General Project Notes/Requirements

- 1. <u>GOVERNING CODES: ALL WORK SHALL CONFORM TO THE FOLLOWING CODES AND STANDARDS:</u>
- A) 2022 CALIFORNIA BUILDING CODE (CBC): TITLE 24, PART 2 (BASED ON 2021 IBC) B) 2022 CALIFORNIA RESIDENTIAL CODE (CRC): TITLE 24, PART 2.5 (BASED ON 2021 IRC)
- C) 2022 CALIFORNIA ELECTRIC CODE (CEC): TITLE 24, PART 3 (BASED ON 2020 NEC) D) 2022 CALIFORNIA MECHANICAL CODE (CMC): TITLE 24, PART 4 (BASED ON 2021 UMC)
- 2022 CALIFORNIA PLUMBING CODE (CPC): TITLE 24, PART 5 (BASED ON 2021 UPC)
- 2022 CALIFORNIA ENERGY CODE (CENC): TITLE 24, PART 6 (CA BUILDING STANDARDS COMMISSION) G) 2022 CALIFORNIA FIRE CODE (CFC): TITLE 24, PART 9 (BASED ON 2021 IFC)
- H) 2022 CALIFORNIA GREEN BUILDING CODE: TITLE 24, PART 11 (CA BUILDING STANDARDS COMMISSION)

IN ADDITION TO THE CODES REFERENCED ABOVE, ALL WORK SHALL CONFORM TO ALL LOCAL ORDINANCES & CODES AS APPLICABLE. CROSS REFERENCE ALL CODE NUMBERS AND VERIFY CONSISTENCY AS REQUIRED.

- 2. ALL WORK DONE PURSUANT TO THESE DRAWINGS & SPECIFICATIONS SHALL COMPLY WITH ALL ORDINANCES AND REGULATIONS WHICH APPLY TO THE WORK AND SHALL IN ANY CASE CONFORM TO THE LATEST EDITION(S) OF THE CRC/IRC/ CBC/IBC (CA RESIDENTIAL CODE/INTERNATIONAL RESIDENTIAL CODE & CALIFORNIA BUILDING CODE/INTERNATIONAL BUILDING CODE) CURRENTLY ENFORCED AND ALL CITY, COUNTY AND/OR STATE CODES AS APPLICABLE.
- 3. BRITT ROWE SHALL NOT BE HELD RESPONSIBLE FOR THE DESIGN, COORDINATION AND/OR IMPLEMENTATION OF ANY AND ALL "DESIGN-BUILD" WORK, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: SEE THE APPROPRIATE CODE REFERENCES BELOW FOR DESIGN AND INSTALLATION REQUIREMENTS.
- A) ELECTRICAL: PER CEC (CALIFORNIA ELECTRIC CODE) CURRENT EDITION. B) MECHANICAL: PER CMC (CALIFORNIA MECHANICAL CODE) CURRENT EDITION.
- C) PLUMBING: PER CPC (CALIFORNIA PLUMBING CODE) CURRENT EDITION. D) FIRE SPRINKLERS: CFC (CALIFORNIA FIRE CODE)
- VERIFY AND ADDRESS ALL ADDITIONAL LOCAL ORDINANCES & CODES WHICH MAY APPLY TO THE SPECIFIC "DESIGN-BUILD" APPLICATION AS REQUIRED.
- 4. BRITT ROWE IS NOT RESPONSIBLE FOR THE DESIGN, COORDINATION, OR IMPLEMENTATION OF ANY WORK PERFORMED BY CONSULTANTS, INCLUDING BUT NOT LIMITED TO, STRUCTURAL ENGINEERING, SOIL ENGINEERING, CIVIL ENGINEERING, LAND SURVEYING, ELECTRICAL ENGINEERING, LANDSCAPE ARCHITECTURE AND/OR TITLE 24 ENERGY COMPLIANCE.
- IN ADDITION TO INSPECTIONS REQUIRED BY CBC 110, THE OWNER, CONTRACTOR AND/OR STRUCTURAL ENGINEER OF RECORD, ACTING AS THE OWNER'S AGENT, SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS OR JURISDICTION APPROVED TESTING AGENCIES, WHO SHALL PROVIDE "SPECIAL INSPECTIONS" DURING THE COURSE OF CONSTRUCTION FOR THE FOLLOWING TYPES OR WORK PER CBC 1704 (SPECIAL INSPECTIONS & TESTS, CONTRACTOR RESPONSIBILITY & STRUCTURAL OBSERVATION) & 1705 (REQUIRED SPECIAL INSPECTIONS & TESTS) INCLUDING BUT NOT LIMITED TO:
- A) STEEL CONSTRUCTION: (1705.2)
- B) CONCRETE CONSTRUCTION: (1705.3) WHERE THE STRUCTURAL DESIGN EXCEEDS A (F'C) OF 2500 PSI C) MASONRY CONSTRUCTION: (1705.4)
-) WOOD CONSTRUCTION: (1705.5)
- E) SOILS: (1705.6) F) FOUNDATIONS: (1705.7, 1705.8, 1705.9, 1705.10)
- G) SEISMIC: (1705.12, 1705.13, 1705.14)
- SPECIAL INSPECTOR'S APPROVALS/CREDENTIALS SHALL BE PROVIDED TO THE LOCAL JURISDICTION UPON REQUEST.
- 6. ALL GENERAL CONTRACTORS AND/OR SUBCONTRACTORS SHALL BE LICENSED WITH POSSESSION OF THE APPROPRIATE INSURANCE POLICIES IE: WORKMAN'S COMPENSATION, LIABILITY, ETC... & A VALID BUSINESS LICENSE WITHIN THE JURISDICTION OF THE SUBJECT PROPERTY PROJECT SITE.
- 7. BRITT ROWE IS NOT RESPONSIBLE FOR THE ERECTION, FABRICATION AND/OR RELATIVE JOB SAFETY. THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS SHALL COMPLY WITH ALL REQUIRED SAFETY ORDERS PER CAL-OSHA REQUIREMENTS AND REGULATIONS.
- 8. THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS ARE TO VERIFY ALL EXISTING CONDITIONS AND/OR DISCREPANCIES BEFORE COMMENCING WITH WORK IN ORDER TO ENSURE CONFORMANCE WITH THE "CONSTRUCTION DOCUMENTS". ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF BRITT ROWE AND/OR THE STRUCTURAL ENGINEER OF RECORD PRIOR TO COMMENCEMENT OF CONSTRUCTION. ALL REQUESTS FOR "CHANGE ORDERS" SHALL BE SUBMITTED IN WRITING TO BRITT ROWE FOR APPROVAL.
- 9. REGARDLESS OF DIMENSIONS SHOWN, ALL NEW WORK SHALL ALIGN EXACTLY WITH EXISTING WORK WITH RESPECT TO FLOOR ELEVATIONS, COLUMN CENTERLINES, WALL FACES, ETC... (UNO)

Sheet Index - Notes

SHT. ID	DRAWING TITLE
A0.1	TITLE SHEET AND GENERAL PROJECT INFO
MISC.	BLUEPRINT FOR A CLEAN BAY (SCC) BMP-3
MISC.	CALGREEN TABLES (SCC) CG-1
MISC.	CALGREEN TABLES (SCC) CG-2
A1.1	SITE PLAN - NOTES
A3.1	(N) 1ST LEVEL FLOOR PLAN
A4.1	ROOF PLAN - MAIN RESIDENCE
A4.2	ROOF PLAN - ACCESSORY BUILDING
A4.3	ROOF FLASHING DETAILS
A5.1	(N) EXTERIOR ELEVATIONS
A5.2	(N) EXTERIOR ELEVATIONS
A6.1	BUILDING CROSS-SECTIONS
A9.1	ACCESSORY BUILDING PLAN
A9.2	ACCESSORY BUILDING ELEVATIONS
D.1	WALL FRAMING DETAILS
DW.1	DOOR/WINDOW SCHEDULES
E.1	ELECTRICAL PLAN - MAIN RESIDENCE
E.2	ELECTRICAL PLAN - ACCESSORY BUILDING
EN.1	CA ELECTRICAL CODE NOTES - LEGEND
EN.2	CA ENERGY CODE NOTES
F.1	SCC FIRE JOB SITE SAFETY NOTES
GN.1	CA RESIDENTIAL CODE NOTES
GN.2	CA RESIDENTIAL CODE NOTES
M.1	CA MECHANICAL CODE NOTES
MISC.	SEPTIC TANK PLAN/DESIGN
P.1	CA PLUMBING CODE NOTES
S.1	FOUNDATION PLAN - NOTES
S.2	CEILING FRAMING PLAN/SHEAR
S.3	ROOF FRAMING PLAN

- 10. LAYOUT FOR NEW WORK IS LARGELY BASED UPON RELATIONSHIP STRUCTURES. ANY QUESTIONS REGARDING THE INTENT RELATED THE ATTENTION OF BRITT ROWE, PRIOR TO THE COMMENCEMENT NOTIFY BRITT ROWE OF ALL DISCREPANCIES PRIOR TO THE COMM
- 11. PREFERENCE SHALL BE GIVEN TO WRITTEN/FIGURED DIMENSIONS "PLANS, SPECIFICATIONS & GENERAL NOTES" ARE INTENDED TO A INDICATED IN ONE & NOT THE OTHER, SHALL BE EXECUTED AS IF I RESTRICTIVE SHALL GOVERN.
- 12. ALL WORK SHALL BE PLUMB, SQUARE & TRUE & SHALL BE OF GOO APPROPRIATE TRADE'S STANDARD PRACTICES & THOSE OF THE 1
- 13. ANY WORK AND/OR ITEM NOT SPECIFICALLY CALLED FOR IN THE D FUNCTIONING INSTALLATION CONSISTENT WITH THE INTENT OF TH GENERAL CONTRACTOR AND/OR SUBCONTRACTORS AS REQUIRE
- 14. THE INTENT OF THE "CONSTRUCTION DOCUMENTS" IS TO INCLUDE NECESSARY FOR THE COMPLETE AND PROPER EXECUTION OF TH
- 15. THE PROJECT "SPECIFICATION BOOK" SHALL TAKE PRECEDENCE (
- 16. CIVIL, SOIL & STRUCTURAL ENGINEERING SPECIFICATIONS SHALL 17. BRITT ROWE RETAINS ALL RIGHTS AND OWNERSHIP TO ALL DRAWI
- USED IN WHOLE, OR IN PART, WITHOUT THE EXPRESSED WRITTEN 18. THE OWNER/DEVELOPER/CLIENT RESERVES THE RIGHT TO MAKE CONSTRUCTION. ALL CHANGES SHALL BE APPROVED BY THE LOCA
- THE CURRENT EDITIONS OF THE CRC, CBC, CMC, CPC, CFC, CEC A 19. NEW CONSTRUCTION AND/OR REMODELING IS LARGELY DEPENDE SURVEY" IS RECOMMENDED & IF PROVIDED, SHALL BE GENERATE ENGINEER & SHALL CONTAIN THE FOLLOWING INFORMATION: PRO EASEMENTS, TOPOGRAPHY LINES, UTILITIES AND/OR SIGNIFICANT WILL NOT BE HELD RESPONSIBLE FOR ANY & ALL DISCREPANCIES EVENT, BRITT ROWE SHALL NOT BE RESPONSIBLE FOR WORK PER COMPLETING THE PROJECT.
- 20. ALL "DEFERRED SUBMITTALS" SHALL FIRST BE SUBMITTED TO THE THEM & FORWARD THEM TO THE BUILDING OFFICIAL WITH NOTATION BEEN REVIEWED & HAVE BEEN FOUND TO BE IN GENERAL CONFOR SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DEFERRED APPLICABLE BUILDING OFFICIAL.

REQUIRED PV SYST	EMS						
01	02	03	04	05	06	07	08
DC System Size (kWdc)	Exception	Module Type	Array Type	Power Electronics	CFI	Azimuth (deg)	Tilt Inpu
3.14	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a
REQUIRED SPECIAL	FEATURES		HER	SPR	θV	Í Ð	E F
The following are fe	atures that must be	installed as condition for	meeting the mode	eled energy performance	e for this o	computer ana	lysis.
Insulation beNorthwest Er	low roof deck nergy Efficiency Allia	nce (NEEA) rated heat pu	mp water heater;	specific brand/model, or	equivale	nt, must be in:	stalled
HERS FEATURE SUM	IMARY						
The following is a su detail is provided in	ummary of the featu the buildng tables b	res that must be field-ver elow. Registered CF2Rs a	ified by a certified nd CF3Rs are requ	HERS Rater as a condition ired to be completed in	on for me the HERS	eting the mod Registry	eled er
 Indoor air qu Kitchen range Minimum Air Verified SEER Fan Efficacy \ Verified HSPF Varified host 	ality ventilation e hood flow ./SEER2 Watts/CFM :	ann cit.					

Indoor air quality ventilation Kitchen range hood Minimum Airflow Verified SEER/SEER2 Fan Efficacy Watts/CFM Verified HSPF Verified heat pump rated heatin Duct leakage testing	ng capacity	
SHT. ID	DRAWING TITLE	
S.4	ACCESSORY BUILDING - FOUNDATIONFRAMING	
SD.1	STRUCTURAL DETAILS	
SD.2	STRUCTURAL DETAILS	
SD.3	STRUCTURAL DETAILS	
SD.4	STRUCTURAL DETAILS	
SD.5	STRUCTURAL DETAILS	
SN.1	STRUCTURAL NOTES	
SN.2	STRUCTURAL NOTES	
T24-1	TITLE 24 ENERGY CALCULATIONS	
T24-2	TITLE 24 ENERGY CALCULATIONS	
WF.1	WUINOTES	
WSWH1	SIMPSON STRONG WALL DETAILS	
WSWH2	SIMPSON STRONG WALL DETAILS	

06 07 08 09 10 11 12

(deg) Input (deg) 12)

true 150-270 n/a n/a <=7:12

Azimuth Tilt Array Angle Tilt: (x in Inverter Eff. Solar Access

(%)

96

(%)

	General Projec	t Information: S	pecial Notes	
PS TO EXISTING CONDITIONS OF THE SITE AND/OR EXISTING D TO THE LAYOUT OF THE NEW WORK SHALL BE BROUGHT TO T OF ANY WORK. THE CONTRACTOR SHALL IMMEDIATELY MENCEMENT OF ANY WORK. IS ON THE DRAWINGS OVER SCALED MEASUREMENTS. THE AGREE AND SUPPLEMENT ONE ANOTHER. ANYTHING	OWNER: MS. JENNIFE SUMMIT RO/ LOS GATOS, 408.318.0403 WZJEN419@	R ZHU AD (NO ADDRESS ASSIGNED - VACANT LOT) CA 95033 GMAIL.COM		
IN ALL. IN CASES OF DIRECT CONFLICT, THE MOST	PROJECT ADDRESS: SUMMIT RO/ LOS GATOS, APN: 558-04-014	AD CA 95033		
TRADE'S COUNCILS AND/OR ORGANIZATIONS. DRAWINGS, BUT REQUIRED FOR A COMPLETE AND FULLY THE "CONSTRUCTION DOCUMENTS" SHALL BE SUPPLIED BY THE ED.	LOT SIZE: 127,631 SF (2000) LOT SLOPE: SEE CIVIL PL ZONING: R1-10,000 TRACT: UNKNOWN	2.93 acres) ANS		
NE ALL LABOR, MATERIALS, EQUIPMENT AND TRANSPORTATION HE WORK.	OCCUPANCY GROUP: R3/U CONSTRUCTION TYPE: V-B FIRE SPRINKLERS: YES			
OVER NOTED SPECIFICATIONS WHEN APPLICABLE.	WUI: YES			
VINGS & SPECIFICATIONS. THESE DOCUMENTS MAY NOT BE N CONSENT FROM BRITT ROWE.	FLOOR AREAS			
ALTERATIONS TO THE DESIGN DURING THE COURSE OF	FLOOR AREA @ MAIN:	3,168 SF		
CAL BUILDING OFFICIAL & SHALL, IN ANY CASE, COMPLY WITH AND/OR CENC AS REQUIRED.	GARAGE AREA:	437 SF	2-CAR ATTACHED	
ENT UPON EXISTING SITE CONDITIONS & THEREFORE A "SITE	COVERED PORCH AREA:	141 SF	ENCLOSED ON THREE SIDES	
DPERTY CORNERS, PROPERTY LINES, EXISTING BUILDING(S),	ACCESSORY BUILDING:	867 SF	DETACHED WORKSHOP	
T TREES. IF A SITE SURVEY IS NOT PROVIDED, BRITT ROWE S RELATING TO THE SITE & EXISTING CONDITIONS. IN ANY RFORMED BY OTHERS & PROVIDED FOR THE PURPOSE OF	TOTAL LIVING AREA	<u>3,168 SF</u>	HABITABLE CONDITIONED SPACE	
IE REGISTERED DESIGN PROFESSIONAL WHO SHALL REVIEW	SETBACKS	PROVIDED	REQUIRED	
DRMANCE WITH THE DESIGN OF THE BUILDING. THE DEFERRED	FRONT	64'-8"	30'-0"	
D SUBMITIAL DOCUMENTS HAVE BEEN APPROVED BY THE	REAR	232'-9"	30'-0"	
	LEFT SIDE	241'-11"	30'-0"	
	RIGHT SIDE	57'-11"	30'-0"	
	LOT COVERAGES	PROPOSED		
	RESIDENCE @ GRADE	3,746 SF	MAIN RESIDENCE, GARAGE & PORCH	
	ACCESSORY BUILDING	867 SF	DETACHED	
	TOTAL LOT COVERAGE	4,613 SF (4%)		
	BUILDING HEIGHT	PROPOSED	ALLOWED	

Parcel Map





Tall Rodge			Professio			
			Profossi	anal Stam		
	Jurisdiction Approv	val Stamp(s)	Drawing:	File Saved:	Scale:	Drawn By:
3 5 5 5 5 5 5 5 5 5 5 5 5 5	CIVIL ENGINEER GREEN CIVIL ENGINEERING MR. AMBROSE WONG P.E. 1900 S. NORFOLK STREET SUITE #350 SAN MATEO, CA 94403 (650) 931-2514 green-eng@hotmail.com T24 ENERGY ANALYST FRI ENERGY, INC. MR. NICHOLAS BIGNARDI 21 N. HARRISON AVENUE, SUITE 210 CAMPBELL, CA 95008 (408) 866-1620 nick@friconsulting.com	STRUCTURAL ENGINEER CHARLES WILLIAMS R.C.E. MR. CHARLES WILLIAMS P.E. PO BOX 1152 MOUNTAIN VIEW, CA 94042 (650) 279-8756 clwrce@aol.com	PROJECT INFO	7/31/23	Noted	MAR W.
PAGE 4	BUILDING DESIGNER BRITT • ROWE 108 N. SANTA CRUZ AVENUE LOS GATOS, CA 95030 (408) 354.6224 (OFFICE) (408) 656-4732 (MIKE CELL) (408) 656-1983 (TONY CELL) peloncito@me.com	SOIL ENGINEER MILLSTONE GEOTECHNICAL MR. BARRY MILLSTONE 17020 MELODY LANE LOS GATOS, CA 95033 (408) 353-5528 BSM@MILSTONEGEO.COM		Be	S Los G	APN
	Project Consultants		Zhu	sidence	ummit Road atos, CA 95033	N: 558-04-014
			Britt R and c and sp of the c in w expres by Br shal nation conformed conformed	www.britt- wwww.britt- www.britt- www.britt- www.britt- www.britt- www.britt- www. www.britt- www. www. www. www. www. www. www. w	retain all to all drav s. The co nay not b part, with n consen All constru- vith all loc ng codes nall verify to assure o these co	rights wings pontents we used hout t given uction cal & s. All all e odes.
			 10 4	BRITT - 08 N. Sant. 08 Gatos, 08.354.62	ROWE a Cruz Av CA 9503	ve. 30
			REVIS	BIONS:		#

Construction Best Management Practices (BMPs)

Construction projects are required to implement year-round stormwater BMPs.

Materials & Waste Management



Non-Hazardous Materials

- Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or when they are not in use.
- Use (but don't overuse) reclaimed water for dust control.
- Ensure dust control water doesn't leave site or discharge to storm drains.

Hazardous Materials

- □ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with City, County, State and Federal regulations.
- □ Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and cover them at the end of every work day or during wet weather or when rain is forecast.
- □ Follow manufacturer's application instructions for hazardous materials and do not use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours.
- Arrange for appropriate disposal of all hazardous wastes.

Waste Management

- Cover and maintain dumpsters. Check frequently for leaks. Place dumpsters under roofs or cover with tarps or plastic sheeting secured around the outside of the dumpster. A plastic liner is recommended to prevent leaks. Never clean out a dumpster by hosing it down on the construction site.
- □ Place portable toilets away from storm drains. Make sure they are in good working order. Check frequently for leaks.
- Dispose of all wastes and demolition debris properly. Recycle materials and wastes that can be recycled, including solvents, waterbased paints, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation
- Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.
- □ Keep site free of litter (e.g. lunch items, cigarette butts).
- □ Prevent litter from uncovered loads by covering loads that are being transported to and from site.

Construction Entrances and Perimeter

- Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site.
- Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking.

Equipment Management & Spill Control



Maintenance and Parking

- Designate an area of the construction site, well away from streams or storm drain inlets and fitted with appropriate BMPs, for auto and equipment parking, and storage.
- □ Perform major maintenance, repair jobs, and vehicle and equipment washing off site.
- □ If refueling or vehicle maintenance must be done onsite, work in a bermed area away from storm drains and over a drip pan or drop cloths big enough to collect fluids. Recycle or dispose of fluids as hazardous waste. □ If vehicle or equipment cleaning must be done onsite, clean with water only in a bermed area that will not allow rinse water to run into gutters, streets, storm
- drains, or surface waters.
- Do not clean vehicle or equipment onsite using soaps, solvents, degreasers, or steam cleaning equipment, and do not use diesel oil to lubricate equipment or parts onsite.

Spill Prevention and Control

- cat litter) available at the construction site at all times. frequently for and repair leaks. Use drip pans to catch
- □ Keep spill cleanup materials (e.g., rags, absorbents and □ Maintain all vehicles and heavy equipment. Inspect leaks until repairs are made.
- □ Clean up leaks, drips and other spills immediately and dispose of cleanup materials properly.
- Use dry cleanup methods whenever possible (absorbent materials, cat litter and/or rags).
- □ Sweep up spilled dry materials immediately. Never attempt to "wash them away" with water, or bury them
- □ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- □ Report significant spills to the appropriate local spill response agencies immediately. If the spill poses a significant hazrd to human health and safety, property or the environment, you must report it to the State Office of Emergency Services. (800) 852-7550 (24 hours).



Earthmoving



Grading and Earthwork

- □ Schedule grading and excavation work during dry weather.
- □ Stabilize all denuded areas, install and maintain temporary erosion controls (such as erosion control fabric or bonded fiber matrix) until vegetation is established.
- □ Remove existing vegetation only when absolutely necessary, plant temporary vegetation for erosion control on slopes or where construction is not immediately planned.
- □ Prevent sediment from migrating offsite and protect storm drain inlets, drainage courses and streams by installing and maintaining appropriate BMPs (i.e. silt fences, gravel bags, fiber rolls, temporary swales, etc.).
- Keep excavated soil on site and transfer it to dump trucks on site, not in the streets.

Contaminated Soils

- □ If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
- Unusual soil conditions, discoloration, or odor.
- Abandoned underground tanks.
- Abandoned wells
- Buried barrels, debris, or trash
- □ If the above conditions are observed, document any signs of potential contamination and clearly mark them so they are not distrurbed by construction activities.

Landscaping

- □ Protect stockpiled landscaping materials from wind and rain by storing them under tarps all year-round.
- □ Stack bagged material on pallets and under cover.
- Discontinue application of any erodible landscape material within 2 days before a forecast rain event or during wet weather.

Concrete Management and Dewatering



Concrete Management

- □ Store both dry and wet materials under cover, protected from rainfall and runoff and away from storm drains or waterways. Store materials off the ground, on pallets. Protect dry materials from wind.
- □ Wash down exposed aggregate concrete only when the wash water can (1) flow onto a dirt area; (2) drain onto a bermed surface from which it can be pumped and disposed of properly; or (3) block any storm drain inlets and vacuum washwater from the gutter. If possible, sweep first.
- □ Wash out concrete equipment/trucks offsite or in a designated washout area onsite, where the water will flow into a temporary waste pit, and make sure wash water does not leach into the underlying soil. (See CASQA Construction BMP Handbook for properly designed concrete washouts.)

Dewatering

- Discharges of groundwater or captured runoff from dewatering operations must be properly managed and disposed. When possible, send dewatering discharge to landscaped area or sanitary sewer. If discharging to the sanitary sewer, call your local wastewater treatment plant.
- Divert run-on water from offsite away from all disturbed areas.
- □ When dewatering, notify and obtain approval from the local municipality before discharging water to a street gutter or storm drain. Filtration or diversion through a basin, tank, or sediment trap may be required.
- □ In areas of known or suspected contamination, call your local agency to determine whether the ground water must be tested. Pumped groundwater may need to be collected and hauled off-site for treatment and proper disposal

Storm drain polluters may be liable for fines of up to \$10.000 per day!

Paving/Asphalt Work



Paving

- Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- Cover storm drain inlets and manholes when applying seal coat, slurry seal, fog seal, or similar materials.
- □ Collect and recycle or properly dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.

Sawcutting & Asphalt/Concrete Removal

- □ Protect storm drain inlets during saw cutting.
- □ If saw cut slurry enters a catch basin, clean it up immediately.
- □ Shovel or vacuum saw cut slurry deposits and remove from the site. When making saw cuts, use as little water as possible. Sweep up, and properly dispose of all residues.

Painting & Paint Removal



Painting Cleanup and Removal

- □ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream.
- □ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain.
- □ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste.
- Sweep up or collect paint chips and dust from non-hazardous dry stripping and sand blasting into plastic drop cloths and dispose of as trash.
- Chemical paint stripping residue and chips and dust from marine paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a statecertified contractor.





COUNTY OF SANTA CLARA

2019 CALGREEN RESIDENTIAL CHECKLIST (MANDATORY)

County Amendments to CALGreen are in Italics. - Designer to cross out items that are not applicable to the project.

- Installer or designer shall verify all applicable requirements have been satisfied and sign and date each row. County Inspectors will verify completion signatures and supporting

documentation DURING CONSTRUCTION.

			APPLICANT TO Plan Check R			Staller or Designer Verification	
ITEM #	CALGreen CODE SECTION	REQUIREMENT	REFERENCE SHEET	Note or Detail No.	Date	Installer or Designer Signature	
		PLANNING AND DESIGN: MAN	DATORY REQ	UIREMENTS	-		
1	4.106.2	A plan is developed and implemented to manage storm water drainage during construction.	CG-2	NOTE 1			
2	4.106.3	Construction plans indicates how site grading or a drainage system will manage all surface water flows to keep water from entering buildings.	CG-2	NOTE 2			
3	4.106.4.1	For new dwellings and the rebuild of existing dwellings that include a panel upgrade or construction between panel and parking area, a raceway to a dedicated 208/240-volt branch circuit meeting the requirements, is installed.	CG-2	NOTES 3 & 4			
	ENERGY EFFICIENCY: MANDATORY REQUIRMENTS						
4	4.201.1	Building meets or exceeds the requirements of the California Building Energy Efficiency Standards.	T24 SHEETS				
	N	ATER EFFICIENCY & CONSERVATION	N: MANDATC	DRY REQUIREME	NTS		
5	4.303.1	Plumbing Fixtures (water closets and urinals) and fittings (faucets and showerheads) installed in residential buildings comply with CALGreen Sections 4.303.1.1 through 4.303.1.4.4.	CG-2	NOTE 5			
6	4.303.2	Plumbing fixtures and fittings required in CALGreen Section 4.303.1 are installed in accordance with the CPC and meet the applicable referenced standards.	CG-2	Note 6			
7	4.304.1	Outdoor potable water use in landscape areas comply with a local water efficient landscape or the current California DWR MWELO, whichever is more stringent.	CG-2	Note 7			
8	4.305.1	For new dwellings where disinfected tertiary recycled water is available, installation of recycled water supply system is required per CPC chapter 15.	CG-2	Note 8			

TABLE 4.504.1 ADHESIVE VOC LIMIT^{1, 2}

Less Water and Less Exempt Compounds in Grams per Liter				
ARCHITECTURAL APPLICATIONS	VOC LIMIT			
Indoor carpet adhesives	50			
Carpet pad adhesives	50			
Outdoor carpet adhesives	150			
Wood flooring adhesive	100			
Rubber floor adhesives	60			
Subfloor adhesives	50			
Ceramic tile adhesives	65			
VCT and asphalt tile adhesives	50			
Drywall and panel adhesives	50			
Cove base adhesives	50			
Multipurpose construction adhesives	70			
Structural glazing adhesives	100			
Single-ply roof membrane adhesives	250			
Other adhesives not specifically listed	50			
SPECIALTY APPLICATIONS				
PVC welding	510			
CPVC welding	490			
ABS welding	325			
Plastic cement welding	250			
Adhesive primer for plastic	550			
Contact adhesive	80			
Special purpose contact adhesive	250			
Structural wood member adhesive	140			
Top and trim adhesive	250			
SUBSTRATE SPECIFIC APPLICATIONS				
Metal to metal	30			
Plastic foams	50			
Porous material (except wood)	50			
Wood	30			
Fiberglass	80			

with the highest VOC content shall be allowed. 2. For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168

1. If an adhesive is used to bond dissimilar substrates together, the adhesive

TABLE 4.504.2 SEALANT VOC LIMIT Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	VOC LIMIT
Architectural	250
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420
SEALANT PRIMERS	
Architectural Nonporous Porous	250 775
Modified bituminous	500
Marine deck	760
Other	750

TABLE 4.504.3							
Grams of VOC per Liter of C	Grams of VOC per Liter of Coating,						
Less Water and Less Exempt Co	ompounds						
COATING CATEGORY							
Flat coatings	30						
Nonflat coatings	100						
Nonflat-nign gloss coatings	150						
SPECIALTY COATINGS	400						
Aluminum root coatings	400						
Basement specialty coatings	400						
Bituminous roof coatings	50						
Bituminous roof primers	350						
Bond breakers	350						
Concrete curing compounds	350						
Concrete/masonry sealers	100						
Driveway sealers	50						
Dry fog coatings	150						
Faux finishing coatings	350						
Fire resistive coatings	350						
Floor coatings	100						
Form-release compounds	250						
Graphic arts coatings (sign paints)	500						
High temperature coatings	420						
Industrial maintenance coatings	250						
Low solids coatings ¹	120						
Magnesite cement coatings	450						
Mastic texture coatings	100						
Metallic pigmented coatings	500						
Multicolor coatings	250						
Pretreatment wash primers	420						
Primers, sealers, and undercoaters	100						
Reactive penetrating sealers	350						
Recycled coatings	250						
Roof coatings	50						
Rust preventative coatings	250						
Shellacs							
Clear	730						
Opaque	550						
Specialty primers, sealers and undercoaters	100						
Stains	250						
Stone consolidants	450						
Swimming pool coatings	340						
Traffic marking coatings	100						
Tub and tile refinish coatings	420						
Waterproofing membranes	250						
Wood coatings	275						
Wood preservatives	350						
Zinc-rich primers	340						
1. Grams of VOC per liter of coating, including wa	ater and including exempt						

compounds. 2. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.

3. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2008. More information is available from the Air Resources Board.

	APP Pla		APPLICAN Plan Chec	TO COMPLETE k Review Data	In	staller or Designer Verification
ITEM #	CALGreen CODE SECTION	REQUIREMENT	REFERENCE SHEET	Note or Detail No.	Date	Installer or Designer Signature
	MATERIA	AL CONSERVATION & RESOURCE EFFI	CIENCY: MA	NDATORY REQU	IREME	NTS
9	4.406.1	Annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls are protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the County of Santa Clara.	CG-2	Note 9		
10	4.408.1	Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste. Submit either a Construction Waste management plan (CALGreen 4.408.2) or Utilize a waste management company (CALGreen 4.408.3).	CG-2	Note 10		
11	4.408.5	Documentation is provided to County of Santa Clara which demonstrates compliance with CALGreen sections 4.408.2 or 4.408.3.	CG-1 CG-2	Construction Waste Management Forms Note 11		
12	4.410.1	An operation and maintenance manual is placed in the building at the time of final inspection.	CG-2	Note 12		
		ENVIRONMENTAL QUALITY: MAN	NDATORY RE	QUIREMENTS		
13	4.503.1	Any installed gas fireplace is a direct- vent sealed-combustion type. Any installed woodstove or pellet stove comply with US EPA Phase II emission limits where applicable.	CG-2	Note 13		
14	4.504.1	Duct openings and other related air distribution component openings are covered during construction until final startup of the HVAC equipment.	CG-2	Note 14		
15	4.504.2.1	Adhesives, sealants and caulks are compliant with VOC and other toxic compound limits.	CG-1 CG-2	Table 4.504.1 Table 4.504.2 Note 15		
16	4.504.2.2	Architectural paints and coatings are compliant with VOC limits.	CG-1 CG-2	Table 4.504.3 Note 16		
17	4.504.2.3	Aerosol paints and coatings are compliant with product weighted MIR limits for ROC and other toxic compounds.	CG-2	Note 17		
18	4.504.2.4	Documentation are provided to the County of Santa Clara to verify that compliant VOC limit finish materials have been used.	CG-2	Note 18		
19	4.504.3	Carpet and carpet systems meet the applicable testing and product	CG-1	Table 4.504.1		
20	4.504.4	80 percent of floor area receiving resilient flooring comply with applicable	CG-2	Note 20		
21	4.504.5	Hardwood plywood, particleboard and medium density fiberboard composite	CG-1	Table 4.504.5		
		wood meet formaldehyde limits.	CG-2	Note 21		

Project Name:
Job #:
Project Manager:
Waste Hauling Company:
Contact Name:

All Subcontractors shall comply with the project's Construction Waste Management Plan. All Subcontractor foremen shall sign the CWM Plan Acknowledgment Sheet. Subcontractors who fail to comply with the Waste Management Plan will be subject to backcharges or withholding of payment, as deemed appropriate. For instance, Subcontractors who contaminate debris boxes that have been designated for a single material type will be subject to backcharge or withheld payment, as deemed appropriate.

- 1. The project's overall rate of waste diversion will be _____%. is generated on this jobsite will be diverted from the landfill and recycled for other use.
- and the anticipated diversion rate.
- ing that they have read and will abide by the CWM Plan. Subcontractor Acknowledgment Sheet enclosed. The CWM Plan will be posted at the jobsite trailer.
- donated to charity if feasible.
- drop boxes will be taken to ______. The average diversion rate for commingled waste will be _____%. As site conditions permit, additional drop boxes will be used for particular phases of construction (e.g., concrete and wood waste) to ensure the highest waste diversion rate possible.
- required, then a strategy of source-separated waste diversion and/or waste stream reduction will be implemented. Source separated waste refers to jobsite waste that is not commingled but is instead allocated to a debris box designated for a single material type, such as clean wood or metal. Notes:
- 1. Waste stream reduction refers to efforts taken by the builder to reduce the amount of waste generated by the project to below four (4) pounds per square foot of building area.
- tion percentage calculations.
- sion rate for the project. hauled and the waste diversion rate being achieved on the project. that rates for these materials.
- excluded from complying with the CWM Plan and will provide debris boxes.
- ignated waste the project Superintendent will, as deemed appropriate, allocate specific areas onsite where individual material types are to be consolidated. These collection points are not to be contaminated with non-designated waste types.
- 11. Debris from jobsite office and meeting rooms will be collected by

			APPLICAN Plan Chec	T TO COMPLETE k Review Data	Ins
ITEM #	CALGreen CODE SECTION	REQUIREMENT	REFERENCE SHEET	Note or Detail No.	Date
	EN	VIRONMENTAL QUALITY: MANDATO	RY REQUIR	EMENTS (Contin	ued)
22	4.504.5.1	Documentation is provided to the County of Santa Clara to verify composite wood meets applicable formaldehyde limits.	CG-2	Note 22	
23	4.505.2	Vapor retarder and capillary break is installed at slab-on-grade foundations.	CG-2	Note 23	
24	4.505.3	Moisture content of building materials used in wall and floor framing do not exceed 19% prior to enclosure and is checked before enclosure. Insulation products are dry prior to enclosure.	CG-2	Note 24	
25	4.506.1	Each bathroom is mechanically ventilated and comply with applicable requirements.	CG-2	Note 25	
26	4.507.2	Heating and air-conditioning systems are sized, designed, and equipment is selected by using one of the methods listed.	CG-2	Note 26	
	INSTALLE	R AND SPECIAL INSPECTOR QUALIFI	CATIONS: M	IANDATORY REQ	UIREM
27	702.1	HVAC system installers are trained and certified in the proper installation of HVAC systems.	CG-2	Note 27	
28	702.2	If required by County of Santa Clara, owner or owner's agent shall employ special inspector who are qualified and able to demonstrate competence in the discipline they are inspecting.	CG-2	Note 28	
29	703.1	Documentation used to show compliance with this code may include construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to County of Santa Clara which show substantial conformance.	CG-2	Note 29	

Inoboot	CURRENT LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard ²	0.13
Chin medium density fiberboard ² . Values in this table are derived from those sp Resources Board, Air Toxics Control Measu tested in accordance with ASTM E1333 For	0.13 0.13 ecified by the Californ the for Composite Wo

Construction Waste Management (CWM) Plan

Fill out the form including diversion rate and facility names and addresses Legend _____ Hauling Company _____ _____

Sorting Facility Name and Location _____ Disposal Service Company

2. This project shall generate the least amount of waste possible by planning and ordering carefully, following all proper storage and handling procedures to reduce broken and damaged materials and reusing materials whenever possible. The majority of the waste that 3. Spreadsheet 1, enclosed, identifies the waste materials that will be generated on this project, the diversion strategy for each waste type

4. Waste prevention and recycling activities will be discussed at the beginning of weekly subcontractor meetings. As each new subcon-tractor comes on-site, the WMP Coordinator will present him/her with a copy of the CWM Plan and provide a tour of the jobsite to identify materials to be salvaged and the procedures for handling jobsite debris. All Subcontractor foremen will acknowledge in writ-

5. Salvage: Excess materials that cannot be used in the project, nor returned to the vendor, will be offered to site workers, the owner, or will provide a commingled drop box at the jobsite for most of the construction waste. These commingled

7. In the event that the waste diversion rate achievable via the strategy described in (6) above, is projected to be lower than what is

2. When using waste stream reduction measures, the gross weight of the product is subtracted from a base weight of four (4) pounds per square foot of building area. This reduction is considered additional diversion and can be used in the waste reduc-

will track and calculate the quantity (in tons) of all waste leaving the project and calculate the waste diverwill provide Project Manager with an updated monthly report on gross weight monthly report will track separately the gross weights and diversion rates for commingled debris and for each source-separated waste stream leaving the project. In the event does not service any or all of the debris boxes on the project, the will work with the responsible parties to track the material type and weight (in tons) in such debris boxes in order to determine waste diversion

9. In the event that Subcontractors furnish their own debris boxes as part of their scope of work, such Subcontractors shall not be weight and waste diversion data for their

10. In the event that site use constraints (such as limited space) restrict the number of debris boxes that can be used for collection of des-

will, at a minimum, recycle office paper, plastic, metal and cardboard.

Construction Waste Management (CWM) Worksheet

Project Name:			
Job Number:			
Project Manager:			
Waste Hauling Company:			
Construction Waste Management (C	WM) Plan		
	DIVERSION N	IETHOD:	PROJECTED
WASTE MATERIAL TYPE	COMMINGLED AND SORTED OFF SITE	SOURCE SEPARATED ON SITE	DIVERSION RATE
Asphalt			
Concrete			
Shotcrete			
Metals			
Wood			
Rigid insulation			
Fiberglass insulation			
Acoustic ceiling tile			
Gypsum drywall			
Carpet/carpet pad			
Plastic pipe			
Plastic buckets			
Plastic			
Hardiplank siding and boards			
Glass			
Cardboard			
Pallets			
Job office trash, paper, glass & plastic bottles, cans, plastic			
Alkaline and rechargeable batteries, toner cartridges, and electronic devices			
Other:			

CWM The Fo

CALGreen One or Two Family Residential Project Mandatory Requirements County of Santa Clara

staller or Designer
Verification
Installer or Designer Signature
ENTS

Construction Waste Management (CWM) Acknowledgment

Note: This sample form may be used to assist in documenting compliance with the waste management plan.

Project Name:			
Job Number:			
Project Manager:			
Waste Hauling Company:			
CWM Plan Acknowledgment			
The Foreman for each new Sub complete this Acknowledgment	ocontractor that comes on site is to receive a c t Form.	opy of the Construction Waste M	anagement Plan and
I have read the Waste Manageme plan.	nt Plan for the project; I understand the goals of t	this plan and agree to follow the pro	cedures described in this
DATE	SUBCONTRACTOR COMPANY NAME	FOREMAN NAME	SIGNATURE



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CALGREEN 2019 NOTES – MANDATORY REQUIREMENTS:

1. PROJECTS WHICH DISTURB LESS THAN ONE ACRE OF SOIL AND ARE NOT PART OF A LARGER COMMON PLAN OF DEVELOPMENT WHICH IN TOTAL DISTURBS ONE ACRE OR MORE, SHALL MANAGE STORM WATER DRAINAGE DURING CONSTRUCTION. SEE CALGREEN 4.106.2 FOR FURTHER DETAILS.

2. CONSTRUCTION PLANS SHALL INDICATE HOW THE SITE GRADING OR DRAINAGE SYSTEM WILL MANAGE ALL SURFACE WATER FLOWS TO KEEP WATER FROM ENTERING BUILDINGS. SWALES, WATER COLLECTION AND DISPOSAL SYSTEMS, FRENCH DRAINS, WATER RETENTION GARDENS, AND OTHER MEASURES CAN BE USED. EXCEPTION: ADDITIONS AND ALTERATIONS NOT ALTERING THE DRAINAGE PATH.

3. NEW CONSTRUCTION SHALL COMPLY WITH CALGREEN SECTION 4.106.4.1 TO FACILITATE FUTURE INSTALLATION AND USE OF EV CHARGERS. ELECTRIC VEHICLE SUPPLY EOUIPMENT (EVSE) SHALL BE INSTALLED IN ACCORDANCE WITH THE CALIFORNIA ELECTRICAL CODE, ARTICLE 625.

EXCEPTIONS:

- A. WHERE COUNTY OF SANTA CLARA HAS DETERMINED EV CHARGING AND INFRASTRUCTURE ARE NOT FEASIBLE
- B. ACCESSORY DWELLING UNITS (ADU) AND JUNIOR ACCESSORY DWELLING UNITS (JADU) WITHOUT ADDITIONAL PARKING FACILITIES.

4. FOR EACH DWELLING UNIT, INSTALL A LISTED RACEWAY TO ACCOMMODATE A DEDICATED 208/240-VOLT BRANCH CIRCUIT. THE RACEWAY SHALL NOT BE LESS THAN TRADE SIZE 1 (NOMINAL 1-INCH INSIDE DIAMETER). THE RACEWAY SHALL ORIGINATE AT THE MAIN SERVICE OR SUBPANEL AND SHALL TERMINATE INTO A LISTED CABINET, BOX OR OTHER ENCLOSURE IN CLOSE PROXIMITY TO THE PROPOSED LOCATION OF AN EV CHARGER. RACEWAYS ARE REQUIRED TO BE CONTINUOUS AT ENCLOSED, INACCESSIBLE OR CONCEALED AREAS AND SPACES. THE SERVICE PANEL AND/OR SUBPANEL SHALL PROVIDE CAPACITY TO INSTALL A 40-AMPERE MINIMUM DEDICATED BRANCH CIRCUIT AND SPACE(S) RESERVED TO PERMIT INSTALLATION OF A BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE. THE RACEWAY TERMINATION LOCATION SHALL BE PERMANENTLY AND VISIBLY MARKED AS "EV CAPABLE".

THE SERVICE PANEL OR SUB-PANEL CIRCUIT DIRECTORY SHALL IDENTIFY THE OVER CURRENT PROTECTIVE DEVICE SPACE(S) RESERVED FOR FUTURE EV CHARGING AS "EV CAPABLE". THE RACEWAY TERMINATION LOCATION SHALL BE PERMANENTLY AND VISIBLY MARKED AS "EV CAPABLE".

5. ALL NONCOMPLIANT PLUMBING FIXTURES SHALL BE REPLACED WITH WATER-CONSERVING PLUMBING FIXTURES. PLUMBING FIXTURE REPLACEMENT IS REQUIRED PRIOR TO ISSUANCE OF A CERTIFICATE OF FINAL COMPLETION, CERTIFICATE OF OCCUPANCY, OR FINAL PERMIT APPROVAL BY BUILDING AND INSPECTION DIVISION. SEE CIVIL CODE SECTION 1101.1, ET SEQ., FOR THE DEFINITION OF A NONCOMPLIANT PLUMBING FIXTURE, TYPES OF RESIDENTIAL BUILDINGS AFFECTED AND OTHER IMPORTANT ENACTMENT DATES.

- A. THE EFFECTIVE FLUSH VOLUME OF ALL WATER CLOSETS SHALL NOT EXCEED 1.28 GALLONS PER FLUSH. TANK-TYPE WATER CLOSETS SHALL BE CERTIFIED TO THE PERFORMANCE CRITERIA OF THE U.S. EPA WATERSENSE SPECIFICATION FOR TANK-TYPE TOILETS.
- B. SHOWERHEADS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 1.8 GALLONS PER MINUTE AT 80 PSI. SHOWERHEADS SHALL BE CERTIFIED TO THE PERFORMANCE CRITERIA OF THE U.S. EPA WATERSENSE SPECIFICATION FOR SHOWERHEADS.
- C. WHEN A SHOWER IS SERVED BY MORE THAN ONE SHOWERHEAD, THE COMBINED FLOW RATE OF ALL SHOWER-HEADS AND/OR OTHER SHOWER OUTLETS CONTROLLED BY A SINGLE VALVE SHALL NOT EXCEED 1.8 GALLONS PER MINUTE AT 80 PSI, OR THE SHOWER SHALL BE DESIGNED TO ALLOW ONLY ONE SHOWER OUTLET TO BE IN OPERATION AT A TIME. A HAND-HELD SHOWER SHALL BE CONSIDERED A SHOWERHEAD.
- D. THE MAXIMUM FLOW RATE OF RESIDENTIAL LAVATORY FAUCETS SHALL NOT EXCEED 1.2 GALLONS PER MINUTE AT 60 PSI. THE MINIMUM FLOW RATE OF RESIDENTIAL LAVATORY FAUCETS SHALL NOT BE LESS THAN 0.8 GALLONS PER MINUTE AT 20 PSI.
- E. THE MAXIMUM FLOW RATE OF KITCHEN FAUCETS SHALL NOT EXCEED 1.8 GALLONS PER MINUTE AT 60 PSI. KITCHEN FAUCETS MAY TEMPORARILY INCREASE THE FLOW ABOVE THE MAXIMUM RATE, BUT NOT TO EXCEED 2.2 GALLONS PER MINUTE AT 60 PSI, AND MUST DEFAULT TO A MAXIMUM FLOW RATE OF 1.8 GALLONS PER MINUTE AT 60 PSI.

6. PLUMBING FIXTURES AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE CALIFORNIA PLUMBING CODE, AND SHALL MEET THE APPLICABLE STANDARDS REFERENCED IN TABLE 1701.1 OF THE CALIFORNIA PLUMBING CODE.

RESIDENTIAL DEVELOPMENTS SHALL COMPLY WITH A LOCAL WATER EFFICIENT LANDSCAPE ORDINANCE OR THE CURRENT CALIFORNIA DEPARTMENT OF WATER RESOURCES' MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO), WHICHEVER IS MORE STRINGENT.

8. NEWLY CONSTRUCTED RESIDENTIAL DEVELOPMENTS, WHERE DISINFECTED TERTIARY RECYCLED WATER IS AVAILABLE FROM A MUNICIPAL SOURCE TO A CONSTRUCTION SITE, MAY BE REQUIRED TO HAVE RECYCLED WATER SUPPLY SYSTEMS INSTALLED, ALLOWING THE USE OF RECYCLED WATER FOR RESIDENTIAL LANDSCAPE IRRIGATION SYSTEMS. SEE CHAPTER 15 OF THE CALIFORNIA PLUMBING CODE.

9. ANNULAR SPACES AROUND PIPES, ELECTRIC CABLES, CONDUITS OR OTHER OPENINGS IN SOLE/BOTTOM PLATES AT EXTERIOR WALLS SHALL BE PROTECTED AGAINST THE PASSAGE OF RODENTS BY CLOSING SUCH OPENINGS WITH CEMENT MORTAR, CONCRETE MASONRY OR A SIMILAR METHOD ACCEPTABLE TO THE COUNTY OF SANTA CLARA.

10. RECYCLE AND/OR SALVAGE FOR REUSE A MINIMUM OF 65 PERCENT OF THE NONHAZARDOUS CONSTRUCTION AND DEMOLITION WASTE IN ACCORDANCE WITH CALGREEN SECTION 4.408.2 OR 4.408.3.

- CLARA.
- SALVAGE FOR FUTURE USE OR SALE.
- WASTE MATERIAL WILL BE TAKEN.
- CONSTRUCTION AND DEMOLITION WASTE GENERATED.
- shall be calculated by weight or volume, but not by both.
- OF SANTA CLARA. SEE CALGREEN 4.408.3 FOR FURTHER .DETAILS

11. DOCUMENTATION SHALL BE PROVIDED TO THE COUNTY OF SANTA CLARA WHICH DEMONSTRATES COMPLIANCE WITH NOTE 10.

12. AT THE TIME OF FINAL INSPECTION, A MANUAL, COMPACT DISC, WEB-BASED REFERENCE OR OTHER MEDIA ACCEPTABLE TO THE COUNTY OF SANTA CLARA INCLUDES ALL OF THE REQUIRED INFORMATION, SHALL BE PLACED IN THE BUILDING. SEE CALGREEN 4.410.1 FOR DETAILS OF REQUIRED INFORMATION.

13. ANY INSTALLED GAS FIREPLACE SHALL BE A DIRECT-VENT SEALED-COMBUSTION TYPE. ANY INSTALLED WOODSTOVE OR PELLET STOVE SHALL COMPLY WITH U.S. EPA NEW SOURCE PERFORMANCE STANDARDS (NSPS) EMISSION LIMITS AS APPLICABLE, AND SHALL HAVE A PERMANENT LABEL INDICATING THEY ARE CERTIFIED TO MEET THE EMISSION LIMITS. WOODSTOVES, PELLET STOVES AND FIREPLACES SHALL ALSO COMPLY WITH APPLICABLE SANTA CLARA COUNTY ORDINANCES AND BAY AREA AIR QUALITY MANAGEMENT DISTRICT REGULATION 6, RULE 3.

14. AT THE TIME OF ROUGH INSTALLATION, DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING, COOLING AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE COUNTY OF SANTA CLARA TO REDUCE THE AMOUNT OF WATER, DUST AND DEBRIS, WHICH MAY ENTER THE SYSTEM.

15. ADHESIVES, SEALANTS AND CAULKS USED ON THE PROJECT SHALL MEET THE REQUIREMENTS OF CALGREEN TABLES 4.504.1 OR 4.504.2 AS REPRODUCED ON SHEET CG-1. SUCH PRODUCTS ALSO SHALL COMPLY WITH THE RULE 1168 PROHIBITION ON THE USE OF CERTAIN TOXIC COMPOUNDS (CHLOROFORM, ETHYLENE DICHLORIDE, METHYLENE CHLORIDE, PERCHLOROETHYLENE AND TRICHLOROETHYLENE), EXCEPT FOR AEROSOL PRODUCTS, AS SPECIFIED BELOW.

AEROSOL ADHESIVES, AND SMALLER UNIT SIZES OF ADHESIVES, AND SEALANT OR CAULKING COMPOUNDS (IN UNITS OF PRODUCT, LESS PACKAGING, WHICH DO NOT WEIGH MORE THAN 1 POUND AND DO NOT CONSIST OF MORE THAN 16 FLUID OUNCES) SHALL COMPLY WITH STATEWIDE VOC STANDARDS AND OTHER REQUIREMENTS, INCLUDING PROHIBITIONS ON USE OF CERTAIN TOXIC COMPOUNDS, OF CALIFORNIA CODE OF REGULATIONS, TITLE 17, COMMENCING WITH SECTION 94507.

16. ARCHITECTURAL PAINTS AND COATINGS SHALL COMPLY WITH VOC LIMITS AS SHOWN IN TABLE 4.504.3 SHEET CG-1. THE VOC CONTENT LIMIT FOR COATINGS THAT DO NOT MEET THE DEFINITIONS FOR THE SPECIALTY COATINGS CATEGORIES LISTED IN TABLE 4.504.3 SHALL BE DETERMINED BY CLASSIFYING THE COATING AS A FLAT, NONFLAT OR NONFLAT-HIGH GLOSS COATING, BASED ON ITS GLOSS, AS DEFINED IN SUBSECTIONS 4.21, 4.36, AND 4.37 OF THE 2007 CALIFORNIA AIR RESOURCES BOARD, SUGGESTED CONTROL MEASURE, AND THE CORRESPONDING FLAT, NONFLAT OR NON-FLAT-HIGH GLOSS VOC LIMIT IN TABLE 4.504.3, SHEET CG-1 SHALL APPLY.

17. AEROSOL PAINTS AND COATINGS SHALL MEET THE PRODUCT-WEIGHTED MIR LIMITS FOR ROC IN SECTION 94522(A)(2) AND OTHER REQUIREMENTS, INCLUDING PROHIBITIONS ON USE OF CERTAIN TOXIC COMPOUNDS AND OZONE DEPLETING SUBSTANCES, IN SECTIONS 94522(E)(1) AND (F)(1) OF CALIFORNIA CODE OF REGULATIONS, TITLE 17, COMMENCING WITH SECTION 94520; AND IN AREAS UNDER THE JURISDICTION OF THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT ADDITIONALLY COMPLY WITH THE PERCENT VOC BY WEIGHT OF PRODUCT LIMITS OF **REGULATION 8, RULE 49.**

18. VERIFICATION OF COMPLIANCE WITH NOTES 15, 16, AND 17 SHALL BE PROVIDED AT THE REQUEST OF THE COUNTY OF SANTA CLARA.

19. ALL CARPET INSTALLED IN THE BUILDING INTERIOR SHALL MEET THE TESTING AND PRODUCT REQUIREMENTS OF ONE OF THE FOLLOWING:

- A. CARPET AND RUG INSTITUTE'S GREEN LABEL PLUS PROGRAM. 2010 (ALSO KNOWN AS SPECIFICATION 01350.)
- C. NSF/ANSI 140 AT THE GOLD LEVEL.

