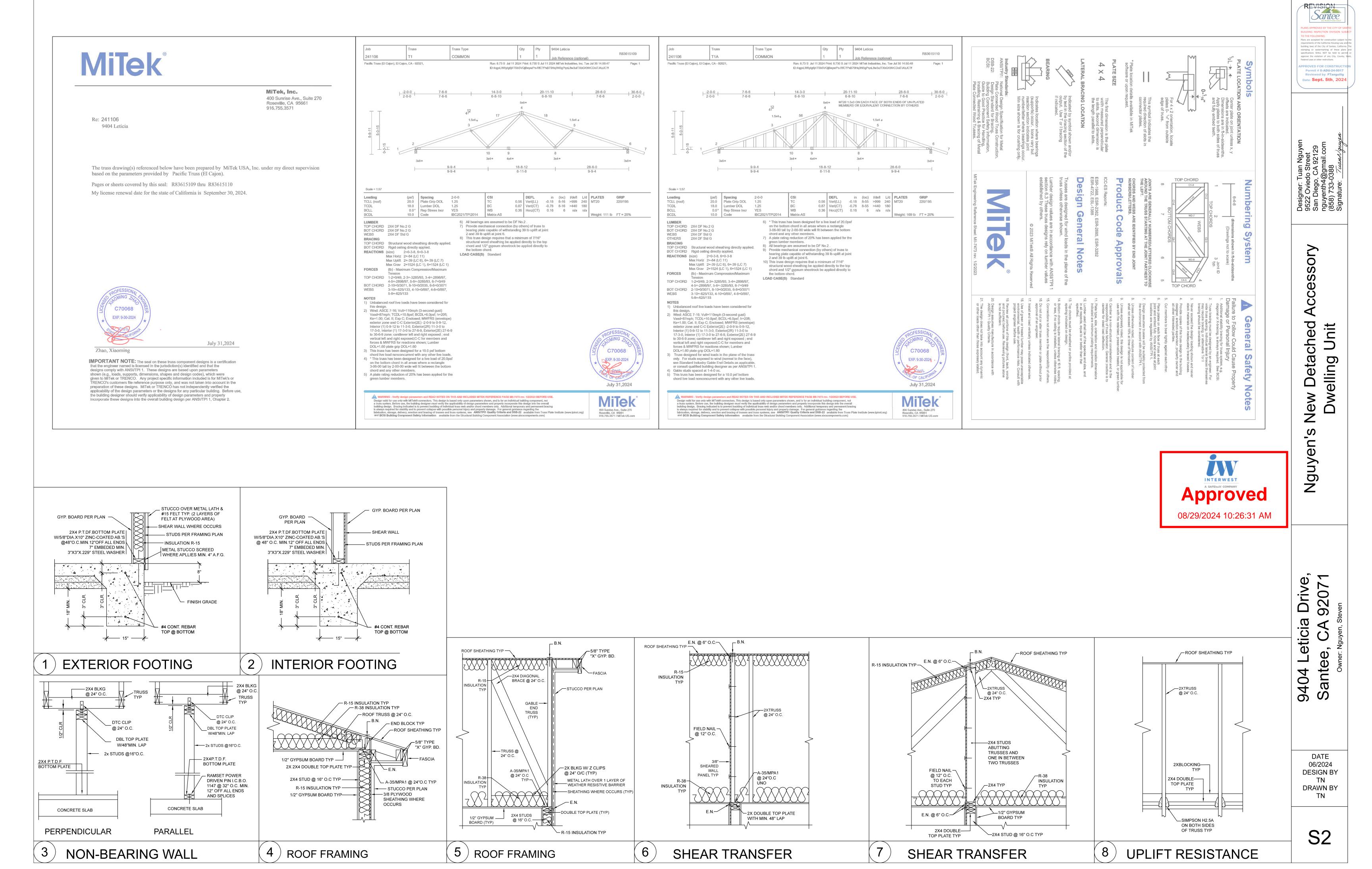
WOOD STRUCTURAL PANELS SHALL CONFORM TO DOC PS 1, DOC PS 2 OR ANSI/APA PRP 210, CSA O437 OR CSA O325. PANELS SHALL BE IDENTIFIED BY A GRADE MARK OR CERTIFICATE OF INSPECTION ISSUED BY AN APPROVED AGENCY

VERTICAL JOINTS OF PANEL SHEATHING SHALL OCCUR OVER AND BE FASTENED TO COMMON STUDS.

HORIZONTAL JOINTS IN BRACED WALL PANELS SHALL OCCUR OVER AND BE FASTENED TO COMMON BLOCKING OF A MINIMUM 1-1/2 INCH THICKNESS.

TABLE 1705.6 REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS		
TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	_	Х
Verify excavations are extended to proper depth and have reached proper material.	_	Х
Perform classification and testing of compacted fill materials.	_	X
<ol> <li>During fill placement, verify use of proper materials and procedures in accordance with the provisions of the approved geotechnical report. Verify densities and lift thicknesses during placement and compaction of compacted fill.</li> </ol>	х	_

Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.



May 24, 2024

1941-A Friendship Drive El Cajon, CA 92020 TEL (619) 258-9000 www.applied-consultants.com

Tuan Nguyen
Via- Email: nguyenth4@gmail.com

Subject: Preliminary Geotechnical Investigation for the Subject Property Located at 9404 Leticia Drive, Santee, CA 92071

#### Dear Tuan Nguyen:

In accordance with your request, we have prepared this preliminary geotechnical investigation report for the subject property located at the aforementioned address. The purpose of this geotechnical investigation was to determine various parameters of the subsurface soils needed before development of the property can begin.

The proposed development is the construction of a detached single-story accessory dwelling unit (ADU) at the rear of the property.

Our work consisted of geotechnical observations, subsurface exploration, soil sampling, laboratory testing, calculations and analyses, and the preparation of this report. Location of the site, relative to general topography, streets, and landmarks, is shown on the attached Figure 1.

#### PRELIMINARY GEOTECHNICAL INVESTIGATION CONCLUSIONS

After reviewing the results of our preliminary geotechnical investigation, we conclude that there are no significant geotechnical or geologic constraints that cannot be mitigated by proper planning, design, and the utilization of sound construction practices and in accordance with the recommendations of this report. Consequently, it is our opinion that the development of the site is feasible from a geotechnical standpoint.

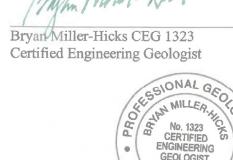
We encountered expansive soils at the location of the proposed development. We recommend that the upper five feet of the soils at the area of the proposed development footprint shall be removed and replaced with a non-expansive material. The removal of the local soils and the compaction of non-expansive engineered fill shall extend to at least five feet outside the proposed development footprint.

The bottom of the excavations shall be approved by our project geologist, engineer, or technician supervisor prior to placing reinforcement, fills or constructing improvements. If the subsoils are determined to be unsuitable when observed, they shall be removed to below the contact with the competent material.

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We appreciate this opportunity to be of service. Should you have any questions, please call our office at (619) 258-9000.

Jorge L. Valdez Gonzalez, PE 92051
Project Engineer



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#### 1.0 SITE DESCRIPTION

The subject property is located at latitude 32°50'42"N and longitude 117°01'22"W. The subject property is located in a residential neighborhood of Santee, California (Figure 1). The residence is bounded to the south by Leticia Drive; to the west by a single-family residence and by West Hills Parkway; and to the north and east by other single-family properties. Review of the current topographic map for the site indicates that the subject property is at approximately 359 feet with respect to the North American Vertical Datum of 1988 (NAVD 88)

The subject property is a rectangular lot of approximately 0.33 acres. The local topography consists of a relatively flat pad bounded by an approximately 22-foot-high ascending slope (with an estimated 2:1 gradient) at the north of the property. An existing single-story structure is located at the southeast portion of the subject property. Surface drainage generally sheet flows from north to south

The proposed development is the construction of a detached single-story accessory dwelling unit (ADU) at the rear of the property.



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# Geographic Location: 9404 Leticla Drive, Santee, CA 92071

Review of the geologic forms referenced ge medium-grain tongues of colothers, 1996)
Road (Kenned between Missi

2.2 Geotec

We encountered

Fig. 1

Site Location Map

9404 Leticia Drive – Preliminary Geotechnical Investigation

APPLIED

CONSULTANTS

# 1.1 SURFACE AND GROUND WATER

On May 9, 2024 we visited the site to perform physical reconnaissance and field work at the subject property. At the time of our visit, we did not detect nor observe surface seeps, springs, or any adverse hydrologic conditions.

We hand dug three exploratory borings at the subject property. Our borings were dug at the rear of the subject property within the area of the proposed development.

# 2.0 Geologic and Geotechnical Site Conditions

# 2.1 Geologic Literature Review and Field Findings

We reviewed the Geologic Map of the San Diego 30' x 60' Quadrangle, California (Kennedy and Tan, 2008) for references concerning the geologic structure and formations underlying the subject property and surrounding areas.

Review of the Geologic Map of the San Diego 30' x 60' Quadrangle indicates that the underlying geologic formation at the subject property consists of the Friars Formation (Tf). According to the referenced geologic map, the Friars Formation is characterized as "Mostly yellowish-gray, medium-grained, massive, poorly indurated nonmarine and lagoonal sandstone and claystone with tongues of cobble conglomerate. It contains an early Uintan vertebrate assemblage (Walsh and others, 1996) and was named for exposures along the north side of Mission Valley near Friars Road (Kennedy and Moore, 1971). The Friars Formation reaches a maximum thickness of 50 m between Mission Valley and Carmel Valley"

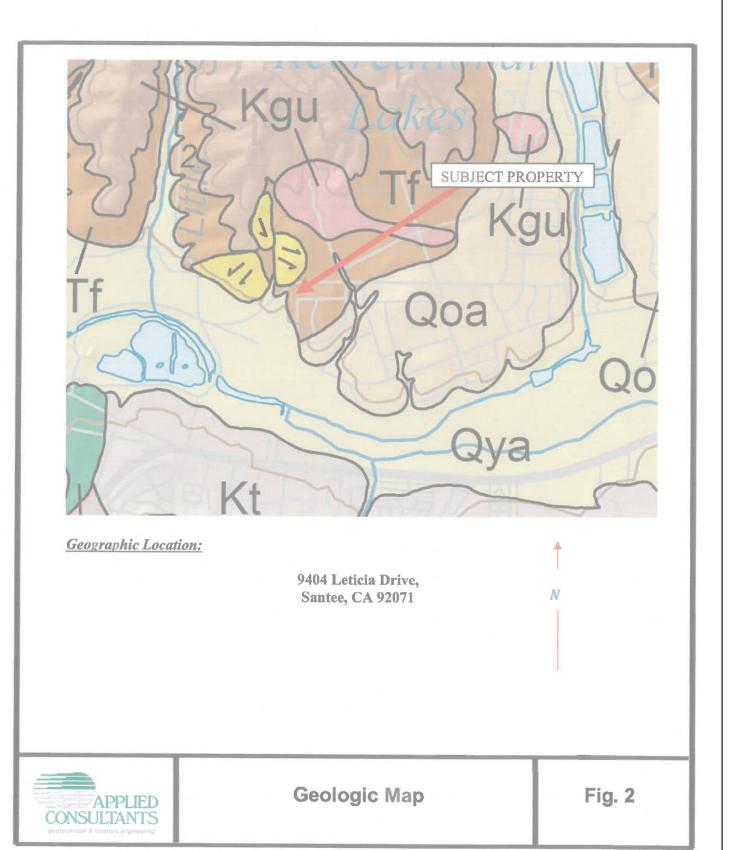
### 2.2 Geotechnical Site Conditions

We encountered the following materials in the exploratory borings:

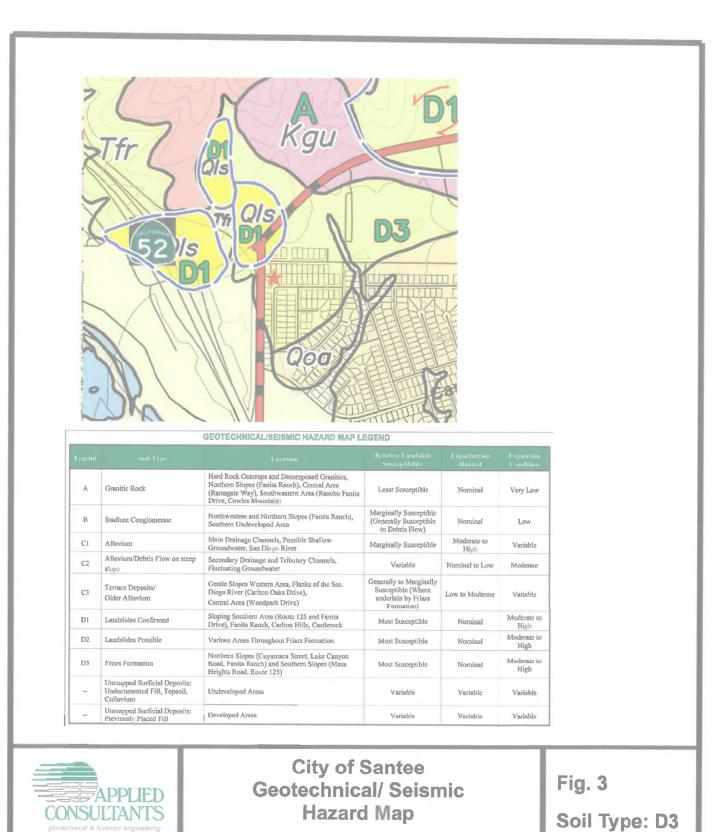
Artificial Fill: was encountered from surface grade to a maximum depth of five feet below ground surface and consisted of a fine to medium grained, light brown to olive gray silty sand and a fine grained, dark grayish brown clayey sand

<u>Friars Formation (Tf):</u> was encountered below the artificial fill and consisted of a fine to medium grained, light gray silty sand (SM).

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DRAWN BY TN

DATE

06/2024

**DESIGN BY** 

TN

PROVED FOR CONSTRUCTION

Date: **Sept. 5th**, 2024

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Permit # B-ADU-24-0017

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#### 3.1 Tectonic Setting

San Diego's tectonic setting includes north and northwest striking fault zones, the most prominent and active of which is the Newport-Inglewood-Rose Canyon Fault Zone. Activity along active faults, or faults with evidence of activity within the last 11,700 years, in this fault zone present the most immediate seismic hazards to San Diego and environs. Other Fault zones including the Elsinore fault zone lie in eastern and northern San Diego county, and the offshore Coronado Banks

Fault rupture hazard would affect a property if an active fault trace or traces traverse the property. The subject property is not within an Alquist-Priolo Earthquake Fault Zone (Special Studies Zone). However, the site is approximately 11 miles to the northeast of faults of late Quaternary age, within the San Diego section of the Newport-Inglewood-Rose Canyon Fault Zone, 29.8 miles southwest of the Julian section of the active Elsinore Fault Zone, and 23.2 miles northeast of active faults within the Coronado Banks Fault Zone.

Even though direct ground rupture from faulting directly underneath the subject property is not likely, the property may be subjected to considerable ground acceleration and shaking from an earthquake event along nearby faults. The intensity of ground shaking is dependent on distance from faults, earthquake magnitude and duration, and seismic characteristics of foundation soils and bedrock.

#### 3.2 Seismic Design Recommendations

The proposed development shall be designed in accordance with seismic considerations contained in the 2022 California Building Code (2022 CBC), American Society of Civil Engineers (ASCE) Standard 7-16: Minimum Design Loads for Buildings and other Structures and City of Santee requirements. Based on the 2022 CBC and ASCE 7-16, the following parameters may be considered for design:

Seismic Importance Factor (I):	1.0 (ASCE 7-16)
Occupancy Category:	II (2022 CBC)
Site Class:	<b>D</b> (2022 CBC)
Spectral Response Coefficient (S <sub>DS</sub> )	0.624g (ASCE 7 Hazard Tool)
Spectral Response Coefficient (S <sub>s</sub> )	0.791g (ASCE 7 Hazard Tool)
Spectral Response Coefficient (S <sub>1</sub> )	0.29g (ASCE 7 Hazard Tool)

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> In general, the clayey soils removed during remedial grading shall not be used for compacted fills due to their expansive characteristics.

### e. Fill Material

The local clayey soils shall not be used as compacted fill. The type of material considered most desirable for import is a low expansive (EI<20) granular material with some silt or clay binder. Furthermore, we recommend that imported fill soils be generally granular and possess a friction angle of 30 degrees or more and a cohesion of 125 pounds per square foot. Fill material shall be approved by the Geotechnical Consultant prior to placement. At least two working days' notice of a potential import shall be given to the Geotechnical Consultant so that appropriate testing can be accomplished. All fill material must be compacted uniformly to 90% of the maximum dry density (ASTM D1557).

### f. Processing of Fill Areas

Prior to placing any new fill soils or constructing any new improvements in areas that have been cleaned out to receive fill, the exposed soils shall be scarified to a depth of 6 inches, moisture conditioned, and compacted to at least 90 percent relative compaction.

# g. Compaction and Method of Filling

All structural fill placed at the site shall be compacted to a relative compaction of at least 90% of its maximum dry density as determined by ASTM Laboratory Test D1557. Fills shall be placed at or slightly above optimum moisture content, in lifts six inches thick, with each lift compacted by mechanical means. Fills shall consist of approved earth material, free of trash or debris, roots, vegetation, or other materials determined to be unsuitable by our soil technicians or project geologist. Fill material shall be free of rocks or lumps of soil in excess of 4 inches in maximum dimension.

# h. Grading Observation

It is necessary for a geotechnical consultant, or their representative, to be present and test the compaction during the basic grading operations and placement of fill material. The engineer will be able to confirm the conditions stated in this report and verify that the grading operations are in compliance with all plans and specifications.

#### 3.3 Geological Hazards

We reviewed the City of Santee Geotechnical/Seismic Hazard Map and noted that the subject property rests upon Type D3 Soils (Frias Formation). The mapped hazard category is described to be "Most Susceptible to Landslide Susceptibility as well as to have Moderate to High expansion conditions". However, the lot is level and although near existing landslides to the north, the graded topography of the site indicates that instability from landslides in the Friars Formation is negligible because no major grading or creation of slopes is proposed.

Minor surficial soil movement due to soil creep and bioturbation is present on virtually all slopes. No visible evidence of gross slope instability was noted during the site inspection and field work conducted at the subject property and surrounding area. Additionally, the proposed accessory dwelling unit will not encroach into the ascending slope, and the additional surcharge load of the ADU will not substantially affect the north ascending slope. The potential landslide risk at the subject property is low.

Liquefaction of cohesionless soils can be caused by strong cyclic accelerations resulting from nearby earthquakes. Research and historical data indicate that loose, granular materials saturated by a near-surface groundwater table are most susceptible to liquefaction.

No near surface groundwater table was encountered or is anticipated. The subsurface materials underlying the subject property do not possess density, texture or saturation characteristics which would make them vulnerable to liquefaction during large seismic events.

The Federal Emergency Management Agency, Flood Insurance Rate Map, states that the subject property does not rest within a surface waters flood zone. The subject property is categorized as, "Areas determined to be outside the 0.2% annual chance floodplain (Other areas, Zone X)." Based upon the local topography and the FEMA Flood Insurance Rate Map, we feel that the potential for flooding at the subject property is low.

#### 3.4 Geotechnical Analysis

The purpose of collecting a bulk soil sample was to determine the soil's physical characteristics through laboratory testing. The soil sample was analyzed for the following:

Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates - ASTM C136

Where foundations are to be located seven feet and further away from the top of slopes,

standard design may take place in conformance with the recommended soil bearing value.

In situations where foundations, footings, walls, etcetera, are located closer than seven feet

from the top of slope they shall be deepened so that the bottom edge of the footing is 7 feet

\*\*Foundation reinforcement shall be designed by the structural engineer. Minimum 3" of

An allowable bearing capacity of 1,500 pounds per square foot may be used in the design

If any interior floor slabs are used for this project, they should be no less than 5" (actual).

For one-story or greater structures, slab reinforcement should consist of #4 rebar placed at

18" on center. All slab reinforcement should rest on concrete chairs or a suitable substitute.

The areas covered by the interior floor slab should be covered with a 15 mil Visqueen

moisture barrier. The moisture barrier should rest on two inches of clean sand and be

Minimum depth\*

(inches)

Minimum width

(inches)

- Optimum Moisture Content and Maximum Density ASTM D1557
- Standard Test Method for Expansion Index of Soils ASTM D4829
- Direct Normal Shear Resistance Value ASTM D3080

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horizontally from daylight in the slope.

b. Minimum dimensions

\* Depth below the lowest grade.

concrete coverage for steel reinforcement.

1-story structure

c. Bearing Capacity

5.3 Concrete Slabs On-Grade

b. Moisture Protection

of these foundations.

a. Floor Slab

5.2 Foundations

a. General

The following table (Table 1) is a compilation of our soils analyses results from the sample collected within the area of the proposed development.

#### Table 1: Applied Consultants' Soils Analyses Results Natural USCS Optimum Optimum Direct Shear Moisture Density (Remolded) Index Phi Cohesion Sample ID (angle) (psf) HB-3 @ 12"-24" 4.6 SM 126 HB-2 @ 12"-24" 24.5 SC (High) HB-2 @ 36"-48" | 18 | SM

pcf - pounds per cubic foot psf - pounds per square foot

#### 4.0 CONCLUSIONS

#### 4.1 Impact of Geologic Hazards upon Subject Property

Based upon our field work and historical research results, we conclude the following:

- Ground Shaking is a likely hazard to the site. Seismic activity on any active and potentially active faults will cause ground movement at the subject property that will be proportional to the magnitude of seismic event. Ground movement at the subject property would be moderated by the distance from the epicenter of the seismic event. It is expected that the structure will have to endure this to some degree.
- Landslide, & Earth Movement. No visible evidence of earth movement was seen during the site inspection and field work conducted at the subject property. Although the Friars formation is susceptible to landslides and earth movement, the topography and proposed development of the subject property indicates that it will not be susceptible to deep seated earth movement. The risk is low for failure in landslide or earth movement.
- Liquefaction. The soil's characteristics at the subject property are not conducive to liquefaction failure. The potential for soil liquefaction at the subject site is low.
- Flooding. Given the topography of the site and data from FEMA maps, flooding is not considered a hazard.

#### 4.2 Geotechnical Investigation Conclusions

After reviewing the results of our preliminary geotechnical investigation, we conclude that there are no significant geotechnical or geologic constraints that cannot be mitigated by proper planning. design, and the utilization of sound construction practices. Consequently, it is our opinion that the development of the site is feasible from a geotechnical standpoint.

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#### 5.0 RECOMMENDATIONS

#### 5.1 Grading

#### a. General

All earthworks shall comply with the grading requirements of the City of Santee except where specifically superseded in this section. Prior to grading a representative of Applied Consultants should be present to discuss the current conditions of the site, grading guidelines and schedule of the earthwork to be completed.

#### b. Grubbing / Clearing

Grading should begin with the removal of all structures and improvements as well as all vegetation. These materials should be hauled off the site to a suitable location. An arborist shall be consulted, and mitigation shall be performed such that all root systems from adjacent trees are terminated at least five feet outside the proposed development footprint.

#### c. Site preparation

The upper five feet of the soils at the area of the proposed development footprint shall be removed and replaced with a non-expansive material. The removal of the local soils and the compaction of non-expansive engineered fill shall extend to at least five feet outside the proposed development footprint.

The bottom of the excavations shall be approved by our project geologist, engineer, or technician supervisor prior to placing fills or constructing improvements. If the subsoils are determined to be unsuitable when observed, they shall be removed to below the contact with the competent material.

#### d. Unsuitable Soils Removal

In areas to receive settlement sensitive structures, all expansive soils, organic soils and loose soils shall be removed to expose suitable bearing material. It is anticipated that the five feet of the onsite soils will require removal and replacement with non-expansive fill for the support of settlement sensitive structures.

Localized areas may require deeper removals. Minimally, the removals should extend a lateral distance of at least five feet beyond the limits of settlement sensitive structures and/or the limits of structural fill. If deeper removals are performed, where possible the removals should extend a lateral distance equal to the depth of removal beyond the improvement limits. Removal bottoms should expose competent materials in a firm and unyielding condition. The extent of removals can best be determined in the field during grading when observation and evaluation can be performed by a representative of our firm.

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## 5.4 Temporary Excavation Slopes

Attention is directed to the fact that while caving was not encountered in the test excavations, it is possible that a trench or excavation could react in an altogether different

California Division of Industrial Safety. These recommended temporary slopes do not

shall be designed and installed to withstand surcharge from adjacent structures in addition

be collected and drained to suitable discharge outlets.

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# 6.0 REVIEW, OBSERVATIONS, AND TESTING

- (a) The final foundation/grading plans should be provided to our office for review in order to evaluate the acceptability of the recommendations presented herein, and provide additional recommendations, as appropriate.
- (b) All construction activities during grading and foundation excavations should be continuously monitored and observed by the Geotechnical Engineer, Engineering Geologist of Record, or their representative.
- (c) All grading and foundation excavations on-site should be observed and tested as required, by a representative of the Geotechnical Engineer and or Engineering Geologist to verify conformance with the intent of the geotechnical/geological recommendations provided herein and to evaluate the acceptability of these recommendations for the actual site conditions.

### CONSTRUCTION INSPECTION AND LIMITATIONS

The recommendations contained within this report are based upon our field investigation. The interpolated subsurface conditions should be checked during construction by a representative of Applied Consultants. We recommend that all grading operations be observed by a representative

The recommendations contained within this report are based upon our field study, laboratory analyses, and our understanding of the proposed construction. If any soil conditions are encountered differing from those assumed in this report, we should be immediately notified so that we can review the situation and make supplementary recommendations. Additionally, if the scope of proposed work changes from that described in this report, we should be notified.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices within the greater San Diego area. Professional judgments contained herein are based upon our evaluation of the technical information gathered, our understanding of the proposed work, and our general experience in the geotechnical field. Our engineering work and judgments rendered meet current professional standards. We do not guarantee the performance of the project in any respect.

We do not direct the contractor's operations and we cannot be responsible for the safety of field personnel on the site; therefore, the safety of field personnel during construction is the responsibility of the contractor. The contractor shall notify the owner if he considers any of the recommended actions contained herein to be unsafe.

It is a pleasure to be of service to you. Should any questions arise, please contact our office at 619-

9404 Leticia Drive - Preliminary Geotechnical Investigation JLVG 5/24/2024

TO THE FOLLOWING:

Plans are accepted for construction subject to ti requirements of the California Housing Law and to building laws of the City of Santee, California. I stamping or watermarking of these plans specifications SHALL NOT be held to permit approve the violation of any City, County, Stederal Laws or other restrictions. ROVED FOR CONSTRUCT Date: **Sept. 5th**, 2024 08/29/2024 10:26:31 AM

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overlain by two inches of clean sand.