ALL CARPET CUSHION INSTALLED IN THE BUILDING INTERIOR SHALL MEET THE REQUIREMENTS OF THE CARPET AND RUG INSTITUTE'S GREEN LABEL PROGRAM. ALL CARPET ADHESIVE SHALL MEET THE REQUIREMENTS OF TABLE 4.504.1, SHEET CG-1.

20. WHERE RESILIENT FLOORING IS INSTALLED, AT LEAST 80 PERCENT OF FLOOR AREA RECEIVING RESILIENT FLOORING SHALL COMPLY WITH ONE OR MORE OF THE FOLLOWING:

A. A CONSTRUCTION WASTE MANAGEMENT PLAN IS PROVIDED. THE CONSTRUCTION WASTE MANAGEMENT PLAN SHALL BE UPDATED AS NECESSARY AND SHALL BE AVAILABLE DURING CONSTRUCTION FOR EXAMINATION BY THE COUNTY OF SANTA

1. IDENTIFY THE CONSTRUCTION AND DEMOLITION WASTE MATERIALS TO BE DIVERTED FROM DISPOSAL BY RECYCLING, REUSE ON THE PROJECT OR

2. SPECIFY IF CONSTRUCTION AND DEMOLITION WASTE MATERIALS WILL BE SORTED ON-SITE (SOURCE-SEPARATED) OR BULK MIXED (SINGLE STREAM). 3. IDENTIFY DIVERSION FACILITIES WHERE THE CONSTRUCTION AND DEMOLITION

4. IDENTIFY CONSTRUCTION METHODS EMPLOYED TO REDUCE THE AMOUNT OF

5. Specify that the amount of construction and demolition waste materials diverted

B. A WASTE MANAGEMENT COMPANY CAN BE UTILIZED IF APPROVED BY THE COUNTY

B. 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

D. SCIENTIFIC CERTIFICATIONS SYSTEMS INDOOR ADVANTAGE GOLD.

- A. PRODUCTS COMPLIANT WITH THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, "STANDARD METHOD FOR THE TESTING AND EVALUATION OF VOLATILE ORGANIC CHEMICAL EMISSIONS FROM INDOOR SOURCES USING ENVIRONMENTAL CHAMBERS," VERSION 1.1, FEBRUARY 2010 (ALSO KNOWN AS SPECIFICATION 01350), CERTIFIED AS A CHPS LOW-EMITTING MATERIAL IN THE COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS (CHPS) HIGH PERFORMANCE PRODUCTS DATABASE.
- B. PRODUCTS CERTIFIED UNDER UL GREENGUARD GOLD (FORMERLY THE GREENGUARD CHILDREN & SCHOOLS PROGRAM).
- C. 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).

21. 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 TABLE 4.504.5 SHEET CG-1.

22. VERIFICATION OF COMPLIANCE WITH NOTE 21 SHALL BE PROVIDED AT THE REQUEST OF THE COUNTY OF SANTA CLARA.

23. CONCRETE SLAB FOUNDATIONS REQUIRED TO HAVE A VAPOR RETARDER BY CBC, CHAPTER 19 OR CONCRETE SLAB-ON-GROUND FLOORS REQUIRED TO HAVE A VAPOR RETARDER BY CRC CHAPTER 5, SHALL COMPLY WITH FOLLOWING REQUIREMENT:

A CAPILLARY BREAK SHALL BE INSTALLED IN COMPLIANCE WITH AT LEAST ONE OF THE FOLLOWING:

- A. A 4-INCH-THICK BASE OF 1/2 INCH OR LARGER CLEAN AGGREGATE SHALL BE PROVIDED WITH A VAPOR RETARDER IN DIRECT CONTACT WITH CONCRETE AND A CONCRETE MIX DESIGN, WHICH WILL ADDRESS BLEEDING, SHRINKAGE, AND CURLING, SHALL BE USED.
- B. A SLAB DESIGN SPECIFIED BY THE LICENSED DESIGN PROFESSIONAL

24. 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. INSULATION PRODUCTS WHICH ARE VISIBLY WET OR HAVE A HIGH MOISTURE CONTENT SHALL BE REPLACED OR ALLOWED TO DRY PRIOR TO ENCLOSURE IN WALL OR FLOOR CAVITIES. WET-APPLIED INSULATION PRODUCTS SHALL FOLLOW THE MANUFACTURERS' DRYING RECOMMENDATIONS PRIOR TO ENCLOSURE.

25. EACH BATHROOM SHALL BE MECHANICALLY VENTILATED AND SHALL COMPLY WITH THE FOLLOWING:

- A. FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE THE BUILDING.
- B. UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDITY CONTROL.
- 1. HUMIDITY CONTROLS SHALL BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY RANGE OF ≤ 50 PERCENT TO A MAXIMUM OF 80 PERCENT. A HUMIDITY CONTROL MAY UTILIZE MANUAL OR AUTOMATIC MEANS OF ADJUSTMENT.
- 2. A HUMIDITY CONTROL MAY BE A SEPARATE COMPONENT TO THE EXHAUST FAN AND IS NOT REQUIRED TO BE INTEGRAL.

26. HEATING AND AIR-CONDITIONING SYSTEMS SHALL BE SIZED, DESIGNED AND HAVE THEIR EQUIPMENT SELECTED USING THE FOLLOWING METHODS:

- A. THE HEAT LOSS AND HEAT GAIN IS ESTABLISHED ACCORDING TO ANSI/ACCA 2 MANUAL J-2016 (RESIDENTIAL LOAD CALCULATION), ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
- B. DUCT SYSTEMS ARE SIZED ACCORDING TO ANSI/ACCA 1 MANUAL D-2016 (RESIDENTIAL DUCT SYSTEMS), ASHRAE HANDBOOKS OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.
- C. SELECT HEATING AND COOLING EQUIPMENT ACCORDING TO ANSI/ACCA 3 MANUAL S-2014 (RESIDENTIAL EQUIPMENT SELECTION) OR OTHER EQUIVALENT DESIGN SOFTWARE OR METHODS.

27. HVAC SYSTEM INSTALLERS SHALL BE TRAINED AND CERTIFIED IN THE PROPER INSTALLATION OF HVAC SYSTEMS INCLUDING DUCTS AND EQUIPMENT BY A NATIONALLY OR REGIONALLY RECOGNIZED TRAINING OR CERTIFICATION PROGRAM. UNCERTIFIED PERSONS MAY PERFORM HVAC INSTALLATIONS WHEN UNDER THE DIRECT SUPERVISION AND RESPONSIBILITY OF A PERSON TRAINED AND CERTIFIED TO INSTALL HVAC SYSTEMS OR CONTRACTOR LICENSED TO INSTALL HVAC SYSTEMS.

28. IF REQUIRED BY THE COUNTY OF SANTA CLARA, THE OWNER OR THE RESPONSIBLE ENTITY ACTING AS THE OWNER'S AGENT SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS TO PROVIDE INSPECTION OR OTHER DUTIES NECESSARY TO SUBSTANTIATE COMPLIANCE WITH THIS CODE. SPECIAL INSPECTORS SHALL DEMONSTRATE COMPETENCE TO THE SATISFACTION OF THE COUNTY OF SANTA CLARA FOR THE PARTICULAR TYPE OF INSPECTION OR TASK TO BE PERFORMED. SPECIAL INSPECTORS SHALL BE INDEPENDENT ENTITIES WITH NO FINANCIAL INTEREST IN THE MATERIALS OR THE PROJECT THEY ARE INSPECTING FOR COMPLIANCE WITH THIS CODE.

29. DOCUMENTATION USED TO SHOW COMPLIANCE WITH THIS CODE SHALL INCLUDE BUT IS NOT LIMITED TO, CONSTRUCTION DOCUMENTS, PLANS, SPECIFICATIONS, BUILDER OR INSTALLER CERTIFICATION, INSPECTION REPORTS, OR OTHER METHODS ACCEPTABLE TO THE COUNTY OF SANTA CLARA WHICH DEMONSTRATE SUBSTANTIAL CONFORMANCE. WHEN SPECIFIC DOCUMENTATION OR SPECIAL INSPECTION IS NECESSARY TO VERIFY COMPLIANCE, THAT METHOD OF COMPLIANCE WILL BE SPECIFIED IN THE APPROPRIATE SECTION OR IDENTIFIED IN THE APPLICATION CHECKLIST.

CALGreen One or Two Family Residential Project Mandatory Requirements County of Santa Clara





2. SEE LANDSCAPE PLANS FOR ADDITIONAL TREE/LANDSCAPE INFORMATION.



SITE PLAN NOTES:

1. See Civil Engineer's "Grading & Drainage Plan(s)" as applicable and/or required for topography, site work & underground construction (typ.) All grading shall be performed in accordance with all local codes & requirements. Civil Engineer's plans shall take precedence over any architectural site plan(s) and/or landscape plan(s).

REVISIONS:

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Britt Rowe shall retain all rights

and ownership to all drawings

and specifications. The contents

of the drawings may not be used

in whole, or in part, without

expressed written consent given

by Britt Rowe. All construction

shall comply with all local &

national building codes. All

contractors shall verify all

conditions to assure

conformance to these codes.

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8/12/23

2. When required and as applicable, a licensed Civil Engineer or Licensed Land Surveyor shall provide written certification of setback compliance from property lines and all relative pad elevations for all new construction on the site.

3. Unless noted otherwise on Civil Engineering Plans (Grading and Drainage), the ground immediately adjacent to the foundation shall be sloped away from the building at a slope of 5% for a minimum distance of 10'-0" measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10'-0" of horizontal distance, a 5% slope shall be provided to an approved alternative method of diverting water away from the foundation. Drainage swale used for this purpose shall be sloped 2% where located within 10'-0" of the building foundation. Impervious surfaces within 10'-0" of the building foundation shall be sloped a minimum of 2% away from the building. CBC1804.4. See exception for allowable finish grade slope reduction to 2% away from

4. When existing sewer laterals are approved for reuse, existing lines shall be televised & approved by the local sanitation district prior to final inspection. Provide a new clean out located @ the property line with an approved back flow prevention device approved by the sanitation department (as applicable).

5. In new construction, all utilities shall be installed underground (uno). See the utility provider's plans & specifications for layout, details & service(s) to be provided. verify w/jurisdiction for special municipal requirements.

6. All trees marked on the "Site Plan" not scheduled for removal shall be protected by the appropriate tree protection measures identified by the consulting Arborist of record and/or local planning jurisdiction as applicable & required as a condition of approval. No equipment, materials or work shall commence until all tree protection fencing is installed. Tree protection fencing shall remain in place until the project is ready for final inspection. Any work required within the fenced protected area shall be performed with hand tools.

7. <u>As applicable</u>, see consulting Landscape Architect's drawings for flatwork, paving, recreational fixtures, proposed planting & irrigation installations.

8. **<u>R319.1 Address identification</u>**. Buildings shall he provided with approved address identification. The address identification shall be legible and placed in a position that is visible from the street or road fronting the property. Address identification characters shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not be spelled out. Each character shall be not less than 4 inches (102 mm) in height with a stroke width of not less than 0.5 inch (12.7 mm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate emergency response. Where access is by means of a private road & the building address cannot be viewed from the public way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be

45'00" W

	SITE PLAN	8/12/23	Noted	M.A.R.
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Jurisdiction Stamps and/or Red Line Notes				



LIVING AREA: 3,168 SF GARAGE AREA: 437 SF COVERED PORCH: 141 SF (@ ENTRY)

0 2' 4' 37° 08' 12" N 121° 58' 00" W

0°/360

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NOTE: SEE TITLE 24 CALCULATIONS FOR MIN. REQUIRED kWdc SOLAR SYSTEM SIZING.



ROOF SLOPE: 4/12 TYP. ROOFING MATERIAL: CLASS A, ASPHALT SHINGLES OVERHANG: 18" TYP. "HIGH PERFORMANCE ATTIC"



NTII	ATION C	ALCS (CRC R806)				
			ACCESSORY BI	JILDING		
BLE ROO	F TO BE	3,746 SF	867 SF			
16"OC						
24"OC		N/A	N/A			
2" DIA. H	HOLES					
2" DIA. H	HOLES	NONE (HP ATTIC)	NONE (HP ATTIC)			
VIDED @	EAVE	N/A	N/A			
LATION F NS	PROVIDED BY					
EQUIRED	1					
ROVIDED						
TER	IAL/FRA	MING NOTES				
	4/12 (TYP.)					
L	CLASS A, 40	YEAR ASPHALT ROOFING SHINGLES. (OLOR SELECTED BY OWNER.			
	18" TYP. (VERIFY W/ARCHITECTURAL PLANS)					
	1/2" CDX PLY PROVIDE RA	(WOOD, NAILED W/10D @ 6"OC EDGE & ADIANT BARRIER PLYWOOD AS REQUIF	10"OC FIELD. USE 19/32" OSB S ED PER T24 CALCULATIONS	HEATHING AS OPTION.		
	30# ASPHALT INSTALL PER	ROOFING PAPER OR EQUAL, OR PER MANUFACTURER'S SPECIFICATIONS.	ROOFING MATERIAL MANUFACT	URER'S SPECIFICATIONS.		

PROVIDE 26GA G.I. METAL FLASHING @ ALL VALLEYS, RIDGES, ROOF TO WALL INTERSECTIONS & ROOF PENETRATIONS PER CBC SECTION 1503.2.

1. CALCULATIONS ABOVE ARE BASED ON 1/150 OF THE AREA TO BE VENTILATED. CRC R806.2.

CALCOLATIONS ABOVE ARE DASED ON 1/150 OF THE AREA TO BE VENTILATED. ONO NOT LESS THAN 1/150 OF THE AREA TO BE VENTILATED. CRC R806.2.
 ENCLOSED ATTICS & ENCLOSED RAFTER SPACES SHALL HAVE A CROSS VENTILATION AREA OF NOT LESS THAN 1/150 OF THE AREA TO BE VENTILATED. CRC R806.2.
 VENTILATED. CRC R806.2.
 VENTILATION REQUIREMENTS MAY BE REDUCED TO 1/300, PER CRC R806.2, EX. #1 AND 2.
 PROVIDE (3) 2" DIA. HOLES @ EACH BLOCK WHERE ROOF RAFTERS ARE SPACED @ 16"OC AND (4) 2" DIA. HOLES WHERE SPACED @ 24" OC

 SEE ALTERNATIVE EAVE DETAILS FOR SPECIAL EAVE CONSTRUCTION (IE: ENCLOSED SOFFITS, "V" NOTCHING, ETC...) AS APPLICABLE.
 EACE 2" DIA. HOLE PROVIDES 3.14 SQUARE INCH OF VENTING. (3.14 SQUARE INCHES X # HOLES PER BLOCK X # OF BLOCKS) CONVERT 7. WHERE EAVE OR CORNICE VENTS ARE PROVIDED, ROOF/CEILING INSULATION SHALL NOT BLOCK THE FREE FLOW OF AIR. MAINTAIN 1" BETWEEN INSULATION & SHEATHING. 8. OPENINGS FOR VENTILATION SHALL BE COVERED W/CORROSION RESISTANT METAL MESH SCREENS W/OPENINGS OF 1/4" IN DIMENSION. 9. PROVIDE ATTIC ACCESS PER CRC R807.1. MINIMUM ACCESS OPENING SHALL BE 22" X 30".

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ACCESSORY ROOF PLAN

ROOF SLOPE: 4/12 TYP. ROOFING MATERIAL: CLASS A, ASPHALT SHINGLES OVERHANG: 12" TYP.





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	ROOF PLAN - ACC.	7/29/23	Noted	MAR <i>W</i> .	
	Zhu Zhu Besidence Summi Road Los Gatos, CA 95033 APN: 558-04-014				
	ERITT - ROWE ERITT - ROWE OS N. Santa Cruz Ave. Los Gatos, CA 95030 408.354.6224 (office) 408.354.6514 (fax) www.britt-rowe.com Britt Rowe shall retain all rights and ownership to all drawings and specifications. The contents of the drawings may not be used in whole, or in part, without expressed written consent given by Britt Rowe. All construction shall comply with all local & national building codes. All conditions to assure conformance to these codes.				
	7/29/	23			







FL3 Flashing: Valley

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FLASHING DETAILS	7/29/23	Noted	MAR W.				
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LEFT SIDE ELEVATION (NE)



FRONT ELEVATION (NW)

EXTERIOR ELEVATION FINISH SCHEDULE (WUI FIRE ZONE)

ROOFING

CLASS A, ASPHALT ROOFING SHINGLES TO MATCH (E) O/MINIMUM 30# BUILDING PAPER OR EQUAL, O/CDX OR OSB ROOF SHEATHING. ROOF MATERIAL COLORS AND/OR MANUFACTURERS SHALL BE SELECTED & APPROVED BY THE PROPERTY OWNER. WHERE ROOF SLOPES ARE LESS THAN 4/12, USE (2) LAYERS OF ROOFING UNDERLAYMENT. CRC R905.2.2 & R905.7.2

EXTERIOR SIDING

EXTERIOR WALLS: (3-COAT) 7/8" PLASTER SIDING, O/(2) LAYERS OF GRADE "D" BUILDING PAPER OR EQUAL, O/CDX/OSB WALL SHEATHING, NAILED @ 6:12 MAXIMUM. SEE ENGINEER'S "SHEAR WALL SCHEDULE" FOR SPECIFIED PLYWOOD THICKNESS & MINIMUM NAILING REQUIREMENTS. ALL GABLE RAKE WALLS: (3-COAT) 7/8" PLASTER SIDING, O/(2) LAYERS OF GRADE "D" BUILDING PAPER OR EQUAL, O/CDX/OSB WALL SHEATHING, NAILED @ 6:12 MAXIMUM. SEE ENGINEER'S "SHEAR WALL SCHEDULE" FOR SPECIFIED PLYWOOD THICKNESS & MINIMUM NAILING REQUIREMENTS. NON SHEAR WALLS: PROVIDE A MINIMUM OF 3/8" CDX PLYWOOD WALL SHEATHING, "FULL WRAP". NAIL W/8D @ 6:12 MAXIMUM. FOR REMODEL PROJECTS, ONLY NEW WALLS SHALL RECEIVE FULL WRAP SHEATHING (UNO).

WALL BASE: A MINIMUM 0.019-INCH (0.5 MM) (NO. 26 GALVANIZED SHEET GAUGE), CORROSION-RESISTANT WEEP SCREED OR PLASTIC WEEP SCREED, WITH A MINIMUM VERTICAL ATTACHMENT FLANGE OF 3-1/2 INCHES (89 MM) SHALL BE PROVIDED AT OR BELOW THE FOUNDATION PLATE LINE ON EXTERIOR STUD WALLS IN ACCORDANCE WITH ASTM C 926. THE WEEP SCREED SHALL BE PLACED A MINIMUM OF 4 INCHES (102 MM) ABOVE THE EARTH OR 2 INCHES (51 MM) ABOVE PAVED AREAS & SHALL BE OF A TYPE THAT WILL ALLOW TRAPPED WATER TO DRAIN TO THE EXTERIOR OF THE BUILDING. THE WEATHER-RESISTANT BARRIER SHALL LAP THE ATTACHMENT FLANGE. THE EXTERIOR LATH SHALL COVER & TERMINATE ON THE ATTACHMENT FLANGE OF THE WEEP SCREED.

DOORS & WINDOWS

ALL EXTERIOR DOORS (WITH GLASS) & WINDOWS SHALL BE CONSTRUCTED WITH DUAL PANED, LOW "E" GLAZING. TEMPERED GLAZING SHALL BE REQUIRED PER CRC SECTIONS R308 & R311. DOOR & WINDOW MANUFACTURER SHALL BE SELECTED & APPROVED BY THE PROPERTY OWNER. SEE SHEET DW.1 FOR ADDITIONAL DOOR & WINDOW NOTES & SCHEDULES.

ACCENTS

SEE EXTERIOR ELEVATIONS AND/OR ROOF PLAN FOR ADDITIONAL WALL & ROOF DETAILS & SPECIFICATIONS.

WILDFIRE URBAN INTERFACE ZONE REQUIREMENTS (AS APPLICABLE):

- RUNNING THE FULL LENGTH OF THE VALLEY. CRC R327.5.3.

- 4. EAVE & CORNICE VENTS ARE NOT PERMITTED. CRC 327.6.3.



1. ROOF VALLEYS SHALL HAVE NOT LESS THAN 26GA SHEET METAL INSTALLED O/A MINIMUM 36" WIDE UNDERLAYMENT OF NO. 72 CAP SHEET

2. PROVIDE STAINLESS STEEL OR POWDER COATED GUTTER GUARDS TO PREVENT THE ACCUMULATION OF DEBRIS. CRC 327.5.4. 3. FOR ROOF & ATTIC VENTS (AS APPLICABLE), OPENINGS SHALL BE APPROVED BY THE STATE OF CA FIRE MARSHAL FOR USE & LISTED FOR WUI.

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REAR ELEVATION (SE)

G.I. FOUNDATION WEEP SCREED @ BASE OF STRUCTURE TYP.



RIGHT SIDE ELEVATION (SW)

G.I. FOUNDATION WEEP SCREED @ BASE OF STRUCTURE TYP.



EXTERIOR ELEVATION FINISH SCHEDULE (WUI FIRE ZONE)

ROOFING

CLASS A, ASPHALT ROOFING SHINGLES TO MATCH (E) O/MINIMUM 30# BUILDING PAPER OR EQUAL, O/CDX OR OSB ROOF SHEATHING. ROOF MATERIAL COLORS AND/OR MANUFACTURERS SHALL BE SELECTED & APPROVED BY THE PROPERTY OWNER. WHERE ROOF SLOPES ARE LESS THAN 4/12, USE (2) LAYERS OF ROOFING UNDERLAYMENT. CRC R905.2.2 & R905.7.2

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WALL BASE: A MINIMUM 0.019-INCH (0.5 MM) (NO. 26 GALVANIZED SHEET GAUGE), CORROSION-RESISTANT WEEP SCREED OR PLASTIC WEEP SCREED, WITH A MINIMUM VERTICAL ATTACHMENT FLANGE OF 3-1/2 INCHES (89 MM) SHALL BE PROVIDED AT OR BELOW THE FOUNDATION PLATE LINE ON EXTERIOR STUD WALLS IN ACCORDANCE WITH ASTM C 926. THE WEEP SCREED SHALL BE PLACED A MINIMUM OF 4 INCHES (102 MM) ABOVE THE EARTH OR 2 INCHES (51 MM) ABOVE PAVED AREAS & SHALL BE OF A TYPE THAT WILL ALLOW TRAPPED WATER TO DRAIN TO THE EXTERIOR OF THE BUILDING. THE WEATHER-RESISTANT BARRIER SHALL LAP THE ATTACHMENT FLANGE. THE EXTERIOR LATH SHALL COVER & TERMINATE ON THE ATTACHMENT FLANGE OF THE WEEP SCREED.

DOORS & WINDOWS

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ACCENTS

SEE EXTERIOR ELEVATIONS AND/OR ROOF PLAN FOR ADDITIONAL WALL & ROOF DETAILS & SPECIFICATIONS.

WILDFIRE URBAN INTERFACE ZONE REQUIREMENTS (AS APPLICABLE):

- RUNNING THE FULL LENGTH OF THE VALLEY. CRC R327.5.3.
- 4. EAVE & CORNICE VENTS ARE NOT PERMITTED. CRC 327.6.3.

1/4" = 1'-0'



1. ROOF VALLEYS SHALL HAVE NOT LESS THAN 26GA SHEET METAL INSTALLED O/A MINIMUM 36" WIDE UNDERLAYMENT OF NO. 72 CAP SHEET

2. PROVIDE STAINLESS STEEL OR POWDER COATED GUTTER GUARDS TO PREVENT THE ACCUMULATION OF DEBRIS. CRC 327.5.4. 3. FOR ROOF & ATTIC VENTS (AS APPLICABLE), OPENINGS SHALL BE APPROVED BY THE STATE OF CA FIRE MARSHAL FOR USE & LISTED FOR WUI.

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Zhu	Residence	Summit Road os Gatos. CA 95033	APN: 558-04-014		
ERITT · ROWE 108 N. Santa Cruz Ave. Los Gatos, CA 95030 408.354.6224 (office) 408.354.6514 (fax) www.britt-rowe.com Britt Rowe shall retain all rights and ownership to all drawings and specifications. The contents of the drawings may not be used in whole, or in part, without expressed written consent given by Britt Rowe. All construction shall comply with all local & national building codes. All contractors shall verify all conditions to assure conformance to these codes.					
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BUILDING SECTION X:

INTERIOR WALL FINISH	ERIOR WALL FINISHES
CEILING	ING WALL FIRE SEPARATION WALL
JYP. BD. OTH TEXTURE	SYP. BD.5/8" GYP. BD. TEXTURE TBD5/8" "TYPE X" GYP. BD.OTH TEXTUREBY OWNER5/8" "TYPE X" GYP. BD.
ULATION	ULATION
AT CEILING	CEILING VAULTED CEILING WALL
\	N/A R15 BATT (UNO) 2X4 WALLS

40'-0" OC MAX.	<u>HP ATTIC</u>	
		BATH: 2 M. BATH Image: State of the state of t



BUILDING SECTION NOTES:

- ROOF ASSEMBLY:
- APPLICABLE.
- CALCULATIONS PROVIDED.
- **CEILING ASSEMBLY:**
- WALL ASSEMBLY:

- NOTCHING, ETC...)
- FRAMING PLAN(S). FLOOR ASSEMBLY:

1. SEE ROOF PLAN AND/OR EXTERIOR ELEVATIONS FOR SPECIFICATION OF ROOF SLOPE, ROOFING MATERIALS & UNDERLAYMENT. PROVIDE "RADIANT BARRIER" SHEATHING AS SPECIFIED IN THE TITLE 24 ENERGY REPORT AS

2. SEE ROOF FRAMING PLAN FOR SIZES & SPACING OF FRAMING MEMBERS: 3. ALL OPEN ATTIC SPACES SHALL BE VENTED PER CRC SECTION R806.2. SEE ROOF NOTES & VENTILATION

1. SEE CEILING FRAMING PLAN(S) & HEADER/CEILING JOIST FRAMING SCHEDULE (SHEET SN.2) FOR SIZES & SPACING OF FRAMING MEMBERS NOT SPECIFICALLY DESIGNATED OR IDENTIFIED ON THE FRAMING PLAN(S).

1. USE 2X4 OR 2X6 DF#2 STUDS @ 16"OC (TYP.) UNO. AS NOTED ON FLOOR/FRAMING PLAN(S). 2. USE 2X6 DF#2 STUDS @ ALL "BALLOON FRAMED" WALLS & WALLS OVER 10'-0" IN HEIGHT. PROVIDE 2X DF#2 SOLID FIRE BLOCKING @ 10'-0"OC HORIZONTAL & VERTICAL.
 SEE SHEET SD.1 (DETAILS) FOR CONVENTIONAL FRAMING APPLICATIONS (WALLS, HEADERS, ALLOWABLE HOLES/

5. SEE FRAMING PLAN(S) FOR ALL DESIGNATED SHEAR WALLS & CONSTRUCT ACCORDING TO STRUCTURAL DESIGN &

1. SEE FOUNDATION & FLOOR FRAMING PLAN(S) FOR SIZES & SPACING OF FRAMING MEMBERS (JOISTS, FLOOR BEAMS, SUPPORTING POSTS, ETC...)

1. SEE TITLE 24 ENERGY REPORT (AS APPLICABLE) FOR MINIMUM INSULATION "R" VALUES.

2. EQUIVALENT T24 CALCULATIONS SPECIFIED "R" VALUE RIGID AND/OR CLOSED CELL SPRAY FOAM MAY BE SUBSTITUTED FOR MINIMUM BATT INSULATION NOTED ABOVE (UNO).

3. WHERE ADDITIONAL STC (SOUND TRANSMISSION CONTROL) OR 1-HOUR FIRE RATING IS DESIRED, USE 5/8" QUIET ROCK 530™ GYP. BOARD @ BOTH SIDES OF WALLS AND/OR (2) LAYERS @ CEILINGS. (UL: U309) ASTM E90-09 4. USE JAMES HARDIE "HARDIE-BACKER" WATERPROOF CEMENT BOARD W/HYDRO-DEFENSE TECHNOLOGY @ ALL WALLS & FLOORS @ WET LOCATIONS. (ANSI A118.10 & ASTM E136 NON-COMBUSTIBLE)

5. CLOSED CELL SPRAY FOAM INSULATION = HUNTSMAN BUILDING SOLUTIONS, INC. (ESR-1826)

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FRONT ELEVATION (N)





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REAR ELEVATION (S)



SECTION X:





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DOOR & WINDOW GENERAL NOTES:

Per California Residential Code (CRC) Sections R308, R310, R311(excepts), R312(excerpts) & R609. See "General Floor Plan Notes" @ Sheets GN.1 through GN.4 for openings located in walls separating dwellings and garages and other information/requirements not contained in these notes.

SECTION R308: GLAZING

R308.1 Identification. Except as indicated in Section R308.1.1 each pane of glazing installed in hazardous locations as defined in Section R308.4 shall be provided with a manufacturer's designation specifying who applied the designation, designating the type of glass and the safety glazing standard with which it complies, which is visible in the final installation. The designation shall be acid etched, sand- blasted, ceramic-fired, laser etched, embossed, or be of a type which once applied cannot be removed without being destroyed. A label shall be permitted in lieu of the manufacturer's designation. Exceptions:

1. For other than tempered glass, manufacturer's designations are not required provided the building official approves the use of a certificate, affidavit or other evidence confirming compliance with this code.

2. Tempered spandrel glass is permitted to be identified by the manufacturer with a removable paper designation R308.1.1 Identification of multiple assemblies. Multi-pane assemblies having individual panes not exceeding 1 square foot

(0.09 m2) in exposed area shall have at least one pane in the assembly identified in accordance with Section R308.1. All other panes in the assembly shall be labeled "CPSC 16 CFR 1201" or "ANSI Z97.1" as appropriate. R308.2 Louvered windows or jalousies. Regular, float, wired or patterned glass in jalousies and louvered windows shall be no thinner than nominal 3/16 inch (5 mm) and no longer than 48 inches (1219 mm). Exposed glass edges shall be smooth.

R308.2.1 Wired glass prohibited. Wired glass with wire exposed on longitudinal edges shall not be used in jalousies or louvered windows **R308.3 Human impact loads**. Individual glazed areas, including glass mirrors in hazardous locations such as those indicated as defined in Section R308.4, shall pass the test requirements of Section R308.3.1.

Exceptions:

1. Louvered windows and jalousies shall comply with Section R308.2. 2. Mirrors and other glass panels mounted or hung on a surface that provides a continuous backing support.

- 3. Glass unit masonry complying with Section R610.
- **R308.3.1 Impact test.** Where required by other sections of the code, glazing shall be tested in accordance with CPSC 16 CFR 1201. Glazing shall comply with the test criteria for Category II unless otherwise indicated in Table R308.3.1(I). Exception: Glazing not in doors or enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers shall be permitted to be tested in accordance with ANSI Z97.1. Glazing shall comply with the test criteria for Class A unless indicated in Table R308.3.1 (2).

R308.4 Hazardous locations. The locations specified in Sections R308.4.1 through R308.4.7 shall be considered specific

hazardous locations for the purposes of glazing. R308.4.1 Glazing in doors. Glazing in all fixed and operable panels of swinging, sliding and bifold doors shall be considered a hazardous location

Exceptions:

1. Glazed openings of a size through which a 3- inch diameter (76 mm) sphere is unable to pass.

Decorative glazing.

R308.4.2 Glazing adjacent doors. Glazing in an individual fixed or operable panel adjacent to a door shall be considered to be a hazardous location where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above the floor or walking surface and it meets either of the following conditions:

- 1. Where the glazing is within 24 inches (610 mm) of either side of the door in the plane of the door in a closed position. 2. Where the glazing is on a wall perpendicular to the plane of the door in a closed position and within 24 inches (610 mm) of the hinge side of an in-swinging door.
- Exceptions

1. Decorative glazing

2. When there is an intervening wall or other permanent barrier between the door and the glazing.

- 3. Where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in this application shall comply with section R308.4.3.
- 4. Glazing that is adjacent to the fixed panel of patio doors.

R308.4.3 Glazing in windows. Glazing in an individual fixed or operable panel that meets all of the following conditions shall

- be considered a hazardous location:
- 1. The exposed area of an individual pane is larger than 9 square feet (0.836 m2);
- 2. The bottom edge of the glazing is less than 18 inches (457 mm) above the floor;
- 3. The top edge of the glazing is more than 36 inches (914 mm) above the floor; and 4. One or more walking surfaces are within 36 inches (914 mm), measured horizontally and in a straight line, of the glazing. Exceptions:
- 1. Decorative glazing.
- 2. When a horizontal rail is installed on the accessible side(s) of the glazing 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of with- standing a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and be a minimum of 1-1/2 inches (38 mm) in cross sectional height.
- 3. Outboard panes in insulating glass units and other multiple glazed panels when the bottom edge of the glass is 25 feet (7620 mm) or more above grade, a roof, walking surfaces or other horizontal [within 45 degrees (0.79 rad) of horizontal] surface adjacent to the glass exterior.
- R308.4.4 Glazing in guards and railings. Glazing in guards and railings, including structural baluster panels and

nonstructural in-fill panels, regardless of area or height above a walking surface shall be considered a hazardous location. R308.4.5 Glazing and wet surfaces. Glazing in walls, enclosures or fences containing or facing hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface shall be considered a hazardous location. This shall apply to single glazing and all panes in multiple glazing.

Exception: Glazing that is more than 60 inches (1524 mm), measured horizontally and in a straight line, from the water's edge of a bathtub, hot tub, spa, whirlpool or swimming pool or from the edge of a shower, sauna or steam room. R308.4.6 Glazing adjacent stairs and ramps. Glazing where the bottom exposed edge of the glazing is less than 36 inches (914 mm) above the plane of the adjacent walk- ing surface of stairways, landings between flights of stairs and ramps shall be considered a hazardous location.

R308.4.7 Glazing Adjacent to the bottom stair landing. Glazing adjacent to the landing at the bottom of a stairway where the glazing is less than 36 inches (914 mm) above the landing and within a 60-inch (1524 mm) horizontal arc less than 180 degrees from the bottom tread nosing shall be considered to be a hazardous location. Exception: The glazing is protected by a guard complying with Section R312 and the plane of the glass is more than 18 inches

(457 mm) from the guard.

R308.5 Site built windows. Site built windows shall comply with Section 2404 of the California Building Code. R308.6 Skylights and sloped glazing. Skylights and sloped glazing shall comply with the following sections.

R308.6.1 Definitions. The following terms are defined in Chapter 2:

<u>SKYLIGHT, UNIT</u>

SKYLIGHTS AND SLOPED GLAZING.

TUBULAR DAYLIGHTING DEVICE (TDD).

R308.6.2 Materials. The following types of glazing shall be permitted to be used:

- 1. Laminated glass with a minimum 0.015-inch (0.38 mm) polyvinyl butyral interlayer for glass panes 16 square feet (1.5 m2) or less in area located such that the highest point of the glass is not more than 12 feet (3658 mm) above a walking surface or other accessible area; for higher or larger sizes, the minimum interlayer thickness shall be 0.030 inch (0.76 mm). 2. Fully tempered glass.
- 3. Heat-strengthened glass.
- 4. Wired glass.

5. Approved rigid plastics.

R308.6.3 Screens, general. For fully tempered or heat-strengthened glass, a retaining screen meeting the requirements of Section R308.6.7 shall be installed below the glass, except for fully tempered glass that meets either condition listed in Section R308.6.5.

R308.6.4 Screens with multiple glazing. When the inboard pane is fully tempered, heat-strengthened or wired glass, a retaining screen meeting the requirements of Section R308.6.7 shall be installed below the glass, except for either condition listed in Section R30S.6.5. All other panes in the multiple glazing may be of any type listed in Section R308.6.2. R308.6.5 Screens not required. Screens shall not be required when fully tempered glass is used as single glazing or the inboard pane in multiple glazing and either of the following conditions are met:

- 1. Glass area 16 square feet (1.49 m2) or less. Highest point of glass not more than 12 feet (3658 mm) above a walking surface or other accessible area, nominal glass thickness not more than 3/16 inch (4.8 mm), and (for
- multiple glazing only) the other pane or panes fully tempered, laminated or wired glass.
- 2. Glass area greater than 16 square feet (1.49 m2). Glass sloped 30 degrees (0.52 rad) or less from vertical, and highest point of glass not more than 10 feet (3048 mm) above a walking surface or other accessible area. **R308.6.6 Glass in greenhouses.** Any glazing material is permitted to be installed without screening in the sloped areas of greenhouses, provided the greenhouse height at the ridge does not exceed 20 feet (6096 mm) above grade. **R308.6.7 Screen characteristics**. The screen and its fastenings shall be capable of supporting twice the weight of the glazing, be firmly and substantially fastened to the framing members, and have a mesh opening of no more than 1 inch by

1inch (25 mm by 25 mm). **R308.6.8 Curbs for skylights**. All unit skylights installed in a roof with a pitch flatter than three units vertical in 12 units horizontal (25-percent slope) shall be mounted on a curb extending at least 4 inches (102 mm) above the plane of the roof unless otherwise specified in the manufacturer's installation instructions.

R308.6.9 Testing and labeling. Unit skylights and tubular daylighting devices shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance grade rating and approved inspection agency to indicate compliance with the requirements of AAMA/WDMA/CSA 101/I.S.21A440.

SECTION R310: EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 Emergency escape and rescue opening required. Basements, habitable attics and every sleeping room shall have not less than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall open directly into a public way, or to a yard or court that opens to a public way. Exception: Storm shelters and basements used only to house mechanical equipment not exceeding a total floor area of 200

square feet (18.58 m2). R310.1.1 Operational constraints and opening control devices. Emergency escape and rescue openings shall be

maintained free of any obstructions other than those allowed by this section and shall be operational from the inside of the room without the use of keys, tools or special knowledge. Window opening control devices complying with ASTM F2090 shall be permitted for use on windows serving as a required emergency escape and rescue opening. R310.2 Emergency escape and rescue openings. Emergency escape and rescue openings shall have minimum dimensions as specified in this section.

R310.2.1 Minimum opening area. Emergency and escape rescue openings shall have a net clear opening of not less than 5.7 square feet (0.530 m2). The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. The net clear height opening shall be not less than 24 inches (610 mm) and the net clear width shall be not less than 20 inches (508 mm).

Exception: Grade floor or below grade openings shall have a net clear opening of not less than 5 square feet (0.465 m2). R310.2.2 Window sill height. Where a window is provided as the emergency escape and rescue opening, it shall have the bottom of the clear opening not greater than 44 inches (1118 mm) measured from the floor, where the sill height is below grade, it shall be provided with a window well in accordance with Section R310.2.3.

R310.2.3 Window wells. The horizontal area of the window well shall be not less than 9 square feet (0.9 m2), with a horizontal projection and width of not less than 36 inches (914 mm). The area of the window well shall allow the emergency escape and rescue opening to be fully opened. Exception: The ladder or steps required by Section R310.2.3.1 shall be permitted to encroach not more than 6 inches (152

mm) into the required dimensions of the window well. R310.2.3.1 Ladder and steps. Window wells with a vertical depth greater than 44 inches (1118 mm) shall be equipped with a permanently affixed ladder or steps usable with the window in the fully open position. Ladders or steps required by this section shall not be required to comply with Sections R311.7 and R311.8. Ladders or rungs shall have an inside width of not less than 12 inches (305 mm), shall project not less than 3 inches (76 mm) from the wall and shall be spaced not more than 18 inches (457 mm) on center vertically for the full height of the window well. R310.2.3.2 Drainage. Window wells shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section R405.1 or by an approved alternative method.

Exception: A drainage system for window wells is not required where the foundation is on well-drained soil or sand-gravel mixture soils in accordance with the United Soil Classification System, Group I Soils, as detailed in Table R405.1. R310.3 Emergency escape and rescue doors. Where a door is provided as the required emergency escape and rescue opening, it shall be permitted to be a side-hinged door or a slider. Where the opening is below the adjacent ground elevation, it shall be provided with a bulkhead enclosure.

- R310.3.1 Minimum door opening size. The minimum net clear height opening for any door that serves as an emergency and escape rescue opening shall be in accordance with Section R310.2.1. R310.3.2 Bulkhead and enclosures. Bulkhead enclosures shall provide direct access from the basement. The bulk- head
- enclosure shall provide the minimum net clear opening equal to the door in the fully open position. R310.3.2.1 Drainage. Bulkhead enclosures shall be designed for proper drainage by connecting to the building's foundation drainage system required by Section R405.1 or by an approved alternative method.
- Exception: A drainage system for bulkhead enclosures is not required where the foundation is on well-drained soil or sand-gravel mixture soils in accordance with the United Soil Classification System, Group I Soils, as detailed in Table

R310.4 Bars, grilles, covers and screens. Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosures, or window wells that serve such openings, provided that the minimum net clear opening size complies with Sections R310.1.1 to R310.2.3, and such devices shall be releasable or removable from the inside without the use of a key, tool, special knowledge or force greater than that required for the normal operation of the escape and rescue opening. The release mechanism shall be maintained operable at all times. Such bars, grills, grates or any similar devices shall be equipped with an approved exterior release device for use by the fire department only when required by the authority having jurisdiction.

Where security bars (burglar bars) are installed on emergency egress and rescue windows or doors, on or after July 1, 2000, such devices shall comply with California Building Standards Code, Part 12, Chapter 12-3 and other applicable provisions of this code. R310.5 Dwelling additions. Where dwelling additions occur that contain sleeping rooms, an emergency escape and rescue opening shall be provided in each new sleeping room. Where dwelling additions occur that have basements, an emergency escape and rescue opening shall be provided in the new basement. <u>Exceptions:</u>

- 1. An emergency escape and rescue opening is not required in a new basement that contains a sleeping room with an emergency escape and rescue opening.
- An emergency escape and rescue opening is not required in a new basement where there is an emergency escape and rescue opening in an existing basement that is accessible from the new basement. R310.6 Alterations or repairs of existing basements. An emergency escape and rescue opening is not required where existing

basements undergo alterations or repairs. Exception: New sleeping rooms created in an existing basement shall be provided with emergency escape and rescue openings in accordance with Section R310.1.

SECTION R311: MEANS OF EGRESS (Excerpts)

R311.1 Means of egress. Dwellings shall be provided with a means of egress in accordance with this section. The means of egress shall provide a continuous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to the required egress door without requiring travel through a garage. The required egress door shall open directly into a public way or to a yard or court that opens to a public way.

R311.2 Egress Door. Not less than one egress door shall be provided for each dwelling unit. The egress door shall be sidehinged, and shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and the stop, with the door open 90 degrees (1.57 rad). The clear height of the door opening shall be not less than 78 inches (1981 mm) in height measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these minimum dimensions. Egress doors shall be readily openable from inside the dwelling without the use of a key or special

knowledge or effort. R311.3 Floors and landings at exterior doors. There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units horizontal (2-percent).

Exception: Exterior balconies less than 60 square feet (5.6 m2) and only accessible from a door are permitted to have a landing less than 36 inches (914 mm) measured in the direction of travel. R311.3.1 Floor elevations at the required egress doors. Landings or finished floors at the required egress door shall not be more than 1-1/2 inches (38 mm) lower than the top of the threshold

Exception: The landing or floor on the exterior side shall not be more than 7-3/4 inches (196 mm) below the top of the threshold provided the door does not swing over the landing or floor. Where exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to grade by means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7. **R311.3.2 Floor elevations for other exterior doors.** Doors other than the required egress door shall be provided with landings or floors not more than 7-3/4 inches (196 mm) below the top of the threshold. Exception: A top landing is not required where a stairway of not more than two risers is located on the exterior side of the door, provided that the door does not swing over the stairway. R311.3.3 Storm and screen doors. Storm and screen doors shall be permitted to swing over all exterior stairs and landings.

SECTION R312: GUARDS AND WINDOW FALL PROTECTION (Excerpts)

R312.2 Window Fall Protection. Window fall protection shall be provided in accordance with Sections R312.2.1 and R312.2.2. **R312.2.1 Window Sills**. In dwelling units, where the top of the sill of an operable window opening is located less than 24 inches (610 mm) above the finished floor and greater than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, the operable window shall comply with one of the following: Exceptions:

- where the opening is in its largest opened position.

Operable windows that are provided with window fall prevention devices that comply with ASTM F2090. Operable windows that are provided with window opening control devices that comply with Section R312.2.2. R312.2.2 Window opening control devices. Window opening control devices shall comply with ASTM F 2090. The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the

minimum net clear opening area of the window unit to less than the area required by Section R310.1.1.

SECTION R609: EXTERIOR WINDOWS AND DOORS

R609.1 General. This section prescribes performance and construction requirements for exterior windows and doors installed in walls. Windows and doors shall be installed and flashed in accordance with the fenestration manufacturer's written instructions. Window and door openings shall be flashed in accordance with Section R703.4. Written installation instructions shall be provided

R609.2 Performance. Exterior windows and doors shall be designed to resist the design wind loads specified in Table R301.2(2) adjusted for height and exposure in accordance with Table R301.2(3) or determined in accordance with ASCE 7 using the allowable stress design load combinations of ASCE 7. Design wind loads for exterior glazing not part of a labeled assembly shall be permitted to be determined in accordance with Chapter 24 of the California Building Code. **R609.3 Testing and labeling.** Exterior windows and sliding doors shall be tested by an approved independent laboratory, and bear a label identifying manufacturer, performance characteristics and approved inspection agency to indicate compliance with AAMAAVDMA/CSA 101/I.S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 or AMD 100, or comply with Section R609.5.

- R609.3.1 Comparative analysis. Structural wind load design pressures for window and door units different than the size tested in accordance with Section R609.3 shall be permitted to be different than the design value of the tested unit where determined in accordance with one of the following comparative analysis methods:
- 1. Structural wind load design pressures for window and door units smaller than the size tested in accordance with Section R609.3 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. Components of the smaller unit shall be the same as those of the tested unit having the highest allow- able design pressure.
- 2. In accordance with WDMAI.S.11.

the acceptance criteria of ANSI/DASMA 108. R609.5 Other exterior window and door assemblies. Exterior windows and door assemblies not included within the scope of Section R609.3 or R609.4 shall be tested in accordance with ASTM E330. Glass in assemblies covered by this exception shall comply with Section R308.5.

- R609.6 Wind-borne debris protection. Protection of exterior windows and glass doors in buildings located in wind-borne debris regions shall be in accordance with Section R301.2.1.2.
- R609.6.1 Fenestration testing and labeling. Fenestration shall be tested by an approved independent laboratory, listed by an approved entity, and bear a label identifying manufacturer, performance characteristics, and approved inspection agency to indicate compliance with the requirements of the following specification(s): ASTM E1886 and ASTM E1996; or 2. AAMA506.
- the main force-resisting system. R609.7.1 Anchoring requirements. Window and glass door assemblies shall be anchored in accordance with the published manufacturer's recommendations to achieve the design pressure specified. Substitute anchoring systems used for substrates
- accepted engineering practice. **R609.7.2** Anchorage details. Products shall be anchored in accordance with the minimum requirements illustrated in Figures R609.7.2(1), R609.7.2(2), R609.7.2(3), R609.7.2(4), R609.7.2(5), R609.7.2(6), R609.7.2(7) and R609.7.2(8). R609.7.2.1 Masonry, concrete or other structural substrate. Where the wood shim or buck thickness is less than iVj load from the window or door frame into the rough opening substrate [see Figures R609.7.2(1) and R6097.2(2)]. Where the wood shim or buck thickness is inches (38 mm) or more, the buck is securely fastened to the masonry, concrete or other substantial substrate, and the buck extends beyond the interior face of the window or door frame. window and glass door assemblies shall be anchored through the jamb, or by jamb clip, or through the flange to the secured wood buck. Anchors shall be embedded into the secured wood buck to adequately transfer load from the window or door frame assembly [see Figures R609.7.2(3), R6097.2(4) and R609.7.2(5)]. **R609.7.2.2 Wood or other approved framing material**. Where the framing material is wood or other approved framing material, window and glass door assemblies shall be anchored through the frame, or by frame clip, or through the flange. Anchors shall be embedded into the frame construction to adequately transfer load [see Figures R609.7.2(6), R609.7.2(7)

and R609.7.2(8)1.

by the fenestration manufacturer for each window or door.

Exception: Decorative glazed openings.

Operable windows with openings that will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening

unit. Where such calculated design pressures are used, they shall be validated by an additional test of the window or door

R609.4 Garage doors. Garage doors shall be tested in accordance with either ASTM E330 or ANSI/DASMA 108, and shall meet

R609.7 Anchorage methods. The methods cited in this section apply only to anchorage of window and glass door assemblies to

not specified by the fenestration manufacturer shall provide equal or greater anchoring performance as demonstrated by

inches (38 mm), window and glass door assemblies shall be anchored through the jamb, or by jamb clip and anchors shall be embedded directly into the masonry, concrete or other substantial substrate material. Anchors shall adequately transfer

R609.8 Mullions. Mullions shall be tested by an approved testing laboratory in accordance with AAMA 450, or be engineered in accordance with accepted engineering practice. Mullions tested as stand-alone units or qualified by engineer- ing shall use performance criteria cited in Sections R609.8.1, R609.8.2 and R609.8.3. Mullions qualified by an actual test of an entire assembly shall comply with Sections R609.8.1 and R609.8.3.

R609.8.1 Load transfer. Mullions shall be designed to transfer the design pressure loads applied by the window and door assemblies to the rough opening substrate. R609.8.2 Deflection. Mullions shall be capable of resisting the design pressure loads applied by the window and door

assemblies to be supported without deflecting more than L/175, where L is the span of the mullion in inches. R609.8.3 Structural safety factor. Mullions shall be capable of resisting a load of 1.5 times the design pressure loads applied by the window and door assemblies to be supported without exceeding the appropriate material stress levels. If tested by an approved laboratory, the 1.5 times the design pressure load shall be sustained for 10 seconds, and the permanent deformation shall not exceed 0.4 percent of the mullion span after the 1.5 times design pressure load is removed.

MISCELLANEOUS DOOR & WINDOW NOTES:

2.

1. <u>Rough Openings</u>: All door and window sizes indicated on "Door & Window Schedules" are generic. Verify the actual required framed rough openings with the owner's selected Door/Window manufacturers' product installation instructions and specifications. Cross reference all window sizes with required shear wall widths on the Framing Plan(s) for verification of allowable window widths.

- Header Height: Unless otherwise noted, door and window header heights shall be as follows based on a typical 3" thick double top plate & a nominal 12"± header depth: Notify project structural engineer and designer of all discrepancies for alternative header installations, configurations, sizing etc... prior to ordering product.
- a. \pm 81" where the stud wall height is 8'-0" tall. Dimension may vary based on size & specified header designation. Verify with product rough opening specifications prior to framing. b. For all stud wall heights over 8'-0" tall, see elevations and/or verify selected product's rough opening(s) prior to framing.
- Product Selection: All door and window manufacturers and product finishes, cladding and/or integral itms and moldings shall be selected and approved by client/homeowner. Britt-Rowe shall not be responsible for modifications and/or changes to schedule specified "generic" rough openings relating to final manufacturer's product specifications. Verify all product rough openings with specified framing and shear wall requirements. Notify structural engineer of record for ALL discrepancies prior to ordering of units.
- Plan & Schedule Identification: Windows and doors equipped with tempered glazing per Section R308.4 are identified on the Floor Plan with a "T" symbol and are noted on the Window and Door Schedules to be equipped with tempered glazing. Windows required to meet emergency and rescue requirements of Section R310 are noted on the Floor Plan and Window Schedule with an "EG" symbol.
- **<u>Remodel Construction</u>**: Where existing windows are planned for same size replacement, verify all existing window sizes and rough openings prior to ordering new replacement units to ensure proper sizing & installation. It is suggested and recommended the selected manufacturer's sales representative visit the site to verify and confirm replacement window sizes and/or product specifications required.
- Energy Efficiency: All windows and doors containing glazing shall be provided with dual pane, low "E" glazing as required by the State of California Title 24 Energy Calculations complimentary to this plan set as applicable.

DOOR/WINDOW SCHEDULE

SYM.	SIZE	DESCRIPTION/NOTES	MATERIAL	GLAZING/CORE		
DOOR	5					
D01	6080	(2) Unit Custom Solid Swinging Entry Doors w/ weatherstripping & Dead Bolt	Wood	Solid		
D02	18080	(1) Unit Sectional Roll Up Garage Door w/Automatic Opener.	Wood/Composite	Solid		
D03	2880	(1) Unit French Patio Swinging Door w/weatherstripping & dead bolt	Wood/Glass	Solid		
D04	2880	(1) Unit Paneled Passage Door	Composite	Solid		
D05	2880	(1) Unit Paneled Passage Door	Composite	Hollow		
D06	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D07	3680	(2) Unit Tempered Glass Sliding Shower Doors w/Enclosure	Glass	Tempered Glass		
D08	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D09	3080	(1) Unit Paneled Barn Slider w/External Rail System	Wood	Solid		
D10	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D11	3680	(2) Unit Tempered Glass Sliding Shower Doors w/Enclosure	Glass	Tempered Glass		
D12	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D13	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D14	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D15	2880	(1) Unit Paneled Passage Door	Composite	Hollow		
D16	2880	(1) Unit Paneled Privacy Door	Composite	Solid		
D17	3680	(2) Unit Tempered Glass Sliding Shower Doors w/Enclosure	Glass	Tempered Glass		
D18	2880	(1) Unit Paneled 20 Min. Fire Rated Privacy Door	Composite	Solid: Fire Core		
D19	6080	(2) Unit Custom Solid Swinging Entry Doors w/ weatherstripping & Dead Bolt	Wood	Solid		
	JWS					
W01	6050	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered		
W02	6050	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered		
W03	6050	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered		
W04	3050	(1) Unit Casement	Vinyl	Dual Pane Glass: 1 Tempered		
W05	2636	(1) Unit Casement	Vinyl	Dual Pane Glass: Both Tempered		
W06	6050 EG	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered		
W07	6050 EG	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered		
W08	6050 EG	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered		
W09	3050 EG	(1) Unit Casement	Vinyl	Dual Pane Glass: 1 Tempered		
W10	3050 EG	(1) Unit Casement	Vinyl	Dual Pane Glass: 1 Tempered		
W11	2636	(1) Unit Casement	Vinyl	Dual Pane Glass: 1 Tempered		

DODR/WINDOW SCHEDULE

W12	2636	(1) Unit Casement	Vinyl	Dual Pane Glass: Both Tempered	
W13	5040	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: Both Tempered	
W14	2640	(1) Unit Casement	Vinyl	Dual Pane Glass: 1 Tempered	
W15	2640	(1) Unit Casement	Vinyl	Dual Pane Glass: 1 Tempered	
W16	6050	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered	
W17	6050	(2) Unit Casement or Horizontal Slider	Vinyl	Dual Pane Glass: 1 Tempered	

1. All door & window manufacturers shall be selected and/or approved by the owner.

2. All door & window styles & finishes shall be selected and/or approved by the owner 3. All door & window sizes (R.O.) noted are indicated in feet/inches. (ie: 4050 = 4'-0" x 5'-0"). Sizes may vary based on manufacturer selection.