Temporary excavation slopes in the existing subsurface soils and or bedrock may be made vertical for cuts less than four (4) feet and where no existing structures are located within seven feet or within the 45-degree zone of influence pressure from adjacent structures.

Additionally, a combination of a 1:1 cut slope with vertical cut less than 4' is acceptable; provided that the given condition is inspected immediately by the geotechnical engineer of record to verify that the soils present verify our logs. For deeper cuts, temporary excavation slopes shall be made no steeper than 1:1 (horizontal to vertical). In areas where soils with little or no binder (cohesion) are encountered, shoring or flatter excavation slopes shall be

All excavations shall be made in accordance with the governing regulations of the State of preclude local raveling and sloughing.

If temporary excavation slopes do not comply with the above, a temporary shoring system to the active and passive pressures generated by the vertical cut.

## 5.5 Site Drainage

- (a) Surface grades adjacent to buildings should be designed and constructed to direct and facilitate drainage away from structures to approved drainage facilities. Recommended minimum grade in unpaved soil areas around buildings and asphaltpaved areas is 5 percent, and in concrete paved areas is 5 percent. Accumulation of water around buildings should be avoided. Concentrations of surface run-off should
- (b) Approved drainage patterns should be installed and maintained throughout the life of structures. The building and surface drainage facilities should not be altered without the prior review and approval of the Project Civil Engineer.

## REFERENCES

- 1. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) Standard 7-16.
- 2. Bearing Capacity for Shallow Foundations -T. William Lambe & Robert V. Whitman, "Soil Mechanics", John Wiley & Sons, 1969.
- 3. California Building Code (CBC 2022), 2022
- 4. California Mines and Geology Division (DMG), 1974, "Maximum Credible Rock Acceleration From Earthquakes in California", Roger W. Greensfelder.
- 5. California Department of Conservation, Division of Mines and Geology (CDMG), 1987. "CSMIP Strong-Motion Records from the Whittier, California Earthquake of 1 October, 1987", OMS Report 87-05.
- 6. City of Santee Geotechnical/Seismic Hazards Maps
- 7. Kennedy, M.P. and Tan, S.S., 2008, Geologic Map of the San Diego 30' x 60' Quadrangle, California, California Geological Survey
- 8. ASCE 7 Hazard Tool https://asce7hazardtool.online/

**FIGURES** 

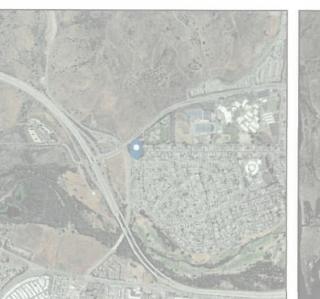
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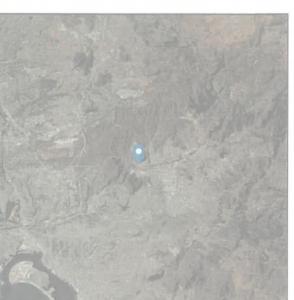
Address: 9404 Leticia Dr Santee, California 92071

ASCE Hazards Report

Standard: ASCE/SEI 7-16 Latitude: 32.84493 Risk Category: ||

Longitude: -117.022922 Soil Class: D - Stiff Soil Elevation: 359.108728601059 ft (NAVD 88)





INTERWEST 08/29/2024 10:26:31 AM

https://ascehazardtool.org/

Page 1 of 4

Thu May 30 2024

**Date Source:** 

JLVG 5/24/2024

Site Soil Class: Results:	D - Stiff Soi	I			
S <sub>s</sub> :	0.791		S <sub>D1</sub> :	N/A	
S <sub>1</sub> :	0.29		T <sub>L</sub> :	8	
Fa	1.184		PGA:	0.339	
F <sub>v</sub>	N/A		PGA <sub>M</sub> :	0.428	
S <sub>MS</sub> :	0.936		F <sub>PGA</sub> :	1.261	
S <sub>M1</sub> :	N/A		l <sub>e</sub> ;	1	
Sps :	0.624		Cu :	1 195	

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Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8. Data Accessed: Thu May 30 2024

USGS Seismic Design Maps

Results:

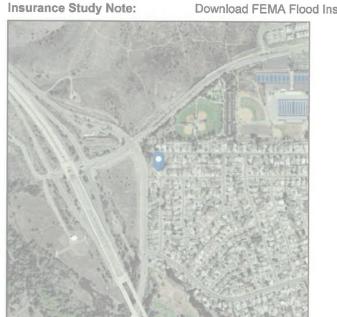
Flood Zone Categorization: X (unshaded)

Base Flood Elevation:

**Data Source:** Date Accessed: FEMA National Flood Hazard Layer - Effective Flood Hazard Layer for US, where modernized (https://msc.fema.gov/portal/search)

Thu May 30 2024 FIRM Panel: If available, download FIRM panel here

Download FEMA Flood Insurance Study for this area here



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**EXPLORATORY BORING LOGS** 

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Address: 9404 LETICIA DRIVE Logged By: JLVG SANTEE, CA 92071 Reviewed By: \_\_JED Location: NW PORTION OF PROPOSED ADU Footing Thickness (in.): Excavation Method: HAND AUGER Depth to Water (ft): Boring /Test pit ID: HB-3 Sample Type: DISCRETE/BULK Caving: Sample Discrete Bulk Lithology & Footing Soil Description Sample | Sample Type ID MC% Interval Interval Silty sand (SM): fine to medium grained, light brown silty sand Silty sand (SM): fine to medium grained, olive gray silty sand 12"-24" 4.6 5 Y 4/2 Artificial fill Clayey sand (SC): fine to medium grained, dark grayish brown clayey 10 YR 4/2 Silty sand (SM): fine to medium grained, light gray silty sand Friars Formation TERMINATED @ 72" BGS **BORING LOG: HB-3** DATE: 5/9/2024 9404 LETICIA DRIVE Drawn By: JLVG

Project Name: NGUYEN ADU

# GENERAL EARTHWORK AND GRADING **GUIDELINES**

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### GENERAL EARTHWORK AND GRADING GUIDELINES

Logged By: JLVG

Footing Thickness (in.):

Discrete Bulk

Sample Sample

Artificial fill

DATE: 5/9/2024

Drawn By: JLVG

Reviewed By: JED

HB-1 Excavation Method: HAND AUGER Sample Type: DISCRETE/BULK Caving: NON Depth of Footing: NA

Type ID MC% Interval Interval

12"-24" 11.8

42"-48"

BORING LOG: HB-1

9404 LETICIA DRIVE,

SANTEE, CA 92071

### I. EARTHWORK OBSERVATION AND TESTING

Project Name: NGUYEN ADU

Address: 9404 LETICIA DRIVE

SANTEE, CA 92071

Location: SW PORTION OF PROPOSED ADU

Soil Description

Silty sand (SM): fine to medium

grained, light brown silty sand

Silty sand (SM): fine to medium

Clayey sand (SC): fine to medium grained, dark grayish brown clayey

PRACTICAL REFUSAL @ 48" BGS

5 Y 4/2

10 YR 4/2

grained, olive gray silty sand

Prior to commencement of grading, a qualified geotechnical consultant should be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report and these specifications. The consultant is to provide adequate testing and observation so that he may determine that the work was accomplished as specified. It should be the responsibility of the contractor to assist the consultant and keep him apprised of work schedules and changes so that the consultant may schedule his personnel accordingly.

The contractor is to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications, and the approved grading plans. If in the opinion of the consultant, unsatisfactory conditions are resulting in a quality of work less than required in these specifications, the consultant may reject the work and recommend that construction be stopped until the conditions are rectified.

Maximum dry density tests used to determine the degree of compaction should be performed in accordance with the American Society for Testing and Materials Test Method ASTM: D 1557.

### II. PREPARATION OF AREAS TO BE FILLED

- 1. Clearing and Grubbing: All brush, vegetation, and debris shall be removed and properly disposed of.
- The Geotechnical Consultant shall evaluate the extent of removal of these items depending on site conditions. Fill material shall not contain more than 1 percent of organic material by volume. No fill should contain more than 5 percent organic matter.
- No fill shall contain hazardous materials or asphalt pavement. If asphalt pavement is removed, it should be disposed of at an appropriate location. Concrete fragments which are free of reinforcing steel may be placed in the fills.
- 2. Processing: the existing ground which is evaluated to be satisfactory for support of fill shall be scarified to a minimum depth of 6 inches. Existing ground which is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until the soils are broken down and free of large clay lumps or clods and until the working surface is reasonably uniform and free of uneven features which would inhibit uniform compaction.
- 3. Overexcavation: Soft, dry, spongy, or otherwise unsuitable ground, extending to such a depth that surface processing cannot adequately improve the condition, shall be overexcavated down to firm ground as approved by the consultant.

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4. Moisture Conditioning: Over-excavated and processed soils shall be watered, dried-back, blended, and/or mixed, as necessary to attain a uniform moisture content approximately 2 percent over optimum.

Logged By: \_\_\_JLVG

Footing Thickness (in.):

Sample Discrete Bulk Lithology & Footing

Artificial fill

Friars Formation

DATE: 5/9/2024

Drawn By: JLVG

Sample Sample

Reviewed By: \_\_JED

Excavation Method: HAND AUGER Depth to Water (ft):

Type ID MC% Interval Interval

HB-2

BORING LOG: HB-2

9404 LETICIA DRIVE,

SANTEE, CA 92071

12"-24" 18.2

Boring /Test pit ID: HB-2 Sample Type: DISCRETE/BULK Caving: Depth of Footing

- 5. Recompaction: Over-excavated and processed soils which have been properly mixed and moisture-conditioned shall be compacted to a minimum relative compaction of 90 percent according to ASTM: D1557.
- 6. Benching: Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be benched. The lowest bench shall be: a minimum of 15 feet wide, at least 2 feet deep with a minimum 2% slope into the fill bank for horizontal stability, expose firm materials, and be approved by the consultant. Other benches shall excavate into firm material for a minimum width of 4 feet. Ground sloping flatter than 5:1 shall be benched or otherwise over-excavated when considered necessary by the consultant.
- 7. Approval: All areas to receive fill, including processed areas, removal areas, and toe-of-fill benches shall be approved by the consultant prior to fill placement.

# III. FILL MATERIAL

Project Name: NGUYEN ADU

Address: 9404 LETICIA DRIVE

Location: NE PORTION OF PROPOSED ADU

Soil Description

Silty sand (SM): fine to medium

grained, light gray silty sand 

Silty sand (SM): fine to medium

TERMINATED @ 66" BGS

grained, light gray silty sand

Clayey sand (SC): fine to medium

grained, dark grayish brown clayey

10 YR 4/2

5 Y 7/2

- 1. General: Material to be placed as fill shall be free of organic matter and other deleterious substances, and shall be approved by the consultant. Soils of poor gradation, expansion, or strength characteristics shall be placed in areas designated by the consultant or mixed with other soils until suitable to serve as satisfactory fill material.
- 2. Oversize: Oversize material defined as rock, or other irreducible material, with a maximum dimension of greater than 12 inches, shall not be buried or placed in fill unless the location, materials, and disposal methods are specifically approved by the consultant. Oversize disposal operations shall be such that nesting of oversized material does not occur, and such that the oversized material is completed surrounded by compacted or densified fill. Oversize material shall not be placed within the range of future utilities or underground construction, unless specifically approved by the consultant.
- 3. Import: If import fill is necessary for grading, the import material shall be approved by the geotechnical consultant.

### IV. FILL PLACEMENT AND COMPACTION

1. Fill Lifts: Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 6 to 8 inches in compacted thickness. The consultant may approve thicker lifts if testing indicates that the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.

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2. Fill Moisture: Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or blended with drier materials. Moisture conditioning and mixing of fill layers shall continue until the fill material is at a uniform moisture content at or near two percent over optimum.

SANTEE, CA 92071

- 3. Compaction of Fill: After each layer has been evenly spread, moisture conditioned and mixed, it shall be uniformly compacted to not less than 90 percent of maximum dry density in accordance with ASTM: D1557. Compaction equipment shall be adequately sized and either specifically designed for soil compaction or of proven reliability, to efficiently achieve the specified degree of compaction.
- 4. Fill Slopes: Compacting of slopes shall be accomplished, in addition to normal compaction procedures, by backrolling of slopes with sheepsfoot rollers at frequent intervals of 2 to 3 feet in fill elevation gain, or by other methods producing satisfactory results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent.
- 5. Compaction Testing: Field tests to check the fill moisture and degree of compaction will be performed by the consultant. The location and frequency of tests shall be at the consultant's discretion. In general, the tests shall be taken at an interval not exceeding 2 feet in vertical rise and/or every 1000 cubic yards of embankment.
- 6. New buildings should not be underlain by cut/fill transitions or transitions from shallow fill to deep fill. Where such transitions are encountered, the more competent material should be over excavated and replaced with compacted fill to provide a relatively uniform thickness of compacted fill beneath the entire building and reduce the potential for differential settlement. The over-excavation depth should be at least 3 feet below the planned finished pad elevation, at least 2 feet below the deepest planned footing bottom elevation, or to a depth of H/2, whichever is deeper, where H is the greatest depth of fill beneath the structure. Horizontally, the over-excavation should extend at least 5 feet outside the planned footing perimeter or up to existing improvements, whichever is less. Where practical, the bottom of excavations should be sloped towards the fil portion of the site and away from its center. A representative of AC should observe the conditions exposed in the bottom of excavations to determine if additional excavation is required.