4. See T24 Calculations (as applicable) for minimum required U-Factor & SHGC-Factor

5. All exterior doors shall be provided with privacy controls & weatherstripping (except garage uno). 6. Garage man door to interior living space shall be 20 min. fire rated & be provided w/self closing, self latching hardware.

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Zhu	Residence	Summit Road Los Gatos, CA 95033	APN: 558-04-014
DOOR/WINDOW NOTES	7/29/23	Noted	MAR <i>M.</i>
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Garage
Kitchen
Utility Room
Pantry
Bath: 2
Bath: 2 (Shower)
Master Bedroom
Master Bath
Master Bath
Master Bath (Shower)
Bedroom: 2
Bedroom: 3
Bedroom: 4
Bedroom: 4 (Closet)
Bath: 3
Bath: 3 (Shower)
Garage
Accessory Shop
Entry/Living
Entry/Living
Garage
Hallway
Bath: 3

LOCATION

Utility Room
Kitchen
Kitchen
Kitchen
Accessory Shop

Bedroom: 4

Bedroom: 3

Bedroom: 2

Master Bedroom

Master Bedroom

Master Bath

ELECTRICAL PLAN

1. SEE SHEET EN.1 FOR CA ELECTRICAL CODE REQUIREMENTS & EN.2 FOR CA ENERGY CODE REQUIREMENTS.

- 2. SEE SHEET EN.1 FOR ELECTRICAL PLAN LEGEND.
- 3. PROVIDE CF2R-LTG-01-E TO INSPECTOR PRIOR TO FINAL INSPECTION.
- 4. BUILDER SHALL PROVIDE PROPERTY OWNER A SCHEDULE OF LUMINARIES USED THROUGHOUT THE PROJECT.
- 5. SEE SHEET E.1 FOR KITCHEN LIGHTING TABLE.
- 6. ALL LIGHTING SHALL BE LED (HIGH EFFICACY) TYP.
- 7. ALL NEW EXTERIOR LIGHTING SHALL BE DOWNWARD DIRECTED & SHIELDED.

hen I	Lighting V	Vorkshe	et	
Efficacy	Watts	Qty.	A: High Efficacy Lighting	B: Low Efficacy Lighting
Yes	15W	9	135	
Yes	19W	3	57	
Yes	1.5W/ft.	12 feet	21	
			A: Total Watts = 213	B: Total Watts = 0

CFM Provided	Fan Manufacturer	Model #	Notes:
600 CFM	By Manuf.		Not included in calculations
80 CFM	Panasonic	FV 08VQ5	
80 CFM	Panasonic	FV 08VQ5	
80 CFM	Panasonic	FV 08VQ5	
150 CFM	Panasonic	FV 1115VK2	24 Hour Operation
390 CFM			150 CFM (24 Hr.)
3,168 SF/33.33 =			96 CFM
(4 + 1) x 7.5 =			38 CFM
			134 CFM

1. All mechanical ducting for exhaust fan assemblies shall be installed per 2022 CMC (code sections as applicable).

2. Per Title 24 ASHRAE ventilation requirements, dwellings shall be provided with 3 CFM per 100 SF of conditioned floor area plus 7.5 CFM per occupant, plus one.

4. Where combustion appliances or solid-burning appliances are located inside the pressure boundary, the maximum allowable net exhaust flow of the two largest exhaust fans shall not exceed 15 CFM per 100 SF of "Occupiable" space, when operating @ full capacity. If the designed total net flow exceeds the limit, the net exhaust flow must be reduced by reducing the exhaust flow or providing compensating outdoor airflow (Note: if make-up air fan is installed, it must be electrically

5. As applicable, provide minimum 100 CFM intermittent airflow for the kitchen range hood/microwave hood combination with a sound rating of three (3) sones or less or provide an exhaust fan in the kitchen capable of providing at least 5 air changes per hour. 6. A manual switch is required for whole-building ventilation & must be labeled "This switch controls the indoor air quality ventilation for the home. Leave it on unless

304.4 Appliances in Attics and Under-Floor Spaces. An attic or under-floor space in which an appliance is installed shall be accessible through an opening and passageway not less than the largest component of the appliance, and not less than 22 inches

304.4.1 Length of Passageway. Where the height of the passageway is less than 6 feet (1829 mm), the distance from the passageway access to the appliance shall not exceed 20 feet (6096 mm) measured along the centerline of the passageway.

304.4.2 Width of Passageway. The passageway shall be unobstructed and shall have solid flooring not less than 24 inches (610 mm) wide from the entrance opening to the appliance. [NFPA 54:9.5.1.2] **304.4.3 Work Platform**. A level working platform not less than 30 inches by 30 inches (762 mm by 762 mm) shall be provided in front of the service side of the

Exception: A working platform need not be provided where the furnace is capable of being serviced from the required access opening. The furnace service side shall not exceed 12 inches (305 mm) from the access opening. **304.4.4 Lighting and Convenience Outlet**. A permanent 120V receptacle outlet and a luminaire shall be installed near the appliance. The switch controlling the luminaire shall be located at the entrance to the passageway. [NFPA 54:9.5.3]

305.1 Installation in Garages. Appliances in garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that burners and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1] 305.1.1 Physical Damage. Appliances installed in garages, warehouses, or other areas subject to mechanical damage shall be guarded against such damage by being installed behind protective barriers or by being elevated or located out of the

305.1.2 Access from the Outside. Where appliances are installed within a garage and are enclosed in a separate enclosed space having access only from outside of the garage, such appliances shall be permitted to be installed at floor level, provided the required combustion air is taken from the exterior of the garage.[NFPA54:9.1.10.3]

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- 4. BUILDER SHALL PROVIDE PROPERTY OWNER A SCHEDULE OF LUMINAIRES USED THROUGHOUT THE PROJECT.
- 5. SEE SHEET E.1 FOR KITCHEN LIGHTING TABLE.
- 6. ALL LIGHTING SHALL BE LED (HIGH EFFICACY) TYP. 7. ALL NEW EXTERIOR LIGHTING SHALL BE DOWNWARD DIRECTED & SHIELDED.

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Image: Construction of the drawings may not be used in whole, or in part, without expressed written consent given by Britt Rowe. All construction shall comply with all local & national building codes. All contractors shall verify all conformance to these codes.			
Zhu	Residence	Summit Road Los Gatos. CA 95033	APN: 558-04-014
ACC.ELECTRICAL PLAN	7/29/23	Noted	MAR <i>M.</i>
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- (3) Cord-and-plug-connected or permanently connected utilization equipment.
 (C) 277 Volts to Ground. Circuits exceeding 120 volts, nominal, between conductors but not exceeding 277 volts, nominal, to ground shall be permitted to supply cord-and-plug connected or permanently connected utilization equipment, or the following ypes of listed luminaires. Electric-discharge luminaires with integral ballasts. 2) LED luminaires with LED drivers between the branch circuit and the lamp holders. Continuing any white LD drivers between the branch build ratio fraction and the fair photoers. candescent, or LED luministies equipped with medium-base or smaller screw shell lamp holders, where the lamp blders are supplied at 120 volts or less from the output of a step-down auto-transformer, LED driver, or other type of ower supply that is an integral component of the luminaire. Informational Note: See 410.90 for requirements regarding the connection of screw shell lamp holders to grounded conductors.
- Luminaires equipped with mogul-base screw shell lamp holder 5) Luminaires, equipped with lamp holders other than the screw shell type, when used within their voltage ratings of their
- (6) Luminaires without lamp holders. Informational Note: luminaires with non-serviceable LEDs are examples of luminaires without lamp holders. (7) Auxiliary equipment of electric-discharge or LED type lamps. Informational Note: See 410.137 for auxiliary equipment (8) Luminaires converted with listed retrofit kits, incorporating intra-girl, LED, light sources, or excepting LED lamps that also conforms with 210.6(C)(1), (C)(2), (C)(3), (C)(4), or (C)(5),

210.7 Multiple Branch Circuits. Where two or more branch circuits supply devices or equipment on the same voke or To it many to transfer or to fail the initial or the initial states and a supply dones or equipment of the stand york of a mounting strap, a means to issuitance using disconnect the ungrounded conductors supplying those devices shall be provided at the point at which the branch circuits originate. 210.8 Ground-Fault Circuit-Interrupter Protection for Personnel. Ground-fault circuit-interrupter protection for personnel. shall be provided as required in 210.8(A) through (F). The ground-fault circuit-interrupter shall be installed in a readily accessible location. Informational Note No. 1: See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders. Informational Note No. 2: See 422.5(A) for GFCI requirements for appliances. Informational Note No. 3: See 555.9 for GFCI requirements for boat hoists. Informational Note No. 4: Additional GFCI requirements for specific circuits and equipment are contained in Chapters (A) Dwelling Units. All 125-volt through 250-volt receptacles installed in the locations specified in 210.8 (A)(1) through (A)(11) and upplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for

- Bathrooms. 2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use Exception to (3): Receptacles that are not readily accessible and are supplied by a branch circuit dedicated 10 electric snow-metting, deicing, or pipeline and vessel heating equipment shall be permitted to be installed in accordance with 426.28, Crawl spaces: at or below grade level
- (5) Basements Exception to (5): A receptacle supplying only a permanently installed fire alarm or burglar alarm system shall not be required to have ground-fault circuit-interrupter protection. Informational Note: See 760.41(B) and 760.121(B) for power supply requirements for fire alarm systems. Receptacles installed under the exception to 210.8 (A)(5) shall not be considered as eeting the requirements of 210.52(G). 6) Kitchens: where the receptacles are installed to serve the countertop surfaces 7) Sinks - where receptacles are installed within 1.8 m (6 ft) of the outside edge of the sink
- (9) Bathtubs or shower stalls where receptacles are installed within 1.8 m (6 ft) of the outside edge of the bathtub or shower (10) Laundry areas
- Exception to (1) through (3), (5) through (8), and (10): Listed locking support and mounting receptacles utilized in combination with compatible attachment. Fittings installed for the purpose of serving a ceiling luminaire or ceiling fan shall not be required to be ground-fault-circuit-interrupter protected. If a general purpose convenience receptacle is integral to the ceiling luminaire or ceiling fan, GFCI protection shall be provided.
- (1) model damp and wer rocations 210.11 Branch Circuits Required. Branch circuits for lighting and for appliances, including motor-operated appliances, shall be provided to supply the loads calculated in accordance with 220.10. In addition, branch circuits shall be provided for specific loads not covered by 220.10 where required elsewhere in this *Code* and for dwelling unit loads as specified to 120.11(C). (A) Number of Branch Circuits. The minimum number of branch circuits shall be determined from the total calculated load the size or rating of the circuits used. In all installations, the number of circuits shall be sufficient to supply the load served. In
- no case shall the load on any circuit exceed the maximum specified by 220.18. B) Load Evenly Proportioned Among Branch Circuits. Where the load is calculated on the basis of volt-amperes per square meter or per square foot, the wiring system up to and including the branch-circuit panel board(s) shall be provided to serve not less than the calculated load. This load shall be evenly proportioned among multi-outlet branch circuits within the panel board(s). Branch-circuit over-current devices and circuits shall be required to be installed only to serve the connected load.
- Dwelling Units. Small-Appliance Branch Circuits. In addition to the number of branch circuits required by other parts of this section, two or more 20-ampere small-appliance branch circuits shall be provided for all receptacle outlets specified by 210.52(B).
 Laundry Branch Circuits. In addition to the number of branch circuits required by other parts of this section, at least one additional 20-ampere branch circuit shall be provided to supply the laundry receptacle outlet(s) required by 210.52(F). The investigation of the superior outlet is a section.
- hall have no other outle circuit shall have no other outlets.
 Bathroom Branch Circuits. In addition to the number of branch circuits required by other parts of this section, one or more 120 volt, 20-ampere branch circuit shall be provided to supply bathroom receptacle outlet(s) required by 210.52(D) and any countertop and similar work surface receptacle outlets. Such circuits shall have no other outlets.
 <u>Exception</u>: Where the 20-ampere circuit supplies a single bathroom, outlets for other equipment within the same bathroom shall be permitted to be supplied in accordance with 210.23(A)(1) and (A)(2).
 (4) Garage Branch Circuits. In addition to the number of branch circuits required by other parts of the section, at least one 120-work 20-ampere branch circuit.
- volt, 20-ampere branch circuit shall be installed to supply receptacle outlets required by 210.52(G)(1) for attached garages and in detached garages with electric power. This circuit shall have no other outlets.

Exception: This circuit shall be permitted to supply readily accessible outdoor receptacle outlets. Exception: This circuit shall be permitted to supply reacily accessible obtabol receptated obtabol. 210.12 Arc-Fault Circuit-Interrupter Protection. Arc-fault circuit-interrupter protection shall be provided as required in 210.12(A) (B), and (C). The arc-fault circuit interrupter shall be installed in a readily accessible location. (A) Dwelling Units. All 120-volt, single phase, 15 and 20 ampere branch circuits supplying outlets installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, surcooms, recreation rooms, closeste, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12 (A)(1) through (A)

- 0). A listed combination-type arc-fault circuit-interrupter, installed to provide protection of the entire branch circuit A listed branch/feeder-type AFCI installed at the origin of the branch-circuit in combination with a listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.
- (3) A listed supplemental arc protection circuit breaker installed at the origin of the branch circuit in combination with a listed tlet branch-circuit type arc-fault circuit interrupter installed at the first outlet box on the branch circuit where all of the llowing conditions are met wiring shall be continuous from the branch-circuit over-current device to the outlet branch-circuit
- The maximum length of the branch-circuit wiring from the branch-circuit over-current device to the first outlet shall not exceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit. (4) A listed outlet branch-circuit type arc-fault circuit interrupter installed at the first outlet on the branch circuit in combination with
- a listed branch-circuit over-current protective device where all of the following conditions are met: a. The branch-circuit wiring shall be continuous from the branch-circuit over-current device to the outlet branch-circuit arc-fault circuit interrupter. b The maximum length of the branch-circuit wiring from the branch-circuit over-current device to the first outlet shall not xceed 15.2 m (50 ft) for a 14 AWG conductor or 21.3 m (70 ft) for a 12 AWG conductor c. The first outlet box in the branch circuit shall be marked to indicate that it is the first outlet of the circuit.
 d. The combination of the branch-circuit shall be marked to indicate that it is the first outlet of the circuit.
 d. The combination of the branch-circuit over-ourrent device and outlet branch-circuit AFCI shall be identified as meeting the requirements for a system combination-type AFCI and shall be listed as such.
 (5) If metal raceway, metal sideways, metal auxiliary gutters, or Type MC, or Type AC cable meeting the requirements of 250.118,
- with metal boxes, metal conduit, bodies, and metal enclosures are installed for the portion of the branch circuit between the wanch-circuit overcurrent device and the first outlet, it shall be permitted to install a listed outlet branch-circuit Type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit. (6) Where a listed metal or nonmetallic conduit or tubing or Type MC cable is encased in not less than 50 mm (2 in.) of concrete Where a listed metal of infinitentiatic conductor utiling of rype Mic cable is enclosed in hot essibility of the portion of the branch circuit between the branch-circuit over-current device and the first outilet, it shall be permitted to install a listed outlet branch-circuit type AFCI at the first outlet to provide protection for the remaining portion of the branch circuit. <u>Exception</u>: AFCI protection shall not be required for an individual branch circuit supplying a fire alarm system installed in accordance with 760.41(B) or 760.121(B). The branch circuit shall be installed in a metal raceway, metal auxiliary gutter, steel-armored cable, Type MC or Type AC, meeting the applicable requirements of 250.118, with metal boxes, conduit bodies, and applicable licential.
- nd enclosures. Informational Note No. 1: For information on combination-type and branch/feeder-type arc-fault circuit nterrupters, see UL 1699-2011, Standard for Arc-Fault Circuit Interrupters. For information on outlet branch-circuit type arcfault circuit interrupters, see UL Subject 1699A, Outline of Investigation for Outlet Branch Circuit Arc-Fault Circuit-Interrupters, Informational Note No. 2: See 293.63(5) of NFPA 72-2016, National Fire Alarm and Signaling Code, for information related to secondary power-supply requirements for smoke alarms installed in dwelling units. Informational Note No. 3: See 750.41(B) nd 760.121(B) for power-supply requirements for fire alarm systems (D) Branch Circuit Extensions or Modifications - Dwelling Units, Dormitory Units, and Guest Rooms and Guest Suites. here bench circuit wiring for any of the areas speci fied in 210.12(A), (B), or (C) is modified, replaced, or extended, the ranch circuit shall be protected by one of the following: (1) By the means described in 210.12(A)(1) through (A)(6)
- A listed outlet branch-circuit type AFCI located at the first receptacle outlet of the existing branch circuit. Exception: AFCI protection shall not be required where the extension of the existing branch circuit conductors is not more than 1.8 m (6 ft) and does not include any additional outlets or devices, other than splicing devices. This measurement shall not include the 210.13 Ground-Fault Protection of Equipment. Each branch-circuit disconnect rated 1000 A or more and installed or solidly grounded wye electrical systems of more than 150 volts to ground, but not exceeding 600 volts phase-to-phase, shall be provided with ground-fault protection of equipment in accordance with the provisions of 230.95. Exception No. 1: This section shall not apply to a disconnecting means for a continuous industrial process where a non-orderly additional or increased hazards.
- xception No. 2: This section shall not apply if ground-fault protection of equipment is provided on the supply side of the branch ircuit and on the load side of any transformer supplying the branch circuit. 210.18 Branch Circuit Ratings. (See CA Electric Code) 210.19 Conductors - Minimum Ampacity and Size. (See CA Electric Code) 210.20 Over-current Protection. Branch-circuit conductors and equipment shall be protected by over-current protective devices that have a rating or setting that complies with 210.20(A) through (D). 210.52 Dwelling Unit Receptacle Outlets. This section provides requirements for 125-volt, 15 and 20 ampere receptacle outlets. The receptacles required by this section shall be in addition to any receptacle that is as follows: 1) Part of a luminaire or appliance, or Controlled by a listed wall-mounted control device in accordance with 210.70(A)(1), Exception No.1, or B) Located within cabinets or cupboards, or
 4) Located more than 1.7 m (5-1/2 ft) above the floor Permanently installed electric baseboard heaters equipped with factory-installed receptacle outlets or outlets provided as a separate assembly by the manufacturer shall be permitted as the required outlet or outlets for the wall space utilized by such rmanently installed heaters. Such receptacle outlets shall not be connected to the heater circuits. (A) General Provisions. In every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom. reation room, or similar room or area of dwelling units, receptacle outlets shall be installed in accordance with the general ons specified in 210.52(A)(1) through (A)(4). Spacing. Receptacles shall be installed such that no point measured horizontally along the floor line of any wall space is more
- than 1.8 m (6 ft) from a receptacle outlet. (2) Wall Space. As used in this section, a wall space shall include the following:
 (1) Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line by doorways and similar openings, fireplaces, and fixed cabinets
 (0) The proper space in the floor including space in the properties of the properties of the floor include the problem in the properties of the floor include the problem space in the properties of the floor include the problem space in the properties of the floor include the problem space in the properties of the floor include the problem space includes and the properties of the floor include the problem space in the properties of the floor include the problem space in the properties of the floor include the problem space in the properties of the floor include the problem space includes and the properties of the floor include the problem space in the properties of the floor include the problem space in the properties of the floor include the problem space include the problem space include the problem space in the properties of the floor include the problem space inclu 2) The space occupied by fixed panels in exterior walls, excluding sliding panels (3) The space afforded by fixed room dividers, such as freestanding bar-type counters or railings (3) Floor Receptacles. Receptacle outlets in or on floors shall not be counted as part of the required number of receptacle outlets (4) Countertop and Similar Work Surface Receptacle Outlets. Receptacles installed for countertop surfaces as specified in 210.52(C) shall not be considered as the receptacles required by 210.52(A).
 (5) Small Applications inless located within 450 mm (18 in.) of the wall.
- (B) Small Appliances
 (F) Small Appliances
 (B) Small Appliance
 (B) Small Appliance
 (C) Receptacle Outlets Served. In the kitchen, pantry, breakfast room, dining room, or similar area of a dwelling unit, the two or more 20 ampere small-appliance branch circuits required by 210.11 (C)(1) shall serve all wall and floor receptacle outlets covered by 210.52(A), all countertop outlets covered by 210.52(C), and receptacle outlets for refrigeration equipment. Exception No.1: In addition to the required receptacles specified by 210.52, switched receptacles supplied from a generalurpose 15- or 20 ampere branch circuit as required in 210.70(A)(1), Exception No.1, shall be permitted. Exception No. 2. The receptacle outlet for refrigeration equipment shall be permitted to be supplied from an individual branch amperes or greater.
- (2) No Other Outlets. The two or more small-appliance branch circuits specified in 210.52(B)(1) shall have no other outlets. xception No.1: A receptacle installed solely for the electrical supply to and support of an electric clock in any of the rooms pecified in 210.52(B)(1).
- specified in 210.52(B)(1).
 Exception No.2: Receptacles installed to provide power for supplemental equipment and lighting on gas-fired ranges, ovens, or counter-mounted cooking units.
 Kitchen Receptacle Requirements. Receptacles installed in a kitchen to serve countertop surfaces shall be supplied by not fewer than two small-appliance branch circuits, either or both of which shall also be permitted to supply receptacle outlets in the same kitchen and in other rooms specified in 210.52(B)(1). Additional small-appliance branch circuit shall be permitted to supply receptacle outlets in the kitchen and other rooms specified in 210.52(B)(1). No small-appliance branch circuit shall serve more than one kitchen. (C) Counterlops and Work Surfaces. In kitchens, pantries, breakfast rooms, dining rooms, and similar areas of dwelling units,
- receptacle outlets for countertop and work surfaces that are 300mm (12 in.) or wider shall be installed in accordance with 210.52(C)(1) through (C)(3) and shall not be considered as the receptacle outlets required by 210.52.(A). For the purposes of this section, where are using multi outlet assemblies, each 300 mm (12 in.) Of multi outlet assembly containing two or ceptacles installed in individual or continuous lengths shall be considered to be one receptacle outl
- (1) Wall Spaces. Receptacle outlets shall be installed so that no point along the wall line is more than 600 mm (24 in.) Measured orizontally from a receptacle outlet in that space. Exception: Recentracle outlets shall not be required directly behind a range, counter-mounted cooking unit, or sink in the on described in Figure 210.52(C)(1). (2) Island and Peninsular Countertops and Work Surfaces. Receptacle outlets shall be installed in accordance with 210.52(C)(2)
- At least one receptacle outlet shall be provided for the first 0.84 m2 (9 ft2), or fraction thereof, of the countertop or work eceptacle outlet shall be provided for every additional 1.7 m2 (18 ft2), or fraction thereof, of the co

 A reast the receptace outer stant be clasted within oco initin (2) in a cute end or a permission counter(c), to Hork surface. Additional required receptacle outlets shall be permitted to be located, as determined by the installer, designer or building owner. The location of the receptacle outlets shall be primitted to be located in 0.52. (C)(3).
 Receptacle Outlet Location. Receptacle outlets shall be located in one or more of the following:
 On or above countertop or work surfaces: on above, but not more than 500 mm (20 in.) above, the countertop or work outlet. (2) In countertop or work surfaces: receptacle outlet, assemblies listed for use in countertops or work services shall be permitted to be installed in countertops or work surfaces. (3) Below countertop or work services: not more than 300 mm (12 in.) Below the countertop or work surface. Receptacles talled below a countertop for work surface shall not be located where the countertop or work surface extends more than 150 mm (6 in.) beyond its support base. Receptacle outlets rendered not readily accessible by appliances, fastened in place, appliance garage is, sinks, orange tops, as covered in 210.52.(C)(1), Exception, or appliances, occupying assigned spaces shall not be considered as these required ormational Note No. 1: See 406.5(E) and 406.5(G) for installation of receptacles in countertops and 406.5(F) and 406.5(G) lation of receptacles in works surfaces. See 380.10 for installation of multi outlet sembles. ional Note No. 2: See Annex J and ANSI/ICC A117.1-2009, Standard on Accessible and Usable Buildings and b) Bathrooms. In dwelling units, at least one receptacle outlet shall be installed in bathrooms within 900 mm (3 ft) of the outside dege of each basin. The receptacle outlet shall be located on a wall or partition that is adjacent to the basin or basin countertop, located on the countertop, or installed on the side or face of the basin cabinet. In no case more than 300 mm (12 in.) below the top of the basin. Receptacle outlet assublies listed for the application shall be permitted to be installed in the countertop. Informational Note: See 405.5(E) for requirements for installation of receptacles in countertops.
 (E) Outdoor Outlets. Outdoor receptacle outlets shall be installed in accordance with (E)(1) through (E)(3). Informational Note: See 30.19 (A)(3) (1) For a one-family dwelling and each unit of a two-family dwelling that is at grade level, at least one receptacle outlet readily accessible from grade and not more than 2.0 m (6 ft) above grade shall be installed at the front and back of the dwelling. (3) Balconies, Decks, and Porches. Balconies, decks, and porches that are within 102mm (4 in.) horizontally of the dwelling uni shall have at least one receptacle outlet accessible from the balcony, deck, or porch. The receptacle outlet shall not be located more than 2.0 m (6-1/2 ft) above the balcony, deck, or porch walking surface. Ideated inter that 20 into 1/2 in advertise backony, dex, or port warms guitable. Laundry Areas. In dwelling units, at least one receptacle outlet shall be installed in areas designated for the installation of laundry. <u>Exception No.</u>: A receptacle for laundry equipment shall not be required not be required in a dwelling unit of a multifamily building where laundry facilities are provided on the premises for use by all building occupants. <u>Exception No.</u>?: A receptacle for laundry equipment shall not be required in other than one-family dwellings where laundry facilities are not to b Basements, Garages and Accessory Buildings. For a one- and two family dwellings, at least one receptacle outlet shall be ified in 210.52 (G)(1) through (G)(3). These receptacles shall be in addition to receptacles require Garages. In each attached garage and in each detached garage with electric power. The branch circuit supplying this receptacle(s) shall not supply outlets outside of the garage. At least one receptacle outlet shall be installed for each car Exception: garage space is not attached to an individual dwelling unit of a multi family dwelling shall not require a receptacle

(b) At least one receptacle outlet shall be located within 600 mm (2 ft) of the outer end of a peninsular countertop, or work

- Accessory Buildings. In each accessory building with electric power. Basements. In each separate unfinished portion of a basement. Hallways. In dwelling units, hallways of 3.0 m (10 ft) or more in length shall have at least one receptacle outlet. As used in section, the hallway length shall be considered the length along the centerline of the hallway without pa Fovers Evers that are not part of a hallway in accordance with 210.52(H) and that have an area that is greater than 5.6 (60 receipts that are not part of a harway in accounce win 210.22(r) and that have an area units greater train 30 (II have a receptacle(s) located in each wall space 900 mm (3 ft) or more in width. Doorways, door-side windows that to the floor, and similar openings shall not be considered wall space. 210.70 Lighting Outlets Required. Lighting outlets shall be installed where specified in 210.70(A), (B), and (C). (A) Dwelling Units. In dwelling units, lighting outlets shall be installed in accordance with 210.70(A)(I), (A)(2), and (A)(3) Habitable Rooms. At least one lighting outlet controlled by a listed wall-mounted control device shall be installed in every habitable room, kitchen, and bathroom. The wall-mounted control device shall be located near an entrance to the room on a Exception No. 1. In other than kitchens and bathrooms, one or more receptacles controlled by a listed wall-mounted control device shall be permitted in lieu of lighting outlets.
- Exception No. 2: Lighting outlets shall be permitted to be controlled by occupancy sensors that are (1) in addition to listed vices or (2) located at a customary wall switch location and equipped with a manual override that will llow the sensor to function as a wall switch. Additional Locations. Additional lighting outlets shall be installed in accordance with (A)(2)(a), (A)(2)(b), and (A)(2)(c). (1) At least one lighting outlet controlled by a listed wall-mounted control device shall be installed in hallways, stairways, attached garages, and detached garages with electric power.
- attactive garages, and detached garages with electric power.
 (2) For dwelling units, attached garages, and detached garages with electric power, at least one lighting outlet controlled by a listed wall-mounted control device shall be installed to provide illumination on the exterior side of outdoor entrances or exits with grade level access. A vehicle door in a garage shall not be considered as an outdoor entrance or exit.
 (3) Where one or more lighting outlet(s) are installed to interior stainways, there shall be a listed wall-mounted control device at each floor level, and landing level that includes an entryway, to control the lighting outlet(s) where the stainway between floor levels has six risers or more. Exception to (A)(2) a). (A)(2)(b), and In hallways, in stairways, and at outdoor entrances, remote, central, or automatic control of lighting shall be permitted.
- (4) Lighting outlets controlled in accordance with 210.7.(A)(2)(3) shall not be controlled by use of listed wall-mounted control devices unless they provide the full range of dipping control at each location. ARTICLE 220: BRANCH CIRCUIT. FEEDER AND SERVICE CALCULATIONS (See complete 220.1 Scope.
- his article provides requirements for calculating branch- circuit, feeder, and service loads. Part I provides for genera equirements for calculation methods. Part II provides calculation methods for branch-circuit loads. Parts III and IV provide alculation methods for feeders and services. Part V provides calculation methods for farms. mational Note No. 1: See examples in Informative Annex D. Informational Note No. 1: See Figure 220.1 for information on the organization of Article 220. 220.3 Other Articles for Specific-Purpose Calculations.
- 3 shall provide references for specific-purpose calculation requirements, not located in Chapters, 5, 6, or 7 that amend nent the requirements of this article. 220.5 Calculations. (A) Voltages. Unless other voltages are specified, for purposes of calculating branch-circuit and feeder loads, nominal system voltages of 120, 120/240, 208Y/120, 240, 347, 480Y/277, 480, 600Y/347, and 600 volts shall be used. (B) Fractions of an Ampere. Calculations shall be permitted to be rounded to the nearest whole ampere, with decimal fractions Part II. Branch Circuit Load Calculations
- 220.10 General. Branch-circuit loads shall be calculated as shown in 220.12, 220.14, and 220.16. 220.11 Floor Area. The floor area for each floor shall be calculated from the outside dimensions of the building, dwelling unit, or other area involved. For dwelling units, the calculated floor area shall not include open porches, garage, or unused or unfinished 220.14 Other Loads - All Occupancies.
- In all occupancies, the minimum load for each outlet for general-use receptacles and outlets not used for general illumination shall not be less than that calculated in 220.14(A) through (M), the loads shown being based on nominal branch-circuit voltages. Exception: The loads of outlets serving switchboards and switching frames in telephone exchanges shall be waived from the (A) Specific Appliances or Loads. An outlet for a specific appliance or other load not covered in 220.14(B) through (M) shall be calculated based on the ampere rating of the appliance or load served.
 (B) Electric Dryers and Electric Cooking Appliances in Dwellings and Household Cooking Appliances Used in
 Instructional Programs. Load calculations shall be permitted as specified in 220.54 for electric dryers and in 220.55 for electric ranges and other cooking a opliances Motor Outlets. Loads for motor outlets shall be calculated in accordance with the requirements in 430.22, 430.24, and 440.6.)) Luminaries. An outlet supplying luminaire(s) shall be calculated based on the maximum volt-ampere rating of the equipment
- Receptacle Outlets. Except as covered in 220.14(J) and (K), receptacle outlets shall be calculated at not less than 180 voltamperes for each single or for each multiple receptacle on one yoke. A single piece of equipment consisting of a multiple receptacle comprised of four or more receptacles shall be calculated at not less than 90 volt-amperes per receptacle. This provision shall not be applicable to the receptacle outlets specified in 210.11(C)(1) and (C)(2).) Dwelling Units. In one-family, two-family, and multi-family dwellings, the minimum load shall not be less than 33 voltamperes/m2 (3 volt-ampere/ft2). The lighting and receptacle outlets specified in 220.14(J)(I), (J)(2), and (J)(3) are included in the minimum unit load calculations. No additional load calculations shall be required for such outlets. The minimum lighting

load shall be determined using the minimum unit load in the floor area as determined in 220.11 for dwelling occupancies Motors rated less than 1/6 by, and connected to a lighting circuit shall be considered part of the minimum lighting load.) All general-use receptacle outlets of 20-ampere rating or less, including receptacles connected to the circuits in 210.11(C)(3), he receptacle outlets specified in 210.52(E) and (G)

- The lighting outlets specified in 210.70 220.16 Loads for Additions to Existing Installations. A) Dwelling Units. Loads added to an existing dwelling unit(s) shall comply with the following as applicable: be calculated in accordance with 220.14. (2) Loads for new circuits or extended circuits in previously wired dwelling units shall be calculated in accordance with either r 220.14, as applicable 220.18 Maximum Loads. The total load shall not exceed the rating of the branch circuit, and it shall not exceed the maximum pecified in 220.18(A) through (C) under the conditions specified therein 220.42 General Lighting. The demand factors specified in Table 220.42 shall apply to that portion of the total branch-circuit load calculated for general The demand factors specified in Table 220.42 shall apply to that portion of the total branch-circuit load calculated for general
- The demand factors specified in Table 220.42 shall apply to that portion or the total pranch-circum table data illumination. They shall not be applied in determining the number of branch circuits for general illumination. 220.52 Small-Appliance and Laundry Loads Dwelling Unit. (A) Small-Appliance transformed by Closes Dwelling Unit.
 (A) Small-Appliance Circuit Load. In each dwelling unit, the load shall be calculated at 1500 volt-amperes for each 2-wire small-appliance branch circuit as covered by 210.11(C)(1). Where the load is subdivided through two or more feeders, the calculated load for each shall include not less than 1500 volt-amperes for each 2-wire small-appliance branch circuit. These Is shall be permitted to be included with the general lighting load and subjected to the demand factors provided in Table Exception: The individual branch circuit permitted by 210.52(B)(1), Exception No. 2, shall be permitted to be excluded from the calculation required by 220.52. (B) Laundry Circuit Load. A load of not less than 1500 volt-amperes shall be included for each 2-wire laundry branch circuit installed as covered by 210.11(C)(2). This load shall be permitted to be included with the general lighting load and subjected to the demand factors provided in Table 220.42. 220.53 Appliance Load-Dwelling Unit(s). It shall be permissible to apply a demand factor of 75 percent to the nameplate rating load of four or more appliances rated 1/4 hp or greater, or 500 watts or greater, that are fastened in place, and that are served by the same feeder or service in a one-family, two-family or multi-family dwelling. This demand factor shallot apply to:
- Household electric cooking equipment that is fastened in place (2) Clothes dryers (3) Space heating equipment
- (4) Air-conditioning equipment 220.54 Electric Colthes Dryers Dwelling Unit(s). The load for household electric clothes dryers in a dwelling unites) shall be either 5000 watts (volt-amperes) or the nameplate rating, whichever is larger, for each dryer served. The use of the demand factors in Table 220.54 shall be permitted. Where two or more single-phase dryers are supplied by a 3-phase, 4-wire feeder or service, the total load shall be calculated on the basis of twice the maximum number connected between any two phases. Kilovolt-amperes (kVA) shall be considered equivalent to kilowatts (kW) for loads calculated in this section. 2005 Electric Coeking Applicance in Drwelling Units and Haucohold Coeking Applicance in Drwelling Units a 220.55 Electric Cooking Appliances in Dwelling Units and Household Cooking Appliances Used in Instructional Programs. The load for household electric ranges, wall-mounted ovens, counter-mounted cooking units, and household cooking appliances individually rated in excess of 1% kW shall be permitted to be calculated in accordance with able 220.55. Kilovolt-amperes (kVA) shall be considered equivalent to kilowatts (kW) for loads calculated under this section Where two or more single-phase ranges are supplied by a 3-phase, 4-wire feeder or service, the total load shall be calculated on the basis of twice the maximum number connected between any two phases. Informational Note No. 1: See the examples in Informative Annex D
- nformational Note No. 2: See Table 220.56 for commercial cooking equipment. ARTICLE 230: SERVICES (See complete Article for additional information) 230.1 Scope. This article covers service conductors and equipment for control and protection of services and their installation ents. Informational Note: See Figure 230.1.
- 230.2 Number of Services. A building or other structure serves shall be supplied by only one service, unless permitted in 230.2 (A) through (D). For the purpose of 230.40, Exception No. 2 only, underground sets of conductors, 1/0 AWG and larger, running to the same location and connected together at their supply end, but not connected together at their load end shall be carefidered to a connected together at their supply end, but not connected together at their load end shall be 230.3 One Building or Other Structure Not to Be Supplied Through Another. Service conductors supplying a building or other structure shall not pass through the interior of another building or other structure.
- 230.8 Raceway Seal. Where a service raceway enters a building or structure from an underground distribution system, it shall 230.5 naccwary seal, where a service racewary enters a building of structure from an uncerground distribution system, it shall be sealed in accordance with 300.5(G). Spare or unused racewary shall also be sealed. Sealants shall be identified for use with the cable insulation, shield, or other components.
 230.9 Clearances on Buildings. Service conductors and final spans shall comply with 230.9(A), (B), and (C). A) Clearances. Service conductors installed as open conductors or multi-conductor cable without an overall outer jacket shall have a clearance of not less than 900 mm (3 ft) from windows that are designed to be opened, doors, porches, balconies, ladders, stairs, fire escapes, or similar locations. ception: Conductors run above the top level of a window shall be permitted to be less than the 900mm (3 ft.) requirement. (B) Vertical Clearance. The vertical clearance of final spans above, or within 900mm (3 ft) measured horizontally of, platforms, projections, or surfaces from which they might be reached shall be maintained in accordance with 230.24(B). (c) Building Openings. Overhead service conductors shall not be installed beneath openings through which materials may be moved, such as openings in farm and commercial buildings, and shall not be installed where they obstruct entrance to these to be a such as openings in farm and commercial buildings. 230.23 Size and Ampacity.
- (A) General. Conductors shall have sufficient ampacity to carry the current for the load as calculated in accordance with Article 220 and shall have adequate mechanical strength. (B) Minimum Size. The conductors shall not be smaller than 8 AWG copper or 6 AWG aluminum or copper-clad aluminum. (c) Immuno the constraints and in the smaller than the term of the constraints of the ARTICLE 240: OVER-CURRENT PROTECTION (See complete Article for additional information
- 240.1 Scope. Parts I through VII of this article provide the general requirements for over-current protection and over-current protective devices not more than 1000 volts, nominal. Part VIII covers over-current protection for those portions of supervised ndustrial installations operating at voltages of not more than 1000 volts, nominal. Part IX covers over-current protection over 1000 volts, nominal. Informational Note: Overcurrent protection for conductors and equipment is provided to open the circuit if the current reaches a value that will cause an excessive or dangerous temperature in conductors or conductor insulation. See also 110.9 for requirements for interrupting ratings and 110.10 for requirements for protection against fault currents. ARTICLE 250: GROUNDING and BONDING (See complete Article for additional information) 250.1 Scope. This article covers general requirements for grounding and bonding of electrical installations, and the specific
- nents in (1) through (6). 1) Systems, circuits, and equipment required, permitted, or not permitted to be grounded Circuit conductor to be grounded on grounded systems Types and sizes of grounding and bonding conductors and electrodes Methods of grounding and bonding
- (6) Conditions under which guards, isolation, or insulation may be substituted for grounding Informational Note: See Figure 250.1 for information on the organization of Article 250 covering grounding and bonding requirements. 250.4 General Requirements for Grounding and Bonding. The following general requirements identify what groundi and bonding of electrical systems are required to accomplish. The prescriptive methods contained in Article 250 shall be follo mply with the performance requirements of this section. (A) Grounded Systems.
 (1) Electrical System Grounding. Electrical systems that are grounded shall be connected to earth in a manner that will limit the voltage imposed by lightning, line surges, or unintentional contact with higher-voltage lines and that will stabilize the voltage to earth during normal operation. Informational Note: An important consideration for limiting the is the routing of bonding and grounding conductors so that they are not any longer than necessary to complete the connection without disturbing the permanent parts of the installation and so that unnecessary bends and loops are avoided.
- (2) Grounding of Electrical Equipment. Normally non- current-carrying conductive materials enclosing electrical conductors of equipment, or forming part of such equipment, shall be connected to earth so as to limit the voltage to ground on these (3) Bonding of Electrical Equipment. Normally non- current-carrying conductive materials enclosing electrical conductors or equipment, or forming part of such equipment, shall be connected together and to the electrical supply source in a manner that establishes an effective ground-fault current path. (4) Bonding of Electrically Conductive Materials and Other Equipment. Normally non-current-carrying electrically conductive aterials that are likely to become energized shall be connected together and to the electrical supply source in a manner that establishes an effective ground-fault current path.

contained conductors, including a grounded conductor

) Where snap switches with integral enclosures comply with 300.15(E)

404.9 General-Use Snap Switches, Dimmers, and Control Switches.

emoving finish materials

404.4 Damp or Wet Locations.

404.8 Accessibility and Grouping.

e permitted at greater heights.

ARTICLE 406: RECEPTACLES, CORD CONNECTORS, and ATTACHMENT PLUGS

and be instant or instant or including yoke of stap of the receptacte is near negative at the instance surface.
(B) Boxes That Are Flush. Receptacles mounted in boxes that are flush with the finished surface or project therefrom shall be installed such that the mounting yoke or strap of the receptacle is held rigidly against the box or box cover.
(C) Receptacles Mounted on Covers. Receptacles mounted in and supported by a cover shall be held rigidly against the cover by more than one screw or shall be a device assembly or box cover listed and identified for securing by a single screw. (D) Position of Receptacle Faces. After installation, receptacle faces shall be flush with or project from faceplates of insulating material and shall project a minimum of 0.4 mm (0.015 in.) from metal faceplates. Exception: Listed kits or assemblies encompassing receptacles and nonmetallic faceplates that cover the receptacle face, where the plate cannot be installed on iny other receptacle, shall be permitt E) Receptacles in Countertops and Similar Work . Receptacles, unless listed as receptacle assemblies for countertop applications shall not be installed in a face-up position in countertops or similar work surfaces. Where receptacle assemblies for countertop applications are required to provide ground-fault circuit- interrupter protection for personnel in accordance with 0.8, such assemblies shall be permitted to be listed as GFCI receptacle assemblies for countertop applications.

ssemblies for countertop applications applications.

(F) Becentacles in Countertops. Becentacle assemblies for installation in countertop surfaces shall be listed for countertop

applications. Where receptacle assemblies for countertop applications are required to provide ground-fault circuit-interrupt

rotection for personnel in accordance with 210.8, such assemblies shall be permitted to be listed as GFCI receptacle,

(1) Countertop and Work Surfaces, Receptacles shall not be installed in a face-up position in or on countertop services or

410.110 General. Luminaires installed in recessed cavities in walls or ceilings, including suspended ceilings, shall comply with temperatures in excess of 90°C (194°F (B) Fire-Resistant Construction. Where a luminaire is recessed in fire-resistant material in a building of fire-resistant n, a temperature higher than 90°C (194°F) but not higher than 150°C (302°F) shall be considered acceptable if the luminaire is plainly marked for that service. sed Incandescent Luminaires. Incandescent luminaires shall have thermal protection and shall be identified as <u>Exception No. 1</u>: Thermal protection shall not be required in a recessed luminaire identified for use and installed in poured Exception No. 2: Thermal protection shall not be required in a recessed luminaire whose design, construction, and thermal performance characteristics are equivalent to a thermally protected luminaire and are identified as inherently protected. 410.116 Clearance and Installation. (A) Clearance. Non-Type IC, A recessed luminaire that is not identified for contact with insulation shall have all recessed parts spaced not Non-type for An excessed training that is not definited for contact with insulation shall have an recessed primate spaced in less than 13 mm (1/2 in.) from combustible materials. The points of support and the trim finishing off the opening in the ceiling, wall, or other finished surface shall be permitted to be in contact with combustible materials. Type IC. A recessed luminaire that is identified for contact with insulation, Type IC, shall be permitted to be in contact with combustible materials at recessed parts, points of support, and portions passing through or finishing off the opening in the building entertained.

building subdure. [b] Installation. Thermal insulation shall not be installed above a recessed luminaire or within 75mm (3 in.) of the recessed luminaire's enclosure, wiring compartment, ballast. transformer, LED driver, or power supply unless the luminaire's is identified more than the luminaire's enclosure. as Type IC for insulation contact. ARTICLE 422: APPLIANCES (See complete Article for additional information) 422.1 Scope. This article covers electrical appliances used in any occupancy. 422.3 Other Articles. The requirements of Article 430 shall apply to the installation of motor-operated appliances, and the requirements of Article 440 shall apply to the installation of appliances containing a hermetic refrigerant motor-compressor(s), except as specifically amended

itted to be in contact with

422.4 Live Parts. Appliances shall have no live parts normally exposed to contact other than those parts functioning as open-resistance beating elements such as the heating element of a toaster, which are necessarily expose 422.5 Ground-Fault Circuit-Interrupter (GFCI) Protection for Personnel. (A) General. Appliances identified in 422.5(A)(1) through (A)(7) rated 150 volts or less to ground and 60 amperes or less, single or 3-phase, shall be provided with Class A GFCI protection for personnel. Multiple Class A GGCI protective devices shall be ermitted but shall not be required. Part II Installation 422.10 Branch-Circuit. This section specifies the requirements for branch circuits capable of carrying appliance current, without overheating under the conditions specified. (A) Individual Branch Circuits. The ampacities of branch-circuit conductors shall not be less than the marked rating of the appliance or the marked rating of an appliance having combined loads. The ampacities of branch-circuit conductors four motor operated appliances not having a mark rating shall be in accordance with Part II of Article 430. The branch-circuit rating for an appliance that is a continuous load, other than a motor-operated appliance, shall not be less than 125 percent of the marked rating, or not less than 100 percent of the marked rating if the branch-circuit device and its assembly are listed fo continuous loading at 100 percent of its rating. Branch circuits and branch-circuit conductors for household ranges and cooking appliances shall be permitted to be in accordance with Table 220.55 and shall be sized in accordance with 210.19(A)

(5) The flexible cord shall have any equipment-grounding conductor and be terminated with a grounding-type attachment 422.17 Protection of Combustible Material. Each electrically heated appliance that is intended by size, weight, and service cated in a fixed position shall be placed so as to provide ample protection between the appliance and adjacen 422.18 Support of Ceiling-Suspended (Paddle) Fans. Ceiling-suspended (paddle) fans shall be supported independently) A listed outlet box or listed outlet box system identified for the use and installed in accordance with 314.27(C). (2) A listed outlet box system, a listed locking support and mounting receptacle, and a compatible factory installed attachment fitting designed for support identified for the use and installed in accordance with 314.27(E). ARTICLE 440: AIR-CONDITIONING and REFRIGERATION EQUIPMENT (See complete Article for

The accepts runs and/e applies to election motivatives an contationing and reingerating equipment and out the branch circuit and controllers for such equipment. It provides for the special considerations necessary for circuits supplying hermetic refrigera motor-compressors and for any air-conditioning or refrigerating equipment that is supplied from a branch circuit that supplies a ARTICLE 690: SOLAR PHOTOVOLTAIC SYSTEMS (See complete Article for additional information & 690.1 Scope

440.1 Scope. This article applies to electric motor-driven air-conditioning and refrigerating equipment and to the branch circuits

This article applies to solar PV systems, other than those covered by Article 691, including the array circuit(s), inverter(s), and controllers for such systems. The system is covered by this article, include those interactive with other electric power production sources, or stand-alone, or both. These PV systems may have AC or DC output for utilization.

							#
	CTRICAL PLAN LEGEND: ((AS APPLICABLE & IND	ICATED ON PLAN)	REVIS			#
SYM:		SYMBOL NOTES: +12" AFF @ WALLS +42" AFE @ COUNTERS	PLAN NOTES: 1. ALL ELECTRICAL, LIGHTING FIXTURES & WIRING SHALL BE UL	//29/2	23		
) (iii)	110V - GFCI DUPLEX OUTLET	+48" AFF @ GARAGES (GFCI) +12" AFF @ WALLS +42" AFF @ COUNTERS	LISTED & THEIR INSTALLATION SHALL CONFORM TO THE CURRENT EDITIONS OF THE CA ELECTRICAL CODE & CA ENERGY CODE. 2. ALL MECHANICAL EQUIPMENT, DUCTWORK, EXHAUST VENTING, ETC SHALL CONFORM TO THE CURRENT EDITION OF THE CA MECHANICAL CODE (CMC)				
WP	110V - EXTERIOR WATERPROOFED OUTLET	+48" AFF @ GARAGES GFCI PROTECTED W/APPROVED METAL BOX, WATERPROOF HOUSING & RUBBER	MECHANICAL CODE. (ONC) 3. <u>ALL</u> FIXTURES, LAMPS, SWITCH & OUTLET PLATES SHALL BE SELECTED AND/OR APPROVED BY THE OWENER. 4. SEE THE TITLE 24 LIGHTING REQUIREMENTS/TABLES FOR REQUIRED SWITCHING IN ALL AREAS.				
Św	110V - SPLIT WIRED/SWITCHED DUPLEX OUTLET	GASKET TOP OUTLET SHALL BE SWITCHED "ON/ OFF". BOTTOM OUTLET ALWAYS "HOT"	 5. ALL LIGHTING FIXTURES SHALL BE EQUIPPED WITH LED OR OTHER "HIGH EFFICACY" LAMPS. 6. SEE "EN" SHEETS FOR CA ELECTRICAL & ENERGY CODE REQUIREMENTS. 				
\bigcirc	110V - CEILING/FLOOR INSTALLED DUPLEX OUTLET. SWITCHED AND/OR HARD WIRED	GFCI PROTECTED AND/OR WATERPROOFED WHEN	 SEE CA ENERGY CODE FOR REQUIRED SWITCHING REQUIREMENTS. SEE SHEET M.1 FOR CA MECHANICAL CODE REQUIREMENTS (AS APPLICABLE). THE CENERAL CONTRACTOR SHALL PROVIDE THE HOMEOWARD SHALL PROVIDE THE SHALL PROVIDE THE HOMEOWARD SHALL PROVIDE THE SHALL PROVIDE THE HOMEOWARD SHALL PROVID SHALL PROVID SHALL PROVID SHALL PROVID SHALL PRO				
\$	220V - DEDICATED CIRCUIT OUTLET	PER CEC ARTICLE 210 FOR DWELLING UNIT APPLIANCES & EQUIPMENT.	 THE GENERAL CONTRACTOR SHALL PROVIDE THE HOMEOWNER WITH A LAMP/FIXTURE SCHEDULE FOR ALL LUMINARIES INSTALLED THROUGHOUT THE PROJECT. ALL EXTERIOR LIGHTING SHALL BE DOWNWARD DIRECTED & SHIELDED. 				
4	RECESSED LED CAN LIGHT 4" DIA. TRIM: USE DIRECTIONAL HOUSING AS DESIRED	LED: COLOR RENDITION TBD BY OWNER	11. ADDITIONAL SYTEMS (IE: SECURITY, HOME AUTOMATION, ETC) MAY BE INSTALLED AS INDICATED ON PLAN(S).	10			
5	RECESSED LED CAN LIGHT 5" DIA. TRIM: USE DIRECTIONAL HOUSING AS DESIRED	LED: COLOR RENDITION TBD BY OWNER		L	los Gatos	, CA 9503	ve. 30
6	RECESSED LED CAN LIGHT 6" DIA. TRIM: USE DIRECTIONAL HOUSING AS DESIRED	LED: COLOR RENDITION TBD BY OWNER		4	08.354.6	224 (office	e)
(m)	RECESSED LED CAN LIGHT UL LISTED FOR "WET LOCATIONS" W/LAMP COVERS APPROVED BY THE CEC	LED: COLOR RENDITION TBD BY OWNER HOUSING DIA. MAY VARY			408.354.6 www.britt-	6514 (fax) •rowe.com) 1
JB	SURFACE MOUNTED (CEILING) JUNCTION BOX WITH UL LISTED LIGHTING FIXTURE AND/OR FAN	LED HIGH EFFICACY FIXTURES TBD BY OWNER/BUILDER				I rotois -"	rights
-(JB)-	SURFACE MOUNTED (WALL) JUNCTION BOX WITH UL LISTED LIGHTING FIXTURE	LED HIGH EFFICACY FIXTURES TBD BY OWNER/BUILDER		and c and sp	owe shal wnership pecificatio	to all dra ns. The co	wings
••	LED LINEAR STRIP LIGHTING	PROVIDE COVER/DIFFUSER		of the of	drawings hole, or in sed writte	may not b n part, wit	be used hout
s s ³	STANDARD WALL SWITCH INSTALLED +48 AFF (TYP.) UNO	INDICATES ALL TYPES OF SWITCHING ON PLAN. D = DIMMER SWITCH		by Br	itt Rowe.	All construction with all loc	uction
EF	RECESSED (CEILING MOUNTED) EXHAUST FAN	5 ROOM AIR CHANGES MIN. PER HOUR (80 CFM MIN.)		nati con	onal build itractors s conditions	ling codes hall verify to assure	s. All / all e
EFL	RECESSED (CEILING MOUNTED) EXHAUST FAN WITH LIGHT	LIGHT & FAN SWITCHED SEPARATELY. 5 ROOM AIR CHANGES MIN. PER HOUR (80 CFM MIN.)		confo	ormance t	o these c	odes.
SD	SMOKE DETECTOR SD/CM = SMOKE DETECTION/CARBON MONOXIDE COMBINATION UNIT	110V "HARD WIRED" W/BATTERY BACK- UP. CHANGE ANNUALLY					
-Ġ-	NATURAL GAS/PROPANE STUB FOR RESIDENTIAL APPLIANCES AND/OR EQUIPMENT.	PROVIDE ACCESSIBLE SHUT-OFF VALVE OR CONTROLS WHERE REQUIRED					
СТУ	CABLE/SATELLITE TV/PHONE CONNECTION						
DB	ILLUMINATED DOOR BELL LV: HARD WIRED	+48" MAX. PLAINLY VISIBLE @ ENTRY PROVIDE INTEGRAL SECURITY CAMERA AS DESIRED			C C C	033	14
				Zhu	Resider	Summit Roo Los Gatos. CA	APN: 558-04-
				ELEC. CODE	9/23	ted	R <i>M</i> .
				CA	d: 7/2	Noi	r: MA
				Drawing:	File Save	Scale:	Drawn By

A. N/A B. ASTRONOMICAL TIME-SWITCH CONTROLS SHALL: i) HAVE SUNRISE AND SUNSET PREDICTION ACCURACY WITHIN PLUS-OR-MINUS 15 MINUTES AND TIME-KEEPING ACCURACY WITHIN F. MINI TES DER VEAR-

iii) BE CAPABLE OF AUTOMATICALLY ADJUSTING FOR DAYLIGHT SAVINGS TIME; AND

ACCURACY WITHIN 5 MINUTES PER YEAR; ii) BE CAPABLE OF DISPLAYING THE DATE, CURRENT TIME, SUNRISE TIME, SUNSET TIME, AND SWITCHING TIMES FOR FACULATED DISING PEOPORALMINING

SETTING. B. PROVIDE REDUCED FLICKER OPERATION, MEANING THAT DIRECTLY CONTROLLED LIGHT SOURCES SHALL BE PROVIDED ELECTRICAL POWER SUCH THAT THE LIGHT OUTPUT HAS AN AMPLITUDE MODULATION OF LESS THAN 300 PERCENT FOR FREQUENCIES LESS THAN 2004/2 WITHOUT CAUSING PREMATURE LAMP FAILURE; C. PROVIDE AN OFF SETTING THAT PRODUCES ZERO LUMEN OUTPUT; AND D. FOR WALL BOX DIMMERS ASSOCIATED SWITCHES DESIGNED FOR USE IN THREE WAY CIRCUITS, BE CAPABLE OF TURNING LIGHTS OFF, AND ON TO THE LEVEL SET BY THE DIMMER IF THE LIGHTS ARE OFF. CONVENTS . OCCUPANCY SENSING CONTROLS, ON TO THE LEVEL OF 1 BY THE DIMMENT IF THE LIGHTS ARE OFF. OCCUPANCY SENSING CONTROLS, OCCUPANT SENSING CONTROLS INCLUDE OCCUPANT SENSORS, MOTION SENSORS AND VACANCY SENSOR CONTROLS, INCLUDING THOSE WITH A PARTIAL-ON OR PARTIAL-OFF FUNCTION. OCCUPANT SENSING CONTROLS SHALL: SENSING CONTROLS SHALL: A. BE CAPABLE OF AUTOMATICALLY TURNING THE CONTROLLED LIGHTS IN THE AREA EITHER OFF OR DOWN NO MORE THAN 20 MINUTES AFTER THE AREA HAS BEEN VACATED: B. FOR MANUAL-ON CONTROLS, HAVE A GRACE PERIOD OF NO LESS THAN 15 SECONDS AND NO MORE THAN 30 SECONDS TO TURN ON LIGHTING AUTOMATICALLY AFTER THE SENSOR HAS TIMED OUT, AND C. PROVIDE A VISIBLE STATUS SIGNAL THAT INDICATES THAT THE DEVICE IS OPENATING PROPERLY, OR THAT IT HAS FAILED OR MALFUNCTIONED. THE VISIBLE STATUS SIGNAL MAY HAVE AN OVERRIDE THAT TURNS OF THE SIGNAL. EXCEPTION TO SECTION 110.918J: OCCUPANT SENSING CONTROLS SYSTEMS MAY CONSIST OF A COMBINATION OE SINGLE OR MULTILEVEL OCCUPANT MOTION OR VACANCY SENSOR CONTROLS, PROVIDED THAT COMPONENTS INSTALLED TO COMPLY WITH MANUAL-ON REQUIREMENTS SHALL NOT BE CAPABLE OF CONVERSION BY OCCUPANTS INSTALLED TO COMPLY WITH MANUAL-ON REQUIREMENTS SHALL NOT BE CAPABLE OF CONVERSION BY OCCUPANTS INSTALLED TO CONVERSION BUTCHING THE SHOULD THAT THE SHALL NOT BE CAPABLE OF CONVERSION BY OCCUPANTS INSTALLED TO CONFUL VITH MANUAL-ON REQUIREMENTS SHALL NOT BE CAPABLE OF CONVERSION BY OCCUPANTS INSTALLED TO CONFUL FUNCTIONE THE VENCTIONAL THE AUTOMICS. PROM MANUAL-ON TO AUTOMATIC-ON FUNCTIONALITY. PART-NIGHT OUTDOOR LIGHTING CONTROLS. AS DEFINED IN SECTION 100.1, SHALL MEET ALL OF THE FOLLOWING HAVE SUNRISE AND SUNSET PREDICTION ACCURACY WITHIN +/- 15 MINUTES, USING BOTH LIGHT SENSING AND TIME MEASUREMENT; AND B. HAVE THE ABILITY TO REDUCE OR TURN OFF OUTDOOR LUMINAIRE POWER AT NIGHT AS REQUIRED IN SECTION 130.2(C); AND
 C. SHALL BE PROGRAMMABLE TO REDUCE OR TURN OFF OUTDOOR LUMINAIRE POWER AT ANY TIME AS DETERMINED BY THE USER. TIME-BASED SCHEDULING CONTROL IS ALLOWED TO BE RELATIVE TO BOTH SUNSET AND SUNRISE, AND TO THE MIDPOINT BETWEEN SUNSET AND SUNRISE.
 ENSORS USED TO DETECT OCCUPANTS. SENSORS THAT ARE USED BY OCCUPANT SENSING CONTROLS TO DETECT A. SENSORS SHALL MEET THE FOLLOWING REQUIREMENTS:
 A. SENSORS SHALL NOT INCORPORATE SWITCHES OR MECHANICAL DEVICES THAT ALLOW THE SENSOR TO BE
DISABLE WITHOUT CHANGING THE SETTINGS OF THE CONTROL
 SENSORS THAT UTILIZE ULTRASONIC RADIATION FOR DETECTION OF OCCUPANTS SHALL:
 COMPLY WITH 21 C.F.R. PART 1002 12;
 II. NOT EMIT AUDIBLE SOUND, AND
 III. NOT EMIT ULTRASONIC MEDIATOR OF CONTROL iii. NOT EMIT AUDIBLE SOUND, AND iii. NOT EMIT ULTRASOUND IN EXCESS OF THE DECIBEL LEVELS SHOWN IN TABLE 110.9A MEASURED NO MORE THAN iii. NOT EMIT ULTRASOUND IN EXCESS OF THE DECIBEL LEVELS SHOWN IN TABLE 110.9A MEASURED NO MORE THAN 5 FEET FROM THE SOURCE, ON AXIS.
 C. SENSORS THAT UTILIZE MICROWAVE RADIATION FOR DETECTION OF OCCUPANTS SHALL:
 i. COMPLY WITH AT C.F.R. PARTS 2 AND 15: AND
 ii. NOT EMIT RADIATION IN EXCESS OF 1 MILLIWATT PER SOURCE CENTIMETER MEASURED NO MORE THAN 5
 CENTIMETERS FROM THE EMISSION SUFRACE OF THE DEVICE.
 TINDICATOR LIGHTS. INDICATOR LIGHTS INTEGRAL TO LIGHTING CONTROLS SHALL CONSUME NO MORE THAN 1 WATT OF
 OPINION DEVICES. SECTION 110.10: MANDATORY REQUIREMENTS FOR SOLAR READINESS: SINGLE-FAMILY RESIDENCES. SINGLE-FAMILY RESIDENCES LOCATED IN SUBDIVISIONS WITH TEN OR MORE SINGLE-FAMILY RESIDENCES AND WHERE IS THE APPLICATION FOR A TENTATIVE SUBDIVISION MAP FOR THE RESIDENCES H BEEN DEEMED COMPLETE OR APPROVED BY THE ENFORCEMENT AGENCY, WHICH DO NOT HAVE A PHOTOVOLTAIC SYSTEM INSTALLED, SHALL COMPLY WITH THE REQUIREMENTS OF SECTIONS 110.10(B) THROUGH 110.10(E). (b) SOLAR ZONE:

 MINIMUM SOLAR ZONE AREA. THE SOLAR ZONE SHALL HAVE A MINIMUM TOTAL AREA AS DESCRIBED BELOW. THE SOLAR ZONE SHALL 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 SHALL BE COMPRISED OF AREAS THAT HAVE NO DIMENSION LESS THAN FIVE FEET AND ARE NO LESS THAN SO 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.
 A. SINGLE-FAMILY RESIDENCES. THE SOLAR ZONE SHALL BE LOCATED ON THE ROOF OR OVERHANG OF THE BUILDING AND HAVE A TOTAL AREA NO LESS THAN 250 SQUARE FEET.
 A. SINGLE-FAMILY RESIDENCES. THE SOLAR ZONE SHALL BE LOCATED ON THE ROOF OR OVERHANG OF THE BUILDING AND HAVE A TOTAL AREA NO LESS THAN 250 SQUARE FEET.
 BUILDING SVITH MOOT SUBJECTIVE FAMILY RESIDENCES WITH A PERMANENTLY INSTALLED DOMESTIC SOLAR WATER-HEATING SYSTEM MEETING THE INSTALLATION CRITERIA SPECIFIED IN THE REFERENCE BESIDENTIAL APERDIX RAY AND WITH AND WITH MINUM SOLAR SAVINGS FRACTION OF 0.50. IIDENTIAL APPENDIX RA4 AND WITH A MINIMUM SOLAR SAVINGS ERACTION OF 0.50. EPTION 2 TO SECTION 110.10(B)1A: SINGLE-FAMILY RESIDENCES WITH THREE HABITABLE STORIES OR MORE WITH A TOTAL FLOOR AREA LESS THAN OR EQUAL TO 2000 SOLARE FEET AND HAVING A SOLAR ZONE TOTA MILLA TOTALE LEGATATICAL ELESTINATON EQUAL TO EXAS COMPLETE LA MUNICIPALIZZATA DALLA DALLA DALLA DALLA DALLA DA INO LESS THAN 150 SOUARES EFEET. PTION 3 TO SECTION 110.101811A: SINGLE-FAMILY RESIDENCES LOCATED IN THE WILDLAND URBAN ERCCE FIRE AREAS DEFINED IN TITLE 24, PART 2 AND HAVING A WHOLE HOUSE FAM AND HAVING A SOLAR WIEHFAGE EINE AREARS DEFINIO IN TITLE 24 TARTI 2 AND FAVINO A WHOLE RUOSE FAVIAND HAVING A SOLAH (ONE TOTAL AREA NO LESS THAN 100 SOLARE FEET. XCCEPTION 4 TO SECTION 110.10(B)1A: BUILDINGS WITH A DESIGNATED SOLAR ZONE AREA THAT IS NO LESS THAN 00 PERCENT OF THE POTENTIAL SOLAR ZONE AREA. THE POTENTIAL SOLAR ZONE AREA IS THE TOTAL AREA OF INV LOW-SLOPED ROOFS WHERE THE ANNUAL SOLAR ACCESS IS 70 PERCENT OR GREATER AND ANY STEEP-SIOPED ROOFS OFIENTED BETWEEN 80 DEGREES AND 300 DEGREES OF TRUE NORTH WHERE THE ANNUAL SOLAR ACCESS IS 70 PERCENT OR GREATER. SOLAR ACCESS IS THE RATIO OF SOLAR INCLUDING SOLAR ACCESS IS 70 PERCENT OR GREATER. SOLAR ACCESS IS THE RATIO OF SOLAR INCLUDING SOLAR ACCESS IS 70 PERCENT TO MERICATION INCLUDING SOLAR ACCESS IS 70 PERCENT TO MERICA THE COMMENT. ADE TO THE SOLAR INSOLATION WITHOUT SHADE. SHADING FROM OBSTRUCTIONS LOCATED ON THE RO ANY OTHER PART OF THE BUILDING SHALL NOT BE INCLUDED IN THE DETERMINATION OF ANNUAL SOLAI IGLEESS. XCEPTION 5 TO SECTION 110.10(B)1A: SINGLE-FAMILY RESIDENCES HAVING A SOLAR ZONE TOTAL AREA NO LESS HAN 150 SQUARE FEET AND WHERE ALL THERMOSTATS ARE DEMAND RESPONSIVE CONTROLS AND COMPLY VITH SECTION 110.12(A) AND ARE CAPABLE OF RECEIVING AND RESPONSIVE SIGNALS PRIOR TO GRANTING OF AN OCCUPANCY PERMIT BY THE ENFORCING AGENCY, EXCEPTION 6 TO SECTION 110.10(9):1A: SINGLEFAMILY RESIDENCES MEETING THE FOLLOWING CONDITIONS; A. ALL THERMOSTAS ARE DEMAND RESPONSIVE CONTROLS THAT COMPLY WITH A SECTION 110.12(A) AND A. ALL THEHMOLT AND AND A SPONSVE CONTINUE OF THAT COMPLY WITH A SECTION TO ARE CARADLE OF RECEIVING AND RESPONSING TO DEMAND PROVINSE SIGNALS PRIOR TO I OF AN OCCUMPNCY PERMIT BY THE ENFORCING AGENCY.
B. COMPLY WITH ONE OF THE FOLLOWING MEASURES:

UMPLY WITH ONE OF THE FOLLOWING MEASURES: INSTALL DISHWASHER THAT MEETS OR EXCEEDS THE ENERGY STAR PROGRAM REQUIREMENTS WITH A REFRIGERATOR THAT MEETS OR EXCEEDS THE ENERGY STAR PROGRAM REQUIREMENTS WHOLE HOUSE FAN DRIVEN BY AND ELECTRONICALLY COMMUTATED MOTOR, OR AN SAE JI772 LEVEL 2 ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE OR EV CHARGER) WITH A MINIMUM OF 40 AMERICIPAL INSTALL A HOME AUTOMATION SYSTEM, CAPABLE OF, AT A MINIMUM, CONTROLLING THE APPLIANCES AND LIGHTING OF THE OWELLING AND RESPONDING TO DEMAND RESPONSE SIGNALS: OR III. INSTALL ALTERNATIVE PLUMBING IPPING TO PERMIT THE DISCHARGE FROM THE CLOTHES WASHER AND ALL SHOWERS AND BATHTUBS TO BE USED FOR AN IRRIGATION SYSTEM IN COMPLIANCE WITH THE CALIFORNIA PLUMBING CODE AND ANY APPLICABLE LOCAL ORDINANCES; OR II. INSTALL ANIWWRTER CATCHMENT SYSTEM DESIGNED TO COMPLY WITH THE CALIFORNIA PLUMBING IN INSTALL ANIWWRTEN CATCHMENT SYSTEM DESIGNED TO COMPLY WITH THE CALIFORNIA PLUMBING CODE AND ANY APPLICABLE LOCAL ORDINANCES, AND THAT USES RAINWATER FLOWING FROM LEAST 65 PERCENT OF THE AVAILABLE ROOF AREA. SECTION 150.0: MANDATORY FEATURES AND DEVICES: SINGLE-FAMILY RESIDENTIAL BUILDINGS SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS OF SECTIONS 150(A) THROUGH 150.0(V). NOTE: THE REQUIREMENTS OF SECTIONS 150.0(A) THROUGH 150.0(R) APPLY TO NEWLY CONSTRUCTED BUILDINGS. SECTIONS 150.2(A) AND 150.2(B) SPECIFY WHICH REQUIREMENTS OF SECTIONS 150.0(A) THROUGH 150.0(R) ALSO APPLY TO ADDITIONS OR 150.2(A) AND 150.2(B) SPECIFY WHICH REQUIREMENTS OF SECTIONS 1300(A) FINOSOFI 1300(A) FINOS M AMBIENT AIR, AND CEILINGS OR ROOF RAFTER ROOFS SEPARATING CONDITIONED SPACES FROM UNCONDITIONED SES OR AMBIENT AIR, SHALL MEET THE REQUIREMENTS OF ITEMS 1 THROUGH 4 BELOW: IN CLIMATE 2005S 4 AND 8 THROUGH 16, ROOF DECKS IN NEWLY CONSTRUCTED ATTIC SYSTEMS SHALL BE INSULATED TO ACHIEVE AN AREA- WEIGHTED AVERAGE, U-FACTOR NOT EXCEEDING U-0.184. XOEPTION TO SECTION 150.0(A)1: THE SPACE-CONDITIONING SYSTEM AIR HANDLER AND DUCTS ARE LOCATED ENTIRELY IN CONDITIONED SPACE BELOW THE CELING SERABATING THE OCCUPIABLE SPACE FROM THE ATTIC; OR THE SPACE-CONDITIONING SYSTEM AIR HANDLER IS LOCATED IN UNCONDITIONED SPACE AND HAS 12 LINEAR FEET OR LESS OF SUPPLY DUCT, INCLUDING THE LENGTH OF THE AIR HANDLER, AND THE PLENUM, LOCATED IN

UNCONDITIONED SPACE, WITH ALL OTHER PORTIONS OF SUPPLY DUCTS LOCATED IN CONDITIONED SPACE BELOW THE CELLING SEPARATING THE OCCUPIABLE SPACE FROM THE ATTIC. CELLINGS AND RAFTER ROOFS SHALL BE INSULATED TO ACHIEVE AN AREA-WEIGHTED AVERAGE U-FACTOR NOT EXCEEDING U-0 043 OR SHALL BE INSULATED DETWEEN WOOD-FRAMING MEMBERS WITH INSULATION TO INSTALLED THERMAIL RESISTANCE OF R-22 OR GREATER FOR THE INSULATION AND KE FOUR VENTED ATTICS, THE MANDATORY INSULATION SHALL BE INSTALLED AT THE CELLING EVEL; FOR UNVENTED ATTICS, THE MANDATORY INSULATION UNL OF CHARGE AT ETHIC OF UNITY OF ODOL EVEL; FOR UNVENTED ATTICS, THE MANDATORY EXCEPTION TO SECTION 150.01,2: CELLINGS AND RATTER ROVES, AND EXCEPTION TO SECTION 150.01,2: CELLINGS AND RATTER ROVES IN AN ALTERATION SHALL BE INSULATED TO A NA AREA-WEIGHTED AVERAGE U-FACTOR NOT EXCEEDING 0.054, OR SHALL BE INSULATED BETWEEN WOOD-FR WEIMBERS WITH INSULATION RESULTING, IM AND INSTALLED THERMAL RESISTANCE OF R-19 OR GREATER. YTTIC ACCESS DOORS SHALL HAVE PERMANENTLY ATTACHED INSULATION USING ADHESIVE OR MECHANICAL TENERS. THE ATTIC ACCESS, SHALL BE GASKETED TO PREVENT AIR LEAKAGE; AND FASTENERS. THE ATTIC ACCESS, SHALL BE GASKETED TO PREVENT AIR LEAKAGE; AND INSULATION SHALL BE INSTALLED IN DIRECT CONTRACT WITH A ROOF OR CELINON WHICH IS SEALED TO LIMIT INFILTRATION AND EXFILTRATION AS SPECIFIED IN SECTION 110.7, INCLUDING BUT NOT LIMITED TO PLACING INSULATION ETHER ABOVE OR BELOW THE ROOF DECK OR ON TOP OF A DRYWALL CELING. **DOSE-FILL INSULATION.** WHICH IS LOSSICATED IN SINSTALLED, THE MINIMUM IN INSTALLED WEIGHT PER SQUARE DOT SHALL CONFORM WITH THE INSULATION MANUFACTURER'S INSTALLED DESIGN WEIGHT PER SQUARE FOOT AT THE MINIFORCIPOL ADDIC TO A MULTICE. MANUFACTURER'S LABELED R-VALUE. (*) WALL INSULATION. OPAQUE PORTIONS OF ABOVE GRADE WALLS SEPARATING CONDITIONED SPACES FROM UNCONDITIONED SPACES OF AMBIENT AIR SHALL MEET THE REQUIREMENTS: 1. 2 X 4 INCH FRAMING SHALL HAVE AN OVERALLASSEMBLY U-FACTOR NOT EXCEEDING U-0 102. CONCENTION FOR OCCUPANTION FOR OUT - EVENTION WALL OF ADOVE MOUTH ATTOR TO DE EXCEEDING U-0 102. 2 X4 INCH FRAMING SHALL HAVE AN OVERALL ASSEMBLY U-HAGTOR NOT EXCEEDING U-01020 EXCEPTION TO SECTION 1500(0): ESITING WALLS ALTREADY INSULATE TO A U-HACTOR NOT EXCEEDING U-0.110 OR ALREADY INSULATED BETWEEN FRAMING MEMBERS WITH INSULATION HAVING AN INSTALLED THERMAL RESISTANCE OF OR GREATER. SINCH OR GREATER FRAMING SHALL HAVE AN OVERALL ASSEMBLY U-FACTOR NOT EXCEEDING U-0.071. QUE NON-FRAMED ASSEMBLIES SHALL HAVE AN OVERALL ASSEMBLY U-FACTOR NOT EXCEEDING U-0.102 OR BOW WINDOW ROOFS AND FLOORS SHALL BE INSULATED TO MEET THE WALL INSULATION REQUIREN BLE 150.1-A OR B. SASONRY WALLS SHALL BE INSULATED TO MEET THE WALL INSULATION REQUIREMENTS OF TABLE 150.1-A OR B. 5. MASONRY WALLS SHALL BE INSULATED TO MEET THE WALL INSULATION HEUDIREMENTS OF TABLE 150.1-A OH B. 6. IN WOOD FRAMED ASSEMBLIES, COMPLIANCE WITH U-FACTORS MAY BE DEMONSTRATED BY INSTALLING WALL INSULATION WITH AN R-VALUE OF 13 IN 2X4 ASSEMBLIES, AND 20 IN 2X6 ASSEMBLIES. RAISED-FLOOR INSULATION, RAISED FLOORS SEPARATING CONDITIONED SPACE FROM UNCONDITIONED SPACE OR AMBIENT AIR SHALL HAVE AN OVERALL ASSEMBLY U-FACTOR NOT EXCEEDING U-0.037. IN A WOOD FRAMED ASSEMBLY, COMPLIANCE WITH THE U-FACTOR MAY BE DEMONSTRATED BY INSTALLING INSULATION WITH AN R-VALUE OF 19 OR GREATER. EXCEPTION TO SECTION 150.0(D): A BUILDING WITH A CONTROLLED VENTILATION OR UNVENTED CRAWL SPACE MAY OMIT RAISED FLOOR INSULATION IF ALL OF THE FOLLOWING ARE MET. FLOOR INSULATION IF ALL OF THE FOLLOWING ARE MET: FOUNDATION WALLS ARE INSULATED TO MEET THE WALL INSULATION MINIMUMS AS SHOWN IN TABLE150.1-A OR B: CLASS I OR II VAPOR RETARDER IS PLACED OVER THE ENTIRE FLOOR OF THE CRAWL PACE: AND VENTS BETWEEN THE CRAWLSPACE AND OUTSIDE AIR ARE FITTED WITH AUTOMATICALLY OPERA: TEMPERATURE ACTUATED, AND ED LOUVERS THAT ARE RENCE RESIDENTIAL APPENDIX RA4. INL INCOMPARITIES IN REFERENCE RESULTENTIAL APPENDIA MA4.5.1. (9) INSTALLATION OF FIREPLACES, DECOMPTIVE GAS APPLIANCES AND GAS LOGS. IF A MASONRY OR FACTORY-BUIL FIREPLACE IS INSTALLED, IT SHALL COMPLY WITH SECTION 110.5, SECTION 4.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE STATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II AND SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SECTION 1.503 OF PART II ADD SHALL HAVE THE FOLL ADMINISTRATE OF THE SECTION SEC ILLOWING: CLOSABLE METAL OR GLASS DOORS COVERING THE ENTIRE OPENING OF THE FIREBOX; AND A COMBUSTION AIR INTAKE TO DRAW AIR FROM THE OUTSIDE OF THE BUILDING, WHICH IS AT LEAST & SQUARE INCHES IN AREA AND IS EQUIPPED WITH A READILY ACCESSIBLE OPERABLE AND TIGHT-FITTING DAMPER OR COMBUSTION-AIR ONTROL DEVICE; AND SYCEPTION TO SECTION 150.0(E)1B: AN OUTSIDE COMBUSTION-AIR INTAKE IS NOT REQUIRED IF THE FIREPLACE WILL BE INSTALLED OVER CONCRETE SLAB FLOORING AND THE FIREPLACE WILL NOT BE LOCATED ON AN EXTERIOR WALL. THE DE ANOTO DUVID ADDRESSING IN E CONTROL. A FLUE DAMPER WITH A READILY ACCESSIBLE CONTROL. EXCEPTION TO SECTION 150.0[E11C: WHEN A GAS LOG, LOG LIGHTER OR DECORATIVE GAS APPLIANCE IS IN INSTALLED IN A FIREPLACE, THE FLUE DAMPER SHALL BE BLOCKED OPEN IF REQUIRED BY THE CMC OR THE MANUFACTURERS INSTALLATION INSTRUCTIONS... 2. CONTINUOUS BURNING PILOT LIGHTS AND THE USE OF INDOOR AIR FOR COOLING A FIREBOX JACKET, WHEN THAT INDOOR AIR IS VENTED TO THE OUTSIDE OF THE BUILDING, ARE PROHIBITED. (1) SLAB EDGE INSULATION. MATERIAL USED FOR SLAB EDGE INSULATION SHALL MEET THE FOLLOWING MINIMUM SPECIFICATIONS: WATER ABSORPTION RATE FOR THE INSULATION MATERIAL ALONE WITHOUT FACINGS NO GREATER THAN 0.3 PERCENT HEN TESTED IN ACCORDANCE WITH TEST METHOD A :24-HOUR-IMMERSION OF ASTM C272. XTER VAPOR PERMEANCE NO GREATER THAN 2.0 PERMINCH WHEN TESTED IN ACCORDANCE WITH ASTM E96. NORRETE SLAB PERIMETER INSULATION SHAH BE PROTECTED FROM PHYSICAL DAMAGE AND ULTRAVIOLET LIGHT

. IN CLIMATE ZONES 1-16, THE EARTH FLOOR OF UNVENTED CRAWL SPACE SHALL BE COVERED WITH A CLASS I OR CLASS II VAPOR RETARDER. THIS REQUIREMENT SHALL ALSO APPLY TO CONTROLLED VENTILATION CRAWL SPACE FOR BUILDINGS COMPLYING WITH THE EXCEPTION TO SECTION 150.0(D): . IN CLIMATE ZONES 14 AND 16, A CLASS I OR CLASS II VAPOR RETARDER SHALL BE INSTALLED ON THE CONDITIONED SPACE SIDE OF ALL INSULATION IN ALL EXTERIOR WALLS, VENTED ATTICS AND UNVENTED ATTICS WITH AIR-PERMEABLE BUILDING COOLING AND HEATING LOADS. BUILDING HEATING AND COOLING LOADS SHALL BE DETERMINED USING A METHOD BASED ON ANY ONE OF THE FOLLOWING: A. THE ASHRAE HANDBOOK, EQUIPMENT VOLUME, APPLICATION VOLUME AND FUNDAMENTAL VOLUME; OR B. THE SMARCAN RESIDENTIAL COMFORT SYSTEM INSTALLATION STANDARD MANUAL; OR C. THE ACCA MANUALJ. ACCA MANUAL J. DLING AND HEATING LOADS ARE TWO OF THE CRITERIA THAT SHALL BE USED FOR EQUIPMENT SIZING AND THE COOLING AND HEATING LOADS ARE TWO OF THE CRITERIA THAT SHALL BE USED FOR EQUIPMENT SIZING AND SELECTION. NOTE: HEATING SYSTEMS ARE REQUIRED TO HAVE A MINIMUM HEATING CAPACITY ADEQUATE TO MEET THE MINIMUM REQUIREMENTS OF THE CBC. THE FURNACE OUTPUT CAPACITY AND OTHER SPECIFICATIONS ARE PUBLISHED IN THE COMMISSIONS DIRECTORY OF CENTIFIED ECUIPMENT OR OTHER DIRECTORIES APPROVED BY THE COMMISSION. DESIGN CONDITIONS, FOR THE PURPOSE OF SIZING THE SPACE CONDITIONING (HVAC) SYSTEM SARE PUBLISHED TEMPERATURES SHALL BE GREF FOR HEATING AND 75° FOR COOLING, OUTDOOR DESIGN CONDITIONS SHALL BE SELECTED FROM REFRERENCE JOINT APPENDIX JA2, WHICH IS BASED ON DATA FROM THE ASHARE CLIMATIC DATA FOR REGION X. THE OUTDOOR DESIGN TEMPERATURE FOR HEATING SHALL BE NO LOW ET THAN THE HEATING WINTER MEDIAN OF EXTREME VALUES THE OUTDOOR DESIGN TEMPERATURE FOR COOLING SHALL BE NO GREATER THAN THE 1.0 PERCENT COOLING DRY BULB AND MEAN COINCIDENT WET BULB VALUES. LDUOR CONDENSING UNITS. CLEARANCES: INSTALLED AIR CONDITIONER AND HEAT PUMP OUTDOOR CONDENSING UNITS SHALL HAVE A CLEARANCE OF AT LEAST FIVE (5) FEET (1.5 METERS) FROM THE OUTLET OF ANY DRYER VENT. CLEARANCE OF ALLEAST FIVE (5) FEEL (1.5 METERS) FROM THE OUTLET OF ANY DRYER VENT. B. LIQUID LINE PRIER, INSTALLED AIR CONDITIONER AND HEAT PUMP SYSTEMS SHALL BE EQUIPPED WITH LIQUID LINE FILTER DRIERS IF REQUIRED, AS SPECIFIED BY MANUFACTURER' INSTRUCTIONS. CENTRAL FORCED AIR-HEATING FURNACES. A. TEMPERATURE RISE. CENTRAL FORCED-AIR HEATING FURNACE INSTALLATIONS SHALL BE CONFIGURED TO OPERATE IN CONFORMANCE WITH THE FURNACE MANUFACTURER'S MAXIMUM INLET-TO-OUTLET TEMPERATURE RISE SPECIFICATIONS SPECIFICATIONS. (i) THERMOSTATS. ALL HEATING OR COOLING SYSTEMS, INCLUDING HEAT PUMPS, NOT CONTROLLED BY A CENTRAL ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) SHALL HAVE A SETBACK THERMOSTAT, AS SPECIFIED IN SECTION 110.2(C). (j) INSULATION FOR PIPING AND TANKS. WATER PIPING, SOLAR WATER-HEATING SYSTEM PIPING AND SPACE CONDITIONING, SYSTEM LINE INSULATION THICKNESS AND CONDUCTIVITY. PIPING SHALL BE INSULATED AS FOLLOWS: A. ALL DOMESTIC HOT WATER PIPING SHALL BE INSULATED AS SPECIFIED IN SECTION 609.11 OF THE CALIFORNIA PLUMBING CODE B. PIPING FOR SPACE-CONDITIONING SYSTEMS, SOLAR WATER-HEATING SYSTEM COLLECTOR LOOP AND DISTRIBUTION PIPING FOR STEAM AND HYDRONIC HEATING SYSTEM SHALL MEET THE REQUIREMENTS OF SECTION 120.3(C). EXCEPTION 11 OF SECTION 150.0(J)::FACTORY:INSTALLED PIPING WITHIN SPACE-CONDITIONING EQUIPMENT CERTIFIED UNDER SECTION 110.2 ECTION TIOLT OF TTO 2. ON 2 TO SECTION 150.0(J)1: PIPING THAT PENETRATES FRAMING MEMBERS SHALL NOT BE REQUIRED TO HAVE EXCEPTION 2 TO SECTION 150 (J)1: PIPING THAT PENETRATES FRAMING MEMBERS SHALL NOT BE REQUIRED TO HAVE IPIE INSULATION FOR THE DISTANCE OF THE FRAMING PENETRATION. PIPING THAT PENETRATES METAL FRAMING SHALL USE GROMMETS. PLUGS. WRAPPING OR OTHER INSULATING MATERIAL TO ASSURE THAT NO CONTACT IS MADE WITH THE METAL FRAMING. INSULATION SHALL BUTT SECURETY AGAINST ALL FRAMING MEMBERS. EXCEPTION 3 TO SECTION 150 (J)1: PIPING INSTALLED IN INTERIOR OR EXTERIOR WALLS SHALL NOT BE REQUIRED TO HAVE PIPE INSULATION FAIL DE THE REQUIREMENTS ARE MET FOR COMPLIANCE WITH QUALITY INSULATION INSTALLATION (Q)1 AS SPECIFIC IN THE REFERENCE RESIDENTIAL APPENDIX RASS. EXCEPTION 4 TO SECTION 150 (Q)1: PIPING SURBOUNDED WITH A MINIMUM OF 1 INCH OF WALL INSULATION. 2 INCHES C C CRAWLSPACE INSULATION. OR 4 INCHES OF ATTIC INSULATION SHALL NOT BE REQUIRED TO HAVE PIPE INSULATION. OR 4 INCHES OF ATTIC INSULATION PROTECTION REQUIREMENTS OF SECTION 100 C RAWLSPACE INSULATION. OR 4 INCHES OF ATTIC INSULATION PROTECTION REQUIREMENTS OF SECTION 100 (R) 100 (R) SECTION 150 (Q)1: PIPING SURBOUNDED WITH A MINIMUM OF 1 INCH OF WALL INSULATION. 2 INCHES 100 C RAWLSPACE INSULATION. OR 4 INCHES OF ATTIC INSULATION SHALL NOT BE REQUIRED TO HAVE PIPE INSULATION. 103 (R)100 PROTECTION, PIPE INSULATION SHALL MEET THE INSULATION PROTECTION REQUIREMENTS OF SECTION 103 (R)10 (R)1 LUMINAIRE REQUIREMENTS. A. LUMINAIRE EFFICACY. ALL INSTALLED LUMINARIES SHALL MEET THE REQUIREMENTS IN TABLE 150.0-A. EXCEPTION 1 TO SECTION 150.0K(1A: INTEGRATED DEVICE LIGHTING INCLIGATED TO EXHAUST FANS, KITCHEN RANGE HOODS, BATH VANITY, MIRRORS, AND GARAGE DOOR OPENERS. EXCEPTION 2 TO SECTION 150.0K(1A: NAVIGATION LIGHTING SUCH AS NIGHT LIGHTS, STEP LIGHTS, AND PATH LIGHTS LESS THAN 5 WATTS. IS WALTO. N 3 TO SECTION 150.0(K)1A: CABINET LIGHTING. LIGHTING INTERNAL TO DRAWERS, CABINETRY AND LINEN CLOSETS WITH AN EFFICACY OF 45 LUMENS PER WATT OR GREATER. B. SCREW-BASED LUMINAIRES. SCREW-BASED LUMINAIRES SHALL CONTAIN LAMPS THAT COMPLY WITH REFERENCE C. RECESSED DOWNLIGHT LUMINARIES IN CEILINGS. LUMINAIRES RECESSED INTO CEILINGS SHALL MEET ALL OF THE FOLLOWING REQUIREMENTS:

. SHALL NOT CONTAIN SCREW BASE LAMP SOCKETS: AND

MBINATION OF THE EXISTING BOILDING S UNALLETED SOUTH AND A SUB-MPONENTS'ENERGY FEATURES, PLUS THE PROPOSED ENERGY FEATURES OF THE ADDITION. WHOLE-DWELLING UNIT MECHANICAL VENTILATION. COEFFICIENT REQUIREMENTS OF SECTIONS 150.1(C)3A AND 150.1(C)4. RENCE RESIDENTIAL APPENDIX SECTION RA3.1.4.3.5.

FIRE DEPARTMENT SANTA CLARA COUNTY

STANDARD DETAILS & SPECIFICATIONS	Spec No	SI-7
	Rev. Date	<u>04/30/09</u>
SUBJECT: Construction Site Fire Safety	Eff. Date	<u>12/17/02</u>
	Approved By	
	Page <u>1</u>	of <u>9</u>

SCOPE

This Standard is intended to prescribe minimum safeguards for new building construction, demolition or significant building alteration projects in order to provide a reasonable degree of safety to life and property from fire. This Standard is based on the provisions for fire safety during building construction or demolitions as set forth in the 2007 California Fire Code Chapter 14 and National Fire Protection Association Standard 241. This Standard shall not be construed to be in lieu of other applicable State or Federal laws and regulations related to construction site safety. The general contractor (or other designee of the building owner) shall be responsible for compliance with the provisions of this Standard. When the term "shall" is used in this Standard, it means a mandatory requirement.

REQUIREMENTS

I. Fire Protection Plan

A written Fire Protection Plan shall be developed for significant or complex construction projects at the discretion of the fire department. The plan shall be approved by the fire department prior to proceeding past foundation work for new buildings or commencement of demolition work in alteration projects. The written plan shall be consistent with the fire safety precautions as specified in this Standard. The general contractor is responsible for carrying out the provisions of the Fire Protection Plan and communicating it to all subcontractors. Additionally, the Fire Marshal shall be notified of any change affecting the utilization of information contained in the Fire Protection plan. The Fire Protection Plan shall include the following:

- A. Procedures for reporting emergencies to the Fire department.
- B. Procedures for emergency notification, evacuation and/or relocation of all persons in the building under construction and on the site.
- C. Procedures for hot work operations, management of hazardous materials and removal of combustible debris and maintenance of emergency access roads. D. Floor plans identifying the locations of exits, exit stairs, exit routes and portable
- fire extinguishers. E. Site plans identifying the designated exterior assembly areas for each evacuation
- F. Site plans identifying required fire apparatus access roadways and on-site fire hvdrants.

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IV. Means of Egress Requirements

- A. Minimum number of Exits: All new buildings under construction shall have a least one unobstructed exit. All exits shall be identified on the Fire Protection Plan.
- B. <u>Multi-Story Buildings:</u> Each level above the first story in new multi-story buildings shall be provided with at least two usable exit stairs after the floor decking is installed. The stairways shall be continuous and discharge to grade level. Stairways serving more than two floor levels shall be enclosed (with openings adequately protected) after exterior walls/windows are in place. Éxit stairs in new and in existing, occupied buildings shall be lighted and
- maintained clear of debris and construction materials at all times.
- **Exception:** For new multi-story buildings, one of the required exit stairs may be obstructed on not more than two contiguous floor levels for the purposes of stairway construction (i.e., installation of gypsum board, painting, flooring, etc.).
- C. Assembly Points: Designated exterior assembly points shall be established for all construction personnel to relocate to upon evacuation. The assembly points shall also be identified in the Fire Protection Plan.

V. Area Separation Walls

When area separation walls are required, the wall construction shall be completed (with all openings protected) immediately after the building is sufficiently weatherprotected at the location of the wall(s).

VI. Special Operation Requirements

- A. Hot Work: Hot work includes any work involving operations capable of initiating fires or explosions, including cutting, welding, brazing, soldering, grinding, thermal spraying, thawing pipe, torch applied roofing, or any other similar activity. The use of hot work equipment shall be in accordance with the following guidelines, including a pre-site inspection, fire watch and post inspection procedures.
- Pre-site Inspection: An inspection of the hot work site shall be conducted by the General Contractor or his/her designee prior to hot work operations to ensure:

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G. The name and contact phone number of the person(s) responsible for compliance with the Fire Protection Plan.

II. General Safety Requirements

A. <u>Fire Department Access Roadways:</u> All construction sites shall be accessible by fire department apparatus by means of roadways having an all-weather driving service of not less than 20ft. of unobstructed width. The roads shall have the ability to withstand the live loads of fire apparatus, and have a minimum 13ft. 6 in. of vertical clearance. Dead end fire access roads in excess of 150 ft. in length shall be provided with approved turnarounds.

When approved by the Chief, temporary access roadways may be utilized until such time that the permanent roadways are installed. As a minimum, the roadway shall consist of a compacted sub base and six (6) inches of road base material (Class 2 aggregate base rock) both compacted to a minimum 95%. The perimeter edges of the roadway shall be contained and delineated by curb and gutter or other approved method. The use of geotextile reinforcing fabric underlayment or soils lime-treatment may be required if so determined by the project civil engineer. Provisions for surface drainage shall also be provided where necessary. The integrity of the roadway shall be maintained at all times.

Key boxes: Key boxes and/or approved padlocks shall be required when necessary for access through locked gates or structures.

- B. <u>Fire hydrants:</u> Where underground water mains and hydrants are required for the building(s) under construction, they shall be installed, completed, and in service prior to combustible construction materials accumulating on site.
- C. <u>Telephone service:</u> Provisions shall be provided at the construction site for emergency notification of the fire department via telephone. The street address of the construction site shall be posted adjacent to the telephone, along with the number for the public safety answering point.
- D. <u>Premises identification</u>: The address numbers of the property or project location shall be plainly visible and legible from the street or road fronting the property at the fire apparatus access point or as otherwise approved.
- E. <u>Combustible debris:</u> Wood, cardboard, packing material, form lumber and similar combustible debris shall not be accumulated within buildings. Such debris, rubbish and waste material shall be removed from buildings on a daily basis.

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- protected; (b) exposed construction is of noncombustible materials or that
- combustible materials are protected; (c) openings are protected; (d) there are no exposed combustibles on the opposite side of partitions, walls, ceilings, floors, etc.;
- (e) fire extinguishers are available, fully charged and operable; and (f) fire watch personnel are assigned, equipped and trained.
- 2. <u>Fire Watch:</u> The sole duty of fire watch personnel shall be to watch for the occurrence of fire during and after hot work operations. Individuals designated to fire watch duty shall have fire extinguishing equipment readily available and shall be trained in the use of such equipment Personnel assigned to fire watch shall be responsible for extinguishing spot fires and communicating an alarm. Fire watch personnel shall be provided with at least one means for notification of the fire department. Hot work conducted in areas with vertical and horizontal fire exposures that cannot be observed by a single individual shall have additional personnel assigned to fire watches to ensure that all exposed areas are monitored.
- 3. <u>Post-inspection</u>: The fire watch shall be maintained a minimum of 30 minutes after the conclusion of the work to look out for leftover sparks, slag or smoldering combustibles.
- B. <u>Asphalt and tar kettles</u>: Asphalt kettles shall not be located within 20 feet of any combustible material, combustible building surface or building opening. With the exception of thermostatically controlled kettles, an attendant shall be within 100 feet of a kettle when the heat source is operating. Ladders or similar obstacles shall not form a part of the route between the attendance and the kettle. Kettles shall be equipped with tight-fitting covers. A minimum 3A 40-B:C rated portable fire extinguisher shall be located within 30 feet of each asphalt kettle when the heat source is operating. Minimum 3A 40-B:C rated portable fire extinguishers also shall be located on roofs during asphalt coating operations.
- C. Motor Equipment: Motorized equipment including internal-combustionpowered construction equipment shall be used in accordance with the following;
 - 1) Equipment shall be located so that exhausts do not discharge against mbustible materials. 2) When possible, exhausts should be piped to the outside of the building.

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(a) the hot work site is clear of combustibles or that combustibles are

- F. <u>Oily rags</u>: Oily rags and similar material shall be stored in metal or other approved containers equipped with tight-fitting covers.
- G. <u>Temporary heating equipment:</u> Temporary heaters, such as those that are LPG fueled, shall be listed and shall be installed, used, and maintained in accordance with the manufacturer's instructions (See LPG storage and use requirements below). Heating devices shall be secured properly and kept clear from combustible materials. Refueling operations shall be conducted in an approved manner.
- H. Smoking: Smoking is prohibited anywhere inside or on the roof of new buildings under construction or in the project work area of buildings undergoing alteration. A suitable number of 'No Smoking' signs shall be posted to ensure that smoking is controlled.
- I. <u>Vehicle parking</u>: All vehicles shall be parked a minimum of 20 feet from new buildings under construction.
- Exceptions: 1. Vehicles that are temporarily parked for loading/unloading or other construction related operations. Such vehicles shall not be left unattended.
 - 2. Private vehicles may be parked in parking garages of Type I construction if the automatic fire sprinkler system is in service and vertical openings are protected.
- J. <u>Combustible material storage</u>: Combustible construction materials shall be stored a minimum of 20 feet from buildings under construction or undergoing remodel.
- **Exceptions:** 1. Materials that are staged for installation on a floor level.
 - 2. When approved by the Fire Department, materials may be stored in parking garages of Type I construction if the automatic fire sprinkler system is in service and vertical openings are protected.

III. Fire Protection Systems

A. Fire Sprinkler Systems: Where automatic fire sprinkler systems are required to be installed in new buildings, the system shall be placed in service as soon possible. Immediately upon the completion of sprinkler pipe installation on each floor level, the piping shall be hydrostatically tested and inspected. After inspection approval from the Fire department, each floor level of sprinkler piping shall be connected to the system supply riser and placed into service with all sprinkler heads uncovered. Protective caps may be

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- 3) Equipment shall not be refueled while in operation. 4) Fuel for equipment shall be stored in an approved area outside of the building
- (Ref: CFC Articles 87 & 13 also 49, 79 and 11)

VII. Hazardous Materials

- A. Liquefied Petroleum Gas (LP-Gas) Storage and use shall comply with the following:
- 1. Propane containers may be used in buildings under construction or undergoing major renovation as a fuel source for temporary heating for curing concrete, drying plaster and similar applications in accordance with the following:
- (a) Heating elements (other than integral heater-container units) shall be located at least 6 feet from any LP-Gas container.
- (b) Integral heater-container units specifically designed for the attachment of the heater to the container, or to a supporting standard attached to the container, may be used provided they are designed and installed so as to prevent direct or radiant heat application to the LP-Gas container.
- (c) Blower and radiant type units shall not be directed toward any LP-Gas container within 20 feet.
- (d) Heat producing equipment shall be installed with clearance to the combustibles in accordance with the manufacturer's installation instructions.
- (e) Cylinders shall comply with DOT cylinder specifications and shall be secured in an upright position.
- (f) Regulators shall be approved for use with LP-Gas. Fittings shall be designed for at least 250 psig service pressure.
- (g) Hose shall be designed for a working pressure of at least 350 psig (unless limited to 5 psig) and shall be a maximum of 6 feet in length.
- (h) Portable heaters shall be equipped with an approved automatic device to shut off the flow of gas to the main burner and to the pilot in the event of flame extinguishment or combustion failure. Portable heaters with an input of more than 50,000 Btu/hr shall be equipped with either a pilot that must be proved before the main burner can be turned on or an approved electronic ignition system.

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installed on the active sprinklers during the installation of drywall, texturing and painting, but shall be removed immediately after this work is completed. For system activation notification, an exterior alarm bell can be installed and connected to the sprinkler waterflow device prior to installation of the monitoring system.

For buildings equipped with fire sprinkler systems that are undergoing alterations, the sprinkler system(s) shall remain in service at all times except when system modifications are necessary. Fire sprinkler systems undergoing modifications shall be returned to service at the end of each workday unless otherwise approved by the fire department. The General contractor or his/her designee shall check the sprinkler control valve(s) at the end of each workday to confirm that the system has been restored to service.

- B. <u>Standpipes:</u> Where standpipes are required, the standpipes shall be installed when the progress of construction is not more than 35 ft. in height above the lowest level of the fire department access. Standpipes shall be provided with fire department hose connections and outlets at accessible locations adjacent to usable stairs. The standpipe system shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring. Each floor shall be provided a 21/2-inch valve outlet for fire department use. Where construction height requires installation of a Class III standpipe, fire pumps and water main connections shall be provided to serve the standpipe.
- C. <u>Fire Extinguishers: Portable</u> fire extinguishers shall be provided and shall be mounted on a wall or post at each usable stairway and such that the travel distance to any extinguisher does not exceed 75 ft. Mounting height to the top of the extinguisher shall not exceed 5 feet. Extinguishers shall not have less than a 2A10BC rating or as otherwise directed by the fire department. The general contractor shall ensure that an adequate number of individuals are trained in the proper use of portable fire extinguishers. Fire extinguishers shall also be located in storage sheds and contractor trailers.
- D. <u>Fire Alarm Systems:</u> Fire alarm systems shall be maintained operational at all times during building alterations. When an alteration requires modification to a portion of the fire alarm system, the portion of the system requiring work shall be isolated and the remainder of the system shall be kept in service whenever practical. When it is necessary to shut down an entire fire alarm system a fire watch or other mitigation approved by the fire department shall be implemented by the general contractor until the system is returned to full service.

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- 2. In addition to the above, for LPG storage/use in buildings undergoing alteration and that are fully or partially occupied, the following shall also apply
- (a) Specific approval must be obtained from the fire department prior to bringing LP-Gas containers on-site.
- (b) The maximum water capacity of individual containers shall be 5gallon water capacity and the number of containers in the building shall not exceed the number of workers assigned to using the LP-Gas.
- (c) Containers having a water capacity greater than 21/2 lb. [1 quart] shall not be left unattended.

B. Storage, Use and Dispensing of Flammable and Combustible Liquids

- 1. Storage areas for flammable and combustible liquids shall be kept free of weeds and extraneous combustible material. Open flames and smoking
- are prohibited in flammable or combustible liquid storage areas. 2. Tanks and containers shall be marked with the name of the product and FLAMMABLE-KEEP FIRE AND FLAME AWAY. Tanks (containers in excess of 60 gallons) shall also be labeled KEEP 50 FEET FROM BUILDINGS.
- 3. Metal containers for Class I or II liquids shall be in accordance with DOT requirements or shall be of an approved design. Discharge devices shall not cause an internal pressure on the container. Individual containers shall not be interconnected and shall be kept closed when not in use.
- 4. Secondary containment or a means of spill control, drainage control, and diking is required for large containers (such as 55 gallon drums) and tanks as approved by the fire department. 5. Plans for the installation/use of any aboveground storage tank (containers
- greater than 60 gallons) shall be submitted to the fire department for review and permit prior to the proposed tank arriving at the site.

C. <u>Compressed Gases</u>

- Gas cylinders shall be marked with the name of the contents.
- Gas cylinders shall be stored upright and secured to prevent falling. 3. When not in use, valve protective caps shall be in place.
- 4. Gas cylinders shall be protected against physical damage.
- 5. When stored, gas cylinders shall be separated from each other based on their hazard classes.
- 6. Combustible materials shall be kept a minimum of 10 feet from gas containers.
- 7. Gas cylinders shall not be placed near elevators, unprotected platform edges or other areas where they would drop more than 2 feet.
- 8. Gas cylinders shall not be placed in areas where they may be damaged by falling objects.
- 9. Ropes, chains or slings shall not be used to suspend gas cylinders, unless the cylinder was manufactured with appropriate lifting attachments.

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4	08.354.62 408.354.6 www.britt-	224 (office 5514 (fax) rowe.com	e)			
Britt Rowe shall retain all rights and ownership to all drawings and specifications. The contents of the drawings may not be used in whole, or in part, without expressed written consent given by Britt Rowe. All construction shall comply with all local & national building codes. All contractors shall verify all conditions to assure conformance to these codes.						
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REVISIONS

GOVERNING CODES: All work shall conform to the following codes & standards 2022 California Building Code (CBC) Title 24, Part 2 (Based on 2021 IBC) 22 California Residential Code (CRC) Title 24, Part 2.5 (Based on 2021 I 22 California Electric Code (CEC) 22 California Mechanical Code (CMC) Title 24, Part 3 (Based on 2020 NEC Title 24, Part 4 (Based on 2021 UMC 2 California Plumbing Code (CPC) Title 24, Part 5 (Based on 2021 UPC 2022 California Energy Code Title 24, Part 6 (CA Building Standards Commission 2022 California Fire Code (CFC) 2022 CalGreen Building Code Title 24, Part 9 (Based on 2021 IFC) Title 24, Part 11 (CA Building Standards Commission) In addition to the codes referenced above, all work shall conform to all local ordinances and codes as applicable. Cross reference all code numbers and verify consistency as required. If all of the appropriate permits are not obtained, Britt/Rowe & all project consultants shall not be held responsible for any and all work performed. NOTE: See Foundation Plan, Framing Plan(s) & structural notes for structural design layout, structural details, material CRC CHAPTER 1: SCOPE AND APPLICATION SECTION R105: PERMITS R105.1 Required. Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the

R105.1 Required. Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the building official and obtain the required permit. R105.2 Work exempt from permit. Permits shall not be required for the following. Exemption from permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code on the observation of any work to be done in any manner in violation of the provisions of this code on the observation. ode shall not be deemed to grant authorization ny other laws or ordinances of this jurisdiction

- Other than storm shelters, one-story, detached accessory structures, provided that the floor area does not exceed 120 square feet (11.15 m2). It is permissible that these structures still be regulated by Section 710A, despite exemption from permi Fences not over 7 feet (2134 mm) high. 3. Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall,
- unless supporting a surcharge. . Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (18 927 L) and the ratio of height to diameter or width does not exceed 2 to
- Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work. cated swimming pools that are less than 24 inches (610 mm) deep.
- Swings and other playground equipment. Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and 10. Decks not exceeding 200 square feet (18.58 m2) in area, that are not more than 30 inches (762 mm) above grade at any point, are not attached to a dwelling and do not serve the exit door required by Section R311.4 SECTION R110: CERTIFICATE OF OCCUPANCY
- R110.1 Use and change of occupancy. A building or structure shall not be used or occupied in hole, or in part, and a change of occupancy of a building, or structure or portion there of shall not be mad, until the building official has issued a certificate of occupancy, therefore as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a of the provisions of this code, or other ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code, or other ordinances of the jurisdiction shall not be valid Certificates of occupancy are not required for work exempt from permits under Section R105.2. 2. Accessory buildings or structures. R110.2 Change in use. Changes in the character or use of an existing structure shall not be made except as specified in Chapter
- Shange in use. Onlarges in the onlarable to do on an observe sector 2 and the sector 2 and following: The permit number. 3. The name and address of the owner or the owner's authorized agent.