### V. SUBDRAIN INSTALLATION

Subdrain systems, if required, shall be installed in approved ground to conform to the approximate alignment and details shown on the plans or shown herein. The subdrain location or materials should not be changed or modified without the approval of the consultant. The consultant, however, may recommend and upon approval, direct changes in subdrain line, grade or material. All subdrains shall be surveyed for line and grade after installation and sufficient time allowed for surveys, prior to commencement of filling over the subdrains.

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### VI. EXCAVATIONS

Excavations and cut slopes shall be examined during grading. If directed by the consultant, further excavation or overexcavation and refilling of cut areas shall be performed, and/or remedial grading of cut slopes performed. Where fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope shall be made and approved by the consultant prior to placement of the fill portion of the slope. Excavations may require the consultant to produce an alternate sloping plan if the excavation

# VII. TRENCH BACKFILL

- 1. The Contractor shall follow all OSHA and CAL/OSHA requirements for maintaining safety of trench excavations.
- 2. The bedding and backfill of utility trenches should be done with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material should have a sand equivalent of (SE >30). Bedding should be placed 1 foot above the top of pipe. All backfill should be compacted to 90 percent from 1 foot above the pipe to the surface.
- 3. The geotechnical consultant should test the trench backfill for relative compaction. At least one test should be performed for every 300 feet of trench and every two feet of trench fill.
- 4. The lift thickness of the trench backfill shall not exceed what is allowed in the Specifications of Public Works Construction unless the contractor can demonstrate that the fill can be compacted by an alternative means to the minimum relative compaction.
- 5. All work associated with trenches, excavations and shoring must conform to the local regulatory requirements, State of California Division of Industrial Safety Codes, and Federal OSHA requirements.

### VIII. FOUNDATIONS NEAR TOP OF SLOPES

Where foundations, footings, walls and other similar proposed structures are to be located seven feet and further away from the top of slopes, standard design may take place in conformance with the recommended soil bearing value. In situations where foundations, footings, walls, et cetera, are located closer than seven feet from the top of slope they shall be deepened so that the bottom edge of the footing is 7 feet horizontally from daylight in the slope.

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#### A. Electrical, Plumbing, and Mechanical

crawl space, or basement. (CRC R314.3)

(CEC 210.12)

- Exterior lighting. All projects shall comply with the County of San Diego lighting
- **GFCI outlets.** Ground Fault Circuit Interrupter (GFCI) outlets are required in bathrooms, at kitchen countertops, at laundry and wet bar sinks, in garages, in crawlspaces, in
- unfinished basements, and outdoors. (CEC 210.8)

hallways, or similar rooms must be protected by Arc Fault Circuit Interrupters (AFCI).

- Luminaire requirements. Installed luminaires shall meet the efficacy and fixture requirements of CBEES 150.0(k).
- Smoke detectors in building remodels. Smoke detectors are required in each existing 1. Fastener requirements. The number, size, and spacing of fasteners connecting wood sleeping room, outside each separate sleeping area in the immediate vicinity of sleeping rooms, and on each story of a dwelling including basements. Battery-operated detectors are acceptable in existing areas with no construction taking place and in alterations not resulting in removal of interior wall or ceiling finishes and without access via an attic,
- Carbon monoxide detectors in building remodels. Carbon monoxide detectors are required outside each separate sleeping area in the immediate vicinity of sleeping rooms and on each story of a dwelling including basements. Battery-operated detectors are acceptable in existing areas with no construction taking place and in alterations not resulting in removal of interior wall or ceiling finishes and without access via an attic, crawl space, or basement. (CRC R315.3)
- Water heater seismic strapping. Minimum two 3/4-inch-by-24-gauge straps required around water heaters, with 1/4-inch-by-3-inch lag bolts attached directly to framing. Straps shall be at points within upper third and lower third of water heater vertical dimension. Lower connection shall occur minimum 4 inches above controls. (CPC 507.2)
- Gas appliances in garages. Water heaters and heating/cooling equipment capable of igniting flammable vapors shall be placed on minimum 18-inch-high platform unless listing report number provided showing ignition-resistant appliance. (CPC 507.13 and
- Impact protection of appliances. Water heaters and heating/cooling equipment subject to vehicular impact shall be protected by bollards or an equivalent measure. (CPC 507 13 1 and CMC 305 11
- 10. Water closet clearance. Minimum 30-inch-wide by 24-inch-deep clearance required at 7. Top plate splices. Top plate lap splices shall be face-nailed with minimum 8 16d nails front of water closets. (CPC 402.5)
- 11. Shower size. Shower compartments shall have minimum area of 1024 square inches and be able to encompass a 30-inch-diameter circle. Shower doors shall have a minimum 22-inch unobstructed width. (CPC 408.5 and CPC 408.6)
- 12. Fireplace appliances. Fireplaces with gas appliances are required to have the flue damper permanently fixed in the open position and fireplaces with LPG appliances are to have no 'pit' or 'sump' configurations. (CMC 303.7.1)
- 13. Chimney clearance. Minimum 2-foot chimney clearance required above building within 10-foot horizontally of chimney. The chimney shall extend minimum 3 feet above highest 9. Cripple walls. Foundation cripple walls shall be framed of studs not less in size than the point where chimney passes through roof. (CRC R1003.9)

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

- Transfer air. Ventilation air shall be provided directly from the outdoors and not as transfer air from adjacent dwelling units or other spaces, such as garages, unconditioned crawlspaces, or unconditioned attics. (CBEES 150.0(o)) Instructions and labeling. Ventilation system controls shall be labeled and the home
- owner shall be provided with instructions on how to operate the system. (CBEES Combustion and solid-fuel burning appliances. Combustion appliances shall be
- properly vented and air systems shall be designed to prevent back drafting. (CBEES 4. Garages. The wall and openings between occupiable spaces and the garage shall be
- ealed. 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.

  14. Shear wall offset. Shear walls may be offset out-of-plan not more than 4 feet from the using California Title 24 or equivalents. (CBEES 150.0(o)) Minimum filtration. Mechanical systems supplying air to occupiable space through
- ductwork shall be provided with a filter having a minimum efficiency of MERV 6 or better.

  15. Shear wall location. Shear walls shall be located at the ends of each braced wall line or (CBEES 150.0(o)) **Air inlets**. Air inlets (not exhaust) shall be located away from known contaminants.
- (CBEES 150.0(o))
- Air moving equipment. Air moving equipment used to meet either the whole-building ventilation requirement or the local ventilation exhaust requirement shall be rated in
- **a.** All continuously operating fans shall be rated at a maximum of 1.0 sone.

terms of airflow and sound. (CBEES 150.0(o))

1.0 sone. c. Intermittently operated local exhaust fans shall be rated at maximum of 3.0 sone.

**b.** Intermittently operated whole-building ventilation fans shall be rated at a maximum of

Remotely located air-moving equipment (mounted outside of habitable spaces) need not meet sound requirements if at least 4 feet of ductwork between fan and intake grill.

# D. Foundation and Underfloor

- Foundation reinforcement. Continuous footings and stem walls shall be provided with a minimum two longitudinal No. 4 bars, one at the top and one at the bottom of the footing.
- Shear wall foundation support. Shear walls shall be supported by continuous foundations. (CRC 403.1.2)
- Vapor retarder. A 6-mil polyethylene or approved vapor retarder with joints lapped minimum 6 inches shall be placed between a concrete slab-on-grade and the base course or subgrade. (CRC 506.2.3)
- Anchor bolts and sills. Foundation plates or sills shall be bolted or anchored to the foundation or foundation wall per the following (CRC R403.1.6 and CRC R602.11.1):
- a. Minimum 1/2-inch-diameter steel bolts
- **b.** Bolts embedded at least 7 inches into concrete or masonry
- Bolts spaced maximum 6 feet on center d. Minimum two bolts per plate/sill piece with one bolt located maximum 12 inches and
- minimum 7 bolt diameters from each end of each sill plate/piece e. Minimum 3-inch by 3-inch by 0.299-inch steel plate washer between sill and nut on each bolt
- **Hold-downs.** All hold-downs must be tied in place prior to foundation inspection.
- Protection of wood against decay. Naturally durable or preservative-treated wood shall be provided in the following locations (CRC R317.1):
- a. All wood in contact with ground, embedded in concrete in direct contact with ground, or embedded in concrete exposed to weather b. Wood joists within 18 inches and wood girders within 12 inches of the exposed ground
- in crawl spaces shall be of naturally durable or preservative-treated wood Wood framing members that rest on concrete or masonry exterior foundation walls and
- preservative-treated wood Wood framing, sheathing, and siding on the exterior of the building and having clearance less than 6 inches from the exposed ground or less than 2 inches vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surface exposed to

are less than 8 inches from exposed earth shall be of naturally durable or

Sills and sleepers on concrete or masonry slab in direct contact with ground unless separated from such slab by impervious moisture barrier

- D. Foundation and Underfloor (Continued)
- inch on tops, sides, and ends g. Wood structural members supporting moisture-permeable floors or roofs exposed to
- weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier h. Wood furring strips or other wood framing members attached directly to interior of

exterior concrete or masonry walls below grade except where vapor retarder applied

- between wall and furring strips or framing members 8. Underfloor ventilation. Underfloor areas shall have ventilation openings through foundation walls or exterior walls, with minimum net area of ventilation openings of 1 square foot for each 150 square feet of underfloor area. On such ventilating opening
- shall be within 3 feet of each corner of the building. (CRC R408.1) **AFCI outlets.** Electrical circuits in bedrooms, living rooms, dining rooms, dens, closets, **9. Underfloor access.** Underfloor areas shall be provided with a minimum 18-inch by 24-inch access opening. (CRC R408.4)

#### E. Wood Framing

- members/elements shall not be less than that set forth in CRC Table R602.3(1). (CRC R502.9, CRC R602.3, and CRC R802.2)
- 2. Stud size, height, and spacing. The size, height, and spacing of studs shall be in accordance with CRC Table R602.3(5). (CRC R602.3.1) 3. Sill plate. Studs shall have full bearing on nominal 2-inch thick or larger sill plate with
- width at least equal to stud width. (CRC R602.3.4) **4. Bearing studs.** Where joists, trusses, or rafters are spaced more than 16 inches on
- center and the bearing studs below are spaced 24 inches on center, such members shall bear within 5 inches of the study beneath. (CRC R602.3.3) 5. **Drilling and notching of studs.** Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25% of its width. Studs in nonbearing partitions may be notched to a depth not to exceed 40% of a single stud width. Any stud may be bored or drilled, provided the diameter of the resulting hole is no more than 60% of the
- bearing partitions drilled over 40% and up to 60% shall also be doubled with no more than two successive studs bored. (CRC R602.6) **Top plate.** Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and at intersections with other partitions. End joints in double top plates shall be offset at least 24 inches. Joints in plates need not occur over studs.
- studs. (CRC R602.3.2) on each side of splice. (CRC R602.10.8.1)
- **Drilling and notching of top plate.** When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling, or notching of the top plate by more than 50% of its width, a galvanized metal tie not less than 0.054-inch thick and 1-1/2-inches wide shall be fastened across and to the plate at each side of the opening with not less than 8 10d nails having a minimum length of 1-1/2 inches at each 37. side or equivalent. The metal tie must extend minimum 6 inches past the opening. (CRC
- studding above. Cripple walls more than 4 feet in height shall have studs sized as required for an additional story. Cripple walls with stud height less than 14 inches shall be sheathed on at least one side with a wood structural panel fastened to both the top and bottom plates in accordance with Table R602.3(1), or the cripple walls shall be constructed of solid blocking. Cripple walls shall be supported on continuous foundations. (CRC R602.9)
- 10. Wall bracing. Buildings shall be braced in accordance with the methods allowed per CRC R602.10.2, CRC R602.10.4, and/or CRC R602.10.5.
- 11. Braced wall line spacing. Spacing between braced wall lines shall not exceed 20 feet or alternate provisions of CRC R602.10.1.3.
- 12. Shear wall cumulative length. The cumulative length of shear walls within each braced wall line shall meet the provisions of CRC Table R602.10.3(1) for wind loads and CRC Table R602.10.3(2) for seismic loads. (CRC R602.10.1.1)
- 13. Shear wall spacing. Shear walls shall be located not more than 25 feet on center. (CRC
- designated braced wall line and not more than 8 feet from any other offset wall considered part of the same braced wall line. (CRC R602.10.1.2)
- meet the alternate provisions of CRC R602.10.2.2. **16.** Individual shear wall length. Shear walls shall meet minimum length requirements of
- 17. Cripple wall bracing. Cripple walls shall be braced per CRC R602.10.11. **18. Shear wall and diaphragm nailing.** All shear walls, roof diaphragms, and floor diaphragms shall be nailed to supporting construction per CRC Table R602.3(1). (CRC
- 19. Shear wall joints. All vertical joints in shear wall sheathing shall occur over, and be fastened to, common studs. Horizontal joints in shear walls shall occur over, and be fastened to, minimum 1-1/2-inch-thick blocking. (CRC R602.10.10)
- 20. Framing over openings. Headers, double joists, or trusses of adequate size to transfer loads to vertical members shall be provided over window and door openings in load-bearing walls and partitions. (CBC 2304.3.2)
- **21. Joists under bearing partitions.** Joists under parallel bearing partitions shall be of adequate size to support the load. Double joists, sized to adequately support the load, that are separated to permit the installation of piping or vents shall be full-depth solid-blocked with minimum 2-inch nominal lumber spaced at maximum 4 feet on center. Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls, or partitions more than the joist depth unless such joists are of sufficient size to carry the i. Vertically at the ceiling and floor levels additional load. (CRC R502.4)
- Concrete slabs-on-grade. Slabs-on-grade shall be minimum 3-1/2-inches thick. (CRC 22. Joists above or below shear walls. Where joists are perpendicular to a shear wall above or below, a rim joist, band joist, or blocking shall be provided along the entire length of the shear wall. Where joists are parallel to a shear wall above or below, a rim joist, end joist, or other parallel framing shall be provided directly above and/or below the shear wall. Where a parallel framing member cannot be located directly above and/or below the shear wall, full-depth blocking at 16-inch spacing shall be provided between the parallel framing members to each side of the shear wall. (CRC R602.10.8)
  - 23. Floor member bearing. The ends of each floor joist, beam, or girder shall have minimum 1-1/2 inches of bearing on wood or metal and minimum 3 inches of bearing on masonry or concrete except where supported on a 1-inch-by-4-inch ribbon strip and nailed to the 47. Fireblocking materials. Except as otherwise specified in items E.48 and E.49, adjoining stud or by the use of approved joist hangers. (CRC R502.6)
  - minimum 3 inches and shall be nailed together within minimum 3 10d face nails. A wood a. Two-inch nominal lumber or metal splice with strength equal to or greater than that provided by the lap is permitted.