4. A description of that portion of the structure for which the certificate is issued. 5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code. he name of the building official. he edition of the code under which the permit was issued. 8. Where an automatic sprinkler system is provided and whether the sprinkler system is required.

- 9. Any special stipulations and conditions of the building permit. SECTION R202: DEFINITIONS See CRC R202 for additional definitions not listed. Accessory Dwelling Unit: and attached or detached residential dwelling unit that provides complete independent living facilitie or one or more persons and is located on a lot with a proposed or existing primary residence. Accessory dwelling units shal nclude permanent, provisions for living, sleeping, eating, cooking and sanitation on the same parcel as the single-family or multi amily dwelling is or will be situated. (See Government Code Section 65852.2) Accessory Structure: A structure that is accessory to and incidental to that of the dwelling(s) and that is located on the same lot. Addition: An extension or increase in floor area, number of stories, or height of a building or structure.
- Attention: Any construction, retroft, or renovation to an existing structure, other than repair or addition that requires a permit. Also, a change in a building, electrical, gas, mechanical or plumbing system, that involves an extension, addition, or change to t arrangement, type or purpose of the original installation that requires a permit. <u>Attic</u>: The unfinished space between the ceiling assembly of the top story and the roof assembly. Attic, Habitable: A finished or unfinished habitable space within an attic. ment: A story that is not a story above grade plane, (see "Story above grade plane"). Building: Any one-or two-family dwelling or townhouse, or portion thereof, used or intended to be used for human habitation, for
- ving, sleeping, cooking, or eating purposes, or any combination thereof, or any accessory structure. (See CRC Section R202 for Building, Existing: Existing building is a building erected prior to the adoption of this code, or one for which a legal building Ceiling Height: The clear vertical distance from the finished floor to the finished ceiling.
- <u>Develling vinit</u> And building that contains on or two dwelling units used, intended colling. <u>Develling vinit</u> Any building that contains on or two dwelling units used, or designed to be built, used, rented, leased, let or hired out to be occupied, or that are occupied for living purposes. <u>Develling unit</u>: A single unit providing complete independent living facilities for one or more persons, including permanent contains of the provided for living, sleeping, eating, cooking and sanitation
- Grade: The finished ground level adjoining the building at all exterior walls. abitable Space: A space in a building for living, sleeping, eating or cooking. Bathrooms, toilet rooms, closets, halls, storage or utility spaces and similar areas are not considered habitable spaces. Height, Building: The vertical distance from top to top of two successive tiers of beams or finished floor surface. Height, Story: The vertical distance from top to top of two successive tiers of beams or finished floor surfaces; and, for the topmost story, from the top of the floor finish to the top of the ceiling joists or, where there is not a ceiling, to the top of the roof reflexe
- Living Space: Space within a dwelling unit utilized for living, sleeping, eating, cooking, bathing, washing and sanitation purposes Structure: That which is built or constructed. SECTION R302: FIRE RESISTANT CONSTRUCTION
- R302.1 Exterior walls. Construction, projections, openings and penetrations of exterior walls of dwellings and access shall comply with Table R302.1(1); or dwellings and accessory buildings equipped throughout with an automatic sprinkler system installed in accordance with Section R313 shall comply with Table R302.1(2).
- Walls, projections, openings or penetrations in walls perpendicular to the line used to determine the fire separation distance 2. Walls of dwellings and accessory structures located on the same lot.
- Wails of dwellings and accessory structures located on the same iot.
 Detached tool sheds and storage sheds, playhouses and similar structures exempted from permits are not required to provide wall protection based on location on the lot. Projections beyond the exterior wall shall not extend over the lot line.
 Detached garages accessory to a dwelling located within 2 teet (610 mm) of a lot line are permitted to have roof eave projections not exceeding 4 inches (102 mm).
 Foundation vents installed in compliance with this code are permitted. R302.5 Dwelling/garage opening/penetration protection. Openings and penetrations through the walls or ceilings separating the dwelling from the garage shall be in accordance with Sections R302.5.1 through R302.5.3.
- **R302.5.1 Opening protection**. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1-3/8 inches (35 mm) in thickness, solid or honeycomb-core steel doors not less than 1-3/8 inches (35 mm) thick, or 20-minute fire-rated doors. Doors shall be self-latching and equipped with a self-closing or automatic closing device.

Exception: Where the residence and the private garage are protected by an automatic residential fire sprinkler system in ordance with Sections R309.6 and R313, other door openings between the private garage and the residence need only be self-closing and self-latching. This exception shall not apply to rooms used for sleeping purposes. R302.5.2 Duct penetration. Ducts in the garage and ducts penetrating the walls or ceilings separating the dwelling from the cted of a minimum No. 26 gauge (0.48mm) sheet steel or other approved material and shall have n trations. Penetrations through the separation required in Section R302.6 shall be protected as required

- by Section R302.11, Item 4. R302.6 Dwelling/garage and/or carport fire separation. The garage and/or carport shall be separated as required by Table R302.6. Dpenings in garage walls shall comply with Section R302.5. Attachment of gypsum board shall comply with Table R302.6. Dpenings in garage walls shall comply with Section R302.5. Attachment of gypsum board shall comply with Table R702.3.5. The wall separation provisions of Table R302.6 shall not apply to garage walls that are perpendicular to the adjacent dwelling unit wall. A separation is not required between the dwelling unit and a carport, provided the carport is entirely open on two or more sides and there are not enclosed areas above. R302.7 Under stair protection. Enclosed accessible space under stairs shall have walls, under-stair surface and any soffits protected on the enclosed side with 1/2 inch (12.7 mm) gypsum board. R302.11 Fire blocking. In combustible construction, fire-blocking shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective barrier between stories, and between a top story and the roof space. Fire blocking shall be provided in woord-frame construction in the following locations: shall be provided in wood-frame construction in the following locations: 1. In concealed spaces of stud walls and partitions, including furred spaces and parallel rows of studs or staggered studs, as
- Vertically at the ceiling and floor levels. . Horizontally at intervals not exceeding 10 feet (3048 mm). At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove
- 3. In concealed spaces between stair stringers at the top and bottom of the nm. Enclosed spaces under stairs shall comply with 4. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free
- passage of flame and products of combustion. The material filling this annular space shall not be required to meet the ASTM . For the fire blocking of chimneys and fireplaces, see Section RI003.19.
- b. For the tire blocking of chirmeys and fireplaces, see Section FI003.19.
 6. Fire blocking of comices of a two-family dwelling is required at the line of dwelling unit separation.
 R302.12 Draft-stopping. In combustible construction where there is usable space both above and below the concealed space of a floor/ceiling assembly, draft stops shall be installed so that the area of the concealed space does not exceed 1,000 square feet (92.9 m2). Draft stopping shall divide the concealed space ace into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draft stopping shall be provided in floor/ceiling assemblies under the following circumstances. following circumstances: 1. Ceiling is suspended under the floor framing.
- Ceiling is suspended under the floor framing.
 Floor framing is constructed of truss-type open-web or perforated members.
 R302.13 Fire protection of floors. Floor assemblies that are not required elsewhere in this code to be fire-resistance rated, shall be provided with a 1/2 inch (12.7 mm) gypsum wall board membrane, 5/8 inch (16 mm) wood structural panel membrane, or equivalent on the underside of the floor framing member. Penetrations or openings for ducts, vents, electrical outlets, lighting, devices, luminaries, wires, speakers, drainage, piping and similar openings or penetrations shall be permitted.
- Floor assemblies located directly over a space protected by an automatic sprinkler system in accordance with Section R313, NFPA 13D, or other approved equivalent sprinkler system. Floor assemblies located directly over a crawl space not intended for storage or fuel-fired appliances.
- 2. Thor assertions of floor assemblies shall be permitted to be unprotected where complying with the following: 3. Portions of floor assemblies shall be permitted to be unprotected where complying with the following: 3.1 The aggregate area of the unprotected portions does not exceed 80 square feet (7.4 m2) per story. 3.2 Fire-blocking in accordance with Section R302.11.1 is installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly. 4. Wood floor assemblies using dimension lumber or structural composite lumber equal to or greater than 2 inch by 10 inch (50.8 nm) nominal dimension, or other approved floor assemblies demonstrating equivalent fire performance R302.14 Combustible insulation clearance. Combustible insulation shall be separated not less than 3 inches (76 mm) from recessed luminaries, fan motors and other heat-producing devices. Exception: Where heat-producing devices are listed for lesser clearances, combustible insulation complying with the listing
- ements shall be separated in accordance with the conditions stipulated in the listing. Recessed luminaries installed in the building thermal envelope shall meet or exceed the requirements of Section N1102.4.5 of this code. SECTION R303: LIGHT, VENTILATION AND HEATING R303.1 Habitable rooms. Habitable rooms shall have an aggregate glazing area of not less than 8 percent of the floor area of such rooms. Natural ventilation shall be through windows, skylights, doors, louvers or other approved openings to the outdoor air.
- Such openings shall be provided with ready access or shall otherwise be readily controllable by the building occupants. The area to the outdoors shall be not less than 4 percent of the floor area being ventilated
- <u>septions:</u> For habitable rooms other than kitchens, the glazed areas need not be open at all what are the opening is not required by Section R310 and a whole-house mechanical ventilation system, or a mechanical ventilation system, capable of producing 0.35 air changes per hour in the habitable rooms is installed in accordance with the California Mechanical Code. 2. For kitchens, the glazed areas need not be openable where the opening is not required by Section R310 and a local exhaust system is installed in accordance with the California Mechanical Code.
- The glazed areas need not be installed in rooms where Exception 1 is satisfied and artificial light is provided that is capable o producing an average illumination of 6 foot-candles (65 lux) over the area of the room at a height of 30 inches (762 mm) above the floor level. se of sunroom and patio covers, as defined in Section R202, shall be permitted for natural ventilation if in excess of 40
- percent of the exterior sunroom walls are open, or are enclosed only by insect screening. The windows, doors, louvers, and other approved closable openings not required by Section R310 may open into a passive solar energy collector for ventilation required by the section. The area of ventilation openings to the outside of the passivi plar energy collector shall be increased to compensate for the openings required by the interior space Glazed openings may open into a passive solar energy collector provided the area of exterior glazed opening(s) into the passive solar energy collector is increased to compensate for the area required by the interior space. R303.2 Adjoining rooms. For the purpose of determining light and ventilation requirements, any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open and unobstructed and provides an
- pening of not less than one-tenth of the floor area of the interior room but not less than 25 square feet (2.3 m2) on: Openings required for light and/or ventilation shall be permitted to open into a sunroom with thermal isolation or a pati cover, provided that there is an openable area between the adjoining room and the sunroom or patio cover of not less than one tenth of the door area of the interior room but not less than 20 square feet (2 m2). The minimum openable area to the outdoor I be based upon the total floor area being ventilated. R303.3 Bathrooms. Bathrooms, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet (0.3 m2), one-half of which must be openable. Exception: The glazed areas shall not be required where artificial light and a local exhaust system are provided. The minimum exhaust rates shall be 50 cubic feet per minute (25 L/s) for intermittent ventilation or 20 cubic feet per minute (10 L/s) fo
- in accordance with the California Mechanical Code, Chapter 4. Exhaust air from the space shall be R303.3.1 Bathroom exhaust fans. Each bathroom containing a bathtub, shower or tub/shower combination shall be mechanically ventilated for purposes of humidity control in accordance with the California Mechanical Code, Chapter 4; and the California Green Building Standards Code, Chapter 4, Division 4.5. ote: Window operation is not a permissible method of providing bathroom exhaust for humidity control.
- R303.4 Ventilation. Ventilation air rates shall be in compliance with the California Mechanical Code. R303.5 Opening location. Outdoor intake and exhaust openings shall be located in accordance with Sections R303.5.I and R303.5.1 Intake openings. Mechanical and gravity outdoor air intake openings shall he located not less than 10 feet (3048 or noxious contaminant, such as vents, chimneys, plumbing vents, streets, alleys, parking lots and loading docks. For the purpose of this section, the exhaust from dwelling unit toilet rooms, bathrooms and kitchens shall not considered as hazardous or noxious Exceptions: 1. The 10 foot (3048mm) separation is not required where the intake opening is located 3 feet (914 mm) or greater below the
- Vents and chimneys, serving fuel, burning appliances shall be terminated in accordance with the applicable provisions of the California Mechanical Code. Clothes dryer exhaust ducts shall be terminated in accordance with the California Mechanical Code. R303.5.2 Exhaust openings. Exhaust air shall not be directed onto walkways. R303.6 Outside opening protection. Air exhaust and intake openings that terminate outdoors shall be protected with corrosion resistant screens, louvers or grilles having a minimum opening size of 1/4 inch (6 mm) and a maximum opening size of 1/2 incl 3 mm), in any dimension. Openings shall be protected against local weather conditions. Outdoor air exhaust and intake
- ns for exterior wall opening protectives in accordance with this code. 303.7 Interior stairway illumination. Interior stairways shall be provided with an artificial light source to illuminate the landings and treads. The light source shall be capable of illuminating treads and landings to levels of not less than 1 foot-candle (11 lux) as measured at the center of treads and landings. There shall be a wall switch at each floor level to control the light source where the tairwav has six or more risers witch is not required where remote, central or automatic control of lighting is provided EXCEPTION: A Switch is not required where tomoto, contacts a datamatic structure of the str anding of the stairway. Exterior stairways providing access to a basement from the outdoor grade level shall be provided with an artificial light source located at the bottom landing of the stairway.

- R303.9 Required heating. Where the winter design temperature in Table R301.2(1) is below 60°F (16°C), every dwelling unit shall be provided with heating facilities capable of maintaining a room temperature of not less than 68°F (20°C) at a point 3 fee 914 mm) above the floor and 2 feet (610 mm) from exterior walls in habitable rooms at the design temperature. The installation of he or more portable space heaters shall not be used to achieve compliance with this section Note: See Section R301.1.1.1 for limited-density owner-built rural dwellings.
- SECTION R304: MINIMUM ROOM AREAS R304.1 Minimum area. Habitable rooms shall have a floor area of not less than 70 square feet (6.5 m2). xception: Nichens 304.2 Minimum dimensions. Habitable rooms shall not be less than 7 feet (2134 mm) in any horizontal dimension.
- imited-density owner-built rural dwellings. See Section R301.1.1.1.
- R304.3 Height effect on room area. Portions of a room with a sloping ceiling measuring less than 5 feet (1524 mm) or a furred ceiling measuring less than 7 feet (2134 mm) from the finished floor to the finished ceiling shall not be considered as contributing to the minimum required habitable area for that room. SECTION R305: CEILING HEIGHT R305.1 Minimum height. Habitable space, hallways and portions of basements containing these spaces shall have a ceilir
- eight of not less than 7 feet (2134 mm). Bathrooms, toilet rooms and laundry rooms shall have a ceiling height of not less than 6 et 8 inches (2032 mm). Exceptions: 1. For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 feet (1524) 1. For rooms with sloped ceilings, the required floor area of the room shall have a ceiling height of not less than 5 feet (1524)
- n and not less than 50 percent of the required floor area shall have a ceiling height of not less than 7 feet (2134 m) and not less than 50 percent of the required floor area shall have a ceiling height of not less than 7 feet (2134 me ceiling height above bathroom and toilet room fixtures shall be such that the fixture is capable of being used for its ended purpose. A shower or tub equipped with a shower head shall have a ceiling height of not less than 6 feet 8 inc 032 mm) above an area of not less than 30 inches (762 mm) by 30 inches (762 mm) at the shower head. basements containing habitable space shall be permitted to project to within 6 Beams in garchiers spaced apart not less than 36 inches (914 mm) in the clear finished with shower project, not more than 78 inches (1981 mm) from the finished floor. **R305.1.1 Basements**. Portions of basements that do not contain habitable space or hallways shall have a ceiling height of not
- <u>Sizeption</u>: At beams, girders, ducts or other obstructions, the ceiling height shall be not less than 6 feet 4 inches (1931 mm) or m the finished floor SECTION R306: SANITATION
- R306.1 Toilet facilities. Every dwelling unit shall be provided with a water closet, lavatory, and a bathtub or shower. R306.2 Kitchen. Each dwelling unit shall be provided with a kitchen area and every kitchen area shall be provided wit R306.3 Sewage disposal. All plumbing fixtures shall be connected to a sanitary sewer or to an approved private sew 6.4 Water supply to fixtures. All plumbing fixtures shall be connected to an approved water supply. Kitchen sinks, lavatories SECTION R307: TOILET, BATH AND SHOWER SPACES
- R307.1 Space required. Fixtures shall be spaced in accordance with the *California Plumbing Code*. R307.2 Bathtub and shower spaces. Bathtub and shower floors and walls above bathtubs with installed shower heads and in shower compartments shall be finished with a non-absorbent surface. Such wall surfaces shall extend to a height of not less than (set (1430) may because the local
- SECTION R308: GLAZING R308.1 Identification. Except as indicated in Section R308.1.1 each pane of glazing installed in hazardous locations as defined Control control control control is a second of the control of t
- <u>ceptions</u>: For other than tempered glass, manufacturer's designations are not required provided the building official approves the use of in that refipered glass, intantacturer's designations are not required provided the building official appro-tate, affidavit or other evidence confirming compliance with this code. de spandrel glass is permitted to be identified by the manufacturer with a removable paper designation
- R308.1.1 Identification of multiple assemblies. Multi-pane assemblies having individual panes not exceeding 1 square foot (0.09 m2) in exposed area shall have at least one pane in the assembly identified in accordance with Section R308.1. All other panes in the assembly shall be labeled "CPSC 16 CFR 1201" or "ANSI Z97.1" as appropriate. R308.2 Louvered windows or jalousies. Regular, float, wired or patterned glass in jalousies and louvered windows shall be no hinner than nominal 3/16 inch (5 mm) and no longer than 48 inches (1219 mm). Exposed glass edges shall be smooth R308.2.1 Wired glass prohibited. Wired glass with wire exposed on longitudinal edges shall not be used in jalousies or R308.3 Human impact loads. Individual glazed areas, including glass mirrors in hazardous locations such as those indicated a lefined in Section R308.4, shall pass the test requirements of Section R308.3.
- vindows and ialousies shall comply with Section R308.2. rs and other glass panels mounted or hung on a surface that provides a continuous backing support complying with Section R610.
- **R308.3.1 Impact test.** Where required by other sections of the code, glazing shall be tested in accordance with CPSC 16 CFR 1201. Glazing shall comply with the test criteria for Category II unless otherwise indicated in Table R308.3.1(1). Exception: Glazing not in doors or enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers shall be I to be tested in accordance with ANSI Z97.1. Glazing shall comply with the test criteria for Class A unless indicate R308.4 Hazardous locations. The locations specified in Sections R308.4.1 through R308.4.7 shall be considered specific
- ardous locations for the purposes of glazing. R308.4.1 Glazing in doors. Glazing in all fixed and operable panels of swinging, sliding and bifold doors shall be considered
- R308.4.2 Glazing adjacent doors. Glazing in an individual fixed or operable panel adjacent to a door shall be considered ation where the bottom exposed edge of the glazing is less than 60 inches (1524 mm) above the floor or walking surface and it meets either of the following conditions: 1. Where the glazing is within 24 inches (610 mm) of either side of the door in the plane of the door in a closed positior Where the glazing is on a wall perpendicular to the plane of the door in a closed position and within 24 inches (610 mm) of the hinge side of an in-swinging door. ecorative glazing.
- When there is an intervening wall or other permanent barrier between the door and the glazing. . Where access through the door is to a closet or storage area 3 feet (914 mm) or less in depth. Glazing in this application shall comply with section R308.4.3. ring that is adjacent to the fixed panel of patio doors.
- R308.4.3 Glazing in windows. Glazing in an individual fixed or operable panel that meets all of the following conditions shall e exposed area of an individual pane is larger than 9 square feet (0.836 m2) e bottom edge of the glazing is less than 18 inches (457 mm) above the floor
- The top edge of the glazing is more than 36 inches (914 mm) above the floor; and or more walking surfaces are within 36 inches (914 mm), measured horizontally and in a straight line, of the glazing.
- ecorative glazing. When a horizontal rail is installed on the accessible side(s) of the glazing 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) without contacting the glass and be a minimum of 1-1/2 inches (38 mm) in cross sectional height. panes in insulating glass units and other multiple glazed panels when the bottom edue of the alass is 25 feet 7620 mm) or more above grade, a roof, walking surfaces or other horizontal [within 45 degrees (0.79 rad) of horizonta urface adjacent to the glass exterior. R308.4.4 Glazing in guards and railings. Glazing in guards and railings, including structural baluster panels and onstructural in-fill panels, regardless of area or height above a walking surface shall be considered a hazardous loca 308.4.5 Glazing and wet surfaces. Glazing in walls, enclosures or fences containing or adjacent to hot tubs, spas, whirlpools, saunas, steam rooms, bathtubs, showers and indoor or outdoor swimming pools where the bottom exposed edge f the glazing is less than 60 inches (1524 mm) measured vertically above any standing or walking surface shall be ardous location. This shall apply to single glazing and all panes in multiple glazing peption: Glazing that is more than 60 inches (1524 mm), measured horizontally from the water's edge of a bathtub, hot tub, or swimming pool or from the edge of a shower, sauna or steam room. R308.4.6 Glazing adjacent stairs and ramps. Glazing where the bottom exposed edge of the glazing is less than 36 inches 014 mm) above the plane of the adjacent walking surface of stairways, landings between flights of stairs and ramps shall be
- . When a rail is installed on the accessible side(s) of the glazing 34 to 38 inches (864 to 965 mm) above the walking surface. The rail shall be capable of withstanding a horizontal load of 50 pounds per linear foot (730 N/m) withou ntacting the glass and be a minimum of 1-1/2 inches (38 mm) in cross sectional height. ng 36 inches (914 mm) or more measured horizontally from the walking surface R308.4.7 Glazing Adjacent to the bottom stair landing. Glazing adjacent to the landing at the bottom of a stairway when and within a 60-inch (1524 mm) horizontal arc less than 180 degrees from the bottom tread nosing shall be considered to be a hazardous location. xception: The glazing is protected by a guard complying with Section R312 and the plane of the glass is more than 18 inches
- R308.5 Site built windows. Site built windows shall comply with Section 2404 of the California Building Code. R308.6 Skylights and sloped glazing. Skylights and sloped glazing shall comply with the following sections. R308.6.1 Definitions. The following terms are defined in Chapter 2: ITS AND SLOPED GLAZING
- R308.6.2 Materials. The following types of glazing shall be permitted to be used: Laminated glass with a minimum 0.015-inch (0.38 mm) polyvinyl butyral interlayer for glass panes 16 square feet (1.5 m2) r less in area located such that the highest point of the glass is not more than 12 feet (3658 mm) ab rface or other accessible area; for higher or larger sizes, the minimum interlayer thickness shall be 0.030 inch (0.76 ully tempered glass.
- rigid plastics 0.08.6.3 Screens general For fully tempered or heat-strengthened glass, a broken glass retention screen meeting th

dered a hazardous location

- 308.6.7 shall be installed below the full area of the glass, except for fully tempered glass that meets 308.6.4 Screens with multiple glazing. Where are the inboard pain is fully tempered, heat-strengthened, or wire glass, a iss retention screen meeting the requirements of Section R308.6.7 shall be installed below the full area of the glass Condition 1 or 2 listed in Section R308.6.5. Other panes in the multiple glazing shall be of any type listed in Section R308.65 Screens not required. Screens shall not be required where laminated glass complying with Item 1 of Section 18.6.5 Screens not required. Screens shall not be required where tailmace gass company memory of occurs. 18.6.2 is used as single glazing or the inboard pane in multiple glazing and either of the following conditions is met. Glass area 16 square feet (1.49 m2) or less. Highest point of glass not more than 12 feet (3658 mm) above a walking surface or other accessible area, nominal glass thickness not more than 3/16 inch (4.8 mm), and (for multiple glazing ly) the other pane or panes fully tempered, laminated or wired glass. ass area greater than 16 square feet (1.49 m2). Glass sloped 30 degrees (0.52 rad) or less from vertical, and highest
- Diass area grater than 10 sequere test (1.9 mill), blove a walking surface or other accessible area.
 R306.6.6 Glass in greenhouses. Any glazing material is permitted to be installed without screening in the sloped areas of greenhouses, provided the greenhouse height at the ridge does not exceed 20 feet (6096 mm) above grade. recentloses, provided in the greating of the index of the state of the R308.6.8 Curbs for skylights. All unit skylights installed in a roof with a pitch flatter than three units vertical in 12 units) shall be mounted on a curb extending at least 4 inches (102 mm) above the plane of the root 08.6.9 Testing and labeling. Unit skylights and tubular daylighting devices shall be tested by an approved independen
- ry, and bear a label identifying manufacturer, performance grade rating and approved inspection agency to indicate noe with the requirements of AAMA/WDMA/CSA 101/I.S.21A440. SECTION R309: GARAGES AND CARPORTS R309.1 Floor surface. Garage floor surfaces shall be of approved non-combustible material. The area of floor used for parking of les or other vehicles shall be sloped to facilitate the movement of liquids to a drain or toward the main vehicle ent Carports, Carports shall be open on at least two sides, Carport floor surfaces shall be of approved non-combustible naterial. Carports not open on at least two sides shall be considered a garage and shall comply with the provisions of this sectior or garages. The area of floor used for parking of automobiles or other vehicles shall be sloped to facilitate the movement of iquids to a drain or toward the main vehicle entry doorway.
- ces shall be permitted at ground level in carports. rd areas. Garages and carports located in flood hazard areas as established by Table R301.2 shall be cordance with Section R322
- R309.4 Automatic garage door openers. Automatic garage door openers, if provided, shall be listed and labeled in accordance JL 325. See Health and Safety Code Sections 19890 and 19891 for additional provisions for residential garage door opene R309.5 Fire sprinklers location on property. Private garages shall be protected by fire sprinklers where the garage wall has been designed based on Table R302.1(2), Footnote a. Sprinklers in garages shall be connected to an automatic sprinkler system hat complies with Section R313. Garage sprinklers shall be residential sprinklers or quick-response sprinklers, designed to de a density of 0.05 gpm/ft2. Garage doors shall not be considered obstructions with respect to sprinkler placemer 09.6 Fire sprinklers attached garages, and carports with habitable space above. Attached garages, and carports with bitable space above shall be protected by fire sprinklers in accordance with this section and Section R313. Protection shall be vided in accordance with one of the following:
- Residential sprinklers installed in accordance with their listing. nded coverage sprinklers discharging water not less than their listed flow rate for Light Hazard in accordance with NFPA Quick-response spray sprinklers at light hazard spacing in accordance with NFPA 13 designed to discharge at 0.05 gpm/ft2 The system demand shall be permitted to be limited to the number of sprinklers in the compartment but shall not exceed two prinklers for hydraulic calculation purposes. Garage doors shall not be considered obstructions and shall be permitted to b nored for placement and calculation of sprinklers otion pracement and carculation of sprinklers. <u>otion</u>: An automatic residential fire sprinkler system shall not be required when additions or alterations are made to existing and/or garages that do not have an automatic residential fire sprinkler system installed in accordance with this section R309.7 Extension garage door springs. Every extension garage door spring sold or offered for sale, whether new or sold as a
- a dwelling covered by this code, shall conform to the ents for garage door springs located in Section 1210 of the California Building Code. R309.8 Electric vehicle (EV) charging infrastructure. Newly constructed one and two family dwellings and townhouses with ached private garages shall comply with EV infrastructure requirements in accordance with the California Green Building SECTION R310: EMERGENCY ESCAPE AND RESCUE OPENINGS R310.1 Emergency escape and rescue opening required. Basements, habitable attics and every sleeping room shall have not
- ess than one operable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, ar nergency escape and rescue opening shall be required in each sleeping room. Emergency escape and rescue openings shall en directly into a public way, or to a yard or court that opens to a public way. xceptions: (SFM) Basement with a ceiling, height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue
- access door that opens directly into a public way, or to a yard, court or exterior egress balcony that opens to a public way. Basements without habitable spaces and having not more than 200 square feet (18.6 m2) in floor area shall not be required to mergency escape and rescue openings. shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500. re the dwelling unit or townhouse unit is equipped with an automatic sprinkler system installed in accordance with Sectio 3. sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the nt has one of the following e means of egress complying with Section R311 and one emergency escape and rescue opening.
- neans of egress complying with Section R311. Operational constraints and opening control devices. Emergency escape and rescue openings shall be ned free of any obstructions other than those allowed by this section and shall be operational from the inside of the ithout the use of keys, tools or special knowledge. Window opening control devices and fall prevention device is ng with ASTM F2090 shall be permitted for use on windows serving as a required emergency escape and rescu and she'll be not more than 70 inches (178 cm) above the finished floor. The release mechanism shall be maintained erable at all times. Such bars, grilles, grates, or any similar devices shall be equipped with an approved exterior releavice for use by the fire department, only when required by the authority having jurisdiction. Where security bars (burgla nstalled on emergency egress and rescue windows or doors, on or after July 1, 2000, such devices shall complete California Building Standards Code, Part 12, Chapter 12-3 and other applicable provisions of this code R310.2 Emergency escape and rescue openings. Emergency escape and rescue openings shall have a minimum dimensions
- accordance with Sections R310.2.1 through R310.2.4 R310.2.1 Minimum opening area. Emergency and escape rescue openings shall have a net clear opening of not less than <u>on</u>: The minimum net clear opening for grade floor emergency escape, and rescue openings shall be 5 square feet R310.2.2 Minimum dimensions. The minimum net clear opening height dimension shall be 24 inches (610 mm). The inimum net clear opening with dimension shall be 20 inches (508 mm). The net clear opening dimensions shall be the result of normal operation of the opening.

than 34 inches (864 mm). R311.8 Ramps. Where required by this code or provided, ramps shall comply with the section. <u>kception</u>: Ramps not within or serving a building, porch or deck.
R311.8.1 Maximum Slope. Ramps serving the egress door required by Section R311.2 shall have a slope of not more than 1 init vertical in 12 units horizontal (8.3 percent slope). All other ramps shall have a maximum slope of 1 unit vertical in 8 units tal (12.5 percent). Exception: Where it is technically infeasible to comply because of site constraints, ramps shall have a slope of not more than rtical in 8 units horizontal (12.5 percent). **R311.8.2 Landings required**. A minimum 3 foot by 3 foot (914 mm by 914 mm) landing shall be provided: At the top and bottom of ramps. Where doors open onto ramps here ramps change direction R311.8.3 Handrails required. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33-percent slope)

R310.2.3 Maximum height from floor. Emergency escape, and rescue openings shall have the bottom of the clear opening 310.2.4 Emergency escape and rescue openings under decks, porches and cantilevers. Emergency escape and openings installed under decks, porches or cantilevers shall be fully openable and provide a path not less than 36 nches. (914 mm) in height and 36 inches (914 mm) in width to a yard or court. 310.3 Emergency escape and rescue doors. Where a door is provided as the required emergency escape and rescue **0.4 Area wells**. An emergency escape and rescue opening where the bottom of the clear opening is below the adjacent grade ed with an area well in accordance with Sections R310.4.1 through R310.4.4. **R310.4.1 Minimum size**. The horizontal area of the area well shall be not less than 9 square feet (0.9 m2), with a horizontal projection and width of not less than 36 inches (914 mm). The size of the area well shall allow the emergency escape and ception: The ladder or steps required by Section R310.4.2 shall be permitted to encroach not more than 6 inches. (152 mm) R310.4.2 Ladder and steps. Area Wells with a vertical depth greater than 44 inches (1118 mm) shall be equipped with an approved, permanently affixed ladder or steps. The ladder or steps shall not be obstructed by the emergency escape and

ot greater than 44 inches (1118 mm) measured from the floor.

of the area well.

opening, it shall be a side-hinged door or a slider.

opening to be fully opened.

e full height of the area well.

system required by Section R405.

comply with Section R311.7

hapter 12-3 and other applicable provisions of this code.

The replacement window meets the size requirements in Item 1.

SECTION R311: MEANS OF EGRESS

t that opens to a public way.

ss than 36 inches (914 mm) measured in the direction of travel.

nore than 1-1/2 inches (38 mm) lower than the top of the threshold

that the door does not swing over the stairway.

use of toenails or nails subject to withdrawal.

led on both sides.

portion of the stairway.

Stairways not within or serving a building, porch or deck.

bassage of a 4 inch diameter (102 mm) sphere.

ons of this section and Section R507.3.

on of travel shall be not less than 36 inches (914 mm).

or does not swing over the stairs.

ovided the door does not swing over the landing or floor.

evel or basement, shall not exceed 50 feet (15240 mm)

ress shall provide a

escue opening where the window or door is in the open position. Ladders or steps required by this section shall not be R310.4.2.1 Ladders. Ladders and rungs shall have an inside width of not less than 12 inches (305 mm), Shell project, not less than 3 inches (76 mm) from the wall and Shelby spaced not more than 18 inches (457 mm) on center vertically for a full height of the area well. 310.4.2.2 Steps. Steps shall have an inside width of not less than 12 inches (305 mm), a minimum tread depth of 5 (127 mm) and a maximum riser height of 18 inches (457 mm) for the full height of the area well. 310.4.3 Drainage. Area Wells shall be designed for proper drainage by connecting to the building's foundation drainage sception: A drainage system for area wells is not required where the foundation is on well drained soil or sand gravel mixture e with the United Soils Classification System, Group I Soils, as detailed in Table R405.1 R310.4.4 Bars, grilles, covers and screens. Where bars, grilles, covers, screens or similar devices are placed over e and rescue openings, bulkhead enclosures or area wells that serve such openings, the minimum net clear opening size shall comply with Sections R310.2 through R310.2.2 and R310.4.1. Such devices shall be releasable or from the inside without the use of a key or tool or force greater than that required for the normal operation of the

escape and rescue opening. The release mechanism shall be maintained operable at all times. Such bars, grilles, grates, o similar devices shall be equipped with an approved exterior release device for use by the fire department, only whe required by the authority having jurisdiction. Where security bars (burglar bars) are installed on emergency egress and rescue vindows or doors, on or after July 1, 2000, such devices shall comply with California Building Standards Code, Part 12 10.5 Replacement windows for emergency escape and rescue openings. Replacement windows installed in buildings neeting the scope of this code shall be exempt from Sections R310.2, and R310.4.4, provided that the replacement windo ndow is the manufacturer's largest standard size window that will fit within the existing frame of The replacement window is the manufacturer's largest standard size window that will fit within the existing rame or existing rough opening. The replacement window is of the same operating style as the existing window or a style that provides for an equal or greater window opening earlier than the existing window. The replacement window is not part of a change of occupancy. **6 Swelling additions**. Where dwelling additions contain sleeping rooms, an emergency escape and rescue opening shall wided in each new sleeping room. Where dwelling additions have basements, an emergency escape and rescue opening pe provided in the new basement.

o. n emergency escape and rescue opening is not required in a new basement that contains a sleeping room with an An emergency escape and rescue opening.
 An emergency escape and rescue opening is not required in a new basement where there is an emergency escape and rescue opening is not required in a new basement.
 An operable window complying with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening.
 An operable window complying with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening.
 An operable window complying with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening.
 An operable window complying with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening in accordance with Section R310.1. Other than new sleeping rooms where an sting basement undergo alterations or repairs, an emergency escape and rescue opening is not required.
 <u>seption</u>: An operable window complying with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening window complying with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R310.7.1 shall be acceptable as an emergency escape and rescue opening with Section R Pering. R310.7.1 Existing emergency escape and rescue openings. Where a change of occupancy would require an emergency escape and rescue opening in accordance with Section R310.1, operable windows serving as the emergency escape and rescue opening shall comply with the following: 1. An existing operable window shall provide a minimum net clear opening of 4 square feet (0.38 m2) with a minimum net clear height opening of 22 inches (559 mm) and a minimum net clear opening width of 20 inches (508 mm).

2. A replacement window, where such window complies with both of the following: 2 The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window shall be permitted to be of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window

R311.1 Means of egress. Dwellings shall be provided with a means of egress in accordance with this section. The means of ous and unobstructed path of vertical and horizontal egress travel from all portions of the dwelling to e required egress door without requiring travel through a garage. The required egress door shall open directly into a public way 11.2 Egress Door. Not less than one egress door shall be provided for each dwelling unit. The egress door shall be sidend shall provide a clear width of not less than 32 inches (813 mm) where measured between the face of the door and th stop, with the door open 90 degrees (1.57 rad). The clear height of the door opening shall be not less than 78 inches (1981 mm) in eight measured from the top of the threshold to the bottom of the stop. Other doors shall not be required to comply with these im dimensions. Egress doors shall be readily openable from inside the dwelling without the use of a key or special 11.3 Floors and landings at exterior doors. There shall be a landing or floor on each side of each exterior door. The width of each landing shall not be less than the door served. Every landing shall have a minimum dimension of 36 inches (914 mm ured in the direction of travel. Exterior landings shall be permitted to have a slope not to exceed 1/4 unit vertical in 12 units vception: Exterior balconies less than 60 square feet (5.6 m2) and only accessible from a door are permitted to have a landing R311.3.1 Floor elevations at the required egress doors. Landings or finished floors at the required egress door shall not be Exception: The landing or floor on the exterior side shall not be more than 7-3/4 inches (196 mm) below the top of the

Where exterior landings or floors serving the required egress door are not at grade, they shall be provided with access to y means of a ramp in accordance with Section R311.8 or a stairway in accordance with Section R311.7. **2 Floor elevations for other exterior doors**. Doors other than the required egress door shall be provided with andings or floors not more than 7-3/4 inches (196 mm) below the top of the threshold. Exception: A top landing is not required where a stairway of not more than two risers is located on the exterior side of the door **3.3 Storm and screen doors**. Storm and screen doors shall be permitted to swing over all exterior stairs and landings. I311.4 Vertical Egress. Egress from habitable levels including habitable attics and basements not provided with an egress doo n accordance with Section R311.2 shall be by one or more ramps in accordance with Section R311.8 or one or more stairways i ordance with Section R311.7 or both. For habitable levels or basements located more than one story above or more than or ry below an egress door, the maximum travel distance from any occupied point to a stairway or ramp that provides egress from

R311.5.1 Attachment. Exterior landings, decks, balconies, stairs and similar facilities shall be positively anchored to the primary ructure to resist both vertical and lateral forces or shall be designed to be self-supporting. Attachment shall not be accomplished .6 Hallways. The minimum width of a hallway shall be not less than 3 feet (914 mn 311.7 Stairways. Where are required by this code or provided, stairways shall comply with this section.

311.7.1 Width. Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail neight and below the required headroom height. Handrails shall not project more than 4.5 inches (114 mm) on either side o he stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, sha not be less than 31-1/2 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrail <u>xception</u>: The width of spiral stairways shall be in accordance with Section R311.7.10.1 .2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2032 mm) neasured vertically from the sloped line adjoining the tread nosing or from the floor surface of the landing or platform on that Where the nosing of treads at the side of a flight extend under the edge of a floor opening through which the stair passes. the floor opening shall be allowed to project horizontally into the required headroom a maximum of 4-3/4 inches (121 mm). The headroom for spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.3 Vertical rise. A flight of stairs shall not have a vertical rise greater than 12 feet 7 inches (3835 mm) between floor R311.7.4 Walk-line. The walk-line across wind or treads and landings shall be concentric to the turn and parallel to the of travel entering and exiting the turn. The walk-line shall be located 12 inches (305 mm) from the inside of the turn The 12-inch (305 mm) dimension shall be measured from the widest point of the clear stair width at the walking surface winders are adjacent within a flight, the point of the widest clear stair width of the adjacent whiners shall be used R311.7.5 Stair Treads and Risers. Stair treads and risers shall meet the requirements of this section. For the purposes of his section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners. R311.7.5.1 Risers. The riser height shall be not more than 7-3/4 inches (196 mm). The riser height shall be measure vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall no exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing o

The opening between adjacent treads is not limited on spiral stairways. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.
 R311.7.5.2 Treads. The tread depth shall be not less than 10 inches (254 mm). The tread depth shall be measured norizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's

he tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted provided that

he openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below do not permit the

eading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than

R311.7.5.2.1 Winder treads. Winder treads shall have a minimum tread depth of 10 inches (254 mm) measured R311.7.5.2.1 Winder treads. Winder treads shall have a minimum tread depth of 10 inches (254 mm) measured between the vertical planes of the foremost projection of adjacent treads at the intersections with the walk line. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point within the clear width of the stair. Within any flight of stairs, the largest winder tread depth at the walk line shall be allowed within the same flight of stairs as rectangular treads and do not have to be within 3/8 inch (9.5 mm). Consistently shaped winders at the walk line shall be allowed within the same flight of stairs as rectangular treads and to not have to be within 3/8 inch (9.5 mm) of the rectangular tread depth.
 Exception: The tread depth at spiral stairways shall be in accordance with Section R311.7.10.1.
 R311.7.5.3 Nosing. The radius of curvature at the nosing shall be not greater than 9/16 inch (14 mm). A nosing projection not less than 3/4 inch (15 mm) and not more than 1-1/4 inches (32 mm) shall be provided on stairways with solid risers. The regreation shall not exceed the smallest nosing projection shall not exceed the smallest nosing projection shall not (9.5 mm) between two stories, including the nosing at the level of floors and landings. Beveling of nosing shall not exceed 1/2 inch (12.7 mm).

Exception: A nosing projection is not required where the tread depth is not less than 11 inches (279 mm). R311.7.5.4 Exterior wood/plastic composite stair treads. Plastic composite exterior stair treads shall comply with the **B311.76 Landings for stairways.** There shall be a floor or landing at the top and bottom of each stairway. The minimum erpendicular to the direction of travel shall be no less than the width of the flight served. Landings of shapes other than or rectangular shall be permitted provided the depth at the walk line and the total area is not less than that of a guarter

rcle with a radius equal to the required landing width. Where the stairway has a straight run, the minimum depth in the Exception: A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage. orded a door does not swing over the stars.

R311.7.8.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface When handrail fittings or bendings are used to provide continuous transition between flights, transitions at winder

ype I Handrails with a circular cross section shall have an outside diameter of at least 1-1/4 inches (32 mm) and not reater than 2 inches (51 mm). If the handrail is not circular, it shall have a perimeter dimension of at least 4 inche 102 mm) and not greater than 6-1/4 inches (160 mm) with a maximum cross section of dimension of 2-1/4 inches (57 e II. Handrails with a perimeter greater than 6-1/4 inches (160 mm) shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4 inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least 5/16 inch (8 mm) within 7/8 inch (22 mm) below the videst portion of the profile. This required depth shall continue for at least 3/8 inch (10 mm) to a level that is not less nan 1-3/4 inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be 1-1/4 inches (32 mm) to a maximum of 2-3/4 inches (70 mm). Edges shall have a mini- mum radius of 0.0

R311.7.11.1 Treads of alternating tread devices. Alternating tread devices shall have a tread depth of not less than 5 inches (127 mm), a projected tread depth of not less than 8-1/2 inches (216 mm), a tread width of not less than 7 inches (178 mm) and a riser height of not more than 9-1/2 inches (241 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projections of adjacent treads. The riser height shall be measured vertically between the leading edges of adjacent treads. The riser height and tread depth provided shall result in an angle of ascent from the horizontal of between 50 and 70 degrees (0.87 and 1.22 rad). The initial tread of the device shall begin at the

sight shall be not more than 9-1/2 inches (241 mm). 311.7.12.2 Handrails of ships ladders. Handrails shall be provided on both sides of ships ladders and shall comply .7.8.2 to R311.7.8.4. Handrail height shall be uniform, not less than 30 inches (762 mm) and not more

es (864 mm) and not more than 38 inches (965 mm). Incress (see finit) and not more than 36 incress (see finit).
R311.8.3.2 Grip size. Handrails on ramps shall comply with Section R311.7.8.3.
R311.8.3.3 Continuity. Handrails where required on ramps shall be continuous for the full length of the ramp. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have space of not less than 1-1/2 inches (38 mm) between the wall and the handrails. SECTION R312: GUARDS AND WINDOW FALL PROTECTION R312.1 Guards. Guards shall be provided in accordance with Sections R312.1.1 through R312.1.4. R312.1.1 Where required. Guards shall be located along open-sided walking surfaces, including stairs, ramps and landing that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inche zontally to the edge of the open side. Insect screening shall not be considered as a guard. R312.1.2 Height. Required guards at open-sided walking surfaces, including stairs, porches, balconies or landings, shall be ess than 42 inches (1067 mm) in height as measured vertically above the adjacent walking surface or the line co the leading edges of the treads. Guards on the open sides of stairs shall have a height not less than 34 inches (864 mm) measured vertically from a line ecting the leading edges of the treads. Where the top of the guard also serves as a handrail on the open sides of stairs, the top of the guard shall not be less than 34 inches (864 mm) and not more than 38 inches (965 mm) measured vertically from a line connecting the leading

R311.8.3.1 Height. Handrail height, measured above the finished surface of the ramp slope, shall be not less than 34

R312.1.3 Opening limitations. Required guards shall not have openings from the walking surface to the required guard ight which allow passage of a sphere 4 inches (102 mm) in diameter e triangular openings at the open side of stair, formed by the riser, tread and bottom rail of a guard, shall not allow 6 inches (153 mm) in diameter. Guards on the open side of stairs shall not have openings which allow passage of a sphere 4-3/8 inches (111 mm) in Balancer, Balanc 2 Window fall protection. Window fall protection shall be provided in accordance with Sections R312.2.1 and R312.2.2. R312.2.1 Window opening height. In dwelling units, where the bottom of the clear opening of an operable window opening is located less than 24 inches (610 mm) above the finished floor, and greater than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, the operable window shall comply with one of the followin Operable windows with openings that will not allow a 4 inch-diameter (102 mm) sphere to pass through the opening here the opening is in its largest opened position. Operable windows are provided with window opening control devices or fall prevention devices that comply with a ASTM

R312.2.2 Emergency escape and rescue openings. Where in operable window serves as an emergency escape and rescue opening, a window opening control device or fall prevention device after operation to release the control device or fall prevention device allowing the window to fully open, shall not reduce the net clear opening area of the window unit to less than the area required by Sections R310.2.1 and R310.2.2. SECTION R313: AUTOMATIC FIRE SPRINKLER SYSTEMS R313.2 One and two family dwellings automatic fire systems. An automatic residential fire sprinkler system shall be installed

An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system. essory Dwelling Unit, provided that all of the following are met: The unit meets the definition of an Accessory Dwelling Unit as defined in the Government Code Section 65852.2. The existing primary residence does not have automatic fire sprinklers 3 The accessory detached dwelling unit does not exceed 1200 square feet in size. The unit is on the same lot as the primary residence. R313.2.1 Design and Installation. Automatic residential fire sprinkler systems shall be designed and installed in accordance

R313.3 Dwelling unit fire sprinkler systems. R313.3.1 General. The design and installation of residential fire sprinkler systems shall be in accordance with NFPA 13D or Section R313.3. which shall be considered equivalent to NFPA 13D. Partial residential sprinkler systems shall be permitted e installed only in buildings not required to be equipped with a residential sprinkler system. Section R313.3 shall apply to stand-alone and multipurpose wet-pipe sprinkler systems that do not include the use of antifreeze. A multipurpose fire sprinkler system shall supply domestic water to both fire sprinklers and plumbing fixtures. A stand-alone sprinkler system shall be separate and independent from the water distribution system

R313.3.1.1 Back-flow protection. A back-flow flow preventer shall not be required to separate a stand-alone sprinkler R313.3.1.2 Required sprinkler locations. Sprinklers shall be installed to protect all areas of a dwelling unit. Exceptions:
1. Attics, crawl spaces and normally unoccupied concealed spaces that do not contain fuel-fired appliances do not

require sprinklers. In attics, crawl spaces and norma11v unoccupied concealed spaces that contain fuel-fire upment, a sprinkler shall be installed above the equipment; however, sprinklers shall not be required in the ainder of the space Clothes closets, linen closets and pantries not exceeding 24 square feet (2.2 m2) in area, with the smallest dimension

not greater than 3 feet (915 mm) and having wall and ceiling surfaces of gypsum board. oms not more than 55 square feet (5.1 m2) in area. Detached garages; carports with no habitable space above; open attached porches; unheated entry areas, such as oms, that are adjacent to an exterior and similar areas. R313.3.2 Sprinklers. Sprinklers shall be new listed residential sprinklers and shall be installed in accordance with the

SECTION R314: SMOKE ALARMS

R314.1 General. Smoke alarms shall comply with NFPA 72 and Section R314. R314.1.1 Listings. Smoke alarms shall be listed in accordance with UL 217. Combination smoke and carbon monoxide alarms shall be listed in accordance with UL 217 and UL 2034. Systems and components shall be California State Fi I listed and approved in accordance with California Code of Regulations, Title 19, Division 1 for the purpose for whic R314.2 Where required. Smoke alarms shall be provided in accordance with this section

R314.2.1 New construction. Smoke alarms shall be provided in dwelling units. R314.2.2 Alterations, repairs and additions. Where alterations, repairs or additions requiring a permit occur, or where one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings. Exception: See Section R314.6 Location. Smoke alarms shall be installed in the following locations:

In each sleeping room. side each separate sleeping area in the immediate vicinity of the bedrooms. On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is les n one full story below the upper level

Not less than 3 feet (914 mm) horizontally from the door or opening of a bathroom that contains a bathtub or shower, unless this would prevent placement of a smoke alarm required by the section. In the hallway and in the room open to the hallway in dwelling units where the ceiling height of a room open to a hallway g bedrooms exceeds that of the hallway by 24 inches (610 mm) or more. 3.1 Installation near cooking appliances. See Section R314.3.3 for specific location requirements. R314.3.2 Smoke alarms. Smoke alarms shall be tested and maintained in accordance with the manufacturer's instructions e alarms that no longer function shall be replaced. 4.3.3 Specific locations requirements. Extract from NFPA 72 Section 29.8.3.4 Specific Location Requirements

is extract has been provided by NFPA as amended by the Office of the State Fire Marshal and adopted by reference a 29.8.3.4 Specific locations requirements. The installation of smoke alarms and smoke detectors shall comply with the 1) Smoke alarms and smoke detectors shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions (a) Smoke alarms and smoke detectors shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40°F (4°C) or exceed 100°F (38°C). Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an unfinished attic or an xterior wall, smoke alarms and smoke detectors shall be mounted on an inside wall.

(3) Smoke alarms or smoke detectors shall be installed a minimum of 20 feet horizontal distance from a permanently stalled cooking appliance Exception: Ionization smoke alarms with an alarm-silencing switch or Photoelectric smoke alarms shall be permitted to be talled 10 feet (3 m) or greater from a permanently installed cooking appliance. Photoelectric smoke alarms shall be mitted to be installed greater than 6 feet (1.8 m) from a permanently installed cooking appliance where the kitchen or oking area and adjacent spaces have no clear interior partitions and the 10 ft distances would prohibit the placement o a smoke alarm or smoke detector required by other sections of the code. Smoke alarms listed for use in close proximity to a permanently installed cooking appliance.

(4) Installation near bathrooms. Smoke alarms shall be installed not less than a 3 foot (0.91 m) horizontal distance from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by other sections of the code.

(5) Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those (6) Smoke alarms and smoke detectors shall not be installed within a 36 in. (910 mm) horizontal path from the tip of the

blade of a ceiling-suspended (paddle fan). Where stairs lead to other occupied levels, a smoke alarm or smoke detector shall be located so that smoke rising in the stairway cannot be prevented from reaching the smoke alarm or smoke detector by an intervening door of

(8) For stairways leading up from a basement, smoke alarms or smoke detectors shall be located on the basement ceiling near the entry to the stairs. (9) For tray-shaped ceilings (coffered ceilings), smoke alarms and smoke detectors shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 in. (300 mm) vertically down from the highest a alarms and datactors installed in rooms with joists or beams shall comply with the requirements of 177324

s installed in rooms with joists or beams shall comply with the requirements of 17.6.3. For (1)) relat dating and begins in both with joins of beams share compy within an erequirements of 17.05.2 to additional requirements or clarification see NFPA 72.
R314.4 Interconnection. Where more than one smoke alarm is required to be installed within an individual dwelling or sleeping unit, the smoke alarm shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors B314.4

nection is not required in buildings that are not undergoing alterations, repairs or construction of any kind. Smoke alarms in existing areas are not required to be interconnected where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure, unless there is an attic, crawl space or basement available which provide access for interconnection without the removal of interior finishes. Smoke alarms are not required to be interconnected where repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition o Smoke alarms are not required to be interconnected when work is limited to the installation, alteration or repairs of plumbing or mechanical systems or the installation, alteration or repair of electrical systems which do not result in the removal of interio all or ceiling finishes exposing the structure.

R314.5 Combination alarms. Combination smoke and carbon monoxide alarms shall be permitted to be used in lieu of smoke alarms. Systems and components shall be California State Fire Marshal listed and approved in accordance with California Code of lations, Title 19, Division 1 for the purpose for which they are installed. Regulations, Title 19, Division 1 for the purpose for which they are installed. R314.6 Power source. Smoke alarms shall receive their primary power from the building wiring provided that such wiring is served from a commercial source and shall be equipped with a battery backup. Smoke alarms with integral strobes that are no equipped with battery backup shall be connected to an emergency electrical system. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for over-current protection ions. Inke alarms are permitted to be solely battery operated in existing buildings where no construction is taking place

Smoke alarms are permitted to be solely battery operated in buildings that are not served from a commercial power source Smoke alarms are permitted to be solely battery operated in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure, unless there is an attic, crawl space or ement available which could provide access for building wiring without the removal of interior finishes. Smoke alarms are permitted to be solely battery operated where repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition o porch or deck.