24. Floor joist lap. Floor joists framing opposite sides over a bearing support shall lap

- 25. Floor joist-to-girder support. Floor joists framing into the side of a wood girder shall be supported by approved framing anchors or on ledger strips minimum nominal 2 inches by 2 inches. (CRC R502.6.2)
- **26. Floor joist lateral restraint.** Floor joists shall be supported laterally at ends and each intermediate support by minimum 2-inch full-depth blocking, by attachment to full-depth header, band joist, or rim joist, to an adjoining stud, or shall be otherwise provided with lateral support to prevent rotation. (CRC R502.7)
- **27.** Floor joist bridging. Floor joists exceeding nominal 2 inches by 12 inches shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at maximum 8-foot intervals. (CRC R502.7.1)
- 28. Framing of floor openings. Openings in floor framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist may be a single member the same size as the floor joist. Single trimmer joists may be used to carry a single header joist located within 3 feet of the trimmer joist bearing. When the header joist span exceeds 4 feet, the trimmer joists and header joist shall be doubled and of sufficient cross section to support the floor joists framing into the header. Approved 48. Fireblocking at openings around vents, pipes, ducts, cables, and wires at ceiling hangers shall be used for the header-joist-to-trimmer-joist connections when the header joist span exceeds 6 feet. Tail joists over 12 feet long shall be supported at the header by framing anchors or on ledger strips minimum 2 inches by 2 inches. (CRC R502.10)

#### E. Wood Framing (Continued)

- f. Ends of wood girders entering masonry or concrete walls with clearances less than 1/2 29. Girders. Girders for single-story construction or girders supporting loads from a single floor shall not be less than 4 inches by 6 inches for spans 6 feet or less, provided that girders are spaced not more than 8 feet on center. Other girders shall be designed to support the loads specified in the CBC. Girder end joints shall occur over supports. When a girder is spliced over a support, an adequate tie shall be provided. The ends of beams or girders supported on masonry or concrete shall not have less than 3 inches of bearing. (CBC 2308.7)
  - **30.** Ridges, hips, and valleys. Rafters shall be framed to a ridge board or to each other with a gusset plate as a tie. Ridge boards shall be minimum 1-inch nominal thickness and not less in depth than the cut end of the rafter. At all valley and hips, there shall be a valley or hip rafter not less than 2-inch nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Where the roof pitch is less than 3:12 slope (25% gradient), structural members that support rafters and ceilings joists, such as ridges, hips, and valleys, shall be designed as beams. (CRC
  - **31.** Ceiling joist and rafter connections. Ceiling joists and rafters shall be nailed to each other per CRC Table R802.5.1(9), and the rafter shall be nailed to the wall top plate per CRC Table R602.3(1). Ceiling joists shall be continuous or securely joined per CRC Table R802.5.1(9) where they meet over interior partitions and are nailed to adjacent rafters to provide a continuous tie across the building when such joists are parallel to connected higher in the attic shall be installed as rafter ties, or rafter ties shall be installed to provide a continuous tie. Where ceiling joists are not parallel to rafters, rafter ties shall be installed. Rafter ties shall be minimum 2 inches by 4 inches nominal, installed per CRC Table R802.5.1(9), or connections of equivalent capacities shall be provided. Where ceilings joists or rafter ties are not provided, the ridge formed by these rafters

    F. General Material Specifications shall be supported by a wall or engineer-designed girder. (CRC R802.3.1)
- **32.** Ceiling joists lapped. Ends of ceiling joists shall be lapped minimum 3 inches or butted 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. (CRC R802.3.2) stud width, the edge of the hole is no more than 5/8 inch to the edge of the stud, and the
- **33.** Collar ties. Collar ties or ridge straps to resist wind uplift shall be connected in the upper hole is not located in the same section as a cut or notch. Studs located in exterior wall or third of the attic space. Collar ties shall be a minimum 1 inch by 4 inches nominal and spaced at maximum 4 feet on center. (CRC R802.3.1)
- **34.** Purlins. Purlins installed to reduce the span of rafters shall be sized not less than the required size of the rafters they support. Purlins shall be continuous and shall be supported by 2-inch-by-4-inch nominal braces installed to bearing walls at a minimum 45-degree slope from horizontal. The braces shall be spaced maximum 4 feet on center Plates shall be minimum nominal 2 inches thick and have width at least equal to width of with a maximum 8-foot unbraced length. (CRC R802.5.1)
  - than 1-1/2 inches of bearing on wood or metal and not less than 3 inches of bearing on masonry or concrete. (CRC R802.6) Roof/ceiling member lateral support. Roof framing members and ceiling joists with a nominal depth-to-thickness ratio exceeding 5:1 shall be provided with lateral support at
  - points of bearing to prevent rotation. (CRC R802.8) Roof/ceiling bridging. Rafters and ceiling joists with a nominal depth-to-thickness ratio exceeding 6:1 shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch wood strip nailed across the rafters or ceiling joists at maximum 8-foot intervals. (CRC R802.8.1)
  - 38. Framing of roof/ceiling openings. Openings in roof and ceiling framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist may be a single member the same size as the ceiling joist or rafter. Single trimmer joists may be used to carry a single header joist located within 3 feet of the trimmer joist bearing. When the header joist span exceeds 4 feet, the trimmer joists and header joist shall be doubled and of sufficient cross section to support the ceiling joists or rafters framing into the header. Approved hangers shall be used for the header-joist-to-trimmer-joist connections when the header joist span exceeds 6 feet. Tail joists over 12 feet long shall be supported at the header by framing anchors or on ledger 9. Fasteners for fire-retardant-treated wood. Fasteners for fire-retardant-treated wood. strips minimum 2 inches by 2 inches. (CRC R502.10)
  - 39. Roof framing above shear walls. Rafters or roof trusses shall be connected to top plates of shear walls with blocking between the rafters or trusses. (CRC R602.10.8)
  - 41. Roof diaphragm at ridges. Minimum 2-inch nominal blocking required for roof
  - diaphragm nailing at ridges. 42. Blocking of roof trusses. Minimum 2-inch nominal blocking required between trusses at 2. Roof flashing. Flashing shall be installed at wall and roof intersections, at gutters,
  - ridge lines and at points of bearing at exterior walls. **43. Truss clearance**. Minimum 1/2-inch clearance required between top plates of interior non-bearing partitions and bottom chords of trusses.
  - **44. Drilling, cutting, and notching of roof/floor framing.** Notches in solid lumber joists, rafters, blocking, and beams shall not exceed one-sixth the member depth, shall be not longer than one-third the member depth, and shall not be located in the middle one-third of the span. Notches at member ends shall not exceed one-fourth the member depth. The tension side of members 4 inches or greater in nominal thickness shall not be notched except at member ends. The diameter of holes bored or cut into members shall not exceed one-third the member depth. Holes shall not be closer than 2 inches to the top or bottom of the member or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches to the notch. (CRC
  - . Exterior landings, decks, balconies, and stairs. Such elements shall be positively anchored to the primary structure to resist both vertical and lateral forces or shall be designed to be self-supporting. Attachment shall not be accomplished by use of toenails
  - or nails subject to withdrawal. (CRC R311.3) 46. Fireblocking. Fireblocking shall be provided in the following locations (CRC R302.11
  - a. In concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs, as follows:
  - ii. Horizontally at intervals not exceeding 10 feet
  - b. At all interconnections between concealed vertical and horizontal spaces such as
  - occur at soffits, drop ceilings, and cove ceilings
  - c. In concealed spaces between stair stringers at the top and bottom of the run d. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with
  - **e.** At chimneys and fireplaces per item E.49
  - f. Cornices of a two-family dwelling at the line of dwelling-unit separation fireblocking shall consist of the following materials with the integrity maintained (CRC

R302.11.1):

- **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 **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 I. Green Building Standards Code (CALGreen) Requirements 10-foot horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs. Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross-section of the wall cavity to a minimum height of 16 inches measured vertically. When piping, conduit, or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction. Loose-fill insulation material shall not be used as a fireblock unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot
- 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)

#### E. Wood Framing (Continued)

- 49. Fireblocking of chimneys and fireplaces. All spaces between chimneys and floors and ceilings through which chimneys pass shall be fireblocked with noncombustible material securely fastened in place. The fireblocking of spaces between chimneys and wood **b.** Urinals: Maximum 0.5 gallons per flush 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
- **50. Draftstopping.** In combustible construction where there is usable space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1000 square feet. Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draftstopping shall be provided in floor/ceiling assemblies under the following circumstances (CRC
- a. Ceiling is suspended under the floor framing
- **b.** Floor framing is constructed of truss-type open-web or perforated members
- **51. Draftstopping materials.** Draftstopping shall not be less than 1/2-inch gypsum board, 3/8-inch wood structural panels, or other approved materials adequately supported. Draftstopping shall be installed parallel to the floor framing members unless otherwise approved by the building official. The integrity of draftstops shall be maintained. (CRC R302.12.1)
- rafters. Where ceiling joists are not connected to the rafters at the wall top plate, joists

  52. Combustible insulation clearance. Combustible insulation shall be separated minimum 3 inches from recessed luminaires, fan motors, and other heat-producing devices. (CRC

- **Lumber.** All joists, rafters, beams, and posts 2-inches to 4-inches thick shall be No. 2 grade Douglas Fir-Larch or better. All posts and beams 5 inches and thicker shall be No. 1 grade Douglas Fir-Larch or better. Studs not more than 8 feet long shall be stud-grade Douglas Fir-Larch or better when supporting not more than one floor, roof, and ceiling. Studs longer than 8 feet shall be No. 2 grade Douglas Fir-Larch or better.
- Concrete. Concrete shall have a minimum compressive strength of 2,500 psi at 28 days and shall consist of 1 part cement, 3 parts sand, 4 parts 1-inch maximum size rock, and not more than 7-1/2 gallons of water per sack of cement. (CRC R402.2)
- Mortar. Mortar used in construction of masonry walls, foundation walls, and retaining walls shall conform to ASTM C 270 and shall consist of 1 part portland cement, 2-1/4 to 3 parts sand, and 1/4 to 1/2 part hydrated lime. (CBC 2103.2)
- Grout. Grout shall conform to ASTM C 476 and shall consist of 1 part portland cement, 1/10 part hydrated lime, 2-1/4 to 3 parts sand, and 1 to 2 parts gravel. Grout shall attain a minimum compressive strength of 2,000 psi at 28 days. (CBC 2103.3) **35.** Roof/ceiling member bearing. The ends of each rafter or ceiling joist shall have not less

Masonry. Masonry units shall comply with ASTM C 90 for load-bearing concrete

- masonry units. (CBC 2103.1) Reinforcing steel. Reinforcing steel used in construction of reinforced masonry or
- concrete structures shall be deformed and comply with ASTM A 615. (CBC 2103.4) 7. Structural steel. Steel used as structural shapes such as wide-flange sections, channels, plates, and angles shall comply with ASTM A36. Pipe columns shall comply with ASTM A53. Structural tubes shall comply with ASTM A500, Grade B.
- Fasteners for preservative-treated wood. Fasteners for preservative-treated and fire-retardant-treated wood - including nuts and washers -- shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper. (CRC R317.3.1) **Exception:** 1/2-inch diameter or greater steel bolts
- **Exception:** Fasteners other than nails and timber rivets may be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695,
- **Exception:** Plain carbon steel fasteners acceptable in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment
- 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)

# 40. Roof diaphragm under fill framing. Roof plywood shall be continuous under California G. Roofing and Weatherproofing

- 1. Roof covering. All roof covering shall be installed per applicable requirements of CBC UL 790. (County Building Code 92.1.1505.1)
- wherever there is a change in roof slope or direction, and around roof openings. Where flashing is of metal, the metal shall be corrosion-resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet). (CRC R903.2.1) **Crickets and saddles.** A cricket or saddle shall be installed on the ridge side of any

chimney or penetration more than 30 inches wide as measured perpendicular to the

- slope. Cricket or saddle covering shall be sheet metal or the same material as the roof covering. (CRC R903.2.2) Water-resistive barrier. A minimum of one layer of No. 15 asphalt felt shall be attached to studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer minimum 2 inches. Where
- top of walls and terminated at penetrations and building appendages in a manner to maintain a weather-resistant exterior wall envelope. (CRC R703.2) Wall flashing. Approved corrosion-resistant flashing shall be applied shingle fashion at the following locations to prevent entry of water into the wall cavity or penetration of

joints occur, felt shall be lapped minimum 6 inches. The felt shall be continuous to the