Smoke alarms are permitted to be solely battery operated when work is limited to the installation, alteration or repairs of plumbing or mechanical systems or the installation, alteration or repair of electrical systems which do not result in the removal of interior wall or ceiling finishes exposing the structure. R314.7 Fire alarm systems. Fire alarm systems shall he permitted to be used in lieu of smoke alarms and shall comply with ctions R314.7.1 through R314.7.4. R314.7.1 General. Fire alarm systems shall comply with the provisions of this code and the household fire warning equipment provisions of NFPA 72. Smoke detectors shall be listed in accordance with UL 268. Systems and components shall be California State Fire Marshal listed and approved in accordance with California Code of Regulations, Title 19, Division 1 for

purpose for which they are installed. **14.7.2 Location.** Smoke detectors shall be installed in the locations specified in Section R314.3. R314.7.3 Permanent fixture. Where a household fire alarm system is installed, it shall become a permanent fixture of the occupancy, owned by the homeowner,

R314.7.4 Combination detectors. Combination smoke and carbon monoxide detectors shall be permitted to be installed in fire alarm systems in lieu of smoke detectors, provided that they are listed in accordance with UL 268 and isting Group R-3 occupancies. R314.8 Existing Group R-3 occupancies.
 R314.8 Existing buildings housing Group R-3 occupancies established prior to the effective date of these regulations may have their use continued if they conform or are made to conform to provisions of these regulations to the extent that reasonable and adequate life safety against the hazards of fire, panic and explosion is substantially provided. Additional means of egress, the installation of automatic sprinkel resystems, automatic fire alarm system or other life safety measures, may be required to provide reasonable and adequate safety.
 Note: It is the intent of this section that every existing occupancy need not mandatorily conform with the requirements for new construction. Reasonable judgment in the application of requirements must be exercised by the enforcing agency.
 R314.8.2 For purposes of clarification. Health and Safety Code Section 13113.7 is repeated.
 a) Except as otherwise provided in this section, a smoke detector, approved and listed by the State Fire Marshal pursuant to Section 13114, shall be installed; in accordance with the manufacturer's instructions in each dwelling intended for human

Section 13114, shall be installed, in accordance with the manufacturer's instructions in each dwelling intended for human occupancy within the earliest applicable time period as follows: 1. For all welling units interded for human occupancy, upon the owner's application on or after January 1, 1985, for a permit for alterations, repairs, or additions, exceeding one thousand dollars (\$1,000). cupancy on or after January 1, 1987 SECTION R315: CARBON MONOXIDE ALARMS 315.11 General. Carbon monoxide alarms shall comply with Section R315. R315.11 Listings. Carbon monoxide alarms shall be listed in accordance with UL 2034. Combination carbon monoxide and

smoke alarms shall he listed in accordance with UL 2034 and UL 217. No person shall install, market, distribute, offer for sale, or sell any carbon monoxide device in the State of California unless the device and instructions have been approved and listed by the Office of the State Fire Marshal. R315.2 Where required. Carbon monoxide alarms shall be provided in accordance with SectionsR315.2.1 and R315.2.2. uant to Health and Safety Code Section 17926, carbon monoxide devices shall be installed in all existing dwelling units as R315.2.1 Existing buildings and new construction. For existing buildings and new construction, carbon monoxide alarms ided in dwelling units where either or both of the following conditions exist. The dwelling unit contrast a fuel-fired appliance or fireplace.
 The dwelling unit contrast a fuel-fired appliance or fireplace.
 The dwelling unit has an attached garage with an opening that communicates with the dwelling unit.
 R315.2.2 Alterations, repairs and additions. Where an addition is made to an existing dwelling, or a fuel-burning heater

appliance, or fireplace is added to an existing dwelling, not previously required to be provided with carbon monoxide alarms, new carbon monoxide alarms shall be installed in accordance with Section R315. Exceptions: 1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing, or siding, or the addition, or replacement of windows, or doors, or the addition of a porch or deck.

 Installation, alteration, or repairs of plumbing systems.
 Installation, alteration, or repairs of nechanical systems that are not fuel fired.
 RS15.3 Location. Carbon monoxide alarms in dwelling units shall be installed and maintained in accordance with the acturer's published instructions in the following locations: Outside of each separate sleeping area in the immediate vicinity of the bedrooms.

On every occupiable level of a dwelling unit, including basements. Where a fuel-burning appliance is located within a bedroom or its attached bathroom, a carbon monoxide alarm shall be stalled within the bedroor R315.4 Combination alarms. Combination carbon monoxide and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms ination carbon monoxide/smoke alarms shall comply with Section R315 and all requirements for listing and approval by the Office of the State Fire Marshal for smoke alarms. R315.5 Power source. Carbon monoxide alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and, where primary power is interrupted, shall receive power from a battery. Wiring shall be permanent and without a disconnecting switch other than those required for over-current protection.

. I monoxide alarms shall be permitted to be battery operated where installed in buildings without commercial power bon monoxide alarms installed in accordance with Section R315.2.2 shall be permitted to be battery powered Carbon monoxide alarms in Group R occupancies shall be permitted to receive their primary power from other power sources recognized for use by NFPA 72. Carbon monoxide alarms in Group R occupancies shall be permitted to be battery-powered or plug-in with a battery backup in existing buildings built prior to January 1, 2011, under any of the following conditions: 4.1 No construction is taking place.

aces where carbon monoxide alarms are required. 3. Repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the ddition or replacement of windows or doors, or the addition of a porch or deck. 4. Work is limited to the installation, alteration or repair of plumbing, mechanical or electrical systems, which do not result in the removal of interior wall or ceiling finishes exposing the structure in areas/spaces where carbon monoxide alarms are 15.6 Carbon monoxide detection systems. Carbon monoxide detection systems shall be permitted to be used in lieu of xide alarms and shall comply with Sections R315.6.1 through R315.6.4 **3315.6.1 General**. Household carbon monoxide detection systems shall comply with NFPA 720. Carbon monoxide detectors shall be listed in accordance with UL 2075. 5.6.2 Location. Carbon monoxide detectors shall be installed and maintained in the locations specified in Section R315.3 315.6.3 Permanent fixture. Where a household carbon monoxide detection system is installed, it shall become a manent fixture of the occupancy and owned by the homeowner. Intranent induce of the occupancy and owned by the noneowner.
Intranent induce of the occupancy and owned by the noneowner.
Int.6.4 Combination detectors. Combination carbon monoxide and smoke detectors shall be permitted to be installed in arbon monoxide detection systems in lieu of carbon monoxide detectors, provided that they are listed in accordance with UL and UL 268.4. Combination carbon monoxide/smoke detectors shall comply with all requirements for listing and pproval by the Office of the State Fire Marshal for smoke alarms. 7 Interconnection. Where more than one carbon monoxide alarm is required to be installed within a dwelling unit or within sleeping unit in Group R occupancies, the alarms shall be interconnected in a manner that activation of one alarm shall activate I of the alarms in the individual unit. ception: Interconnection is not required in existing buildings built prior to January 1, 2011, under any of the following conditions: rsical interconnection is not required where listed wireless alarms are installed and all alarms sound upon activation of one construction is taking place. Repairs or alterations do not result in the removal of interior wall and ceiling finishes exposing the structure in areas/spaces carbon monoxide alarms are required. Pepairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the dition or replacement of windows or doors, or the addition of a porch or deck. Work is limited to the installation, alteration or repair of plumbing, mechanical, or electrical systems, which do not result in the removal of interior wall or ceiling finishes exposing the structure in areas/spaces where carbon monoxide alarms are required SECTION R317: PROTECTION OF WOOD AND WOOD BASED PRODUCTS AGAINST DECAY

4.2. Repairs or alterations do not result in the removal of interior wall and ceiling finishes exposing the structure in areas/

R317.1 Location required. Protection of wood and wood based products from decay shall be provided in the following locations the use of naturally durable wood or wood that is preservative-treated in accordance with AWPA In crawl spaces or un-excavated areas located within the periphery of the building foundation, wood joists or the bottom of ood structural floor where closer than 18 inches (457 mm) to exposed ground, wood girders where closer than 12 inches (305 mm) to exposed ground, and wood columns where closer than 8 inches (204 mm) to exposed ground. d framing members including columns, that rest directly on concrete or masonry exterior foundation walls, and are less an 8 inches (203 mm) from the exposed ground.

sills and sleepers on a concrete or masonry slab that is in direct contact with the ground unless separated from such slab by an impervious moisture barrier. he ends of wood girders entering exterior masonry or concrete walls having clearances of less than 1/2 inch (12.7 mm) on tops, sides and ends, od siding, sheathing and wall framing on the exterior of a building having a clearance of less than 6 inches (152 mm) from the ground or less than 2 inches (51 mm) measured vertically from concrete steps, porch slabs, patio slabs, and similar

orizontal surfaces exposed to the weather. rizontal surfaces exposed to the weather. pod structural members supporting moisture-permeable floors or roofs that are exposed to the weather, such as concrete or nasonry slabs, unless separated from such floors or roofs by an impervious moisture barrier. Jood furring strips or other wood framing members attached directly to the interior of exterior masonry walls or concrete walls elow grade except where an approved vapor retarder is applied between the wall and the furring strips or framing membe rtions of wood structural members that form the structural support of buildings, balconies, porches or similar permanent

building appurtenances where those members are exposed to the weather, without adequate protection from a roof, eave verhang, or other covering, that would prevent moisture or water accumulation on the surface or at joints between <u>xception</u>: Sawn lumber used in buildings located in a geographical region where experience has demonstrated that clima onditions preclude the need to use naturally durable or preservative-treated wood where the structure is exposed to the weather. er. I columns in contact with basement floor slabs unless supported by concrete piers or metal pedestals projecting not less nan 1 inch (25 mm) above the concrete floor and separated from the concrete pier by an impervious moistu R317.1.1 Field treatment. Field-cut ends, notches and drilled holes of preservative-treated wood shall be treated in the field

R317.1.2 Ground contact. All wood in contact with the ground, embedded in concrete in direct contact with the ground or nbedded in concrete exposed to the weather that supports permanent structures intended for human occupancy sha e approved pressure preservative treated wood suitable for ground contact use, except untreated wood may be used whe y below groundwater level or continuously submerged in fresh water. 317.1.3 Geographical areas. In geographical areas where experience has demonstrated a specific need, approved reservative- treated wood shall be used for those portions of wood members that form th naturally durable or press tructural supports of buildings, balconies, porches or similar permanent building appurtenances when those members are posed to the weather without adequate protection from a roof, eave, overhang or other covering that would prev

noisture or water accumulation on the surface or at joints between members. Depending on local experience, such members orizontal members such as girders, joists and decking. Vertical members such as posts, poles and columns Both horizontal and vertical members R317.1.4 Wood columns. Wood columns shall be approved wood of natural decay resistance or approved pressure-

reservative-treated wood exposed to the weather or in basements when supported by concrete piers or metal pedestals projecting 1 in (25.4 mm) above a concrete floor or 6 inches (152 mm) above exposed earth and the earth is covered by an approve npervious moisture barrier. s in enclosed crawl spaces or un-excavated areas located within the periphery of the building when supported by concrete pier or metal pedestal at a height more than 8 inches (203 mm) from exposed earth and the earth is covered

an impervious moisture barrier. eck posts supported by concrete piers or metal pedestals projecting not less than 1 inch (25 mm) above a concrete floor or 6 inches (152 mm) above exposed earth. 7.3 Fasteners and Connectors in Contact With Preservative Treated and Fire Retardant Treated Wood. Fasteners, cluding nuts and washers, and connectors in contact with preservative-treated wood and fire-retardant-treated wood shall be coordance with this section. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153. Stainless

eel driven fasteners shall be in accordance with the material requirements of ASTM F166 317.3.1 Fasteners for Preservative Treated Wood. Fasteners, including nuts and washers, for preservative-treated wood shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Coat- ing types and weights fo connectors in contact with preservative-treated wood shall be in accordance with the connector manufacturer's recommendations. In the absence of manufacturer's recommendations, a minimum of ASTM A 653 type G185 zinc-coated galvanized steel, or equivalent, shall be used.

; alf-inch-diameter (12.7 mm) or greater steel bolts. 2. Fasteners other than nails and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum. Plain carbon steel fasteners in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment shall 1317.3.3 Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations. Fasteners including nuts and washers, for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot-dipped, zinc-coated galvanized steel, stainless steel, silicon bronze or copper. Fasteners other than nails and timber rivets shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B69

SECTION R318: PROTECTION AGAINST SUBTERRANEAN TERMITES R318.1 Subterranean termite control methods. In areas subject to damage from termites as indicated by Table R301.2(1),

ethods of protection shall be one of the following methods or a combination of these methods: Chemical Termiticide treatment in accordance with Section R318 Termite baiting system installed and maintained according to the label.

re-preservative-treated wood in accordance with the provisions of Section R317. Naturally durable termite-resistant wood. vsical barriers in accordance with Section R318.3 and used in locations as specified in Section R317.1 Cold-formed steel framing in accordance with Sections R505.2.1 and R603.2.

SECTION R319: SITE ADDRESS

in accordance with AWPA M4.

R319.1 Address identification. Buildings shall he provided with approved address identification. The address identification sha ne legible and placed in a position that is visible from the street or road fronting the property. Address identification character shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall not he pelled out. Each character shall be not less than 4 inches (102 mm) in height with a stroke width of not less than 0.5 inc nm). Where required by the fire code official, address identification shall be provided in additional approved locations to facilitate

emergency response. Where access is by means of a private road and the building address cannot be viewed from the public data and the building address cannot be viewed from the building address cannot be viewed from the way, a monument, pole or other sign or means shall be used to identify the structure. Address identification shall be maintaine SECTION R324: SOLAR ENERGY SYSTEM R324.1 General. Solar energy systems shall comply with the provisions of this section.

Plumbing Code and the California Fire Code. 324.3 Photovoltaic systems. Photovoltaic (PV) systems shall be designed and installed in accordance with Sections R324. hrough R324.7.1 and the manufacturer's installation instructions. The electrical portion of solar PV systems shall be designed and nstalled in accordance with the California Electrical Code. R324.3.1 Equipment listings. Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703 or

with both UL 61730-1 and UL 61730-2. Inverters shall be listed and labeled in accordance with UL 1741. Systems connecter to the utility grid show use inverters listed for utility interaction. Mounting systems, listed and labeled in accordance with UL 2703 shall be installed in accordance with the manufacturer's installation instructions and their listings. R324.4 Roof-top mounted photovoltaic systems. Roof-top mounted photovoltaic panel systems installed on or above the roof ed and installed in accordance with Section R907 **R324.4.1 Roof live load**. Roof structures that provide support for photovoltaic panel systems shall be designed for applicable roof live load. The design of roof structures need not include roof live load in the areas covered by photovoltaic panel system

rtions of roof structures not covered by photovoltaic panels shall be designed for roof live load. Roof structures that provide support for photo- voltaic panel systems shall be designed for live load, LR, for the load case where the photovoltaic panel R324.5 Building-integrated photovoltaic systems. Building-integrated photovoltaic systems (BIPV) that serve as roof coverings be designed and installed in accordance with Section R905. R324.5.1 Photovoltaic shingles. Photovoltaic shingles shall comply with Section R905.16. R324.5.2 fire classification. Building integrated photovoltaic systems shall have a fire classification in accordance with

224.5.3 BIPV roof panels. BIPV roof panels shall comply with Section R905.17. R324.6 Roof access and pathways. Roof access, pathways and spacing requirements shall be provided in accordance with Sections R324.6.1 through R324.6.2.1. Access and minimum spacing shall be required to provide emergency access to the roof, o provide pathways to specific areas of the roof, provide for smoke ventilation opportunity areas, and to provide emergency aress from the roof.

proserver. Detached, non-habitable structures including, but not limited to, detached garages, parking shade structures, carports, solar trellises, and similar structures, shall not be required to provide roof access Roof access, pathways and setbacks need not be provided where the enforcing agency has determined that rooftop operations will not be employed. requirements shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal (17 percent slope) or less.

BIPV Systems listed in accordance with Section 690.12(B)(2) of the California Electrical Code where the removal or cuttin away of portions of the BIPV system during fire fighting operations has been determined to not expose a fire fighter to al shock hazards. 4.6.1 Pathways. Not fewer than two pathways on separate roof planes from the lowest roof edge to ridge and not less nan 36 inches (914 mm) wide, shall be provided on all buildings. Not fewer than one pathway shall be p or driveway side of the roof. For each roof plane with a photovoltaic array, a pathway not less than 36 inches wide (914 mm) shall be provided from the lowest roof edge to ridge on the same roof plane as the photovoltaic array, on an adjacent roof plane, or straddling the same and adjacent roof planes. Pathways shall be over areas, capable of supporting fire fighter cessing the roof. Pathways shall be located in areas with minimal obstructions, such as vent pipes, conduit, or mechanica 324.6.2 Setback at ridge. For photovoltaic arrays occupying, not more than 33 percent of the plan view total roof area, not less than an 18 inch (457 mm) clear setback is required on both sides of a horizontal ridge. For photovoltaic arrays occupying more than 33 percent of the plan view total roof area, not less than a 36 inch (914 mm) clear setback is required on both sides

R324.6.3 Emergency escape and rescue openings. Panels and modules installed on dwellings shall not be placed on the portion of a roof that is below an emergency escape and rescue opening. A pathway not less than 36 inches (914 mm) wide hall be provided to the emergency escape and rescue opening. See exception. R324.7 Ground-mounted photovoltaic systems. Ground mound into photovoltaic systems Shelby designed and installed in accordance with Section R30 SECTION 326: HABITABLE ATTICS

R326.1 General. Habitable attics shall comply with Sections R326.2 and R326.3. 326.2 Minimum dimensions. A habitable attic shall have a floor area in accordance with Section R304 and a ceiling height in R326.3 Story above grade plane. A habitable attic shall be considered a story above grade plane. See exceptions 326.4 Means of egress. The means of egress for habitable attics shall comply with the applicable provisions of Section R311

SECTION R334: CONSTRUCTION WASTE REDUCTION. DISPOSAL AND RECYCLING

SECTION R338: ELECTRIC VEHICLE R338.1 Electric vehicle. An automotive-type vehicle for highway use, such as passenger automobiles, buses, trucks, vans and he like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array or other source of electric current. For the purpose of this chapter, electric motorcycles and similar type vehicles and off-road selftric vehicles such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors 2 Charging. In any building or interior area used for charging electric vehicles, electrical equipment shall be installed in tance with the California Electrical Code.

accordance with the California Electrical Code. R338.3 Ventilation. Mechanical exhaust ventilation, when required by the California Electrical Code shall be provided at a rate as required by Article 625 or as required by Section 1203 of the California Building Code whichever is greater. The ventilation system shall include both the supply and exhaust equipment and shall be permanently installed and located to intake supply air from the outdoors, and vent the exhaust directly to, the outdoors without conducting the exhaust air through other spaces within the Exception: Positive pressure ventilation systems shall only be allowed in buildings or areas that have been designed and

cked with the recharging equipment used to supply the vehicle(s) being charged, and shall remain energized during the charging cycle. Electric vehicle recharging equipment shall be marked or labeled in accordance with the California Elec erlocked with the rec septions: Exhaust ventilation shall not be required in areas with an approved engineered ventilation system, which maintains a

Exitative verification siter for be required in a reases wind an approved engineerie verification system, when maintains a hydrogen gas concentration at less than 25 percent of the lower flammability limit, and the system of the system flammability limit. Mechanical exhaust ventilation for hydrogen shall not be required where the charging equipment uti-lized is installed and listed for indoor charging of electric vehicles without ventilation. SECTION R340: POLLUTANT CONTROL R340.1 Finish material pollutant control. Finish materials including adhesives, sealants, caulks, paints and coatings, aerosol

Rectant pointed of the intervention of the shall meet the volatile of Chapter 4. Division 4.5. CHAPTER 4: FOUNDATIONS: (Also see structural notes)

SECTION R408: UNDERFLOOR SPACE R408.1 Moisture control. The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement) shall comply with Section R408.2 or R408.3. R408.2 Openings for under-floor ventilation. Ventilation openings through foundation or exterior walls surrounding the underfloor space shall be provided in accordance with the section. The minimum net area of ventilation openings shall not be less

han 1 square foot (0.0929 m2) for each 150 square feet (14 m2) of underfloor space area. One ventilation opening shall be within feet (915 mm) of each external corner of the underfloor space. Ventilation openings shall be covered for their height and widtl vith any of the following materials provided that the least dimension of the covering shall not exceed 1/4 inch (6.4 mm), and perational louvers are permitted: Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick. xpanded sheet metal plates not less than 0.047 inch (1.2 mm) thicl

ast-iron grill or Extruded load-bearing brick vents. Hardware cloth of 0.035 inch (0.89 mm) wire or heavier.

Corrosion-resistant wire mesh, with the least dimension being 1/4" inch (3.2 mm) thick. <u>ceptions:</u> The total area of ventilation openings shall be permitted to be reduced to 1/1500 of the underfloor area where the ground The fault near the covered with an approved Class 1 vapor retarder material.
 Where are the ground surface is covered with an approved Class 1 vapor retarder material, ventilation openings are not required to be within 3 feet (915 mm) of each external corner of the under floor space provided that the openings are place to

provide cross-ventilation of the space. R408.3 Unvented Crawl Space. For unvented underfloor spaces, the following items shall be provided Exposed earth is covered with a continuous Class 1 vapor retarder. Joints of the vapor retarder shall overlap by 6 inches (152 mm) and shall be sealed or taped. The edges of the vapor retarder shall extend at least 6 inches (152 mm) up the stem wall and shall be attached and sealed to the stem wall or insulation; and

R334.1 Construction waste management. Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous construction and demolition waste in accordance with the California Green Building Standards Code, Chapter 4, Division 4.4.

approved for that approved the second approved the second s

ontinuously operated mechanical exhaust ventilation at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4.7 m2) of crawl space floor area, including an air pathway to the common area (such as a duct or transfer grill litioned air supply sized to deliver at a rate equal to 1 cubic foot per minute (0.47 L/s) for each 50 square feet (4. n2) of under-floor area, including a return air pathway to the common area (such as a duct or transfer grille). Crawl spa perimeter walls shall be insulated in accordance with the minimum insulation requirements established in the Califo Energy Code. Crawl space insulation shall be permanently fastened to the wall and extend downward from the floor to the finished grade level and then vertically and/or horizontally for at least an additional 24 inches (610 mm) im in structures complying with the California Mechanical Code, if underfloor space is used as a plenum

One of the following shall be provided for the underfloor space:

ere mechanical equipment is located under floors.

ding is occupied or used for any purpose.

SECTION R609: EXTERIOR WINDOWS AND DOORS

manufacturer for each window or door.

/I.S.2/A440 or AMD 100, or comply with Section R609.5

unit having the highest allow- able design pressure.

ance with WDMAI.S.11

egions shall be in accordance with Section R301.2.1.2.

ASTM E1886 and ASTM E1996; or 2, AAMA506

nce applied, cannot be removed without being destroyed.

omply with Sections R609.8.1 and R609.8.3.

nstallation is provided. Exterior sheathing shall be dry before applying exterior cover

assemblies to the rough opening substrate.

CHAPTER 7: WALL COVERING

SECTION R702: INTERIOR COVERING

SECTION R701: GENERAL:

lacing concrete shall be removed before a building is occupied or used for any purpose. All construction materials shall be

nidification sized in accordance with manufacturer's specifications. R408.4 Access shall be provided to all underfloor spaces. Access openings through the floor shall be a minimum of 1 inches by 24 inches (457 mm by 610 mm). Openings through a perimeter wall shall be not less than 16 inches by 24 inches (40 310 mm). When any portion of the through-wall access is below grade, an areaway not less than 16 inches by 24 inch 07 mm by 610 mm) shall be provided. The bottom of the areaway shall be below the threshold of the access opening. Throug access openings shall not be located under a door to the residence. See the California Mechanical Code for access R408.5 Removal of Debris. The under-floor grade shall be cleaned of all vegetation and organic material. All wood forms used for

R408.6 Finished Grade. The finished grade of underfloor surface may be located at the bottom of the footings: however, where nere is evidence that the groundwater table can rise to within 6 inches (152 mm) of the finished floor at the building perimeter ere is evidence that the surface water does not readily drain from the building site, the grade in the underfloor space sha high as the outside finished grade, unless an approved drainage system is provide lood resistance. For buildings located in flood hazard areas as established in Table R301.2(1 losing the underfloor space shall be provided with flood openings in accordance with Section R322.2 The finished ground level of the underfloor space shall be equal to or higher than the outside finished ground level on at least

nderfloor spaces that meet the requirements of FEMA/FIA TB11-Exception: Underfloor spaces that meet the requirements or removing the second method in a continuous Class 1 or 2 vapor R408.8 Underfloor vapor retarder. Climate Zones 1A, 2A and 3A below the warm humid line, a continuous Class 1 or 2 vapor retarder shall be provided on the exposed face of air permeable insulation installed between the floor joists and exposed to th grade in the underfloor space. The vapor retarder shall have a maximum water vapor permeance of 1.5 perms when tested i Exception: the vapor retarder shall not be required in unvented crawl spaces constructed in accordance with Section R408.3.

R609.1 General. This section prescribes performance and construction requirements for exterior windows and doors installed s. Windows and doors shall be installed in accordance with the fenestration manufacturer's written instructions. Window and r openings shall be flashed in accordance with Section R703.4. Written installation instructions shall be provided by the Re09.2 Performance. Exterior windows and doors shall be designed to resist the design wind loads specified in Table R301.2(2) d for height and exposure in accordance with Table R301.2(3) or determined in accordance with ASCE 7 using the owable stress design load combinations of ASCE 7. Design wind loads for exterior glazing not part of a labeled assembly shall ined in accordance with Chapter 24 of the California Building Code. R609.3 Testing and labeling. Exterior windows and sliding doors shall be tested by an approved independent laboratory, and nufacturer, performance characteristics and approved inspection agency to indicate compliance w S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/C

R609.3.1 Comparative analysis. Structural wind load design pressures for window and door units different than the size tested in accordance with Section R609.3 shall be permitted to be different than the design value of the tested unit where ned in accordance with one of the following comparative analysis methods: Structural wind load design pressures for window and door units smaller than the size tested in accordance with Section R609.3 shall be permitted to be higher than the design value of the tested unit provided such higher pressures are determined by accepted engineering analysis. Components of the smaller unit shall be the same as those of the teste nit. Where such calculated design pressures are used, they shall be validated by an additional test of the window or do R609.4 Garage doors. Garage doors shall be tested in accordance with either ASTM E330 or ANSI/DASMA 108, and shall meet

R609.4.1 Garage door labeling. Garage doors shall be labeled with a permanent label provided by the garage door manufacturer. The label shall identify the garage door manufacturer, the garage door model/series number, the positive an negative designed wind pressure rating, the installation instruction drawing reference number, and the applicable test

R609.5 Other exterior window and door assemblies. Exterior windows and door assemblies not included within the scope of R609.3 or R609.4 shall be tested in accordance with ASTM E330. Glass in assemblies covered by this exception shall 609.6 Wind-borne debris protection. Protection of exterior windows and glass doors in buildings located in wind-borne debris **R609.6.1 Fenestration testing and labeling**. Fenestration shall be tested by an approved independent laboratory, listed by an approved entity, and bear a label identifying manufacturer, performance characteristics, and approved inspection agency mpliance with the requirements of the following specification(s): R609.6.2 Impact protective systems testing and labeling. Impact protective systems shall be tested for impact resistance

horso ac impact protective systems its and into rabeing impact protective systems shall not ensure the impact protective systems is by an approved independent laboratory for compliance with RSTM E1986 and ASTM E1996. Impact protective systems sh be tested for designed wind pressures by an approved independent laboratory for compliance with ASTM E330. Required designed wind pressures shall be determined in accordance with Table R331.2.1.(1), adjusted for height and exposure in accordance with Table R301.2.1.(2) or determined in accordance with ASCE 7. For the purpose of this section, design, wind re is determined in accordance with ASCE 7 are permitted to be multiplied by 0.6. Impact protective systems, bear el, identifying the manufacturer, performance characteristics, and an approved inspection agency. Impact protectiv systems, she'll have a permanent label, providing traceability to the manufacturer, product designation, and perform acteristics. The permanent label shall be acid etched, sandblasted, ceramic fired, laser etched, embossed, or a type tha R609.7 Anchorage methods. The methods cited in this section apply only to anchorage of window and glass door assemblies to

R609.7.1 Anchoring requirements. Window and glass door assemblies shall be anchored in accordance with the publisher ndations to achieve the design pressure specified. Substitute anchoring systems used for substrate ot specified by the fenestration manufacturer shall provide equal or greater anchoring performance as demonstrated by 2(1), R609.7.2(2), R609.7.2(3), R609.7.2(4), R609.7.2(5), R609.7.2(6), R609.7.2(7) and R609.7.2(8). R609.7.2.1 Masonry, concrete or other structural substrate. Where the wood shim or buck thickness is less than 1-1/2 inches (38 mm), window and glass door assemblies shall be anchored through the jamb, or by jamb clip and anchors sha be embedded directly into the masonry, concrete or other substantial substrate material. Anchors shall adequately transf ad from the window or door frame into the rough opening substrate [see Figures R609.7.2(1) and R6097.2(2

Where the wood shim or buck thickness is inches (38 mm) or more, the buck is securely fastened to the mason concrete or other substantial substrate, and the buck extends beyond the interior face of the window or door frame window and glass door assemblies shall be anchored through the jamb, or by jamb clip, or through the flange to t secured wood buck. Anchors shall be embedded into the secured wood buck to adequately transfer load from the or door frame assembly [see Figures R609.7.2(3), R6097.2(4) and R609.7.2(5)]. R609.7.2.2 Wood or other approved framing material. Where the framing material is wood or other approved framing material, window and glass door assemblies shall be anchored through the frame, or by frame clip, or through the fl rs shall be embedded into the frame construction to adequately transfer load [see Figures R609.7.2(6), R609.7.2 R609.8 Mullions. Mullions shall be tested by an approved testing laboratory in accordance with AAMA 450, or be engineered in

ordance with accepted engineering practice. Mullions tested as stand-alone units or qualified by engineering shall use ormance criteria cited in Sections R609.8.1, R609.8.2 and R609.8.3. Mullions qualified by an actual test of an entire assembly **R609.8.1 Load transfer.** Mullions shall be designed to transfer the design pressure loads applied by the window and door **R609.8.2 Deflection**. Mullions shall be capable of resisting the design pressure loads applied by the window and door assemblies to be supported without deflecting more than L/175, where L is the span of the mullion in inches. R609.8.3 Structural safety factor. Mullions shall be capable of resisting a load of 1.5 times the design pressure loads applied by the window and door assemblies to be supported without exceeding the appropriate material stress levels. If tested by an approved laboratory, the 1.5 times the design pressure load shall be sustained for 10 seconds, and the permanent deformation shall not exceed 0.4 percent of the mullion span after the 1.5 times design pressure load is removed.

R701.1 Application. The provisions of this chapter shall control the design and construction of the interior and exterior wal rering for all buildings. 01.2 Installation. Products sensitive to adverse weather shall not be installed until adequate weather protection for the

R702.1 General. Interior coverings or wall finishes shall be installed in accordance with this chapter and Table R702.1(1)

03.7.1 for support and Section R703.7.4 for anchorage, except an airspace is not required. Interior finishes and material phorm to the flame spread and smoke-development requirements of Section R302.9. 2.2 Interior plaster. R702.2.1 Gypsum plaster. Gypsum plaster materials shall conform to ASTM C5, C22, C28, C35, C59, C61, C587, C631, C847, C933, C1032 and C1047, and shall be installed or applied in compliance with ASTM C843 and C844. Gypsum lath or gypsum base for veneer plaster shall conform to ASTM 96. Plaster shall be not less than three coats where applied over metal lath and not less than two coats where applied over er bases permitted by this section, except that veneer plaster shall be applied in one coat not to exceed 3/16 incl .76 mm) thickness, provided the total thickness is in accordance with Table R702.1(1). R702.3 Gypsum board and gypsum panel products. R702.31 Materials. Gypsum board and gypsum panel products. R702.31 Materials. Gypsum board and gypsum panel product materials and accessories shall conform to ASTM C22, C475, C514, C1002, C1047, C1177, C1178, C1278, C1396 or C658 and shall be installed in accordance with the provisions of this section. Adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C557. R702.3.2 Wood framing. Wood framing supporting gypsum board and gypsum panel products shall be not less than 2 inal thickness in the least dimension except that wood furring strips not less than 1 inch by 2 inc 25 mm by 51 mm) nominal dimension shall be permitted to be used over solid backing or framing spaced not more that hes (610 mm) on center. **R702.3.3 Cold-formed steel framing**. Cold-formed steel framing supporting gypsum board and gypsum panel products shall be not less than 1-1/4 inches (32 mm) wide in the least dimension. Non load-bearing cold-formed steel framing hall comply with AISI S220 and ASTM C645, Section 10. Load-bearing cold-formed steel framing shall comply with AIS 00 and ASTM C955, Section 8. **R702.3.5 Application**. Supports and fasteners used to attach gypsum board and gypsum panel products shall comply with Table R702.3.5. Gypsum sheathing shall be attached to exterior walls in accordance with Table R602.3(1). Gypsu oard and gypsum panel products shall be applied at right angles or parallel to framing members. All edges and ends f gypsum board and gypsum panel products shall occur on the framing members, except those edges and ends that perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed t R702.3.5.1 Screw fastening. Screws for attaching gypsum board and gypsum panel products to wood framing shall be Type W or Type S in accordance with ASTM C1 002 and shall penetrate the wood not less than inch .9 mm). Gypsum board and gypsum panel products shall be attached to cold-formed steel framing with minimum No. 6 screws. Screws for attaching gypsum board and gypsum panel products to cold-formed steel framing less than 0.033 inch (1 mm) thick shall be Type S in accordance with ASTM C1 002 or bugle head style in accordance

able R702.1(2), Table R702.1(3) and Table R702.3.5. Interior masonry veneer shall comply with the requirements of Sectio

vith ASTM C1513 and shall penetrate the steel not less than 3/8 inch (9.5 mm). Screws for attaching gyosum board and gypsum panel products to cold- formed steel framing 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall be accordance with ASTM C954 or bugle head style in accordance with ASTM C1513. Screws for attaching gypsun ard and gypsum panel products to structural insulated panels shall penetrate the wood structural panel facing no ss than 7/16 inch (11.1 mm). R702.3.6 Horizontal gypsum board diaphragm ceilings. Gypsum board and gypsum panel products shall be permitted on wood joists to create a horizontal diaphragm in accordance with Table R702.3.6. Gypsum board and gypsum panel products shall be installed perpendicular to ceiling framing members. End joints of adjacent courses of board and panels shall not occur on the same joist. The maximum allowable diaphragm proportions shall be 1-1/2: 1 between hear resisting elements. Rotation or cantilever conditions shall not be permitted. Gypsum board or gypsum pane products shall not be used in diaphragm ceilings to resist lateral forces imposed by masonry or concrete construction Perimeter edges shall be blocked using wood members not less than 2 inch by 6 inch (5 mm by 152 mm) nominal dimension. Blocking material shall be installed flat over the top plate of the wall to provide a nailing surface not less than nches (51 mm) in width for the attachment of the gypsum board or gypsum panel product R702.3.7 Water-resistant gypsum backing board. Gypsum board used as the base or backer for adhesive application of ceramic tile or other required nonabsorbent finish material shall conform to ASTM C1396, C1178 or C1278. Use of vater-resistant gypsum backing board shall be permitted on ceilings. Water-resistant gypsum board shall not be installed a Class I or II vapor retarder in a shower or tub compartment. Cut or exposed edges, including those at wall intersections, shall be sealed as recommended by the manufacturer R702.3.7.1 Limitations. Water-resistant gypsum backing board shall not be used where there will be direct exposure to water, or in areas subject to continuous high humidity. R702.4.1 General. Ceramic tile surfaces shall be installed in accordance with ANSI A108.1. A108.4. A108.5. A108.6

A108.11, A118.1, A118.3, A136.1 and A137.1. **R702.4.2 Backer boards**. Materials used as backers for wall tile in tub and shower areas and wall panels in shower as shall be of materials listed in Table R702.4.2, and installed in accordance with the manufacturer's recom-R702.5 Other finishes. Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hard board paneling less than 1/4 inch ninal thickness shall not have less than a 3/8 inch (10 mm) gypsum board or gypsum panel pro Wood veneer paneling not less than 1/4 inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboa

2.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB Grading Rules for Wood Shakes ed to be installed directly to the studs with maximum 24 inches (610 mm) on-center spacin R702.6.1 Attachment, Nails, staples or glue are permitted for attaching shakes or shingles to the wall, and attachm shakes or shingles directly to the surface shall be permitted provided the fasteners are appropriate for the type of wall surface material. Where nails or staples are used, two fasteners shall be provided and shall be placed so that they are covered by the R702.6.2 Furring strips. Where furring strips are used, they shall be 1 inch by 2 inches or 1 inch by 3 inches (25 mm by 51 mm or 25 mm by 76 mm), spaced a distance on center equal to the desired exposure, and shall be attached to the wall by nailing through other wall material into the studs.

SECTION R703: EXTERIOR COVERING R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.4. coeption: Log walls designed and constructed in accordance with the provisions of ICC 400. **ATO3.1.1 Water resistance.** The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly. Protection against condensation in the

exterior wall assembly shall be provided in accordance with the California Energy Code. ather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed in accordance with Section R703.4 or R703.8 Compliance with the requirements for a means of drainage, and the requirements of Sections R703.2 and R703.4, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the erior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM 331 under the following conditions 1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size 2.3 Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299 Pa). . Exterior wall envelope assemblies shall be subjected to the minimum test exposure for a minimum of 2 hour ne exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetration o ons of terminations with dissimilar materials. intersections or terminations with dissimilar materials. **R703.1.2** Wind resistance. Wall coverings, backing materials and their attachments shall be capable of resisting wind load in accordance with Tables R301.2(2) and R301.2(3). Wind-pressure resistance of the siding and backing materials shall be

gn analysis, data from approved design standards and analysis conforming to generally accepted engineering practic all be used to evaluate the siding and backing material and its fastening. All applicable failure modes including bendin ture of siding, fastener withdrawal and fastener head pull-through shall be considered in the testing or design analysi Where the wall covering and the backing material resist wind load as an assembly, use of the design capacity of the assembly R703.2 Water-resistive barrier. Not fewer than one layer of water-resistant barrier shall be applied over studs or sheathing of all exterior walls with flashing as indicated in Section R703.4, in such a manner as to provide a continuous water resistant ba ehind the exterior wall veneer. The water-resistant barrier material shall be continuous to the top of walls and terminated at ations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section . Water-resistive barrier materials shall comply with one of the following: b. 15 felt complying with ASTM D226, Type 1 ASTM E2556, Type 1 or 2 ASTM E331 in accordance with Section R703.1.1

determined by ASTM E330 or other applicable standard test methods. Where wind-pressure resistance is determined by

. Other approved materials in accordance with the manufacturer's installation instructions. No. 15 asphalt felt in water-resistant barriers complying with ASTM E2556 shall be applied horizontally, with the upper layer lapped over the lower layer, not less than 2 inches (51 mm), and where joints occur shall be lapped no less than 6 inches (152 R703.3 Nominal thickness and attachments. The nominal thickness and attachment of exterior wall coverings shall be in

- Table R703.3(1) using screw fasteners substituted for the nails specified in accordance with Table R703.3(2), or an approved 703.3.2 Fasteners. Exterior wall coverings shall be securely fastened with aluminum, galvanized, stainless steel or rustpreventative coated nails or staples in accordance with Table R703.3(I) or with other approved corrosion-resistar ccordance with the wall covering manufacturer's installation instructions. Nails and staples shall comply with ASTM F166. Iails shall be T-head, modified round head, or round head with smooth or deformed shanks. Staples shall have a minimun crown width of 7/16 inch (11.1 mm) outside diameter and be manufactured of minimum 16-gage wire. Where fiberboard gypsum, or foam plastic sheathing backing is used, nails or staples shall be driven into the studs. Where wood or wood ructural panel sheathing is used, fasteners shall be driven into studs unless otherwise permitted to be driven into sheathing ccordance with either the siding manufacturer's installation instructions or Table R703.3.2 R703.3.3 Minimum fastener length and penetration. Fasteners shall have the greater of the minimum length specified in Table R703.3(1) or as required to provide a minimum penetration into framing as follows: Fasteners for horizontal aluminum siding, steel siding, particleboard panel siding, wood structural panel siding in accordance with ANSI/APA-PRP 210, fiber-cement panel siding and fiber-cement lap siding installed over foam plastic heathing shall penetrate not less than 1-1/2 inches (38 mm) into framing or shall be in accordance with the ufacturer's installation instructions. Fasteners for hardboard panel and lap siding shall penetrate not less than 1-1/2 inches (38 mm) into framing. Fasteners for vinyl siding and insulated vinyl siding installed over wood or wood structural panel sheathing shall penetrat not less than 1-1/4 inches (32 mm) into sheathing and framing combined. Vinyl siding and insulated vinyl siding shall b permitted to be installed with fasteners penetrating into or through wood or wood structural sheathing of minimu thickness as specified by the manufacturer's instructions or test report, with or without penetration into the framing Where the fastener penetrates fully through the sheathing, the end of the fastener shall extend not less than 1/4 inch (6 mm) beyond the opposite face of the sheathing. Fasteners for vinyl siding and insulated vinyl siding installed over foan plastic sheathing shall be in accordance with Section R703.11.2. Fasteners for vinyl siding and insulated vinyl siding nstalled over fiberboard or gypsum sheathing shall penetrate not less than 1-1/4 inches (32 mm) into framing Fasteners for vertical or horizontal wood siding shall penetrate not less than 1-1/2 inches (38 mm) into studs, studs and ood sheathing combined, or blocking. Fasteners for siding material installed over foam plastic sheathing shall have sufficient length to accommodate foar plastic sheathing thickness and to penetrate framing or sheathing and framing combined, as specified in Items 1 through R703.4 Flashing. Approved corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. Fluid-applied branes used as flashing in exterior walls shall comply with AAMA 714. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashings shall be installed at the following locations: Exterior window and door openings. Flashing at exterior window and door openings shall be installed in accordance with 2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with
- projecting lips on both sides under stucco copings. Under and at the ends of masonry, wood or metal copings and sills. ntinuously above all projecting wood trim Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
- 6. At wall and roof intersections. At built-in gutters. R703.4.1 Flashing installation at exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to a water-resistant barrier complying with section F subsequent drainage. Air sealing shall be installed around all window and door openings on the interior side of the rough
- opening gap. Mechanically attached flexible flashings shall comply with AAMA 712. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following: The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration nanufacturer's instructions, in accordance with the flashing manufacturer's instructions. Where are flashing instructions c details are not provided, pan flashing shall be installed at the sill of the exterior window and door openings. Penn flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water esistant barrier for subsequent drainage. Openings using pan flashing shall incorporate flashing or protection at the heads In accordance with the flashing design or method of a registered design professional. . In accordance with other approved methods.
- R703.5 Wood, hardboard and wood structural panel siding. Wood, hardboard, and wood structural panel siding shall be Istalled in accordance with this section and Table R703.3(1). Hardboard siding shall comply with CPA/ANSI A135.6. Hardboard itectural trim shall comply with CPA/ANSI A 135.7 **R703.5.1 Vertical wood siding.** Wood siding applied vertically shall be nailed to horizontal nailing strips or blocking set not more than 24 inches (610 mm) on cente
- R703.5.2 Panel siding. 3/8 inch (9.5 mm) wood structural panel siding shall not be applied directly to studs spaced more than 16 inches (406 mm) on center where long dimension is parallel to studs. Wood structural panel siding 7/16 inch (11.1 mm) or thinner shall not be applied directly to studs spaced more than 24 inches (610 mm) on center. The stud spacing shall not exceed the panel span rating provided by the manufacturer unless the panels are installed with the face grain perpendicular the studs or over sheathing approved for that stud spacing. Joints in wood, hardboard or wood structural panel siding shall be made as follows unless otherwise approved. Vertical joints in panel siding shall occur over framing members, unless wood rood structural panel sheathing is used, and shall be shiplapped or covered with a batten. Horizontal joints in panel sidin shall be lapped not less than 1 inch (25 mm) or shall be shiplapped or flashed with Z-flashing and occur over solid blocking ood structural panel sheathing. R703.5.3 Horizontal wood siding. Horizontal lap siding shall be installed in accordance with the manufacturer's endations. Where there are no recommendations the siding shall be lapped not less than 1 inch (25 mm), or 1/2 inch nm) if rabbeted, and shall have the ends caulked, covered with a batten or sealed and installed over a strip of flashing R703.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB Grading Rules for Wood Shakes and R703.6.1 Application. Wood shakes or shingles shall be applied either single course or double course over nominal 1/2 inch .7 mm) wood-based sheathing or to furring strips over 1/2 inch (12.7 mm) nominal non-wood sheathing. A water-resistiv barrier shall be provided over all sheathing, with horizontal overlaps in the membrane of not less than 2 inches (51 mm) and vertical overlaps of not less than 6 inches (152 mm). Where horizontal furring strips are used, they shall be 1 inch by 3 inches or 1 inch by 4 inches (25 mm by 76 mm or 25 mm by 102 mm) and shall be fastened to the studs with minimum 7d or 8d box nails and shall be spaced a distance on center equal to the actual weather exposure of the shakes or shingles, not to xceed the maximum exposure specified in Table R703.6.1. When installing shakes or shingles over a non-permeable wa resistive barrier, furring strips shall be placed first vertically over the barrier and in addition, horizontal furring strips shall be fastened to the vertical furring strips prior to attaching the shakes or shingles to the horizontal furring strips. The spacing between adjacent shingles to allow for expansion shall be 1/8 inch (3.2 mm) to 1/4 inch (6.4 mm) apart, and between adjace shakes shall be 3/8 inch (9.5 mm) to 1/2 inch (12.7 mm) apart. The offset spacing between joints in adjacent courses shal not less than 1-1/2 inches (38 mm). R703.6.2 Weather exposure. The maximum weather exposure for shakes and shingles shall not exceed that specified in R703.6.3 Attachment. Wood shakes or shingles shall be installed according to this chapter and the manufacturer's instructions. Each shake or shingle shall be held in place by two stainless steel Type 304, Type 316 or hot-dipped zinc-coated galvanized corrosion-resistant box nails in accordance with Table R703.6.3(1) or R703.6.3(2). The hot-dipped zinc-coated alvanizing shall conform to minimum standard ASTM A153D, 1.0 ounce per square foot. Alternatively, 16-gage stainless steel ype 304 or Type 316 staples with crown widths inch (11 mm) minimum, inch (19 mm) maximum, shall be used and the crow of the staple shall be placed parallel with the butt of the shake or the shingle. In single-course application, the fasteners shall
- be concealed by the course above and shall be driven approximately 1 inch (25 mm) above the butt line of the succeeding course and 3/4 inch (19 mm) from the edge. In double-course applications, the exposed shake or shingle shall be face-nailed with two fasteners, driven approximately 2 inches (51 mm) above the butt line and 3/4 inch (19 mm) from each edge asteners installed within 15 miles (24 km) of salt water coastal areas shall be stainless steel Type 316. Fasteners for fireetardant-treated shakes or shingles in accordance with Section R902 or pressure-impregnated-preservative-treated shakes r shingles in accordance with AWPAU1 shall be stainless steel Type 316. The fasteners shall penetrate the sheathing c furring strips by not less than 1/2 inch (13 mm) and shall not be overdriven. Fasteners for untreated (natural) and treated ucts shall comply with ASTM FI667. 703.6.4 Bottom courses. The bottom courses shall be doubled R703.7 Exterior plaster (stucco). Installation of these materials shall be in compliance with ASTM C926, ASTM C1063 and the R703.7.1 Lath. Lath and lath attachments shall be of corrosion-resistant materials in accordance with ASTM C1063.
- Expanded metal, welded wire, or woven wire lath shall be attached to wood framing members or furring. Where are the exterior plaster is serving as wall bracing in accordance with Table R602.10.4, the lath shall be attached directly to framing. The lath shall be attached with 1-1/2 inch long (38 mm), 11-gauge nails having a 7/16 inch (11.1 mm) head, or 7/8 inch long (22.2 mm), 16-gauge staples, spaced not more than 7 inches (178 mm) on center along framing members or furring and not more than 24 inches (610 mm) on center between framing members, or furring, or as otherwise approved. Additional fastening between wood framing members shall not be prohibited. Lath attachments to cold formed steel framing, masonry, stone, or oncrete substrates shall be in accordance with ASTM C1063. Where lath is installed directly over foam sheathing, lat onnections shall also be in accordance with Section R703.15, R703.16 or R703.17. Where lath is attached to furring shall be in accordance with Section R703.15, or R703.16 or R703.17. Exception: Lath is not required over masonry, cast in place concrete, precast concrete or stone substrates prepared in R703.7.2 Plaster. Plastering with cement plaster shall be in accordance with ASTM C926. Cement materials shall be in accordance with one of the following Masonry cement conforming to ASTM C91, Type M, S, or N. Portland cement conforming to ASTM C150, Type I, II or III.
- Blended hydraulic cement conforming to ASTM C595, Type IP, IS (< 70), IL, or IT (< 70).
 Hydraulic cement conforming to ASTM C1157, Type GU, HE, MS, HS, or MH.
- 5. Plastic (stucco) cement conforming to ASTM C1328. Plaster shall be not less than three coats were applied over metal lath or wire lath, and shall be not less than two coats were applied over masonry, concrete, pressure-preservative-treated wood or decay-resistant wood as specified in Section R317 r qvpsum backing. If the plaster surface is completely covered by veneer or other facing material, or is completely concealed, plaster application need only two coats provided the total thickness is as set forth in Table R702.1(1). On wood-frame with an on-oracle floor slab system, exterior plaster, shall be applied to cover, but not extend below, lath, paper and screed. The proportion of aggregate to cementitious materials shall be as set forth in Table R702.1(3). R703.7.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of 3-1/2 inches (89 mm) shall be provided at o below the foundation plate line on exterior stud walls in accordance with ASTM C926. The weep screed shall be place not less than 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange.
- erior lath shall cover and terminate on the attachment flange of the weep screed. R703.7.3 Water-resistive barriers. Water-resistant barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall comply with Section R703.7.3.1 or R703.7.3.2. R703.7.3.1 Dry climates. In Dry (B) climate zones indicated in figure N1101.7, water-resistant barriers shall comply with The water-resistant barrier, shall be two layers of 10-minute Grade D paper, or have a water-resistance equal to or greater than two layers of a water-resistant barrier complying with ASTM E2556. Type 1, The individual layers shall be talled independently such that each layer provides a separate continuous plane. Flashing installed in accordance with Section R703.4 and intended to drain to the water-resistant barrier shall be directed between the layers.
- 2. In addition to complying with Section R703.7.3.1, Item 2, drainage on the exterior of the water-resistant barrier sha nave a drainage efficiency of not less than 90 percent, as measured in accordance with ASTM E2273 or Annex A2 of R703.7.3.2 Moist and marine climates. In the Moist (A) or Marine (C) climate zones indicated in figure N1101.7, waterresistant barriers shall comply with one of the following: In addition to complying with Section R703.7.3.1, a space or drainage material not less than 3/16 inch (5 mm) in depth shall be added to the exterior side of the water-resistive barrier. In addition to complying with Section R703.7.3.1. Item 2, drainage on the exterior of the water-resistive barrier shall have a
- drainage efficiency of not less than 90 percent, as measured in accordance with ASTM E2273 or Annex A2 of ASTM R703.7.4 Application. Each coat shall be kept in a moist condition for at least 48 hours prior to application of the next coat. ations installed in accordance with ASTM C926. <u>Exception</u>: Applications installed in accordance with ASTM C926. R703.7.5 Curing. The finish coat for two-coat cement plaster shall not be applied sooner than seven days after application of the first coat. For three-coat cement plaster, the second coat shall not be applied sooner than 48 hours after application of the first coat. The finish coat for three-coat cement plaster shall not be applied sooner than seven days after application of the
- R703.10 Fiber cement siding. R703.10.1 Panel siding. Fiber-cement panels shall comply with the requirements of ASTM C1186, Type A, minimum Grade II or ISO 8336, Category A, minimum Class 2. Panels shall be installed with the long dimension either parallel or perpendicular to framing. Vertical and horizontal joints shall occur over framing members and shall be protected with caulking, or wit battens or flashing, or be vertical or horizontal shiplap, or otherwise designed to comply with Section R703.1. Panel siding shall be installed with fasteners in accordance with Table R703.3(1) or the approved manufacturer's instructions R703.10.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches (305 mm) shall comply with the requirements of ASTM C1186, Type A, minimum Grade II or ISO 8336, Category A, minimum Class 2. Lap shall be designed to comply with Section R703.1. Lap siding courses shall be installed with the fastener heads exposed or concealed, in rdance with Table R703.3(1) or approved manufacturer's instructions
- R703.12 Adhered masonry veneer installation. Adhered masonry veneer shall comply with the requirements of Section R703.7.3 and the requirements in Sections 12.1 and 12.3 of TMS 402/ACI 530/ASCE 5. Adhered masonry veneer shall be nstalled in accordance with Section R703.7.1, Article 3.3C of TMS 602/ACI 530.1/ASCE 6 or the manufacturer's instructions. R703.12.1 Clearances. On exterior stud walls, adhered masonry veneer shall be installed Minimum of 4 inches (102mm) above the earth; 2. Minimum of 2 inches (5 1 mm) above paved areas; or 3. Minimum of 1/2 inch (12.7 mm) above exterior walking surfaces that are supported by the same foundation that supports
- R703.12.2 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26-gage galvanized or plastic with a minimum vertical attachment flange of 3-1/2 inches (89 mm) shall be installed to extend a um of 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section R703.4 R703.12.3 Water-resistive barrier. A water-resistive barrier shall be installed as required by Section R703.2 and shall comp with the requirements of Section R703.7.3. The water-resistive barrier shall lap over the exterior of the attachment flange of the screed or flashing provided in accordance with Section R703.12.2.

- CHAPTER 8: ROOF-CEILING CONSTRUCTION SECTION R801: GENERAL R801.3 Roof drainage. In areas where expansive or collapsible soils are known to exist, all dwellings shall have a method of water disposal from roofs that will collect and discharge roof drainage to the ground surface not less than 5 feet (1524 mm) from foundation walls or to an approved drainage system. SECTION R802: WOOD ROOF FRAMING (See Structural Plans & Notes) SECTION R803: ROOF SHEATHING (See Structural Plans & Notes) SECTION R805: CEILING FINISHES R805.1 Ceiling installation. Ceilings shall be installed in accordance with the requirements for interior wall finishes as provided in Section R702.1 through R702.6. SECTION R806: ROOF VENTILATION R806.1 Ventilation required. Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain or snow. Ventilation openings shall have a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm). Ventilation openings having a least dimension larger than 1/4 inch (6.4 mm) shall be provided with corrosion-resistant wire cloth screening, hardware cloth or similar material with openings having a least dimension of 1/16 inch (1.6 mm) minimum and 1/4 inch (6.4 mm) maximum. Openings in roof framing members shall conform to the requirements of Section R802.7.
 R806.2 Minimum vent area. The minimum net free ventilating area shall be 1/150 of the area of the vented space. Exception: The minimum net free ventilation area shall he 1/300 of the vented space provided one or more of the following conditions are met: In Climate Zones 6, 7 and 8, a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling. In Climate Zones 6, 7 and 8, a Class I or II vapor retarder is installed on the warm-in-winter side of the ceiling.
 Not less than 40 percent and not more than 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the attic or rafter space. Upper ventilators shall be located not more than 3 feet (914 mm) below the ridge or highest point of the space, measured ventically, with the balance of the required ventilation provided by eave or cornice vents. Where the location of wall or roof framing members conflicts with the installation of upper ventilators, installation more than 3 feet (914 mm) below the ridge or highest point of the space. Where eave or cornice vents are installed, insulation shall not block the free flow of air. Not less than a 1 inch (25 mm) space shall be provided between the insulation and the roof sheathing and at the location of the vent. 806.4 Installation and weather protection. Ventilators shall be installed in accordance with manufacturer's instruction R806.4 Installation and weather protection. Ventilators shall be installed in accordance with manufacturer's instructions. Installation of ventilators in roof systems shall be in accordance with the requirements of Section R903. Installation of ventilators in wall systems shall be in accordance with the requirements of Section R703.1. **R806.5 Unvented attic and unvented enclosed rafter assemblies**. Unvented attics and unvented enclosed roof framing assemblies created by ceilings that are applied directly to the underside of the roof framing members and structural roof sheathing applied directly to the top of the roof framing members/rafters, shall be permitted where all the following conditions are met: 1. The unvented attic appeal is completely within the building thermal envelope. The unverted attic space is completely within the building thermal envelope.
 No interior Class I vapor retarders are installed on the ceiling side (attic floor) of the unvented attic assembly or on the ceiling side of the unvented enclosed roof framing assembly.
 Where wood shingles or shakes are used, a minimum 1/4 inch (6.4 mm) vented airspace separates the shingles or shakes and the roofing underlayment above the structural sheathing.
 In California Climate Zones 5, 6, 7 and 8, any air-impermeable insulation shall be a Class II vapor retarder, or shall have a Class II vapor retarder coating or covering in direct contact with the underside of the insulation.
 Insulation shall comply with then 5.3 and either them 5.1 or 5.2:
 5.1.1 tem 5.1.1, 5.1.2, 5.1.3 or 5.1.4 shall be met, depending on the air permeability of the insulation directly under the structural roof sheathing. No insulation underlayment is installed. A continuous underlayment shall be considered to exist if
- eathing, roofing paper or any continuous layer having a perm rate of no more than one perm under the dry cup method 5.1 Item 5.1.1, 5.1.2, 5.1.3 or 5.1.4 shall be met, depending on the air permeability of the insulation directly under the tural root sheathing. i.1.1 Where only air-impermeable insulation is provided, it shall be applied in direct contact with the underside of the structural roof sheathing. 5.1.2. Where air-permeable insulation is provided inside the building thermal envelope, it shall be installed in accordance with Section 5.1. In addition to the air-permeable insulation installed directly below the structural sheathing, rigid board or sheat insulation shall be installed directly above the structural roof sheathing in accordance with the R-values in Table Construction is a structural sheathing in accordance with the R-values in Table

- 5.1.3. Where both air-impermeable and air-permeable insulation are provided, the air-impermeable insulation shall be applied in direct contact with the under-side of the structural roof sheathing and shall be in accordance with the R-values in Table R806.5 for condensation control. The air-permeable insulation shall be installed directly under the airpermeable insulatior 5.1.4. Alternatively, sufficient rigid board or sheet insulation shall be installed directly above the structural roof sheathing to maintain the monthly average temperature of the underside of the structural roof sheathing above 45°F (7°C). For calculation purposes, an interior air temperature of 68°F (20°C) is assumed and the exterior air temperature is assumed to be the monthly average outside air temperature of the three coldest months. n Climate Zones 1, 2 and 3, air permeable insulation installed in unvented attics shall meet the following requirements: 2.1 An approved vapor diffusion port shall be installed not more than 12 inches (305 mm) from the highest point of the oof, measured vertically from the highest point of the roof to the lower edge of the port. 2.2 The port area shall be greater than or equal to 1:600 of the ceiling area. Where there are multiple parts in the attic, the sum of the port areas shall be greater than or equal to the area requirement. 2.3 The vapor-permeable membrane in the vapor diffusion port shall have a vapor permeance rating of greater than or qual to 20 perms, when tested in accordance with Procedure A of ASTM E96 2.4 The vapor diffusion port shall serve as an air barrier between the attic in the exterior of the building. 2.5 The vapor diffusion port shall protect the attic against the entrance of rain and snow. 6 Framing members and blocking shall not block the free flow of water vapor to the port. Not less than a 2 inch (51 n) Space shall be provided between any blocking in the roof sheathing. Air-permeable insulation shall be permitted
- ithin that space. .2.7 The roof slope shall be greater than or equal to 3:12 (vertical/horizontal) .2.8 Where only air-permeable insulation is used, it shall be installed directly below the structural roof sheathing, on top of the attic floor, or on top of the ceiling. 2.9 Air-impermeable insulation where used in conjunction with air-permeable insulation, shall be directly above or below the structural roof sheathing and is not required to meet the R-value in Table R806.5. 5.2.10 Where air-permeable insulation is used and is installed directly below the roof structural sheathing, air shall be supplied at a flow rate greater than or equal to 50 cfm (23.6 L/s) per 1,000 square feet (93 m2) of ceiling. The air shall be om ductwork providing supply air to the occupiable space when the conditioning system is operating Alternatively, the air shall be supplied by a supply fan when they conditioning system is operating. (See exceptions)
- SECTION R807: ATTIC ACCESS R807.1 Attic access, Buildings with combustible ceiling or roof construction shall have an attic access opening to attic areas that nave a vertical height of 30 inches (762 mm) or greater over an area of not less than 30 square feet (2.8 m2). The vertical heigh shall be measured from the top of the ceiling framing members to the underside of the roof framing members. The rough-framed ppening shall be not less than 22 inches by 30 inches (559 mm by 762 mm) and shall be located in a hallway or other readily ccessible location. Where located in a wall, the opening shall be not less than 22 inches wide by 30 inches high (559 mm wide by 762 mm high). Where the access is located in a ceiling, minimum unobstructed headroom in the attic space shall be 30 inches 762 mm) at some point above the access measured vertically from the bottom of ceiling framing members. See the California

Mechanical Code for access requirements where mechanical equipment is located in attics CHAPTER 9: BOOF ASSEMBLIES

- SECTION R901: GENERAL R901.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of roof assemblies SECTION R902: FIRE CLASSIFICATION
- R902.1 Roofing covering materials. Roofs shall be covered with materials as set forth in Sections R904 and R905. A minimum A, B or C roofing shall be installed in areas designated by this section or where the edge of the roof is less than 3 feet (914 orn a lot line. Class A, B and C roofing required by this section to be listed shall be tested in accordance with UL 790 or Exceptions
- <u>uons</u>. ass A roof assemblies include those with coverings of brick, masonry and exposed concrete roof decl Class A roof assemblies include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile, or late installed on non-combustible decks. Nass A roof assemblies include minimum 16 ounces per square foot copper sheets installed over combustible decks. Class A roof assemblies include slate installed over underlayment over combustible decks. R902.1.1 Roof coverings within very-high fire hazard severity zones. The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-retardant roof covering that is at least Class A. <u>Exception</u>: The requirements shall not apply in any jurisdiction that adopts the model ordinance approved by the State Fire
- Marshal pursuant to Section 51189 of the Government Code or an ordinance that substantially conforms to the model ordinance and transmits a copy to the State Fire Marshal. R902.1.2 Roof coverings in other areas. The entire roof covering of every existing structure where more than 50 percent of
- the total roof area is replaced within any one-year period, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-retardant roof 902.1.3 Roofing requirements a Wildland-urban interface fire area. Roofing requirements for structures located in a dland-urban interface fire area shall also comply with Section R337.5. 90.2 Fire-retardant-treated shingles and shakes. Fire-retardant-treated wood shakes and shingles are wood shakes and shingles complying with UBC Standard 15-3 or 15-4 which are impregnated by the full-cell vacuum-pressure process with fire-etardant chemicals, and which have been qualified by UBC Standard 15-2 for use on Class A, B or C roofs. Fire-retardant-treate shakes and shingles shall comply with ICC-ES EG107 and with the weathering requirements contained in Health and Safety ode Section 13132.7(i). Each bundle shall bear labels from an ICBO accredited quality control agency identifying their roof
- assification and indicating their compliance with ICC-ES EG107 and with the weathering requirements contained in Health and Safety Code Section 13132.7(j) ealth and Safety Code Section 13132.7() No wood roof covering materials shall be sold or applied in this state unless both of following conditions are met: he materials have been approved and listed by the State Fire Marshal as complying with the requirements of this section. The materials have passed at least five years of the 10-year natural weathering test. The 10-year natural weathering test required by this subdivision shall be conducted in accordance with Standard 15-2 of the 1994 edition of the Uniform Building
- ode at a testing facility recognized by the State Fire Marshal. R902.3 Building-integrated photovoltaic product. Building-integrated photovoltaic products (BIPV) products installed as the f covering shall be tested, listed and labeled for fire classification in accordance with UL 7103 [SFM] Section R902.1 through 02.1.3. Class A, B or C BIPV products shall be installed where the edge of the roof is less than 3 feet (914 mm) from a lot line R902.4 Rooftop-mounted photovoltaic panels systems. Rooftop-mounted photovoltaic (PV) panel systems installed on or above the roof covering shall be tested, listed and identified with a fire classification in accordance with UL 2703. Listed systems nall be installed in accordance with the manufacturer's installation instructions and their listing. Class A, B, or C photovolta and modules shall be installed in jurisdictions designated by law as requiring their use or where the edge of the roof is less than 3 feet (914 mm) from a lot line SECTION R903: WEATHER PROTECTION
- R903.1 General. Roof decks shall be covered with approved roof coverings secured to the building or structure in accordance sions of this chapter. Roof assemblies shall be designed and installed in accordance with this code and the approved unufacturer's instructions such that the roof assembly shall serve to protect the building or structure. R903.2 Flashing. Flashings shall be installed in a manner that prevents moisture from entering the wall and roof through joints in copings, through moisture permeable materials and at intersections with parapet walls and other penetrations through the ro R903.2.1 Locations. Flashings shall be installed at wall and roof intersections, wherever there is a change in roof slope or direction and around roof openings. A flashing shall be installed to divert the water away from where the eave of a sloped roo intersects a vertical sidewall. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than ch (0.5 mm) (No. 26 galvanized sheet). R903.2.2 Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 inches (762 mm) wide as measured perpendicular to the slope. Cricket or saddle coverings shall be sheet metal or of e same material as the roof covering. sception: Unit skylights installed in accordance with Section R308.6 and flashed in accordance with the manufacturer's
- instructions shall be permitted to be installed without a cricket or saddle. R903.3 Coping. Parapet walls shall be properly coped with noncombustible, weatherproof materials of a width not less than the R903.4 Roof drainage. Unless roofs are sloped to drain over roof edges, roof drains shall be installed at each low point of the R903.4.1 Secondary (emergency overflow) drains or scuppers. Where roof drains are required, secondary emergency overflow roof drains or scuppers shall be provided where the roof perimeter construction extends above the roof in such manner that water will be entrapped if the primary drains allow buildup for any reason. Overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches (51 mm) above the low point of the roof, or overflow s having three times the size of the roof drains and having a minimum opening height of 4 inches (102 mm) shall be
- istalled in the adjacent parapet walls with the inlet flow located 2 inches(51 mm) above the low point of the roof served. The installation and sizing of overflow drains, leaders and conductors shall comply with the California Plumbing Code. SECTION R904: MATERIALS R904.1 Scope. The requirements set forth in this section shall apply to the application of roof covering materials specified herein oof assemblies shall be applied in accordance with this chapter and the manufacturer's installation instructions. Installation of
- of assemblies shall comply with the applicable provisions of Section R905. R904.2 Compatibility of materials. Roof assemblies shall be of materials that are compatible with each other and with the building or structure to which the materials are applied

R904.3 Material specifications and physical characteristics. Roof covering materials shall conform to the applicable standards **R904.4 Product identification**. Roof covering materials shall be delivered in packages bearing the manufacturer's identifying marks and approved testing agency labels required. Bulk shipments of materials shall be accompanied by the same information issued in the form of a certificate or on a bill of lading by the manufacturer. SECTION R905: REQUIREMENTS FOR ROOF COVERINGS

- R905.1 Roof covering application. Roof coverings shall be applied in accordance with the applicable provisions of this section ation instructions. Unless otherwise specified in this section, roof coverings shall be installed to sist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R905.1.1 Underlayment. Underlayment for asphalt shingles, clay and concrete tile, metal roof shingles, mineral-surfaced roll roofing, slate and slate-type shingles, wood shingles, wood shakes and metal roof panels shall conform to the applicable standards listed in this chapter. Underlayment materials required to comply with ASTM D226, D1970, D4869 and D6757 shall r a label indicating compliance to the standard designation and, if applicable, type classification indicated in Table R905 (1). Underlayment shall be applied in accordance with Table R905.1.1(2). Underlayment shall be attached in accordance with Table R905.1.1(3). As an alternative, self-adhering polymer-modified bitumen underlayment bearing a label indicating compliance with ASTM
- D1970 and installed in accordance with both the underlayment manufacturer's and roof covering manufacturer's instructions for the deck material, roof ventilation configuration and climate exposure for the roof covering to be installed, As an alternative, a minimum 4 inch wide (102 mm) strip of self-adhering polymer-modified bitumen membrane bearing a bel indicating compliance with ASTM D1970, installed in accordance with the manufacturer's instructions for the dec material, shall be applied over all joints in the roof decking. An approved underlayment complying with Table R905,1,1(1) for the applicable roof covering for areas where win design is not required in accordance with figure are 301.2.1.1 shall be applied over the entire roof over the 4 inch wide, (102 mm) membrane strips. Underlayment shall be applied in cordance with table are 905.1.1(2) using the application requirements for areas where when design is not required in cordance with figure R301.2.1.1. Underlayment shall be attached in accordance with Table R905.1.1(3). R905.2 Asphalt shingles. The installation of asphalt shingles shall comply with the provisions of this section.
- R905.2.1 Sheathing requirements. Asphalt shingles shall be fastened to solidly sheathed decks R905.2.2 Slope. Asphalt shingles shall be used only on roof slopes of two units vertical in 12 units horizontal (2:12) or greater. For roof slopes from two units vertical in 12 units horizontal (2:12) up to four units vertical in 12 units horizontal (4:12), double yment application is required in accordance withSection R905.1. 905.2.3 Underlayment. Underlayment shall comply with Section R905.1.1. R905.2.4 Asphalt shingles. Asphalt shingles shall comply with ASTM D3462.
- R905.2.4.1 Wind resistance of asphalt shingles. Asphalt shingles shall be tested in accordance with ASTM D7158. sphalt shingles shall meet the classification requirements of Table R905.2.4.1 for the appropriate ultimate design wind speed. Asphalt shingle packaging shall bear a label to indicate compliance with ASTM D7158 and the required sification in Table R905.2.4.1. Jassinication in Table 1990.2.4.1. Sception: Asphalt shingles not included in the scope of ASTM D7158 shall be tested and labeled to indicate compliance with ASTM D3161 and the required classification in Table R905.2.4.1. R905.25 Fasteners: A sateners for asphalt shingles shall be galaxitized steel, stainless steel, aluminum or copper roofing nails, minimum 12-gage [0.105 inch (3 mm)] shank with a minimum 3/8 inch-diameter (9.5 mm) head, complying with ASTM 1667, of a length to penetrate through the roofing materials and not less than 3/4 inch (19.1 mm) into the roof sheathing. /here the roof sheath-ing is less than 3/4 inch (19.1 mm) thick, the fasteners shall penetrate through the sheathing.
- R905.2.6 Attachment. Asphalt shingles shall have the minimum number of fasteners required by the manufacturer, but not less than four fasteners per strip shingle or two fasteners per individual shingle. Where the roof slope exceeds 21 units n 12 units horizontal 21:12 (175-percent slope), shingles shall be installed as required by the manufacturer. 905.2.7 Ice barrier. Where required, ice barriers shall comply with Section R905.1.2. ing. Flashing for asphalt shingles shall comply with this section. R905.2.8.1 Base and cap flashing. Base and cap flashing shall be installed in accordance with manufacturer's instructions. Base flashing shall be of either corrosion-resistant metal of minimum nominal 0.019-inch (0.5 mm) thickness or mineral-surfaced roll roofing weighing not less than 77 pounds per 100 square feet (4 kg/m2). Cap flashing shall be
- ant metal of minimum nominal 0.019-inch (0.5 mm) thickness R905.2.8.2 Valleys. Valley linings shall be installed in accordance with the manufacturer's instructions before applying shingles. Valley linings of the following types shall be permitted: . For open valleys (valley lining exposed) lined with metal, the valley lining shall be not less than 24 inches (610 mm) wide and of any of the corrosion-resistant metals in Table R905.2.8.2. For open valleys, valley lining of two plies of mineral-surfaced roll roofing, complying with ASTM D3909 or ASTM D6380 Class M, shall be permitted. The bottom layer shall be 18 inches (457 mm) and the top layer not less than 36 inches (914 mm) wide.
- 3. For closed valleys (valley covered with shingles), valley lining of one ply of smooth roll roofing complying with ASTM D6380 and not less than 36 inches wide (914 mm) or valley lining as described in Item 1 or 2 shall be permitted. Self-adhering polymer modified bitumen underlay- ment complying with ASTM D1970 shall be permitted in lieu of the lining R905.2.8.3 Sidewall flashing. Base flashing against a vertical sidewall shall be continuous or step flashing and shall be not less than 4 inches (102 mm) in height and 4 inches (102 mm) in width and shall direct water away from the vertical
- sidewall onto the roof or into the gutter. Where siding is provided on the vertical side- wall, the vertical leg of the flashing shall be continuous under the siding. Where anchored masonry veneer is provided on the vertical sidewall, the base flashing shall be provided in accordance with this section and counter flashing shall be provided in accordance with ection R703.7.2.2. Where exterior plaster or adhered masonry veneer is provided on the vertical sidewall, the base shall be provided in accordance with this section and Section R703.6.3 R905.2.8.4 Other flashing. Flashing against a vertical front wall, as well as soil stack, vent pipe and chimney flashing, dance with the asphalt shingle manufacturer's printed instructions R905.2.8.5 Drip edge. A drip edge shall be provided at eaves and rake edges of shingle roofs. Adjacent segments of drip dge shall be overlapped not less than 2 inches (5 mm). Drip edges shall extend not less than 1/4 inch (6.44 mm) below e roof sheathing and extend up back onto the roof deck not less than 2 inches (51 mm). Drip edges shall be nechanically fastened to the roof deck at not more than 12 inches (305 mm) o.c. with fasteners as specified in Section
- 005.2.5. Underlayment shall be installed over the drip edge along eaves and under the drip edge along rake edges. R905.3 Clay and concrete tile. The installation of clay and concrete tile shall comply with the provisions of this section R905.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing. <u>cception</u>: Spaced lumber sheathing in accordance with Section R803.1 shall be permitted in Seismic Design Categories A, R905.3.2 Deck slope. Clay and concrete roof tile shall be installed on roof slopes of two and one-half units vertical in 12 units orizontal (272:12) or greater. For roof slopes from two and one-half units vertical in 12 units horizontal (272:12) to four units
- cal in 12 units horizontal (4:12), double underlayment application is required in accordance with Section R905.3.3. 5.3.3 Underlayment. Underlayment shall comply with Section R905.1.1 R905.3.4 Clay tile. Clay roof tile shall comply with ASTM C1167 R905.3.5 Concrete tile. Concrete roof tile shall comply with ASTM C1492. R905.3.6 Fasteners. Nails shall be corrosion resistant and not less than 11 gauge [0.120 inch {3 mm}], 5/16 inch (11 mm) head, and of sufficient length to penetrate the deck not less than 3/4 inch (19 mm) or through the thickness of the deck,
- hichever is less. Attaching wire for clay or concrete tile shall not be smaller than 0.083 inch (2 mm). Perimeter fastening eas include three tile courses but not less than 36 inches (914 mm) from either side of hips or ridges and edges of eaves R905.3.7 Application. Tile shall be applied in accordance with this chapter and the manufacturer's installation instructions, Climatic conditions. . Roof slope.
- Type of tile being installed. and concrete roof tiles shall be fastened in accordance with this section and the manufacturer's installation instructions Perimeter tiles shall be fastened with not less than one fastener per tile. Tiles with installed weight less than 9 pounds per uare foot (0.4 kg/m2) require not less than one fastener per tile regardless of roof slope. Clay and concrete roof tile
- ent shall be in accordance with the manufacturer's installation instructions where applied in areas where the ultimate n wind speed exceeds 130 miles per hour (58 m/s) and on buildings where the roof is located more than 40 feet (12192 mm) above grade. In areas subject to snow, not less than two fasteners per tile are required. In other areas, clay and concrete of tiles shall be attached in accordance with Table R905.3.7. R905.3.8 Flashing. At the juncture of roof vertical surfaces, flashing and counter flashing shall be provided in accordance with chapter and the manufacturer's installation instructions and, where of metal, shall be not less than 0.019 inch (0.5 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal. The valley flashing shall extend not less than 11 inches (279 mm) from the centerline each way and have a splash diverter rib not less than 1 inch (25 mm) in height at the flow line formed as part of the flashing. Sections of flashing shall have an end lap of not less than 4 inches (102 mm). For roof slopes of three nits vertical in 12 units horizontal (25-percent slope) and greater, valley flashing shall have a 36 inch wide (914 mm) lerlayment of one layer of Type 1 underlayment running the full length of the valley, in addition to other required lerlayment. In areas where the average daily temperature in January is 25 °F (-4°C) or less, metal valley flashing
- nderlayment shall be solid-cemented to the roofing underlayment for slopes less than seven units vertical in 12 units tal (58-percent slope) or be of self- adhering polymer modified bitumen sheet. R905.6 Slate shingles. The installation of slate shingles shall comply with the provisions of this section. R905.6.1 Deck requirements. Slate shingles shall be fastened to solidly sheathed roofs. R905.6.2 Deck slope. Slate shingles shall be used only on slopes of four units vertical in 12 units horizontal (33-percent slope) or greater. 005.6.3 Underlayment. Underlayment shall comply with Section R905.1.1.
- R905.6.3.1 Ice barrier. Where required, ice barriers shall comply with Section R905.1.2. R905.6.4 Material standards. Slate shingles shall comply with ASTM C406.

accordance with Section R905.

ot require the removal of existing roof coverings.

without tear-off of existing roof coverings

CHAPTER 10: CHIMNEYS AND FIREPLACES

SECTION R1004: FACTORY BUILT FIREPLACES

als securely fastened in place

Code, Chapter 4, Division 4.5.

earth extensions shall comply with UL 1618.

SECTION R1005: FACTORY-BUILT CHIMNEYS

marked "Residential Type and Building Heating Appliance Chimney."

rs shall be designed to support the additional load.

SECTION R1006: EXTERIOR AIR SUPPLY

terms of their listing in the manufacturer's instructions.

vith a corrosion-resistant screen of 1/4 inch (6.4 mm) mesh.

not include more than four elbows.

shake roofs where applied in accordance with Section R908.4

covering is not adequate as a base for additional roofing.

slope) or greater

905.8.3 Underlayment. Underlayment shall comply with Section R905.1.

905.8.6 Application. Wood shakes shall be installed in accordance with this chapter and the manufacturer's installation

R905.6.5 Application. Minimum head lap for slate shingles shall be in accordance with Table R905.6.5. Slate shingles shall be secured to the roof with two fasteners per slate. Slate shingles shall be installed in accordance with this chapter and th

R905.6.6 Flashing. Flashing and counter flashing shall be made with sheet metal. Valley flashing shall be not less than 5 inches (381 mm) wide. Valley and flashing metal shall be a minimum uncoated thickness of 0.0179 inch (0.5 mm) zin coated G90. Chimneys, stucco or brick walls shall have not less than two plies of felt for a cap flashing consisting of a

inch wide (102 mm) strip of felt set in plastic cement and extending 1 inch (25 mm) above the first felt and a top coating of plastic cement. The felt shall extend over the base flashing 2 inches (51 mm). Wood shingles. The installation of wood shingles shall comply with the provisions of this section

R905.7.1 Deck requirements. Wood shingles shall be installed on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall be not less than 1 inch by 4 inch (25 mm by 102 mm) nominal dimensions and shall be space

on centers equal to the weather exposure to coincide with the placement of fasteners. 905.7.1.1 Solid sheathing required. In areas where the average daily temperature in January is 25°F (-4°C) or less, portion of the roof requiring the application of an ice barrie solid sheathing is required on that portion of the root requiring the application of an ide parter. R905.7.2 Deck slope. Wood shingles shall be installed on slopes of three units vertical in 12 units horizontal (25-percent

905.7.3 Underlayment. Underlayment shall comply with Section R905.1.1 R905.7.3.1 Ice barrier. Where required, ice barriers shall comply with Section R905.1.2 R905.7.4 Material standards. Wood shingles shall be of naturally durable wood and comply with the requirements of

R905.7.5 Application. Wood shingles shall be installed in accordance with this chapter and the manufacturer's instructions. Wood shingles shall be laid with a side lap not less than 1-1/2 inches (38 mm) between joints in courses, and wo joints shall not be in direct alignment in any three adjacent courses. Spacing between shingles shall be not less than //4 inch to 3/8 inch (6.4 mm to 9.5 mm). Weather exposure for wood shingles shall not exceed those set in Table R905.7.5(1). Fasteners for untreated (naturally durable) wood shingles shall be box nails in accordance with Table

R905.7.5(2). Nails shall be stainless steel Type 304 or 316 or hot-dipped galvanized with a coating weight of ASTM A153 Class D (1.0 oz/f2). Alternatively, two 16-gage stainless steel Type 304 or 316 staples with crown widths inch (11.1 mm) inimum, 3/4 inch (19.1 mm) maximum, shall be used. Fasteners installed within 15 miles (24 km) of salt water coasta areas shall be stainless steel Type 316. Fasteners for fire-retardant-treated shingles in accordance with Section R902 c pressure-impregnated-preservative-treated shingles of naturally durable wood in accordance with AWPA U1 shall be stainless steel Type 316. All fasteners shall have a minimum penetration into the sheathing of 3/4 inch (19.1 mm). Fo

sheathing less than 3/4 inch in (19.1 mm) thickness, each fastener shall penetrate through the sheathing. Wood shingles shall be attached to the roof with two fasteners per shingle, positioned in accordance with the manufacturer's installati structions. Fastener packaging shall bear a label indicating the appropriate grade material or coating weight. R905.7.6 Valley flashing. Roof flashing shall be not less than No. 26 gage [0.019 inches (0.5 mm)] corrosion-resistan sheet metal and shall extend 10 inches (254 mm) from the centerline each way for roofs having slopes less than 12 units rertical in 12 units horizontal 100-percent slope), and 7 inches (178 mm) from the centerline each way for slopes of 12

units vertical in 12 units horizontal and greater. Sections of flashing shall have an end lap of not less than 4 inches (102 R905.7.7 Label required. Each bundle of shingles shall be identified by a label of an approved grading or inspection

1905.8 Wood shakes. The installation of wood shakes shall comply with the provisions of this section. R905.8.1 Deck requirements. Wood shakes shall be used only on solid or spaced sheathing. Where spaced sheathing is used, sheathing boards shall be not less than 1 inch by 4 inch (25 mm by 102 mm) nominal dimensions and shall be space on centers equal to the weather exposure to coincide with the placement of fasteners. Where 1 inch by 4 inch (25 mm by 102 sheathing is installed at 10 inches (254 mm) on center, additional 1 inch by 4 inch (25 mm by 102 mm) board

R905.8.1.1 Solid sheathing required. In areas where the average daily temperature in January is 25°F (-4°C) or less, solid sheathing is required on that portion of the roof requiring an ice barrier. **R905.8.2 Deck slope**. Wood shakes shall only be used on slopes of three units vertical in 12 units horizontal (25-percent

R905.8.3.1 Ice barrier. Where required, ice barriers shall comply with Section R905.1.2. R905.8.4 Interlayment. Interlayment shall comply with ASTM D226, Type I. R905.8.5 Material standards. Wood shakes shall comply with the requirements of Table R905.8.5.

instructions. Wood shakes shall be laid with a side lap not less than 1 1-1/2 inches (38 mm) between joints in adjacent courses. Spacing between shakes in the same course shall be 3/8 inch to 5/8 inch (9.5 mm to 15.9 mm) including taper sawn shakes. Weather exposures for wood shakes shall not exceed those set in Table R905.8.6. Fasteners for untreated (natural ood shakes shall be box nails in accordance with Table R905.7.5(2). Nails shall be stainless steel Type 304, or Type 316 or hot-dipped with a coating weight of ASTM A153 Class D (1.0 oz/f2). Alternatively, two 16-gage Type 304 or Type 16 stainless steel staples, with crown widths inch (11.1 mm) minimum, 3/4 inch (19.1 mm) maximum, shall be used

Fasteners installed within 15 miles (24 km) of salt water coastal areas shall be stainless steel Type 316. Wood shakes shall be attached to the roof with two fasteners per shake positioned in accordance with the manufacturer's installation instructions

Fasteners for fire-retardant-treated (as defined in Section R902) shakes or pressure-impregnated-preservative-treated shakes of naturally durable wood in accordance with AWPA U1 shall be stainless steel Type 316. All fasteners shall have a minimum penetration into the sheathing of 3/4 inch (19.1 mm). Where the sheathing is less than 3/4 inch (19.1 mm) thick, each fastener shall penetrate through the sheathing. Fastener packaging shall bear a label indicating the appropriate grade material or **05.8.7 Shake placement**. The starter course at the eaves shall be doubled and the bottom layer shall be either 15 inch

905.9.2 Material standards. Built-up roof covering materials shall comply with the standards in Table R905.9.2 or UL 55A. 905.9.3 Application. Built-up roofs shall be installed in accordance with this chapter and the manufacturer's instructions.

The minimum slope for lapped, non soldered-seam metal roofs without applied lap sealant shall be three units vertical in

The minimum slope for standing-seam roof systems shall be one-quarter unit vertical in 12 units horizontal (2-percent

designed in accordance with the California Building Code. Metal-sheet roof coverings installed over structural decking sha ed with corrosion resistance in accordance with the standards and minimum thicknesses shown in Table R905.10.3(2)

R905.11.1 Slope. Modified bitumen membrane roofs shall have a design slope of not less than one-fourth unit vertical in 1 **905.11.2 Material standards**. Modified bitumen roof coverings shall comply with the standards in Table R905.11.2. R905.11.3 Application. Modified bitumen roofs shall be installed in accordance with this chapter and the manufacturer's

R905.16.1 Deck requirements. Photovoltaic shingles shall be applied to a solid or closely-fitted deck, except where the roof 905.16.2 Deck slope. Photovoltaic shingles shall be used only on roof slopes of two units vertical in 12 units horizontal

R905.16.6 Wind resistance. Photovoltaic shingles shall comply with the classification requirements of Table R905.16.6 for the

R907.2 Fire classification. Rooftop-mounted photovoltaic panels systems shall have the fire classification as required by Section R907.4 Photovoltaic panels and modules. Photovoltaic panels systems mounted on top of a roof shall be listed and labeled in

ystem and the material and equipment loads that will be encountered during installation of the roof covering system. 08.3 Roof replacement. Roof replacement shall include the removal of existing layers of roof coverings down to the roof deck. Exception: Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice parrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in

R908.3.1 Roof re-cover. The installation of a new roof covering over an existing roof covering shall be permitted where any of Where the new roof covering is installed in accordance with the roof covering manufacturer's approved instructions 2. Complete and separate roofing systems, such as standing-seam metal roof systems, that are designed to transmit the roof loads directly to the building's structural system and do not rely on existing roofs and roof coverings for support, shall

Metal panel, metal shingle and concrete and clay tile roof coverings shall be permitted to be installed over existing wood The application of a new protective coating over an existing spray polyurethane foam roofing system shall be permitted R908.3.1.1 A roof re-cover shall not be permitted where any of the following conditions occur:

Where the existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof Where the existing roof covering is slate, clay, cement or asbestos-cement tile. Where the existing roof has two or more applications of any type of roof covering. 1908.4 Roof re-covering. Where the application of a new roof covering over wood shingle or shake roofs creates a combustible

ncealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other approved R908.5 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged. cracked or broken slate or tile shall not be reinstalled. Any existing flashings, edgings, outlets, vents or similar devices that are a art of the assembly shall be replaced where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be R908.6 Flashings. Flashings shall be reconstructed in accordance with approved manufacturer's installation instructions. Metal

flashing to which bituminous materials are to be adhered shall be primed prior to installation.

R1004.1 General. Factory-built fireplaces shall be listed and labeled and shall be installed in accordance with the conditions of the built fireplaces shall be tested in accordance with UL 127. ting. Factory-built fireplaces shall be tested in accordance with OE 127. R1004.1.1 Factory-built wood burning fireplaces. Factory-built wood burning fireplaces shall be qualified at the U.S. EPA's y Fireplace Program Phase 2 emissions level and be in accordance with the California Green Building Standards R1004.2 Hearth extensions. Hearth extensions of approved factory-built fireplaces shall be installed in accordance with the sting of the fireplace. The hearth extension shall be readily distinguishable from the surrounding floor area. Listed and labeled R1004.3 Decorative shrouds. Decorative shrouds shall not be installed at the termination of chimneys for factory-built fireplaces except where the shrouds are listed and labeled for use with the specific factory-built fireplace system and installed in accordance R1004.5 Gasketed fireplace doors. A gasketed fireplace door shall not be installed on a factory-built fireplace except where the

fireplace system has been specifically tested, listed and labeled for such use in accordance with UL 127 R1005.1 Listing. Factory-built chimneys shall be listed and labeled and shall be installed and terminated in accordance with the R1005.2 Decorative shrouds. Decorative shrouds shall not be installed at the termination of factory-built chimneys except where the shrouds are listed and labeled for use with the specific factory-built chimney system and installed in accordance with the

11005.3 Solid-fuel appliances. Factory-built chimneys installed in dwelling units with solid-fuel-burning appliances shall comply with the Type HT requirements of UL 103 and shall be marked "Type HT and "Residential Type and Building Heating Appliance Exception: Chimneys for use with open combustion chamber fireplaces shall comply with the requirements of UL 103 and shall be The solution of the solution o equirements of UL 103 and shall be marked "Building Heating Appliance Chimney" or "Residential Type and Building Heating 11005.4 Factory-built fireplaces. Chimneys for use with factory-built fireplaces shall comply with the requirements of UL 127.

R1005.5 Support. Where factory-built chimneys are sup- ported by structural members, such as joists and rafters, those R1005.6 Medium-heat appliances. Factory-built chimneys for medium-heat appliances producing flue gases having a ature above 1,000°F (538°C), measured at the entrance to the chimney, shall comply with UL 959 R1005.7 Factory-built chimney offsets. Where a factory-built chimney assembly incorporates offsets, no part of the chimney shall be at an angle of more than 30 degrees (0.52 rad) from vertical at any point in the assembly and the chimney assembly shall

R1006.1 Exterior air. Factory-built or masonry fireplaces covered in this chapter shall be equipped with an exterior air supply to ensure proper fuel combustion unless the room is mechanically ventilated and controlled so that the indoor pressure is neutral or R1006.1.1 Factory-built fireplaces. Exterior combustion air ducts for factory-built fireplaces shall be a listed component of the fireplace and shall he installed in accordance with the fireplace manufacturer's instructions. R1006.1.2 Masonry fireplaces. Listed combustion air ducts for masonry fireplaces shall be installed in accordance with the R1006.2 Exterior air intake. The exterior air intake shall he capable of supplying all combustion air from the exterior of the dwelling or from spaces within the dwelling ventilated with outdoor air such as non-mechanically ventilated crawl or attic spaces The exterior air intake shall not be located within the garage or basement of the dwelling. The exterior air intake, for other than listed factory-built fireplaces, shall not be located at an elevation higher than the firebox. The exterior air intake shall be covered

R1006.3 Clearance. Unlisted combustion air ducts shall be installed with a minimum 1 inch (25 mm) clearance to combustibles for all parts of the duct within 5 feet (1524 mm) of the duct outlet. R1006.4 Passageway. The combustion air passageway shall be not less than 6 square inches (3870 mm2) and not more than 55 square inches (0.035 m2), except that combustion air systems for listed fireplaces shall be constructed in accordance with the 1006.5 Outlet. The exterior air outlet shall be located in the back or side of the firebox chamber or shall be located outside of the

firebox, at the level of the hearth and not greater than 24 inches (610 mm) from the firebox opening. The outlet shall be closable and designed to prevent burning material from dropping into concealed combustible spaces.

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COUNTY OF SANTA CLARA

General Construction Specifications

GENERAL CONDITIONS

- ALL CONSTRUCTION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS AND/OR GEOTECHNICAL REPORT PREPARED BY AMERICAN SOIL TESTING, INC AND DATED JUNE 1ST, 2015. THIS REPORT IS SUPPLEMENTED BY: 1) THESE PLANS AND SPECIFICATIONS, 2) THE COUNTY OF SANTA CLARA STANDARD DETAILS. 3) THE COUNTY OF SANTA CLARA STANDARD SPECS, 4) STATE OF CALIFORNIA STANDARD DETAILS, 5) STATE OF CALIFORNIA STANDARD SPECIFICATIONS. IN THE EVENT OF CONFLICT THE FORMER SHALL TAKE PRECEDENCE OVER THE LATTER. THE PERFORMANCE AND COMPLETION
- OF ALL WORK MUST BE TO THE SATISFACTION OF THE COUNTY. DEVELOPER IS RESPONSIBLE FOR INSTALLATION OF THE IMPROVEMENTS SHOWN ON THESE PLANS AND HE OR HIS SUCCESSOR PROPERTY OWNERS ARE RESPONSIBLE FOR THEIR CONTINUED MAINTENANCE.
- DEVELOPER SHALL BE RESPONSIBLE FOR CORRECTION OF ANY ERRORS OR OMISSIONS IN THESE PLANS. THE COUNTY SHALL BE AUTHORIZED TO REQUIRE DISCONTINUANCE OF ANY WORK AND SUCH CORRECTION AND MODIFICATION OF PLANS AS MAY BE NECESSARY TO COMPLY WITH COUNTY STANDARDS OR CONDITIONS OF DEVELOPMENT APPROVAL
- DEVELOPER SHALL OBTAIN ENCROACHMENT PERMITS FROM THE SANTA CLARA VALLEY WATER DISTRICT AND CALIFORNIA DEPARTMENT OF TRANSPORTATION WHERE NEEDED. COPIES OF THESE PERMITS SHALL BE KEPT AT THE JOB SITE FOR REVIEW BY THE COUNTY'S INSPECTOR.
- DEVELOPER SHALL REMOVE OR TRIM ALL TREES TO PROVIDE AN
- UNOBSTRUCTED FIFTEEN (15) FOOT VERTICAL CLEARANCE FOR ROADWAY AREA. THIS PLAN AUTHORIZES THE REMOVAL OF ONLY THOSE TREES WITH TRUNK DIAMETERS GREATER THAN 12 INCHES MEASURED 4.5 FEET ABOVE THE GROUND THAT ARE SHOWN TO BE REMOVED UNLESS AN AMENDED PLAN IS APPROVED OR A SEPARATE TREE REMOVAL PERMIT IS OBTAINED FROM THE PLANNING OFFICE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT
- REMOVAL OF ADDITIONAL TREES HAS BEEN PERMITTED. DEVELOPER SHALL PROVIDE ADEQUATE DUST CONTROL AS REQUIRED BY THE COUNTY INSPECTOR. ALL PERSONS MUST COMPLY WITH SECTION 4442 OF THE PUBLIC RESOURCES
- CODE AND SECTION 13005 OF THE HEALTH AND SAFETY CODE RELATING TO THE USE OF SPARK ARRESTERS.
- UPON DISCOVERING OR UNEARTHING ANY BURIAL SITE AS EVIDENCED BY HUMAN SKELETAL REMAINS OR ARTIFACTS, THE PERSON MAKING SUCH DISCOVERY SHALL IMMEDIATELY NOTIFY THE COUNTY CORONER AT (4008) 454-2520 AND LAND DEVELOPMENT ENGINEERING OFFICE AT (408) 299-5730. NO FURTHER DISTURBANCE OF THE SITE MAY BE MADE EXCEPT AS AUTHORIZED BY THE LAND DEVELOPMENT OFFICE IN ACCORD WITH PROVISIONS OF THIS ORDINANCE (COUNTY ORDINANCE CODE SECTION B6-18).
- THESE PLANS ARE FOR THE WORK DESCRIBED IN THE SCOPE OF WORK ONLY. A SEPARATE PERMIT WILL BE REQUIRED FOR THE SEPTIC LINE CONSTRUCTION ANY DEVIATION FROM THESE APPROVED PLANS SHALL BE RE-APPROVED IN WRITING BY THE COUNTY ENGINEER PRIOR TO CONSTRUCTION.

CONSTRUCTION STAKING

- THE DEVELOPER'S ENGINEER IS RESPONSIBLE FOR THE INITIAL PLACEMENT AND REPLACEMENT OF CONSTRUCTION GRADE STAKES. THE STAKES ARE TO BE ADEQUATELY IDENTIFIED, LOCATED, STABILIZED, ETC. FOR THE CONVENIENCE OF CONTRACTORS. LATERAL OFFSET OF STAKES SET FOR CURBS AND
- GUTTERS SHALL NOT EXCEED 2 1/2 FEET FROM BACK OF CURB. ANY PROPERTY LINE STAKES OR ROAD MONUMENTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY DEVELOPER'S ENGINEER AND LICENSED LAND SURVEYOR.
- PROPERTY LINE STAKING MUST BE PERFORMED BY THE PROJECT ENGINEER OR LAND SURVEYOR TO ESTABLISH OR RE-ESTABLISH THE PROJECT BOUNDARY AND SHALL BE INSPECTED BY THE COUNTY INSPECTOR PRIOR TO THE
- BEGINNING OF THE WORK PROPER CONSTRUCTION STAKES SHALL BE SET IN THE FIELD BY THE PROJECT 16. THE INSPECTOR MAY VERIFY THAT A VALID NOTICE OF INTENT (NOI) HAS BEEN ENGINEER OR LAND SURVEYOR AND VERIFIED BY THE COUNTY INSPECTOR PRIOR TO THE COMMENCEMENT OF GRADING.

CONSTRUCTION INSPECTION

- CONTRACTOR SHALL NOTIFY PERMIT INSPECTION UNIT, SANTA CLARA COUNTY PRIOR TO COMMENCING WORK AND FOR FINAL INSPECTION OF WORK AND SITE.
- COUNTY REQUIRES A MINIMUM OF 24 HOURS ADVANCE NOTICE FOR GENERAL INSPECTION, 48 HOURS FOR ASPHALT CONCRETE INSPECTION.
- INSPECTION BY SANTA CLARA COUNTY SHALL BE LIMITED TO INSPECTION OF MATERIALS AND PROCESSES OF CONSTRUCTION TO OBSERVE THEIR COMPLIANCE WITH PLANS & SPECIFICATIONS BUT DOES NOT INCLUDE RESPONSIBILITY FOR THE SUPERINTENDENT OF CONSTRUCTION, SITE CONDITIONS, EQUIPMENT OR PERSONNEL. CONTRACTOR SHALL NOTIFY THE COUNTY LAND DEVELOPMENT INSPECTOR AT PHONE (408) 299-6868 AT LEAST 24 HOURS PRIOR TO COMMENCING WORK AND FOR FINAL INSPECTION OF WORK AND SITE.
- DEVELOPER AND/OR HIS AUTHORIZED REPRESENTATIVE MUST SUBMIT WRITTEN REQUEST FOR FINAL INSPECTION AND ACCEPTANCE. SAID REQUEST SHALL BE DIRECTED TO THE INSPECTION OFFICE NOTED ON THE PERMIT FORM. THE CONTRACTOR SHALL PROVIDE TO THE COUNTY CONSTRUCTION INSPECTOR
- WITH PAD ELEVATION AND LOCATION CERTIFICATES. PREPARED BY THE PROJECT ENGINEER OR LAND SURVEYOR, PRIOR TO COMMENCEMENT OF THE BUILDING FOUNDATION.

SITE PREPARATION (CLEARING AND GRUBBING)

- EXISTING TREES AUTHORIZED FOR REMOVAL, ROOTS, AND FOREIGN MATERIAL IN AREAS TO BE IMPROVED WILL BE REMOVED TO AN AUTHORIZED DISPOSAL SITE ACCESS ROADS AND DRIVEWAYS AS FOLLOWS:
 - PROPOSED ROADWAYS (EITHER PRIVATE OR TO BE DEDICATED TO
 - PUBLIC USE)
- B) FROM AREAS AFFECTED BY THE PROPOSED GRADING EXCEPT WHERE NOTED ON THE PLANS. IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO MOVE OR RELOCATE
- UTILITY POLES AND OTHER OBSTRUCTIONS IN THE WAY OF CONSTRUCTION. ITILITY LOCATION. TRENCHING & BACKFILL
- CONTRACTOR SHALL NOTIFY USA (UNDERGROUND SERVICE ALERT) AT
- 1-800-277-2600 A MINIMUM OF 24 HOURS BEFORE BEGINNING UNDERGROUND WORK FOR VERIFICATION OF THE LOCATION OF UNDERGROUND UTILITIES.
- ACCURATE VERIFICATION AS TO SIZE, LOCATION, AND DEPTH OF EXISTING UNDERGROUND CONDUITS OR FACILITIES SHALL BE THE INDIVIDUAL CONTRACTORS RESPONSIBILITY. PLAN LOCATIONS ARE APPROXIMATE AND FOR GENERAL INFORMATION ONLY.
- ALL UNDERGROUND INSTALLATIONS SHALL BE IN PLACE AND THE TRENCH BACKFILLED AND COMPACTED BEFORE PLACING AGGREGATE BASE MATERIAL OR SURFACE STRUCTURES. SURFACING MAY BE DONE IF THE UTILITY COMPANY CONCERNED INDICATES BY LETTER THAT IT WILL BORE. UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY, GAS AND WATER MAINS SHALL BE INSTALLED OUTSIDE THE PAVED AREAS.
- TRENCH BACKFILL IN EXISTING PAVEMENT AREAS SHALL BE SAND MATERIAL IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE STATE SPECIFICATIONS. THE STRUCTURAL SECTION FOR TRENCH REPLACEMENT SHALL CONSIST OF NOT LESS THAN 12 INCHES OF APPROVED AGGREGATE BASE MATERIAL COMPACTED TO A RELATIVE COMPACTION OF AT LEAST 95% AND 4 INCHES OF HOT ASPHALT CONCRETE PLACED IN TWO LIFTS. TRENCH RESTORATION FOR HIGHER TYPE PAVEMENTS SHALL BE MADE IN KIND OR AS
- DIRECTED BY THE COUNTY. TRENCH BACKFILL IN NEW CONSTRUCTION AREAS SHALL BE SAND MATERIAL COMPACTED TO A RELATIVE COMPACTION OF AT LEAST 90%. THE REQUIREMENT FOR SELECT MATERIAL MAY BE WAIVED BY COUNTY IF THE NATIVE SOIL IS SUITABLE FOR USE AS TRENCH BACKFILL BUT THE COMPACTION REQUIREMENTS WILL NOT BE THEREBY WAIVED.
- BACKFILL AND TRENCH RESTORATION REQUIREMENTS SHALL APPLY AS MINIMUM STANDARDS TO ALL UNDERGROUND FACILITIES INSTALLED BY OTHER FIRMS OR PUBLIC AGENCIES.

TAINING WALLS

- REINFORCED CONCRETE AND CONCRETE MASONRY UNIT RETAINING WALLS SHALL HAVE FOUNDATION AND REINFORCEMENT INSPECTED BY THE COUNTY ENGINEERING CONTINUAL CONTROL OF THE COUNTY INSPECTOR INSPECTOR AND ENGINEER OF RECORD PRIOR TO POURING THE FOUNDATION AND
- FORMING THE WALL SEGMENTAL BLOCK RETAINING WALLS SHALL HAVE FOUNDATION AND
- REINFORCEMENT INSPECTED BY THE COUNTY ENGINEERING INSPECTOR.

GRADING

- 1. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY. EXCAVATED MATERIAL SHALL BE PLACED IN THE FILL AREAS DESIGNATED OR SHALL BE HAULED AWAY FROM THE SITE TO A COUNTY APPROVED DISPOSAL COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR SITE. WHERE FILL MATERIAL IS TO BE PLACED ON NATURAL GROUND, IS SHALL REQUIRE ALL TRUCKS TO MAINTAIN AT LEAST TWO FEET OF FREEBOARD. E STRIPPED OF ALL VEGETATION. TO ACHIEVE A PROPER BOND WITH THE 3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY (NON-TOXIC) SOIL FILL MATERIAL, THE SURFACE OF THE GROUND SHALL BE SCARIFIED TO DEPTH STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS AND STAGING OF 6" BEFORE FILL IS PLACED. WHERE NATURAL GROUND IS STEEPER THAN AREAS AT CONSTRUCTION SITES. 5:1, IT SHALL BE BENCHED AND THE FILL KEYED IN TO ACHIEVE STABILITY. SWEEP DAILY (WITH WATER SWEEPERS) ALL PAVED ACCESS ROADS, PARKING WHERE NEW FILL IS TO BE PLACED ON EXISTING FILL THE EXISTING FILL SHALL AREAS AND STAGING AREAS AT CONSTRUCTION SITES. THE USE OF DRY BE REMOVED UNTIL MATERIAL COMPACTED TO 90% RELATIVE COMPACTION IS POWDER SWEEPING IS PROHIBITED. EXPOSED. THEN THE NEW FILL MATERIAL SHALL BE PLACED AS PER THESE SWEEP STREETS DAILY (WITH WATER SWEEPERS) IF VISIBLE SOIL MATERIAL IS CONSTRUCTION NOTES. FILL MATERIAL SHALL BE PLACED IN UNIFORM LIFTS CARRIED ONTO ADJACENT PUBLIC STREETS. THE USE OF DRY POWDER NOT EXCEEDING 6" IN UNCOMPACTED THICKNESS. BEFORE COMPACTION BEGINS, SWEEPING IS PROHIBITED THE FILL SHALL BE BROUGHT TO A WATER CONTENT THAT WILL PERMIT 6. ALL CONSTRUCTION VEHICLES, EQUIPMENT AND DELIVERY TRUCKS SHALL PROPER COMPACTION BY EITHER 1) AERATING THE FILL IF IT IS TOO WET OR HAVE A MAXIMUM IDLING TIME OF 5 MINUTES (AS REQUIRED BY THE 2) MOISTENING THE FILL WITH WATER IF IT IS TOO DRY. EACH LIFT SHALL BE CALIFORNIA AIRBORNE TOXIC CONTROL MEASURE TITLE 13, SECTION 2485 OF THOROUGHLY MIXED BEFORE COMPACTION TO ENSURE A UNIFORM DISTRIBUTION CALIFORNIA CODE OF REGULATIONS (CCR)). ENGINES SHALL BE SHUT OFF IF CONSTRUCTION REQUIRES LONGER IDLING TIME UNLESS NECESSARY FOR OF MOISTURE PROPER OPERATION OF THE VEHICLE.
- EXCESS CUT MATERIAL SHALL NOT BE SPREAD OR STOCKPILED ON THE SITE. SURPLUS EARTH FILL MATERIAL SHALL BE PLACED IN A SINGLE (8" MAX) THICK LAYER COMPACTED TO WITHSTAND WEATHERING IN THE AREA(S)
- DELINEATED ON THE PLAN. 4. NO ORGANIC MATERIAL SHALL BE PLACED IN ANY FILL. NO TREES SHALL BE REMOVED OUTSIDE OF CUT, FILL OR ROADWAY AREAS.
- THE UPPER 6" OF SUBGRADE BELOW DRIVEWAY ACCESS ROAD OR PARKING AREA SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY. MAXIMUM CUT SLOPE SHALL BE 2 HORIZONTAL TO 1 VERTICAL. MAXIMUM FILL SLOPE SHALL BE 2 HORIZONTAL TO 1 VERTICAL
- FARTHWORK SUMMARY CUBIC YARDS (C,Y)

			()
LOCATION	CUT (C.Y.)	FILL (C.Y.)	VERT. DEPTH
RESIDENCE	0	328	5.77'
SHED	14	1	0.50'
HARDSCAPE	2	1	0.75'
LANDSCAPE	45	498	7.00'
DRIVEWAY	75	7	1.08'
OFF SITE IMPROVEMENTS	-	-	-
TOTAL	136	835	

NOTE: FILL VOLUMES INCLUDE 10% SHRINKAGE. EXCESS MATERIAL SHALL BE OFF HAULED TO A COUNTY

- APPROVED DUMP SITE. 7. NOTIFY SOILS ENGINEER TWO (2) DAYS PRIOR TO COMMENCEMENT OF ANY GRADING WORK TO COORDINATE THE WORK IN THE FIELD. 8. ALL MATERIALS FOR FILL SHOULD BE APPROVED BY THE SOILS ENGINEER
- BEFORE IT IS BROUGHT TO THE SITE. 9. THE UPPER 6" OF THE SUBGRADE SOIL SHALL BE SCARIFIED, MOISTURE
- CONDITIONED AND COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 95% 10. ALL AGGREGATE BASE MATERIAL SHALL BE COMPACTED TO A MINIMUM 95%
- RELATIVE COMPACTION 11. THE GEOTECHNICAL PLAN REVIEW LETTER MUST BE REVIEWED AND APPROVED BY THE COUNTY GEOLOGIST PRIOR TO FINAL APPROVAL BY THE COUNTY ENGINEER FOR BUILDING OCCUPANCY.
- 12. THE PROJECT GEOTECHNICAL ENGINEER SHALL PERFORM COMPACTION TESTING AND PRESENT THE RESULTS TO THE COUNTY ENGINEERING INSPECTOR PRIOR TO THE CONSTRUCTION OF ANY PAVED AREA.
- 13. GRADING WORK BETWEEN OCTOBER 15TH AND APRIL 15TH IS AT THE DISCRETION OF THE SANTA CLARA COUNTY GRADING OFFICIAL.
- 14. TOTAL DISTURBED AREA FOR THE PROJECT 9.800 SF. (0.225 ACRES) SEE SHEET C3 FOR MORE DETAIL. 15. WDID NO.: NOT REQUIRED
- ISSUED BY THE STATE AND THAT A CURRENT AND UP TO DATE STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS AVAILABLE ON SITE.