- water to the building structural framing components (CRC R703.8): a. Exterior door and window openings, extending to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage
- **b.** At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings
- c. Under and at the ends of masonry, wood, or metal copings and sills d. Continuously above all projecting wood trim
- **e.** Where exterior porches, decks, or stairs attach to a wall or floor assembly of

wood-frame construction

- f. At wall and roof intersections
- At built-in gutters an approved material to resist the free passage of flame and products of combustion

  6. Dampproofing. Dampproofing materials for foundation walls enclosing usable space below grade shall be installed on the exterior surface of the wall, and shall extend from
  - the top of the footing to finished grade. (CRC R406.1) Weep screed. A minimum 0.019-inch (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed with a minimum vertical attachment flange of 3-1/2 inches shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 92. The weep screed shall be placed a minimum 4 inches above the earth or 2 inches above paved areas and shall be of a

type allowing trapped water to drain to the exterior of the building. (CRC R703.7.2.1)

### H. Grading and soils

lepth. (CBC 1803.5.8)

- 1. Grading permit. Grading permit required if volume of earth moved exceeds 200 cubic yards or if any cuts or fills exceed 8 feet in height/depth. (County Grading Ordinance 202) 2. Compaction report. Compaction report required for fill material 12 inches or more in
  - **Applicability**. CalGreen residential mandatory measures shall apply to every newly
- building's conditioned area, volume, or size. (CalGreen 101.3, CalGreen 301.1.1) **Exception:** All residential buildings undergoing permitted alterations, additions, or improvements shall replace noncompliant plumbing fixtures with water-conserving plumbing fixtures per CalGreen 301.1.1 and CalGreen 4.303.1

constructed building or structure and within any addition or alteration increasing a

#### I. (CALGreen) Requirements (Continued)

- Water conserving plumbing fixtures and fittings. Plumbing fixtures and fittings shall comply with
- the following per CalGreen 4.303.1:
- a. Water closets: Maximum 1.28 gallons per flush
- 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 2.0 gallons per minute at
- 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
- Kitchen faucets: Maximum flow rate of 1.5 gallons per minute at 60 psi (County Green Building Code
- **Exception:** Temporary increase allowed to maximum 2.2 gallons per minute at 60 psi if faucet defaults back to maximum 1.5 gallons per minute at 60 psi
- g. Appliances: At least one qualified ENERGY STAR dishwasher or clothes washer shall be installed in each dwelling unit. (County Green Building Code 97.1.4.303.3) Outdoor potable water use in landscape areas. Residential developments shall comply with local
- water efficient landscape ordinance or the current California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. (CalGreen 4.304.1) Joints and openings. Openings in the building envelope separating conditioned space from
- unconditioned space needed to accommodate utility and other penetrations must be sealed in compliance with the California Energy Code. (CALGreen 4.406.1) **Exception:** Annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such opening with cement
- mortar, concrete masonry or a similar method acceptable to the enforcing agency. Construction waste reduction, disposal, and recycling. Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3, or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance. (CalGreen 4.408.1)
- **Exception:** Excavated soil and land-clearing debris. **Exception:** Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite The County of San Diego, Department of Public Works, Construction & Demolition (C&D) Facilities Guide is online at:

https://www.sandiegocounty.gov/content/dam/sdc/dpw/SOLID\_WASTE\_PLANNING\_

- and RECYCLING/UpdatedCDResources/CDFacility QuickGuide.pdf **Exception:** The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility. Construction waste management plan. A construction waste management plan in conformance with Items 1-5 shall be completed and available on the job site. The construction waste management
- plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency. (CalGreen 4.408.2) I. 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) Identify diversion facilities where the construction and demolition waste materials 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 bot
- Waste management company. Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1. (CalGreen 4.408.3) **Note:** The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste company.
- Waste stream reduction alternative [LR]. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 3.4 pounds per square foot of the building area shall meet the 65 percent construction waste reduction requirement in Section 4.408.1. (CalGreen 4.408.4) 4.408.4.1 Waste stream reduction alternative. Projects that generate a total combined weight of

construction and demolition waste disposed of in landfills, which do not exceed 2 pounds per square

- **Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, Items 1-5, Section 4.408.3, or Section 4.408.4.
- reference, or other acceptable media which includes all of the following shall be placed in the building (CALGreen 4.410.1) a. Directions to owner or occupant that manual shall remain with the building throughout the life cycle of the structure.

Operation and maintenance manual. Prior to final inspection, a manual, compact disc, web-based

i. Equipment and appliances, including water-saving devices and systems, HVAC system, photovoltaic systems, water-heating systems and other major appliances and equipment.

Operation and maintenance instructions for the following:

- Roof and yard drainage, including gutters and downspouts.
- iii. Space conditioning systems, including condensers and air filters. iv. Landscape irrigation systems. v. Water reuse systems
- c. Information from local utility, water, and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations. Public transportation and/or carpool options available in the area. e. Educational material on the positive impacts of an interior relative humidity between 30-60 percent
- and what methods an occupant may use to maintain the relative humidity level in that range. Information about water-conserving landscape and irrigation design and controllers which conserve
- g. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation. h. Information on required routine maintenance measures, including, but not limited to, caulking,

the amount of dust or debris which may collect in the system. (CALGreen 4.504.1)

- painting, grading around the building, etc. Information about state solar energy and incentive programs available. A copy of all special inspection verifications required by the enforcing agency or code.
- 11. Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce
- 4.504.2. Verification of compliance shall be provided at the request of the enforcing agency. (CALGreen 4.504.2.1) 13. Carpet systems. All carpet installed in the building interior shall meet the testing and product

12. Adhesives, sealants, caulks, paints, and coatings pollutant control. Adhesives (including carpet

adhesives), sealants, caulks, paints, and coatings shall comply with VOC limits per CALGreen

- requirements of one of the following (CALGreen 4.504.3): a. Carpet and Rug Institute's Green Label Plus Program (all carpet cushion must meet the requirements
- b. California Department of Public Health Standard Practice for the testing of VOCs (Specification
- NSF/ANSI 140 at the Gold level. d. Scientific Certifications Systems Indoor Advantage™ Gold. 14. Resilient flooring systems. At least 80 percent of the floor area receiving resilient flooring shall comply with one of or more of the following (CALGreen 4.504.4):
- VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) High Performance Products Database b. Products compliant with CHPS criteria certified under the Greenguard Children & Schools program Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program

d. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of

- Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350) **15. Composite wood products.** Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.) by or before the dates specified in those sections, as shown in CalGreen Table
- 4.504.5. The following limits are in parts per million (CALGreen 4.504.5): a. Hardwood plywood veneer core b. Hardwood plywood composite core 0.05
- 0.09 c. Particle board d. Medium-density fiberboard (MDF) 0.11 0.13
- e. Thin MDF (5/16 inch or less)

**Approved** 

I. (CALGreen) Requirements (Continued)

16. Moisture content of building materials. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content

- shall be verified in compliance with the following (CALGreen 4.505.3): a. Moisture content shall be determined with either a probe-type or contact-type
- **b.** Moisture readings shall be taken at a point 2 feet to 4 feet from the grade
- stamped end of each piece to be verified. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.
- Insulation products which are visibly wet or have high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.
- 17. Bathrooms with a bathtub and/or shower shall be mechanically ventilated per
- the following (CalGreen 4.506.1): a. Fans shall be ENERGY STAR compliant and ducted to terminate outside
- b. Unless functioning as a component of a whole-house ventilation system, fans shall have humidity controls capable of adjustment - manually or automatically -- between a relative humidity range of 50% to 80%.

18. Heating and air-conditioning system design. Heating and air-conditioning

systems shall be sized, designed, and have their equipment selected using the

- following methods (CALGreen 4.507.2): a. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J, ASHRAE handbooks, or other equivalent design software or
- **b.** Duct systems are sized according to ANSI/ACCA 1 Manual D 2009,

other equivalent design software or methods

**TABLE R602.3(1)** 

ASHRAE handbooks, or other equivalent design software or methods. c. Select heating and cooling equipment according to ACCA 36-S Manual S or

ΓΕ		FOR STRUCTU TABLE R602.3(1) TENING SCHEDULE	JRAL MEN
ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER*, b, c	SPACING AND LOCATION
		Roof	
1	Blocking between ceiling joists or rafters to top plate	4-8d box (2 <sup>1</sup> / <sub>2</sub> " × 0.113") or 3-8d common (2 <sup>1</sup> / <sub>2</sub> " × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Toe nail
2	Ceiling joists to top plate	4-8d box (2 <sup>1</sup> / <sub>2</sub> " × 0.113"); or 3-8d common (2 <sup>1</sup> / <sub>2</sub> " × 0.131"); or 3-10d box (3" × 0.128"); or 3-3" × 0.131" nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions [see Sections R802.3.1, R802.3.2 and Table	4-10d box (3" × 0.128"); or 3-16d common (3 <sup>1</sup> / <sub>2</sub> " × 0.162"); or	Face nail

Table R802.5.1(9) Face nail Face nail each rafter -10d box (3" × 0.128"); or 16" o.c. face nail 12" o.c. face nail foot of the building area shall meet the 65 percent construction waste reduction requirement in Section Toe nail Continuous header to stud Top plate to top plate 10d box (3" x 0.128"); or 12" o.c. face nail Double top plate splice SDCs D<sub>0</sub>, D<sub>1</sub>, or D<sub>2</sub>; and braced ITEM DESCRIPTION OF BUILDING ELEMENTS SPACING AND LOCATION

1"×6" sheathing to each bearing

Toe nail

6" o.c. toe nail

SPACING AND LOCATION

End nail Face nail 3 staples, 1" crown, 16 ga., 134," lox.
Wider than 1" x 8" Face nail 21 Joist to sill, top plate or girder 4" o.c. toe na

ITEM DESCRIPTION OF BUILDING ELEMENTS NUMBER AND TYPE OF FASTENER

5 2" planks (plank & beam-floor & ro At each bearing, face nail 26 Band or rim joist to jois End nail "× 14 ga. staples, 7<sub>16</sub>" crown 20d common (4" x 0.192"); or 0d box (3" × 0.128"); or aggered on opposite sides e nail at ends and at each 28 Ledger strip supporting joists or rafters At each joist or rafter, face

29 Bridging to joist 2-10d (3" × 0.128") DESCRIPTION OF BUILDING ELEMENTS NUMBER AND TYPE OF FASTENER\* 1.5 Edges (inches)<sup>h</sup>

6 5/8" gypsum sheathing

7 3/4" and les

Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimus average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch he not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.

 Staples are 16 gage wire and have a minimum 7/16-inch on diameter crown width. . Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater Spacing of fasteners not included in this table shall be based on Table R602.3(2). nches on center. Where the ultimate design wind speed is greater than 130 mph, nalls for attaching panel roof sheathing to intermediate supports shall t paced 6 inches on center for minimum 48-inch distance from ridges, caves and gable end walls; and 4 inches on center to gable end wall framing. n sheathing shall conform to ASTM C1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to A fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or

where a rafe is fastened to an adjacent parallel eeiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails fro the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.

ng panel edges perpendicular to the framing members need not be provided except as required by other prov ed by framing members or solid blocking.

THESE ARE MINIMUM REQUIREMENTS AND SHALL NO SUPERSEDE MORE RESTRICTIVE SPECIFICATIONS ON THE PLANS R AS REQUIRED BY APPLICABLE ate: **Sept. 5th**, 2024

**S**antee

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Sheet Numb

PDS 081 (REV.

01/20/2021)

INTERWES?

**Approved** 

**O**antee

LANS APPROVED BY THE CITY OF SAI

UILDING INSPECTION DIVISION SUBJ

requirements of the California Housing Law and the building laws of the City of Santee, California. The stamping or watermarking of these plans and specifications SHALL NOT be held to permit or

approve the violation of any City, County, Stat ederal Laws or other restrictions.

PPROVED FOR CONSTRUCTI

Permit # B-ADU-24-0017

Date: Sept. 5th, 2024

Φ

CF1R-PRF-01E CERTIFICATE OF COMPLIANCE CERTIFICATE OF COMPLIANCE CF1R-PRF-01E CERTIFICATE OF COMPLIANCE (Page 1 of 9) Calculation Date/Time: 2022-11-02T14:13:14-07:00 Calculation Date/Time: 2022-11-02T14:13:14-07:00 Project Name: Ngoy's New Detached ADU Project Name: Ngoy's New Detached ADU Calculation Date/Time: 2022-11-02T14:13:14-07:00 (Page 4 of 9) Project Name: Ngoy's New Detached ADU Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x Input File Name: 9404 Leticia Drive.ribd19x Calculation Description: Title 24 Analysis Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x GENERAL INFORMATION OPAQUE SURFACES SPACE CONDITIONING SYSTEMS Project Name Ngoy's New Detached ADU 01 03 04 06 07 08 01 Run Title Title 24 Analysis Window and Doo Tilt (deg) Construction Azimuth Orientation Gross Area (ft<sup>2</sup>) Area (ft2) Heating Unit | Cooling Unit 03 Project Location 9404 Leticia Drive Name System Type Fan Name Name Name New Front Wall Detached ADU Zone R-15 Wall 135 Front 256.5 90 City Santee Standards Version 2019 New Right Wall Detached ADU Zone R-15 Wall Right 313.5 06 45 66 90 Zip code | 9207: Software Version EnergyPro 8.3 Heat Pump Heat Pump Heat pump heating cooling System 1 System 1 New Left Wall Detached ADU Zone R-15 Wall 225 Left 313.5 56 90 08 Climate Zone 10 Front Orientation (deg/ Cardinal) 135 New Back Wall Detached ADU Zone R-15 Wall Back 256.5 Building Type | Single family Number of Dwelling Units R-38 Roof Attic W/R15 02 05 06 New Roof Detached ADU Zone n/a n/a 998 n/a n/a 01 03 12 Project Scope NewConstruction Number of Bedrooms HVAC - HEAT PUMPS 14 Number of Stories Addition Cond. Floor Area (ft<sup>2</sup>) ATTIC 16 Fenestration Average U-factor 0.3 Existing Cond. Floor Area (ft<sup>2</sup>) System Type 01 02 03 05 06 07 80 HSPF/COP | Cap 47 | Cap 17 Glazing Percentage (%) 17.84% Total Cond. Floor Area (ft<sup>2</sup>) 99 Name Construction Roof Rise (x in 12) Roof Reflectance Roof Emittance Radiant Barrier Cool Roof ADU Conditioned Floor Area n/a Attic Detached ADU Attic RoofDetached Heat Pump System 1 VCHP-ductless Ventilated ADU Zone Zone 22 HVAC HEAT PUMPS - HERS VERIFICATION FENESTRATION / GLAZING 05 06 07 08 09 10 11 12 13 02 **Building Complies with Computer Performance** Width Height Mult. Verified EER Verified SEER 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 provided Area Verified Airflow Airflow Target Name Surface Orientation U-factor Source Shading 03 This building incorporates one or more Special Features shown below Heat Pump System Not Required Not Required Not Required 1-hers-htpump Window 5050 New Front Wall Front 0.3 NFRC Window 5050 New Front Wall Front 0.3 Window 135 NFRC | 0.23 | NFRC | Bug Screen VARIABLE CAPACITY HEAT PUMP COMPLIANCE OPTION - HERS VERIFICATION 0.3 NFRC 0.23 NFRC Bug Screen Window 5050 Window New Right Wall Right New Right Wall Airflow to **Ductless Units** Window 5050 Window New Right Wall 0.3 NFRC 0.23 NFRC Bug Screen Low-Static Habitable in Conditioned Thermostat 0.3 NFRC 0.23 NFRC Bug Screen Window 5050 New Left Wall 225 Window VCHP System Rooms Space 0.3 NFRC 0.23 NFRC Bug Screen Window 3020 Window New Left Wall 225 Required Not required Not required Not required Not required Heat Pump System 1 Not required Required Required Window 5050 New Left Wall 225 0.3 NFRC 0.23 NFRC Bug Screen 1 6 0.3 NFRC 0.23 NFRC Bug Screen New Back Wall Back 315 Window 3020 Window HERS Provider: Registration Date/Time: Registration Date/Time: HERS Provider: Registration Date/Time: Registration Number: 222-P010215252A-000-000-0000000-0000 222-P010215252A-000-000-0000000-0000 2022-11-02 14:33:18 CalCERTS inc 2022-11-02 14:33:18 CalCERTS inc. 222-P010215252A-000-000-0000000-0000 CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.2.000 Report Generated: 2022-11-02 14:15:16 CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Generated: 2022-11-02 14:15:16 CA Building Energy Efficiency Standards - 2019 Residential Compliance Schema Version: rev 20200901 Schema Version: rev 20200901 Schema Version: rev 20200901 CF1R-PRF-01E CERTIFICATE OF COMPLIANCE CF1R-PRF-01E CERTIFICATE OF COMPLIANCE CERTIFICATE OF COMPLIANCE Calculation Date/Time: 2022-11-02T14:13:14-07:00 Calculation Date/Time: 2022-11-02T14:13:14-07:00 (Page 2 of 9) Project Name: Ngoy's New Detached ADU (Page 5 of 9) Calculation Date/Time: 2022-11-02T14:13:14-07:00 Project Name: Ngoy's New Detached ADU Project Name: Ngoy's New Detached ADU Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x ENERGY DESIGN RATING OPAQUE DOORS IAQ (INDOOR AIR QUALITY) FANS **Energy Design Ratings Compliance Margins** 04 02 03 Name Side of Building Area (ft<sup>2</sup>) U-factor Total<sup>2</sup> (EDR) Efficiency<sup>1</sup> (EDR) Total<sup>2</sup> (EDR) Efficiency<sup>1</sup> (EDR) Dwelling Unit IAQ CFM IAQ Watts/CFM IAQ Fan Type New Front Wall 0.2 Standard Design 53.2 25.3 0.35 SFam IAQVentRpt Exhaust SLAB FLOORS Proposed Design 53 16.6 0.2 8.7 01 02 04 05 06 08 03 RESULT: 3: COMPLIES Edge Insul. R-value Edge Insul. R-value Name Area (ft<sup>2</sup>) Perimeter (ft) Carpeted Fraction and Depth and Depth Efficiency EDR includes improvements to the building envelope and more efficient equipment 2: Total EDR includes efficiency and demand response measures such as photovoltaic (PV) systems and batteries New Slab On Grade Detached ADU Zone 0.1 80% 3: Building complies when efficiency and total co<mark>mp</mark>liance margins are greater than or equal to zero Standard Design PV Capacity: 2.33 kWdc PV System resized to 3.09 kWdc (a factor of 3.087) to achieve 'Maximum PV for Compliance Credit' PV scaling DPAQUE SURFACE CONSTRUCTIONS 02 03 06 ENERGY USE SUMMARY Interior / Exterior **Total Cavity** Construction Name R-value Energy Use (kTDV/ft<sup>2</sup>-yr) Standard Design Compliance Margin Percent Improvement R-value N HERS PROVIDER 12,65 10.24 Space Heating Inside Finish: Gypsum Board R-15 Wall Wood Framed Wall 2x4 @ 16 in. O. C. R-15 Cavity / Frame: R-15 / 2x4 30.2 Space Cooling -8.7 Exterior Finish: 3 Coat Stucco IAQ Ventilation 20.05 20.97 4.4 Water Heating Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Self Utilization/Flexibility Credit Attic RoofDetached ADU Wood Framed R-15 None / None Siding/sheathing/decking Attic Roofs 2x4 @ 24 in. O. C. 68.66 67.96 Compliance Energy Total Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-2.0 insul. REQUIRED PV SYSTEMS - SIMPLIFIED Over Ceiling Joists: R-28.9 insul. Ceilings (below Wood Framed R-38 Roof Attic W/R15 R-38 2x4 @ 24 in. O. C. None / None Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board DC System Size Tilt: (x in Module Type Array Type Solar Access (deg) Input 12) (kWdc) (deg) (%) <=7:12 150-270 3.09 Standard Fixed none n/a Registration Date/Time: HERS Provider: Registration Date/Time: Registration Date/Time: Registration Number: Registration Number Registration Number: 222-P010215252A-000-000-0000000-0000 2022-11-02 14:33:18 CalCERTS inc. 222-P010215252A-000-000-0000000-0000 2022-11-02 14:33:18 CalCERTS inc. 222-P010215252A-000-000-0000000-0000 CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.2.000 Report Generated: 2022-11-02 14:15:16 CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.2.000 Report Generated: 2022-11-02 14:15:16 CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.2.000 Schema Version: rev 20200901 Schema Version: rev 20200901 Schema Version: rev 20200901 CF1R-PRF-01E CERTIFICATE OF COMPLIANCE CF1R-PRF-01E CERTIFICATE OF COMPLIANCE CERTIFICATE OF COMPLIANCE Calculation Date/Time: 2022-11-02T14:13:14-07:00 (Page 3 of 9) Calculation Date/Time: 2022-11-02T14:13:14-07:00 (Page 6 of 9) Calculation Date/Time: 2022-11-02T14:13:14-07:00 Project Name: Ngoy's New Detached ADU Project Name: Ngoy's New Detached ADU **Project Name:** Ngoy's New Detached ADU Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x Calculation Description: Title 24 Analysis Input File Name: 9404 Leticia Drive.ribd19x Calculation Description: Title 24 Analysis DOCUMENTATION AUTHOR'S DECLARATION STATEMENT REQUIRED SPECIAL FEATURES BUILDING ENVELOPE - HERS VERIFICATION I certify that this Certificate of Compliance documentation is accurate and complete. The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis. cumentation Author Name: High R-value Spray Foam Insulation CFM50 Quality Insulation Installation (QII) Building Envelope Air Leakage Ricardo Perez 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 n/a Estudio75 WATER HEATING SYSTEMS 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 4275 Executive Square #200 01 03 05 06 detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry Water Heater Name (#) Solar Heating System Compact Distribution HERS Verification Name System Type Distribution Type Building-level Verifications La Jolla, CA 92037 Quality insulation installation (QII) Domestic Hot Water Standard Distributio DHW Sys 1 DHW Heater 1 (1) Indoor air quality ventilation (DHW) RESPONSIBLE PERSON'S DECLARATION STATEMENT Kitchen range hood I certify the following under penalty of perjury, under the laws of the State of California: Cooling System Verifications: WATER HEATERS Verified Refrigerant Charge Airflow in habitable rooms (SC3.1.4.1.7) 01 ating System Verifications: # of Vol. Factor or Pilos Insulation Verified heat pump rated heating capacity Standby Loss 1st Hr. Rating Wall-mounted thermostat in zones greater than 150 ft2 (SC3.4.5) Heating NEEA Heat Pump MIEN NGUYEN Name or Recovery Ductless indoor units located entirely in conditioned space (SC3.1.4.1.8) Element or Flow Rate **Brand or Model** Type HVAC Distribution System Verifications: 🥒 (gal) Efficiency (Int/Ext) -- None --

DHW Heater 1

DHW Sys 1 - 1/1

06

Number of Ventilation

Cooling Systems

Water Heating System 1

DHW Sys 1

**Number of Water** 

Heating Systems

1

Water Heating System 2

Report Generated: 2022-11-02 14:15:16

N/A

CalCERTS inc

WATER HEATING - HERS VERIFICATION

Heat Pump

Not Required

222-P010215252A-000-000-0000000-0000

CA Building Energy Efficiency Standards - 2019 Residential Compliance

n/a

Parallel Piping

Not Required

Domestic Hot Water System Verifications:

03

Number of Dwelling

Units

**HVAC System Name** 

New Minisplits1

Number of Bedroom

Zone Floor Area (ft<sup>2</sup>)

Registration Date/Time:

Report Version: 2019.2.000

Schema Version: rev 20200901

Number of Zones

Avg. Ceiling Height

2022-11-02 14:33:18

ditioned Floor Area (ft<sup>2</sup>)

998

Zone Type

Conditioned

222-P010215252A-000-000-0000000-0000

CA Building Energy Efficiency Standards - 2019 Residential Compliance

BUILDING - FEATURES INFORMATION

Project Name

Ngoy's New Detached ADU

-- None --

ZONE INFORMATION

Zone Name

Detached ADU Zone

Input File Name: 9404 Leticia Drive.ribd19x ocumentation Author Signature Ricardo Perez 2022-11-02 14:30:29 CABE A/ HERS Certification Identification (If applicab R19-19-30062 619-274-2838 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. 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. 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. 2022-11-02 14:33:18 NOUVELLE DESIGN AND CONSULTANT 10635 GREENFORD DR SAN DIEGO, CA 92126 858-726-2046

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.

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Rheem\XE40T10HS

45U0 (40 gal)

Central DHW

Distribution

Not Required

Report Generated: 2022-11-02 14:15:16

Outside

08

Shower Drain Water

Heat Recovery

CalCERTS inc.

n/a

Not Required

n/a

n/a

Compact Distribution

Type

2022-11-02 14:33:18

Registration Date/Time:

Report Version: 2019.2.000

Schema Version: rev 20200901

40 NEEA Rated

04

**Compact Distribution** 

Not Required

<= 12 kW

Registration Date/Time: CA Building Energy Efficiency Standards - 2019 Residential Compliance Report Version: 2019.2.000

2022-11-02 14:33:18

CalCERTS inc. Report Generated: 2022-11-02 14:15:16

Easy to Verify

at CalCERTS.com

CF1R-PRF-01E

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Equipment

11

Heat Pump System

1-hers-htpump

09

Verified Heating

Cap 17

Yes

Continuously

CalCERTS inc.

CF1R-PRF-01E

(Page 8 of 9)

07

**HERS Verification** 

Yes

CalCERTS inc.

CF1R-PRF-01E

(Page 9 of 9)

Thermostat

Type

Setback

08

EER/CEER

11.5

Ducts in

Conditioned

Space

05

IAQ Recovery

Effectiveness - SRE

n/a

2022-11-02 14:33:18

Name

07

SEER

erified Refrigerant

Charge

Air Filter Sizing

& Pressure

Drop Rating

Status

09

Zonally

Controlled

Not Zonal

Airflow per

RA3.3 and

HERS Provider

06

IAQ Recovery

Effectiveness - ASRE

HERS Provider:

Report Generated: 2022-11-02 14:15:16

SC3.3.3.4.1

Verified HSPF

Existing

10

Verified Heating

Certified

Fan

Report Generated: 2022-11-02 14:15:16

non-continuous Running

Cap 47

Equipment

Count

HVA	C SYSTEMS					
Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
4	Split Heat Pump	8.20 HSPF	Split Heat Pump	14.0 SEER	Setback	New

<b>HVAC DISTRIE</b>	BUTION			Duct	
Location	Heating	Cooling	<b>Duct Location</b>	R-Value	Status
New Minisplits	Ductless / No Fan	Ductless	nla	n/a	New

WAT	ER HEATING				
Qty.	Туре	Gallons	Min. Eff	Distribution	Status
1	Heat Pump	40	3.75	Standard	New
		,			

Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose

Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except

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

appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour ); and pool and spa heaters.\*

bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.

Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.

EnergyPro 8.3 by EnergySoft User Number: 6441

§ 110.3(c)6:

§ 110.5:

§ 150.0(h)1:

# 2019 Low-Rise Residential Mandatory Measures Summary

ENERGY COMMISSION	
§ 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:	<b>Liquid Line Drier.</b> Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	Storage Tank Insulation. Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(j)2A:	Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(j)3:	Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0(n)2:	Recirculating Loops. Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 150.0(n)3:	<b>Solar Water-heating Systems.</b> 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.

§ 150.0(n)3:	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	s Measures:
§ 110.8(d)3:	<b>Ducts.</b> Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	CMC Compliance. All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air.

§ 150.0(m)1:	surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ½ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*
§ 150.0(m)2:	Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct

§ 150.0(m)2:	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,

3 100.0(111)0.	manually operated dampers in all openings to the outside, except combustion inlet and outlet all openings and elevator shart vents.
§ 150.0(m)9:	<b>Protection of Insulation.</b> Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation expos to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10:	Porous Inner Core Flex Duct. Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11:	Duct System Sealing and Leakage Test. When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.

	accordance with § 150.0(m)11 and Reference Residential Appendix RA3.
§ 150.0(m)12:	Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Pressu drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*
	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 CF

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.\*

Requirements for	or Ventilation and Indoor Air Quality:
§ 150.0(o)1:	Requirements for Ventilation and Indoor Air Quality. All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1.
§ 150.0(o)1C:	Single Family Detached Dwelling Units. Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.
§ 150.0(o)1E:	Multifamily Attached Dwelling Units. Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8.
§ 150.0(o)1F:	Multifamily Building Central Ventilation Systems. Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.
§ 150.0(o)1G:	Kitchen Range Hoods. Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0(o)2:	Field Verification and Diagnostic Testing. Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.
Pool and Spa Sy	ystems and Equipment Measures:
§ 110.4(a):	Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.*
§ 110.4(b)1:	<b>Piping.</b> 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):	<b>Pool Systems and Equipment Installation.</b> Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.*
Lighting Measu	res:
§ 110.9:	<b>Lighting Controls and Components.</b> All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.*
§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A.
§ 150.0(k)1B:	<b>Blank Electrical Boxes.</b> The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(k)1C:	Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C.
§ 150.0(k)1D:	Electronic Ballasts for Fluorescent Lamps. Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.
§ 150.0(k)1E:	Night Lights, Step Lights, and Path Lights. Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.
§ 150.0(k)1F:	Lighting Integral to Exhaust Fans. Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).*
§ 150.0(k)1G:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.*
§ 150.0(k)1H:	<b>Light Sources in Enclosed or Recessed Luminaires.</b> 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.*
· ·	Interior Switches and Controls Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually

Interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's instructions.

§ 150.0(k)2F: Interior Switches and Controls. Lighting controls must comply with the applicable requirements of § 110.9.

Interior Switches and Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to

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

2019 Low-Rise Residential Mandatory Measures Summary

9203



Santee ANS APPROVED BY THE CITY OF SANT BUILDING INSPECTION DIVISION SUBJE PROVED FOR CONSTRUCTION Permit # B-ADU-24-0017 Date: **Sept. 5th**, 2024

@gmail.cc e#20( Estudio75 Ricar xecutive Square (619) 274-2838 2

2019 Low-Rise Residential Mandatory Measures Summary 2040 Law Dias Dasidantial Mandatan Mas NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. \*Exceptions may apply. Building Envelope Measures: Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less § 110.6(a)1: 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). Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tables § 110.6(b): 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.\* Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, § 110.7: Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods § 110.8(a): § 110.8(g): Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g). Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing § 110.8(i): 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 Ceiling and Rafter Roof Insulation. Minimum R-22 insulation in wood-frame ceiling; or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached § 150.0(a): insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.\* § 150.0(b): Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value. 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 § 150.0(c): 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." 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 § 150.0(f): UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g). 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 § 150.0(g)1: retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d). 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 § 150.0(g)2: insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation. Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a § 150.0(q): maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.\* Fireplaces, Decorative Gas Appliances, and Gas Log Measures: Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces. § 110.5(e) 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)1: Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area § 150.0(e)2: and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.\* Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.\* § 150.0(e)3: Space Conditioning, Water Heating, and Plumbing System Measures: Certification. Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.\* § 110.2(a): HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K." 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 § 110.2(b): 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.\* Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a § 110.2(c): Water Heating Recirculation Loops Serving Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)4: Interior Switches and Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually

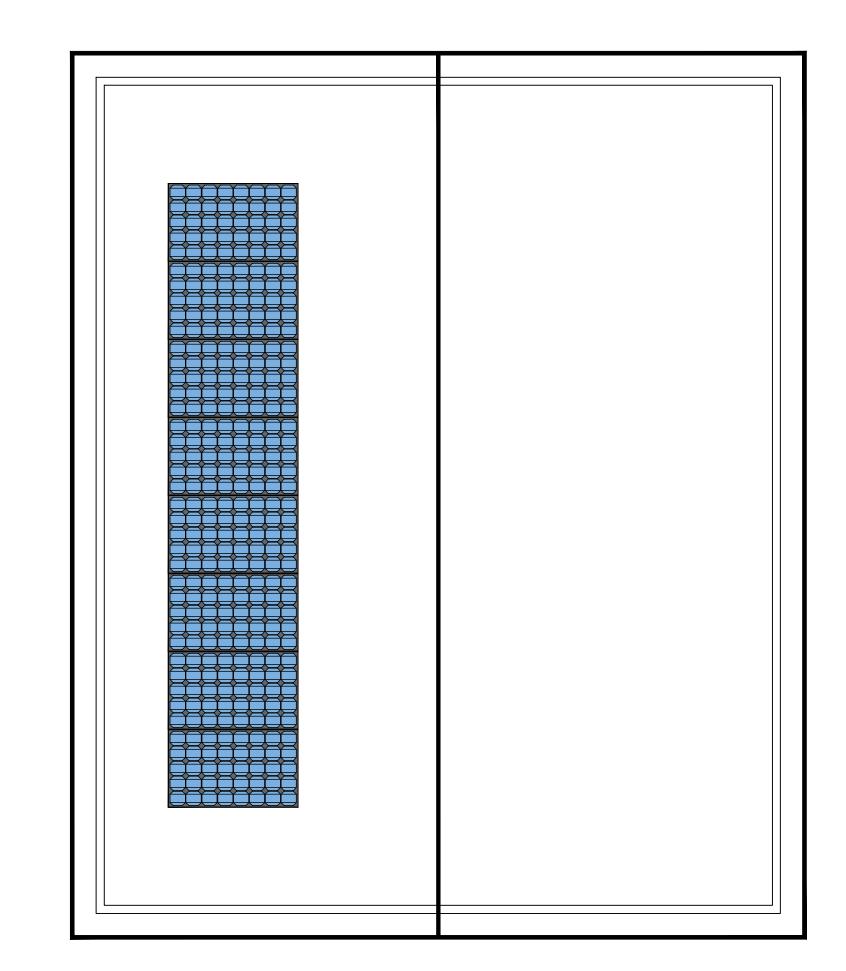
§ 150.0(k)2C:

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HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY 11/2/2022 Ngoy's New Detached ADU Floor Area **New Minisplits** 998 **ENGINEERING CHECKS** SYSTEM LOAD COIL HTG. PEAK **Number of Systems** COIL COOLING PEAK CFM Sensible Latent CFM Sensible Heating System 432 9,194 494 256 10,082 **Total Room Loads** Output per System Return Vented Lighting Total Output (Btuh) **Return Air Ducts** Output (Btuh/sqft) Return Fan Output per System Ventilation 36,000 Total Output (Btuh) **Supply Air Ducts** Total Output (Tons) Total Output (Btuh/sqft) 10,082 9,194 TOTAL SYSTEM LOAD Total Output (sqft/Ton) Air System HVAC EQUIPMENT SELECTION CFM per System Heatpump Minisplit 9K Btus 33,815 21,872 Airflow (cfm) Airflow (cfm/sqft) 0.0% Total Adjusted System Output 33,815 21,872 0.00 (Adjusted for Peak Design conditions) Aug 3 PM Jan 1 AM TIME OF SYSTEM PEAK Note: values above given at ARI conditions HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak) Outside Air 0 cfm COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak) 75 / 62 °F 55 / 54 °F Outside Air 55 / 54 °F 0 cfm 75 / 62 °F 75 / 62 °F

its speed is automatically increased to ensure that the desired CFM is not compromised, which allows the fan to

When the fan senses static pressure,





IAQ fan shall run continuously and has max 1 sone

HERS blower door testing to show no more than 0.3

noise level. Continuous exhaust systems require

Continuous exhaust system:

# MINISPLITS DETAIL

Interior Minisplit Head

HSPF 8.2 Minimum.

LG or Similar

9,000 Btus Minimum

Interior Minisplit Head

HSPF 8.2 Minimum

9,000 Btus Minimum.

LG or Similar

Interior Minisplit Head

HSPF 8.2 Minimum.

9,000 Btus Minimum.

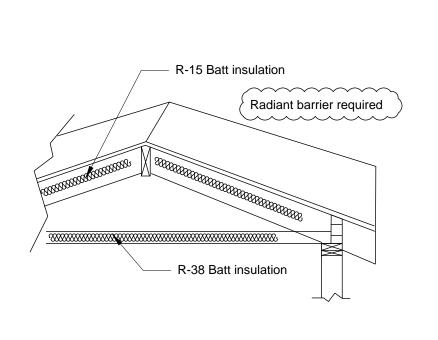
LG or Similar

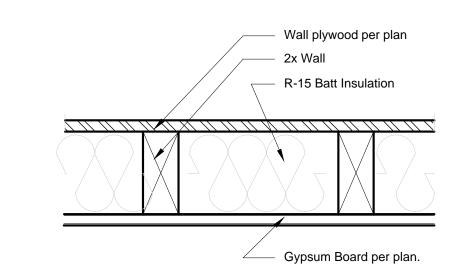
Interior Minisplit Head

HSPF 8.2 Minimum.

LG or Similar

9,000 Btus Minimum.





Exterior AC Condenser 14 Seer Minimum 11.5 EER Minimum

36,000 Btus Minimum.

LG or Similar

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

INSULATION AT ROOF ATTIC

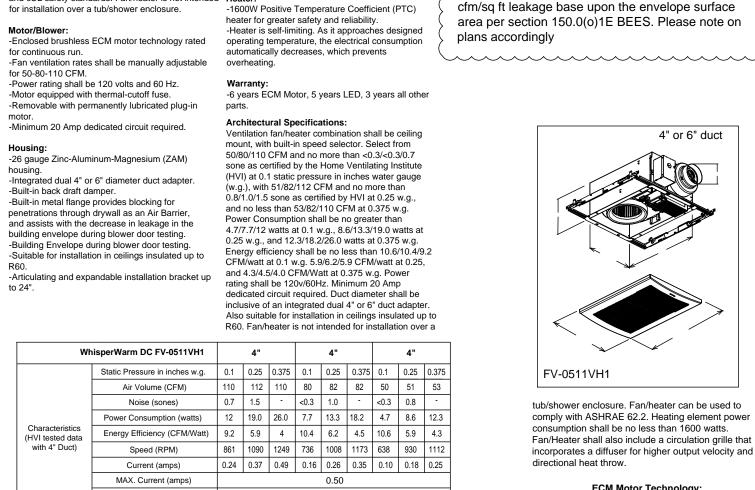
-- None --

INSULATION AT EXTERIOR WALL

# ENERGY EFFICIENCY HERS VERIFICATION

#### HERS FEATURE SUMMARY The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the buildng tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry Building-level Verifications: Quality insulation installation (QII) Indoor air quality ventilation Kitchen range hood Cooling System Verifications: Verified Refrigerant Charge Airflow in habitable rooms (SC3.1.4.1.7) Heating System Verifications: 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) HERS PROVIDER **HVAC Distribution System Verifications:** -- None --**Domestic Hot Water System Verifications:**

# **Certificate of Product Ratings** AHRI Certified Reference Number : 205574635 Rated as follows in accordance with Department of Energy (DOE) Water Heater test procedures as published in the latest edition of the Code of Federal Regulations, 10 CFR Part 430 Subpart B Appendix E and subject to verification of rating accuracy by AHRI-sponsored, First Hour Rating (GPH): 60 Uniform Energy Factor: 3.75 The following data is for reference only and is not certified by AHRI Energy Source : Heat Pump with Tank Heater Type : Storage Usage Bin : Medium Usage Nominal Capacity (gal): 40 DOE Rated Storage Volume (gal): 36 Input (kW): 4.5 Recovery Efficiency, (%): 434



Motor Type

ENERGY STAR rated

PANASONIC FV-0511VH1

Ventilating fan/heater shall be low noise ceiling

Heating elements shall be included. Evaluated by

and cUL safety standards. Fan/heater is not intended Heater

Specification Submittal Data / Panasonic Ventilation Fan/Heater

mount type rated for continuous run. Fan/heater shall -Attaches directly to housing with torsion springs.

be certified by the Home Ventilating Institute (HVI). -Circulation grille with built-in diffuser for higher

-Attractive design using Poly Pro material.

ENERGY EFFICIENCY HERS VERIFICATION

WATER HEATER

IAQ FAN (HERS VERIFICATION REQUIRED)

N/A - No ESTAR category for fan/heater