TREE PROTECTION

- 1. FOR ALL TREES TO BE RETAINED WITH A CANOPY IN THE DEVELOPMENT AREA OR INTERFACES WITH THE LIMITS OF GRADING FOR ALL PROPOSED SEVELOPMENT ON SITE THE TREES SHALL BE PROTECTED BY THE OF RIGID TREE PROTECTIVE FENCING, CONSISTENT WITH THE COUNTY INTEGRATED LANDSCAPE GUIDELINES, AND INCLUDE THE FOLLOWING:
- FENCING SHOULD BE PLACED ALONG THE OUTSIDE EDGE OF THE DRIPLINE OF THE TREE OR GROVE OF TREES. THE FENCING SHALL BE MAINTAINED THROUGHOUT THE SITE
- CONSTRUCTION PERIOD AND SHALL BE INSPECTED PERIODICALLY FOR DAMAGE AND PROPER FUNCTION. FENCING SHALL BE REPAIRED, AS NECESSARY, TO PROVIDE A PHYSICAL
- BARRIER FROM CONSTRUCTION ACTIVITIES. SIGNAGE STATING, "WARNING- THIS FENCING SHALL NOT BE REMOVED WITHOUT PERMISSION FROM THE SANTA CLARA COUNTY PLANNING OFFICE (408) 299-5770. COUNTY OF SANTA CLARA TREE
- PROTECTION MEASURES MAY BE FOUND AT http://www.sccplanning.gov." SHALL BE PLACED ON THE TREE PROTECTIVE FENCING UNTIL FINAL OCCUPANCY.
- PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY, TREE PROTECTIVE FENCING SHALL BE SECURELY IN PLACED AND INSPECTED BY THE LAND DEVELOPMENT ENGINEERING INSPECTOR.
- SEE EXISTING TREE PROTECTION DETAILS FOR MORE INFORMATION.

- A) TO A MINIMUM DEPTH OF TWO FEET BELOW THE FINISHED GRADE OF 1. DRIVEWAY LOCATIONS SHALL BE AS SHOWN ON THE IMPROVEMENT PLANS WITH CENTERLINE STATIONING. THE MINIMUM CONCRETE THICKNESS SHALL BE 6 INCHES THROUGHOUT (WITH A MAXIMUM APPROACH SLOPE OF 1 1/4 INCHES PER FOOT
 - ALL DRIVEWAY OR COMMON ACCESS ROAD SECTIONS IN EXCESS OF 15 LONGITUDINAL SLOPE MUST BE PAVED WITH A MINIMUM 2-INCH ASPHALT LIFT OR FULL DEPTH CONCRETE LIFT PRIOR TO ANY COMBUSTIBLE FRAMING.
 - THE OWNER AND PRIME CONTRACTOR ARE RESPONSIBLE FOR MAINTAINING PROJECT SITE ACCESS AND NEIGHBORHOOD ACCESS FOR EMERGENCY VEHICLES AND LOCAL RESIDENTS
 - 4. ROADWAYS DESIGNATED AS NOT COUNTY MAINTAINED ROADS AS SHOWN ON THE PLAN WILL NOT BE ELIGIBLE FOR COUNTY MAINTENANCE UNTIL THE ROADWAYS ARE IMPROVED (AT NO COST TO THE COUNTY) TO THE PUBLIC MAINTENANCE ROAD STANDARDS APPROVED BY THE BOARD OF SUPERVISORS AND IN EFFECT AT SUCH TIME THAT THE ROADWAYS ARE CONSIDERED FOR ACCEPTANCE INTO THE COUNTY'S ROAD SYSTEM. ALL WORK IN THE COUNTY ROAD RIGHT-OF-WAY REQUIRES AN
 - ENCROACHMENT PERMIT FROM THE ROADS AND AIRPORTS DEPARTMENT. EACH INDIVIDUAL ACTIVITY REQUIRES A SEPARATE PERMIT - I.E. CABLE, ELECTRICAL, GAS, SEWER, WATER, RETAINING WALLS, DRIVEWAY APPROACHES, FENCES, LANDSCAPING, TREE REMOVAL, STORM DRAINAGE IMPROVEMENTS, ETC..

TREET LIGHTING

- 1. PACIFIC GAS & ELECTRIC ELECTROLIER SERVICE FEE SHALL BE PAID BY THE DEVELOPER AND/OR HIS AUTHORIZED REPRESENTATIVE. SANITARY SEWER
- THE SANITARY SEWER AND WATER UTILITIES SHOWN ON THESE PLANS ARE NOT PART OF THIS GRADING PERMIT AND ARE SHOWN FOR REFERENCE ONLY.
- ALL MATERIALS AND METHODS OF CONSTRUCTION OF SANITARY SEWERS SHALL THE AS-BUILT PLANS MUST BE FURNISHED TO THE COUNTY ENGINEER CONFORM TO THE SPECIFICATIONS OF THE JURISDICTION INVOLVED. INSPECTION AFTERCONSTRUCTION. OF SANITARY SEWER WORK SHALL BE DONE BY SAID JURISDICTION.

PORTLAND CEMENT CONCRETE

CONCRETE USED FOR STRUCTURAL PURPOSES SHALL BE CLASS "A" (6 SACK PER CUBIC YARD) AS SPECIFIED IN THE STATE STANDARD SPECIFICATIONS. CONCRETE PLACED MUST DEVELOP A MINIMUM STRENGTH FACTOR OF 2800 PSI IN A SEVEN-DAY PERIOD. THE CONCRETE MIX DESIGN SHALL BE UNDER THE

AIR QUALITY, LANDSCAPING AND EROSION CONTROL

- ALL VEHICLE SPEEDS ON UNPAVED ROADS SHALL BE LIMITED TO 15 MILES PFR HOUR 8. ALL CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED AND PROPERLY TUNED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. ALL EQUIPMENT SHALL BE CHECKED BY A CERTIFIED MECHANIC AND DETERMINED TO BE RUNNING IN PROPER CONDITION PRIOR TO OPERATION. 9. POST A SIGN THAT IS AT LEAST 32 SQUARE FEET MINIMUM 2 INCHES LETTER
- HEIGHT VISIBLE NEAR THE ENTRANCE OF CONSTRUCTION SITE THAT IDENTIFIES THE FOLLOWING REQUIREMENTS. OBTAIN ENCROACHMENT PERMIT FOR SIGN FROM ROADS DEPARTMENT OR OTHER APPLICABLE AGENCY IF REQUIRED. A. 15 MILES PER HOUR (MPH) SPEED LIMIT
- B. 5 MINUTES MAXIMUM IDLING TIME OF VEHICLES
- . TELEPHONE NUMBER TO CONTACT THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT REGARDING DUST COMPLAINTS. NOTE PHONE NUMBER OF THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT AIR POLLUTION COMPLAIN HOTLINE OF 1-800-334-6367 10. ALL FILL SLOPES SHALL BE COMPACTED AND LEFT IN A SMOOTH AND FIRM CONDITION CAPABLE OF WITHSTANDING WEATHERING. 11. ALL EXPOSED DISTURBED AREAS SHALL BE SEEDED WITH BROME SEED SPREAD AT THE RATE OF 5 LB. PER 1000 SQUARE FEET (OR APPROVED EQUAL). SEEDING AND WATERING SHALL BE MAINTAINED AS REQUIRED TO ENSURE
- GROWTH 12. ALL DITCHES SHALL BE LINED PER COUNTY STANDARD SD8. 13. ALL STORM DRAINAGE STRUCTURES SHALL BE INSTALLED WITH EFFECTIVE ENTRANCE & OUTFALL EROSION CONTROLS E.G. SACKED CONCRETE RIP-RAP. ENERGY DISSIPATERS SHALL BE INSTALLED AT ALL DITCH OUTFALLS. WHERE OUTFALLS ARE NOT INTO AN EXISTING CREEK OR WATER COURSE, RUNOFF SHALL BE RELEASED TO SHEET FLOW. 14. PRIOR TO GRADING COMPLETION AND RELEASE OF THE BOND, ALL GRADED
- AREAS SHALL BE RESEEDED IN CONFORMANCE WITH THE COUNTY GRADING ORDINANCE TO MINIMIZE THE VISUAL IMPACTS OF THE GRADE SLOPES AND REDUCE THE POTENTIAL FOR EROSION OF THE SUBJECT SITE
- 15. PERMANENT LANDSCAPING SHOWN ON THE ATTACHED LANDSCAPE PLAN MUST BE INSTALLED AND FIELD APPROVED BY THE COUNTY PLANNING OFFICE PRIOR TO FINAL APPROVAL BY THE COUNTY ENGINEER, AND FINAL OCCUPANCY RELEASE BY THE BUILDING INSPECTION OFFICE.
- 16. THE OWNER SHALL PREPARE AND PRESENT A WINTERIZATION REPORT TO THE COUNTY INSPECTOR FOR REVIEW PRIOR TO OCTOBER 15TH OF EVERY YEAR. 17. THE OWNER, CONTRACTOR, AND ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES SHALL INSTALL AND MAINTAIN CONSTRUCTION BEST MANAGEMENT PRACTICES (BMPS) ON THE PROJECT SITE AND WITHIN THE SANTA CLARA COUNTY ROAD RIGHT-OF-WAY THROUGHOUT THE DURATION OF THE CONSTRUCTION AND UNTIL THE ESTABLISHMENT OF PERMANENT STABILIZATION AND SEDIMENT CONTROL TO PREVENT THE DISCHARGE OF POLLUTANTS INCLUDING SEDIMENT, CONSTRUCTION MATERIALS, EXCAVATED MATERIALS, AND WASTE INTO THE SANTA CLARA COUNTY RIGHT-OF-WAY, STORM SEWER
- WATERWAYS, ROADWAY INFRASTRUCTURE. BMPS SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING: A. PREVENTION OF POLLUTANTS IN STORM WATER DISCHARGES FROM THE CONSTRUCTION SITE AND THE CONTRACTOR'S MATERIAL AND
- EQUIPMENT LAYDOWN / STAGING AREAS. B. PREVENTION OF TRACKING OF MUD, DIRT, AND CONSTRUCTION MATERIALS ONTO THE PUBLIC ROAD RIGHT-OF-WAY.
- C. PREVENTION OF DISCHARGE OF WATER RUN-OFF DURING DRY AND WET WEATHER CONDITIONS ONTO THE PUBLIC ROAD RIGHT-OF-WAY. 18. THE OWNER, CONTRACTOR, AND ANY PERSON PERFORMING CONSTRUCTION ACTIVITIES SHALL ENSURE THAT ALL TEMPORARY CONSTRUCTION FACILITIES. INCLUDING BUT NOT LIMITED TO CONSTRUCTION MATERIALS, DELIVERIES. HAZARDOUS AND NON-HAZARDOUS MATERIAL STORAGE, EQUIPMENT, TOOLS,
- PORTABLE TOILETS, CONCRETE WASHOUT, GARBAGE CONTAINERS, LAYDOWN YARDS. SECONDARY CONTAINMENT AREAS, ETC. ARE LOCATED OUTSIDE THE SANTA CLARA COUNTY ROAD RIGHT-OF-WAY. 19. EROSION CONTROL PLAN IS A GUIDE AND SHALL BE AMENDED AS NECESSARY TO PREVENT EROSION AND ILLICIT DISCHARGES ON A YEAR AROUND BASIS,
- DEPENDING ON THE SEASON, WEATHER, AND FIELD CONDITIONS. EROSION CONTROL MEASURES IN ADDITION TO THOSE NOTED IN THE PERMITTED PLANS MAY BE NECESSARY. FAILURE TO INSTALL SITE AND SITUATIONALY APPROPRIATE EROSION CONTROL MEASURES MAY RESULT IN VIOLATIONS, FINES, AND A STOPPAGE OF WORK.

STORM DRAINAGE AND STORMWATER MANAGEMENT

- 1. DEVELOPER IS RESPONSIBLE FOR ALL NECESSARY DRAINAGE FACILITIES NHETHER SHOWN ON THE PLANS OR NOT AND HE OR HIS SUCCESSOR PROPERTY OWNERS ARE RESPONSIBLE FOR THE ADEQUACY AND CONTINUED MAINTENANCE OF THESE FACILITIES IN A MANNER WHICH WILL PRECLUDE ANY
- HAZARD TO LIFE, HEALTH, OR DAMAGE TO ADJOINING PROPERTY, CONSISTENT WITH NPDES PERMIT CAS612008 / ORDER NO. R2-2009-0047 AND NPDES PERMIT CAS000004/ ORDER NO. 2013-0001-DWQ DROP INLETS SHALL BE COUNTY STANDARD TYPE 5 UNLESS OTHERWISE NOTED
- ON THE PLANS. THE DEVELOPER'S ENGINEER SHALL BE RESPONSIBLE FOR THE PROPER LOCATION OF DROP INLETS. WHERE STREET PROFILE GRADE EXCEEDS 6% DROP INLETS SHALL BE SET AT 500 ANGLE CURB LINE TO ACCEPT WATER OR AS SHOWN ON THE PLANS.
- WHERE CULVERTS ARE INSTALLED THE DEVELOPER SHALL BE RESPONSIBLE FOR GRADING THE OUTLET DITCH TO DRAIN TO AN EXISTING SWALE OR TO AN OPEN AREA FOR SHEET FLOW. UPON INSTALLATION OF DRIVEWAY CONNECTIONS, PROPERTY OWNERS SHALL
- PROVIDE FOR THE UNINTERRUPTED FLOW OF WATER IN ROADSIDE DITCHES. 5. THE COUNTY SHALL INSPECT UNDERGROUND DRAINAGE IMPROVEMENTS AND STORMWATER MANAGEMENT FEATURES PRIOR TO BACKFILL.

AS-BUILT PLANS STATEMENT

THIS IS A TRUE COPY OF THE AS-BUILT PLANS. THERE (____ WERE) (___ WERE NOT) MINOR FIELD CHANGES - MARKED WITH THE SYMBOL (^). THERE (___WERE) _ WERE NOT) PLAN REVISIONS INDICATING SIGNIFICANT CHANGES REVIEWED BY THE COUNTY ENGINEER AND MARKED WITH THE SYMBOL \triangle .

NOTE: THIS STATEMENT IS TO BE SIGNED BY THE PERSON AUTHORIZED BY THE COUNTY ENGINEER TO PERFORM THE INSPECTION WORK. A REPRODUCIBLE COPYOF

SIGNATURE

- geotechnical engineer observation
- 1. A CONSTRUCTION OBSERVATION LETTER FROM THE RESPONSIBLE GEOTECHNICAL ENGINEER AND ENGINEERING GEOLOGIST DETAILING CONSTRUCTION OBSERVATIONS AND CERTIFYING THAT THE WORK WAS DONE IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL
- AND GEOLOGIC REPORTS SHALL BE SUBMITTED PRIOR TO THE GRADING COMPLETION AND RELEASE OF THE BOND.

COUNTY LOCATION MAP

EXISTING TREE PROTECTION DETAILS

- 1. PRIOR TO THE COMMENCEMENT OF ANY GRADING, TREE PROTECTIVE FENCING SHALL BE IN PLACE IN ACCORDANCE WITH THE TREE PRESERVATION PLAN AND INSPECTED BY A CERTIFIED ARBORIST. THE ARBORIST SHALL MONITOR CONSTRUCTION ACTIVITY TO ENSURE THAT THE TREE PROTECTION MEASURES ARE IMPLEMENTED AND ADHERED TO DURING CONSTRUCTION. THIS CONDITION
- SHALL BE INCORPORATED INTO THE GRADING PLANS. 2. FENCE SHALL BE MINIMUM 5 FEET TALL CONSTRUCTED OF STURDY MATERIAL (CHAIN-LINK OR EQUIVALENT STRENGTH/ DURABILITY).
- 3. FENCE SHALL BE SUPPORTED BY VERTICAL POSTS DRIVEN 2 FEET (MIN) INTO THE GROUND AND SPACED NOT MORE THAN 10 FEET APART.
- 4. TREE FENCING SHALL BE MAINTAINED THROUGHOUT THE SITE DURING THE CONSTRUCTION PERIOD, INSPECTED PERIODICALLY FOR DAMAGE AND PROPER FUNCTION, REPAIRED AS NECESSARY TO PROVIDE A PHYSICAL BARRIER FROM CONSTRUCTION ACTIVITIES, AND REMAIN IN PLACE UNTIL THE FINAL
- INSPECTION. 5. A SIGN THAT INCLUDES THE WORDS, "WARNING: THIS FENCE SHALL NOT BE REMOVED WITHOUT THE EXPRESSED PERMISSION OF THE SANTA CLARA COUNTY PLANNING OFFICE," SHALL BE SECURELY ATTACHED TO THE FENCE IN A VISUALLY PROMINENT LOCATION.

			Revision 3 –
	R.C.E. NO.	EXPIRATION DATE	Revision 2 –
	СПКІЗ С042107	IVFTER L. FREITAS, F.E.	Revision 1 –
DATE			
COUNTY ENGINEER'S NOT ISSUANCE OF A PERMIT AUTHORIZIN ENGINEER FROM RESPONSIBILITY FO PLANS. IF, DURING THE COURSE O (OR DEPARTURE FROM) THE SPECIF TO REQUIRE THE SUSPENSION OF W SPECIFY THE MANNER IN WHICH TH	E NG CONSTRUCTION DOES NO OR THE CORRECTION OF ERR OF CONSTRUCTION, THE PUB FICATIONS OF THE PLANS, T WORK, AND THE NECESSARY NORK, AND THE NECESSARY NE SAME IS TO BE MADE.	OT RELEASE THE DEVELOPER, PERMITTEE OF RORS OR OMISSIONS CONTAINED IN THE BLIC INTEREST REQUIRES A MODIFICATION OF THE COUNTY SHALL HAVE THE AUTHORITY Y MODIFICATION OR DEPARTURE AND TO	FAX NO. <u>N/</u> GRI CIVIL EN INFO@GREEN 1900 S. N
		PROFESS/0W4 HANG W0 EV NO. 73068 xp. 12/31/2024 EXPIRATION DATE	ENGINEER'S NAM ADDRESS: <u>1900</u> SAN
DATE <u>3/2/2023</u> S	GUUT	73068 	
I HEREBY STATE THAT THESE PLAN	NS ARE IN COMPLIANCE WITH	H ADOPTED COUNTY STANDARDS	BMP-2 BM
ENGINEER'S STATEMENT			BMP-1 BM
WITHUOT AN ENCROACHEMENT PERMIT, STAGING OF CONSTRUCTION MATERIAL OF PORTABLE TOILETS.	INCLUDING THE AND THE PLACEMENT	APPROVED BY: DATE:	C4 DE
NO WORK SHALL BE DONE IN THE COU	JNTY'S RIGHT-OF-WAY	COUNTY SANITATION DISTRICT 2-3 ENGINEER'S SIGNATURE	C3 ER
ENCROACHMENT PERMIT NO.			C2.1 GR
ISSUED BY: DA	TE:		C2.0 GR
COUNTY OF SANTA CLARA DEPT. OF	ROADS AND AIRPORTS	GRADING / DRAINAGE PERMIT NO ISSUED BY: DATE:	C1.1 OV
		LAND DEVELOPMENT ENGINEERING & SURVEYING	C1.0 C0

	LAND DEVELOPMENT	ENGINEERING & SURVEYING	C1.0	CO
OF POADS AND AIRPORTS	GRADING / DRAINAGE P	ERMIT NO	- C1.1	OV
DATE:			C2.0	GR
			с2.1	GR
COUNTY'S RIGHT-OF-WAY	COUNTY SAN ENGINE	NITATION DISTRICT 2–3 EER'S SIGNATURE	C3	ER
RMIT, INCLUDING THE RIAL AND THE PLACEMENT	APPROVED BY:	DATE:	C4	DE
ΝT			BMP-1	BM
PLANS ARE IN COMPLIANCE WITH A	OOPTED COUNTY STANDARDS		BMP-2	BM
CUDY				
SIGNATURE	73068 			
SUPER PROFES	I2/31/202 EXPIRATION D	24 ATE	ENGINEEF	R'S NAM
₩ ₩ ₩ Exp. <u>12/3</u>	3068 1/2024 ↓		ADDRESS	: <u>1900</u> <u>SAN</u> 0. (65
NOTE	CALIFOR		FAX NO.	<u>N/</u>
DRIZING CONSTRUCTION DOES NOT R Y FOR THE CORRECTION OF ERRORS SE OF CONSTRUCTION, THE PUBLIC PECIFICATIONS OF THE PLANS, THE OF WORK, AND THE NECESSARY MO H THE SAME IS TO BE MADE.	ELEASE THE DEVELOPER, PERI OR OMISSIONS CONTAINED IN INTEREST REQUIRES A MODIFI COUNTY SHALL HAVE THE AU DIFICATION OR DEPARTURE AN	MITTEE OF N THE CATION OF THORITY ND TO	CIV INFO 190 SA	IR ILEN D@GREEN DOS.N NMATE
CO42107	IER L. FREITAS, P.E.		Revision 1	_
R.C.E. NO.	EXPIRATION D	ATE	Revision 2 Revision 3	

VICINITY MAP

<u>SCOPE</u> OF WORK

ANDS OF ZHU

1. THE DEVELOPER IS RESPONSIBLE FOR THE INSTALLATION OF THE WORK PROPOSED ON THE EROSION CONTROL PLAN. THE ENGINEER OF RECORD IS RESPONSIBLE FOR THE DESIGN OF THE EROSION CONTROL PLANS AND ANY MODIFICATIONS OF THE EROSION CONTROL PLANS TO PREVENT ILLICIT DISCHARGES FROM THE SITE DURING CONSTRUCTION.

2. CONSTRUCTION OF A 26.9' DRIVEWAY 3. STORM WATER FACILITIES

4. UTILITY TRENCHING

* ALL RETAINING WALL DESIGN WILL BE PERMITTED WITH A SEPARATE BUILDING PERMIT

- INDICATES FOUND IRON PIPE AS NOTED
- INDICATES IRON PIPE TO BE SET

APPROVED FOR ISSUANCE REFER TO

CONDITIONS AND PERMIT NUMBERING

ENCROACHMENT AND/OR CONSTRUCTION

PERMIT AND PLAN COVER SHEET FOR SPECIAL

UNRECORDED MONUMENTS THAT ARE DISCOVERED THAT ARE WITHIN 50 FEET OF THE CONSTRUCTION ACTIVITY THE CONTRACTOR SHALL CAUSE TO HAVE A LICENSED LAND SURVEYOR OR CIVIL ENGINEER, AUTHORIZED TO PRACTICE SURVEYING, RESET PERMANENT MONUMENT(S) IN THE SURFACE OF THE NEW CONSTRUCTION OR SET A

MONUMENT COULD BE DESTROYED, DAMAGED, COVERED, DISTURBED, OR OTHERWISE OBLITERATED. THE LICENSED LAND SURVEYOR OR CIVIL ENGINEER SHALL FILE A CORNER RECORD OR RECORD OF SURVEY WITH COUNTY SURVEYOR PRIOR TO FINAL ACCEPTANCE OF THE PROJECT BY THE LAND DEVELOPMENT ENGINEERING INSPECTOR.

SHEET INDEX

C1.0	COVER S	SHEET	
C1.1	OVERALL	SITE PLAN	
C2.0	GRADING	& DRAINAGE P	LAN
C2.1	GRADING	& DRAINAGE P	LAN
C3	EROSION	CONTROL PLAN	
C4	DETAIL S	SHEET	
BMP-1	BMP DE1	AIL #1	
BMP-2	BMP DET	AIL #2	
ENGINEER	'S NAME: <u>CHI</u>	N HANG WONG, P.E.	
ADDRESS:	1900 S. NOI SAN MATEC	RFOLK ST. SUITE #3:), CA 94403	50
PHONE N FAX NO.	0. <u>(650) 931-</u> 	-2514	
CIV INFO 190 SAM	EREE IL ENGINEE 0@green-ce.com 10 s. norfolf 1 mateo, ca	N CARAN RING,INC M K ST. SUITE #350 94403	
Revision 1	-	<i>APN</i> 588-04-014	Sheet 1
	—	Co. File	of

THE LANDOWNER / CONTRACTOR MUST PROTECT AND ENSURE THE

ACTIVITIES PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL LOCATE, STAKE, AND FLAG ALL PERMANENT SURVEY MONUMENTS (

WITNESS MONUMENT(S) TO PERPETUATE THE LOCATION IF ANY PERMANENT

SURVEY MONUMENT PRESERVATION

COUNTY OF SANTA CLARA

PERPETUATION OF SURVEY MONUMENTS AFFECTED BY CONSTRUCTION

PRE & POST DEVELOPMENT EA TYPE STURBANCE AREA DUSE (ROOF) ED (ROOF) ED (ROOF) TIO/HARDSCAPE TAL IMPERVIOUS AREA T IMPERVIOUS AREA INCREASE AVEL DRIVEWAY RVIOUS AREA TAL PERVIOUS AREA	PERVIOUS/IMPERV EXISTING (SF) 9,800 SF 0.225 ACRE 0.225 ACRE N/A N/A N/A N/A N/A N/A N/A N/A	IOUS AREAS: PROPOSED (SF) 9,800 SF 0.225 ACRE 4,130 1,077 444 5,651 5,651 5,651 5,651 0 N/A 4,149 4,149	\mathbf{K}	REV. DATE DESCRIPTION A - - A - - B - - B - - B - - B - - B - - B - -
TH UNKNOWN TH UNKNOWN TH UNKNOWN TH UNKNOWN TH UNKNOWN TH UNKNOWN	OUND 33' 10 30 15 5418 . 61 	990.60 45°	FOUND CONC MON AT 990.60 FOUND THIS LINE AT 990.60 W	OVERALL SITE PLAN ZHU RESIDENCE 29000 SUMMIT ROAD LOS GATOS, CA 95033
				CIVIL ENGINEERING, INC CIVIL ENGINEERING, INC CIVIL ENGINEERING, INC CIVIL ENGINEERING, INC 1900 S. NORFOLK ST. SUITE #350 1900 S. NORFOLK ST. SUITE #350 SAN MATEO, CA 94403
RAL NOTES: EXISTING STRUCTURES TO REM BE THE CONTRACTOR'S RESE STING STRUCTURE AS NECESS/ ER. CTOR SHALL PROTECT ALL PROTECT ALL PROTECT ALL PROTECT ALL PROTECT OR SHALL COMPLY WITH ALL DICTED TO SAME. CTOR SHALL COMPLY WITH ALL DICTED TO SAME. CTOR SHALL ADJUST AND/OR IRE A SMOOTH FIT AND CONTROL CTOR SHALL ASSURE POSITIVE AND PAVED AREAS. ITRACTOR IS SPECIFICALLY CANN OF EXISTING UTILITIES AS SEEN OF THE VARIOUS UTILITY COMENTS TAKEN IN THE FIELD. BEING EXACT OR COMPLETE. T RIATE UTILITY COMPANIES AT VEST EXACT FIELD LOCATION OF SIBILITY OF THE CONTRACTOR E PROPOSED IMPROVEMENTS SEEN	IAIN ARE DAMAGEL PONSIBILITY TO RE ARY TO RETURN IT OPERTY CORNERS. L APPLICABLE GOV CUT EXISTING PAV INUOUS GRADE. DRAINAGE AWAY UTIONED THAT TH SHOWN ON THESE OMPANIES, AND WH THE INFORMATION HE CONTRACTOR N LEAST 72 HOURS OF UTILITIES. IT SH TO RELOCATE UTIL SHOWN ON THE PL	D DURING CONSTRUCTION PAIR AND/OR REPLACE TO EXISTING CONDITIONS /ERNING CODES AND BE /EMENT AS NECESSARY FROM BUILDING FOR ALL E LOCATION AND/OR PLANS IS BASED ON IERE POSSIBLE, N IS NOT TO BE RELIED /UST CALL THE BEFORE ANY EXCAVATION IALL BE THE JTIES WHICH CONFLICT ANS.	 THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN GENERAL N.P.D.E.S. PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES. UTILITY VAULTS, TRANSFORMERS, UTILITY CABINETS, CONCRETE BASES, OR OTHER STRUCTURES CANNOT BE PLACED OVER WATER MAINS/SERVICES. MAINTAIN 1' HORIZONTAL CLEAR SEPARATION FROM THE VAULTS, CABINETS & CONCRETE BASSES TO EXISTING UTILITIES AS FOUND IN THE FIELD. IF THERE IS CONFLICT WITH EXISTING UTILITIES, CABINETS, VAULTS & BASES SHALL BE RELOCATED FROM THE PLAN LOCATION AS NEEDED TO MEET FIELD CONDITIONS. TREES MAY NOT BE PLANTED WITHIN 10' OF EXISTING WATER MAINS/SERVICES OR METERS. MAINTAIN 10' BETWEEN TREES AND WATER SERVICES, MAINS & METERS. UTILITY INSTALLATION IF ANY SHALL BE IN ACCORDANCE WITH COUNTY OF SANTA CLARA STANDARDS CONTRACTOR SHALL REFER TO ARCH. PLANS FOR EXACT LOCATIONS OF UTILITIES SERVICES TO NEW BUILDING. COORDINATE WITH LOCAL UTILITIES COMPANIES FOR SERVICE CONNECTIONS. 	NO 73068 NO 73068 Exp. 12/31/2024 CIVIL OF CALIFORNIA CIVIL OF CALIFORNIA CIVIL OF CALIFORNIA CIVIL OF CALIFORNIA SCALE VERTICAL: 1"= AS SHOWN HORIZONTAL: 1"= AS SHOWN DATE: 11/22/2022 DESIGNED: HCL DRAWN: BL REVIEWED: HCL JOB NO.: 20210003 SHEET C1.1

2 OF 8 SHEETS

AREA TYDE		PROPOSED (SE)		
DISTURBANCE AREA	9,800 SF	9,800 SF		
	0.225 ACRE	0.225 ACRE		
HOUSE (ROOF)	N/A	4,130		
SHED (ROOF)	N/A	1,077		NOLL
	N/A	444		SCRIF
NET IMPERVIOUS AREA INCREASED): N/A	5,651		DE DE
	, N/A		10 0 15 10 50	
PERVIOUS AREA	9,800	4,149		
TOTAL PERVIOUS AREA	9,800	4,149	(IN FEET $)1 inch = 30 ft.$	
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			AT 990.60	
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:KAL NOTES: Y EXISTING STRUCTURES TO REMA ALL BE THE CONTRACTOR'S RESPO	NIN ARE DAMAGE	D DURING CONSTRUCTION	7. THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN	ROFESSIONAL HANG HOLES
XISTING STRUCTURE AS NECESSAI	RY TO RETURN I	T TO EXISTING CONDITION	S GENERAL N.P.D.E.S. PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.	
RACTOR SHALL PROTECT ALL PRO	PERTY CORNERS.		8. UTILITY VAULTS, TRANSFORMERS, UTILITY CABINETS, CONCRETE BASES, OR OTHER	₩0. 73068 Exp. <u>12/31/2024</u>
RACTOR SHALL COMPLY WITH ALL	APPLICABLE GO	VERNING CODES AND BE	STRUCTURES CANNOT BE PLACED OVER WATER MAINS/SERVICES. MAINTAIN 1' HORIZONTAL CLEAR SEPARATION FROM THE VAULTS, CABINETS & CONCRETE	VATE OF CALIFORNIE
IRUCTED TO SAME.			BASSES TO EXISTING UTILITIES AS FOUND IN THE FIELD. IF THERE IS CONFLICT WITH EXISTING UTILITIES, CABINETS, VAULTS & BASES SHALL BE RELOCATED FROM THE PLAN LOCATION AS NEEDED TO NEET FIELD CONDITIONS. THESE	
SOUTH SHALL ADJUST AND/OR CONTINUES A SMOOTH FIT AND CONTINUES	LUT EXISTING PA NUOUS GRADE.	VEMENT AS NECESSARY	NOT BE PLAN LOCATION AS NEEDED TO MEET FIELD CONDITIONS. TREES MAY NOT BE PLANTED WITHIN 10' OF EXISTING WATER MAINS/SERVICES OR METERS.	SCALE
RACTOR SHALL ASSURE POSITIVE	DRAINAGE AWAY	FROM BUILDING FOR AL	MAINTAIN TU BETWEEN IREES AND WATER SERVICES, MAINS & METERS.	VERTICAL: 1"= AS SHOWN
ONTRACTOR IS SPECIEICALLY CALL	ITIONED THAT TH		9. UTILITE INSTALLATION IF ANY SHALL BE IN ACCORDANCE WITH COUNTY OF SANTA CLARA STANDARDS	HORIZONTAL: 1"= AS SHOWN
TION OF EXISTING UTILITIES AS SI	HOWN ON THESE	PLANS IS BASED ON	10. CONTRACTOR SHALL REFER TO ARCH. PLANS FOR EXACT LOCATIONS OF UTILITIES SERVICES TO NEW BUILDING COORDINATE WITH LOCAL UTILITIES COMPANIES FOR	DATE: 11/22/2022
JREMENTS TAKEN IN THE FIELD. S BEING EXACT OR COMPLETE TH	THE INFORMATIO	N IS NOT TO BE RELIED MUST CALL THF	SERVICE CONNECTIONS.	DESIGNED: HCI
OPRIATE UTILITY COMPANIES AT LI	EAST 72 HOURS TUTILITIES. IT SH	BEFORE ANY EXCAVATION	Ν	DRAWN: BI
DNSIBILITY OF THE CONTRACTOR T THE PROPOSED IMPROVEMENTS SH	O RELOCATE UTI HOWN ON THE PL	LITIES WHICH CONFLICT _ANS.		REVIEWED: HCI
				JOB NO.: 20210003
				CHEFT
				SHEEL

OVERALL LOT AREA					
AREA TYPE	EXISTING (SF)	PROPOSED (SF)			
TOTAL LOT AREA	127,327 SF	127,327 SF			
	2.923 ACRE	2.923 ACRE			
		1			
NON LAND DISTURBANCE AREA	N/A	117,522			
LAND DISTURBANCE AREA	N/A	9,800			

		_						
	GENERAL NOTE 1. IF ANY EXISTING STRUCTU THE CONTRACTOR'S RESPONDENCE AS NECESSARY TO RETUR	S: RES TO REMAIN ARE DAMAGED DURING CONSTRUCTION IT SHALL BE INSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE N IT TO EXISTING CONDITIONS OR BETTER.						
	2. CONTRACTOR SHALL PROT 3. CONTRACTOR SHALL COMP	 CONTRACTOR SHALL PROTECT ALL PROPERTY CORNERS. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME. 						
	4. CONTRACTOR SHALL ADJU SMOOTH FIT AND CONTINU	ST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A OUS GRADE.						
	5. CONTRACTOR SHALL ASSU AND PAVED AREAS.	SMOOTH FIT AND CONTINUOUS GRADE. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDING FOR ALL NATURAL AND PAVED AREAS.						
)	6. THE CONTRACTOR IS SPEC EXISTING UTILITIES AS SHO UTILITY COMPANIES, AND INFORMATION IS NOT TO E MUST CALL THE APPROPR EXCAVATION TO REQUEST RESPONSIBILITY OF THE C PROPOSED IMPROVEMENTS	FICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF WIN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE E RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR ATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE DNTRACTOR TO RELOCATE UTILITIES WHICH CONFLICT WITH THE SHOWN ON THE PLANS.	DESCRIPTION					
0	7. THE CONTRACTOR SHALL N.P.D.E.S. PERMIT FOR ST	ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN GENERAL DRMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.						
[]	8. UTILITY VAULTS, TRANSFO CANNOT BE PLACED OVER SEPARATION FROM THE V/ FOUND IN THE FIELD. IF BASES SHALL BE RELOCAT	RMERS, UTILITY CABINETS, CONCRETE BASES, OR OTHER STRUCTURES WATER MAINS/SERVICES. MAINTAIN 1' HORIZONTAL CLEAR AULTS, CABINETS & CONCRETE BASSES TO EXISTING UTILITIES AS THERE IS CONFLICT WITH EXISTING UTILITIES, CABINETS, VAULTS & TED FROM THE PLAN LOCATION AS NEEDED TO MEET FIELD	REV. DA					
	 OR METERS. MAINTAIN 10' 9. UTILITY INSTALLATION IF A OTAMOLOGICAL 	BETWEEN TREES AND WATER SERVICES, MAINS & METERS.						
	10. CONTRACTOR SHALL REFE TO NEW BUILDING. COORDI	R TO ARCH. PLANS FOR EXACT LOCATIONS OF UTILITIES SERVICES NATE WITH LOCAL UTILITIES COMPANIES FOR SERVICE CONNECTIONS.	A N					
	LEGEND							
MATCH LINE (SEE SHEET C2.1)	+ 50.0 ↓ 50.0 ↓ ¹ % □ □ • • • • • • • • • • • • •	 PROPERTY LINE STREET CENTER LINE EX. ROLLED CURB EX. SPOT ELEVATION GRADING DAYLIGHT LINE FLOW DIRECTION GRADE BREAK FLOW LINE RAINWATER LEADER STORM DRAIN CLEANOUT STORM DRAIN INLET 2'X3' JUNCTION BOX OR OUTFALL STRUCTURE STORM DRAIN PIPE 	GRADING AND DRAINAGE ZHU RESIDENCE 29000 SUMMIT ROA LOS GATOS, CA 950:					
	ABBREVIATIONS: BS = BOTTOM OF STEP BOW = BACK OF WALK BW = BOTTOM OF WALL C = CONCRETE DK = DECK DWY = DRIVEWAY EG = EXISTING GRADE EX = EXISTING FF = FINISHED FLOOR FG = FINISHED GRADE GRADING NOTE 1 MATCH EXISTING ELEVAT ON ADJACENT PROPERTI (2A) RAINWATER LEADER PER (2B) CONCRETE SPLASH PAD (3A) BEGIN/END SWALE PER	FL=FLOW LINER.O.W. =RIGHT-OF-WAYG=GARAGES=SLOPEGB=GRADE BREAKSD=STORM DRAINIE=INVERT ELEVATIONSR=STRAW ROLLL=LAWNTC=TOP OF CURBLF=LINEAL FOOTTG=TOP OF GRATELP=LOW POINTTP=TOP OF PAVEMENN=NEWTS=TOP OF STEPP=PATIO OR PORCHTW=TOP OF WALLPUE=PUBLIC UTILITY EASEMENT TYP=TYPICALSION. GRADING LIMIT IS TO PROPERTY LINE. NO GRADING ALLOWEDESDETAIL #1D/C4PER DETAIL #1A/C4DETAIL #2B/C4DRIVEWAY ENTRANCE PER DETAIL #6A/C4: INSTALL H=20 HEAVY	CIVIL ENGINEERING, INC CIVIL ENGINEERING, INC INFO@GREEN-CE.COM 1900 S. NORFOLK ST. SUITE #350 SAN MATEO, CA 94403					
	 TRAFFIC RATED SOLID C AREA DRAIN AT LANDSC 3'X2' STORM DRAIN JUN 3'X2' STORM DRAIN OUT 8 ENERGY DISSIPATOR PEF 	OVER APE AREA PER DETAIL #3A/C4 CTION BOX PER DETAIL #6E/C4 FALL STRUCTURE PER DETAIL #8A/C4	× Exp. 12/31/2024 × CIVIL CIVIL CIVIL CIVIL CIVIL CIVIL CIVIL					
			SCALE VERTICAL: 1"= AS SHOWN					
			HURIZUNTAL: 1"= AS SHOWN DATE: 11/22/2022					
			DESIGNED: HCL DRAWN: BL					
			REVIEWED: HCL					
//	*		JOB NO.: 20210003					
		APPROVED FOR ISSUANCE REFER TO ENCROACHMENT AND/OR CONSTRUCTION PERMIT AND PLAN COVER SHEET FOR SPECIAL CONDITIONS AND PERMIT NUMBERING	JOB NO.: 20210003 SHEET C2.0 3 of 8 sheets					

-	<u>G</u>	ENERAL NOTES:						
		THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE THE EXISTING STRUCTURE AS NECESSARY TO RETURN IT TO EXISTING CONDITIONS OR BETTER.						
	2. 3.	CONTRACTOR SHALL PROTECT ALL PROPERTY CORNERS. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED						
10	4.	TO SAME. CONTRACTOR SHALL ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A						
	5.	SMOOTH FIT AND CONTINUOUS GRADE. CONTRACTOR SHALL ASSURE POSITIVE DRAINAGE AWAY FROM BUILDING FOR ALL NATURAL						
	6.	THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.	DESCRIP TION					
	7.	THE CONTRACTOR SHALL ADHERE TO ALL TERMS & CONDITIONS AS OUTLINED IN GENERAL N.P.D.E.S. PERMIT FOR STORMWATER DISCHARGE ASSOCIATED WITH CONSTRUCTION ACTIVITIES.	E					
	8.	UTILITY VAULTS, TRANSFORMERS, UTILITY CABINETS, CONCRETE BASES, OR OTHER STRUCTURES CANNOT BE PLACED OVER WATER MAINS/SERVICES. MAINTAIN 1' HORIZONTAL CLEAR SEPARATION FROM THE VAULTS, CABINETS & CONCRETE BASSES TO EXISTING UTILITIES AS FOUND IN THE FIELD. IF THERE IS CONFLICT WITH EXISTING UTILITIES, CABINETS, VAULTS & BASES SHALL BE RELOCATED FROM THE PLAN LOCATION AS NEEDED TO MEET FIELD CONDITIONS. TREES MAY NOT BE PLANTED WITHIN 10' OF EXISTING WATER MAINS/SERVICES	REV. DAT	- -				
	9.	OR METERS. MAINTAIN 10' BETWEEN TREES AND WATER SERVICES, MAINS & METERS. UTILITY INSTALLATION IF ANY SHALL BE IN ACCORDANCE WITH COUNTY OF SANTA CLARA						
	10.	STANDARDS CONTRACTOR SHALL REFER TO ARCH. PLANS FOR EXACT LOCATIONS OF UTILITIES SERVICES			Ż			
		TO NEW BUILDING. COORDINATE WITH LOCAL UTILITIES COMPANIES FOR SERVICE CONNECTIONS.			PLA			
-		EGEND = PROPERTY LINE			Ш			033
		= STREET CENTER LINE = EX. ROLLED CURB + 50.0 = EX. SPOT ELEVATION			SAINAG	JENCE		CA 95(
	_	$- \cdot - \cdot - \cdot - \cdot - \cdot - = GRADING DAYLIGHT LINE$			L L L			SS,
		= FLOW DIRECTION $= GRADE BREAK$			2 Z	R		ATO
		= FLOW LINE $= RAINWATER FADER$			ح (۲)	Ή	$\frac{1}{2}$	S O
		 STORM DRAIN CLEANOUT 			N		100	00
					A			
		= STORM DRAIN PIPE			G			
-	ABE BS BW C D W G E E X F F G G (1) (2A)	REVIATIONS: = BOTTOM OF STEP FL = FLOW LINE R.O.W. = RIGHT-OF-WAY / = BACK OF WALK G = GARAGE S = SLOPE = BOTTOM OF WALL GB = GRADE BREAK SD = STORM DRAIN = CONCRETE IE = INVERT ELEVATION SR = STRAW ROLL = DECK L = LAWN TC = TOP OF CURB ' = DRIVEWAY LF = LINEAL FOOT TG = TOP OF PAVEMENT = EXISTING GRADE LP = LOW POINT TP = TOP OF STEP = FINISHED FLOOR N = NEW TS = TOP OF STEP = FINISHED FLOOR P = PATIO OR PORCH TW = TOP OF WALL = FINISHED GRADE PUE = PUBLIC UTILITY EASEMENT TYP = TYPICAL RADING NOTESS MATCH EXISTING ELEVATION. GRADING LIMIT IS TO PROPERTY LINE. NO GRADING ALLOWED ON ADJACENT PROPERTIES RAINWATER LEADER PER DETAIL #1D/C4 CONCRETE SPLASH PAD PER DETAIL #1A/C4			KEEN JUS	/IL ENGINEERING, INC	00 S. NORFOLK ST. SUITE #350	N MATEO, CA 94403
	$\langle 3A \rangle$ $\langle 4 \rangle$	BEGIN/END SWALE PER DETAIL #2B/C4 12"X12" AREA DRAIN AT DRIVEWAY ENTRANCE PER DETAIL #6A/C4; INSTALL H–20 HEAVY			Ú	C N	2 0	Ś
	5 6 7 8	AREA DRAIN AT LANDSCAPE AREA PER DETAIL #3A/C4 3'X2' STORM DRAIN JUNCTION BOX PER DETAIL #6E/C4 3'X2' STORM DRAIN OUTFALL STRUCTURE PER DETAIL #8A/C4 ENERGY DISSIPATOR PER DETAIL #4E/C4		A BROW	Experiment of the second secon	ROFESS/ HANG 2 / (10. 73 0. 12/31/2 0F CI	WAY LITOR	
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EF	ROSION AND	D SEDIMENT CO	DNTROL NOT	ES AND MEAS	SURES:					
1.	GRADING WORK BET GRADING OFFICIAL.	WEEN OCTOBER 1 AND APR REFER TO COUNTY 'S STAN	IL 30 IS AT THE DISC DARD GUIDELINES FOR	RETION OF SANTA CLARA ADDITIONAL CONDITIONS	COUNTY					
,	A. THE OWNER/OWNI OUT THE DURATI AND SEDIMENT C THE SITE WHERE	ER'S CONTRACTOR, AGENT, ON OF CONSTRUCTION AND CONTROL WITHIN SANTA CLA STORM WATER RUN-OFF I	AND/OR ENGINEER SI UNTIL THE ESTABLISI ARA COUNTY ROAD RIG S DIRECTLY FALLING II	HALL INSTALL AND MAINT HMENT OF PERMANENT ST GHT OF WAY AND ANY PO NTO THE SAN MATEO COU	AIN THROUGH TABILIZATION DRTION OF JNTY ROAD					
	RIGHT OF WAY B EXCAVATED MATE CONSTRUCTION A INFRASTRUCTURE APPLICABLE TO	EST MANAGEMENT PRACTIC ERIALS, WE USED MATERIAL ACTIVITIES ANCHORING THE . BMPS SHALL INCLUDE, BU THE PUBLIC ROAD FACILITIE	ES (BMPS) TO PREVEI S, AND SEDIMENT, CA STORM DRAIN SYSTEM JT NOT TO BE LIMITED S:	USED BY EROSION MATER USED BY EROSION FROM , WATERWAYS, AND ROAE) TO, THE FOLLOWING PR/	TALS, DWAY ACTICES					
	i. REDU CONTI ii. PREVE RIGHT III. PREVE	CTION OF POLLUTANTS IN S RACTOR'S MATERIAL AND E ENTION OF TRACKING MUD, OF WAY. ENTION OF DISCHARGE OF	STORM WATER DISCHAI QUIPMENT/STAGING AI DIRT AND CONSTRUCT WATER RUNOFF DURIN	RGES FROM CONSTRUCTIO REAS. TION MATERIALS ONTO PU G DRY AND WET WEATHEF	N SITE AND IBLIC ROAD R CONDITIONS	NO				
r		PUBLIC ROAD RIGHT OF W	AY.			SCRIP TI				
t	B. THE OWNER/OWN CONSTRUCTION F HAZARDOUS AND CONCRETE WASH ETC. ARE LOCA THIS SITE WHERE	ACILITIES, INCLUDING BUT I NON-HAZARDOUS MATERI OUT, GARBAGE CONTAINERS TED OUTSIDE THE SANTA C STORM WATER RUN-OFF	AND/OR ENGINEER SP NOT LIMITED TO CONS AL STORAGE, EQUIPME S, LAY DOWN YARDS, SLARA COUNTY ROAD IS CORRECTLY FOLLOW	TRUCTION MATERIALS, DEI INT, TOOLS, PORTABLE TO SECONDARY CONTAINMEN RIGHT OF WAY AND ANY ING INTO SANTA CLARA	ILMPORART LIVERIES, DILETS, T AREAS, PORTION OF COUNTY	DATE DE				
2.	THE FACILITIES SHO	WAT. WN ON THIS PLAN ARE DES	SIGNED TO CONTROL E	ROSION AND SEDIMENT D	URING THE	7				
-	RAINY SEASON, OCT YEAR. GRADING OPE PROTECTED WITH ER	OBER 1 TO APRIL 30. FAC RATIONS DURING THE RAIN ROSION CONTROL MEASURES	ILITIES ARE TO BE OP Y SEASON, WHICH LEA S IMMEDIATELY FOLLOW	ERABLE PRIOR TO OCTOB AVE DENUDED SLOPES SH /ING GRADING ON THE SL	ER 1 OF ANY ALL BE OPES.	REV.				
5.	THIS PLAN COVERS SHOWN ON THE ERC IMPROVEMENT SHALL APPROVAL OF THE	ONLY THE FIRST WINTER F DSION CONTROL PLAN. PRIC _ BE EVALUATED AND REVI CITY ENGINEER.	OLLOWING GRADING WI R TO SEPTEMBER 15, SIONS MADE TO THIS	TH ASSUMED STIE CONDITION OF SITE COMPLETION OF SITE PLAN AS NECESSARY WITE	IIONS AS E TH THE					
4.	IF HYDROSEEDING IS CONTROL BLANKETS 3) TACKIFIER AND M FABRIC ON DISTURB	S NOT USED, THEN OTHER , OR A THREE—STEP APPLI MULCH. CONTACT SANTA CL ED SLOPES GREATER THAN	METHODS SHALL BE IN CATION OF: 1) SEED, .ARA COUNTY FOR AP 2:1.	IPLEMENTED, SUCH AS EF MULCH, FERTILIZER 2) BL PROVED SEED MIX. UTILIZ	ROSION LOWN STRAW E EROSION		LAN			33
ō.	DURING WINTER MON CONTROL FABRIC.	ITHS, ALL DISTURBED SLOP	ES GREATER THAN 2:	1 SHALL HAVE MANDATO	RY EROSION			Ш	A O Y	
3.	INLET PROTECTION S STORM DRAIN SYSTE TO PREVENT ENTRY	SHALL BE INSTALLED AT OF EM. INLETS NOT USED IN C OF SEDIMENT.	PEN INLETS TO PREVEI ONJUNCTION WITH ERC	NT SEDIMENT FORM ENTER DSION CONTROL ARE TO E	RING THE BE BLOCKED		TRO	DEN		57 U
7.	THIS EROSION AND DURING CONSTRUCTI MADE TO THIS PLAN	SEDIMENT CONTROL PLAN I ON DUE TO UNANTICIPATED I IN THE FIELD. NOTIFY THI	MAY NOT COVER ALL) FIELD CONDITIONS. V E CITY REPRESENTATIV	THE SITUATIONS THAT MA /ARIATIONS AND ADDITION /E OF ANY FIELD CHANGE	AY ARISE S MAY BE TS.		NOC	RESIL		ς Ο
3.	THIS PLAN IS INTEN TO BE USED FOR FI	DED TO BE USED FOR INTE NAL ELEVATIONS OR PERM.	RIM EROSION AND SEI ANENT IMPROVEMENTS	DIMENT CONTROL ONLY A OF FUTURE CONSTRUCTIO	ND IS NOT ON.		Z		S S	$\overline{\mathbf{A}}$
Э.	CONTRACTOR SHALL AND AFTER STORM	. BE RESPONSIBLE FOR MOI EVENTS.	NITORING EROSION ANI	D SEDIMENT CONTROL PRI	IOR, DURING,		0	Ξ	\bigotimes	כ
10.	REASONABLE CARE OR ANY OTHER SUB BLOW, SPILL, OR TR REMEDY SHALL OCC	SHALL BE TAKEN WHEN HA STANCE OVER ANY PUBLIC ACK OVER AND UPON SAIE UR.	AULING ANY EARTH, SA STREET, ALLEY OR O PUBLIC OR ADJACEN	AND, GRAVEL, STONE, DEI THER PUBLIC PLACE. SHO T PRIVATE PROPERTY, IM	BRIS, PAPER DULD ANY MEDIATE		EROS		290	
11. 12.	SANITARY FACILITIES DURING THE RAINY THE SITE SHALL BE SYSTEMS, INCLUDING	S SHALL BE MAINTAINED ON SEASON, ALL PAVED AREA MAINTAINED SO AS TO MII S EXISTING DRAINAGE SWAL	N THE SITE. S SHALL BE KEPT CLE NIMIZE SEDIMENT LADE ES AND WATER COURS	TAR OF EARTH MATERIAL IN RUNOFF TO ANY STOR SES.	AND DEBRIS. M DRAINAGE					
13.	DEMOLITION OPERAT POLLUTION WILL BE COMPLIED WITH.	IONS SHALL BE CARRIED O MINIMIZED. STATE AND LOG	UT IN SUCH A MANNE CAL LAWS CONCERNING	R THAT EROSION AND W	ATER SHALL BE					
4.	CONTRACTORS SHAL LOCAL AGENCY REQ	L PROVIDE DUST CONTROL UIREMENTS.	AS REQUIRED BY THE	APPROPRIATE FEDERAL,	STATE, AND					
15.	WITH THE APPROVAL AREAS ABOVE THEM	OF THE CITY INSPECTOR, HAVE BEEN STABILIZED.	EROSION AND SEDIME	NT CONTROLS MAYBE RE	MOVED AFTER		¥.	C	0	
<u>MAII</u>	NTENANCE NOTES						\mathcal{D}_{i}		1 □ □	
	A. REPAIR DAMAGES	CAUSED BY SOIL EROSION	WS: OR CONSTRUCTION AT	THE END OF EACH WOR	KING DAY.			/(<i>C</i> ,/// DM		
	B. SWALES SHALL BEC. SEDIMENT TRAPS, AS NEEDED.	EINSPECTED PERIODICALLY BERMS, AND SWALES ARE	AND MAINTAINED AS TO BE INSPECTED AF	NEEDED. TER EACH STORM AND RE	EPAIRS MADE			INEERIA EN-CE.CC	XFULN S I), CA 944	
	D. SEDIMENT SHALL E SEDIMENT HAS AC	BE REMOVED AND SEDIMEN CUMULATED TO A DEPTH (T TRAPS RESTORED TO OF ONE FOOT.	D ITS ORIGINAL DIMENSION	NS WHEN			ENG Øgre		
	E. SEDIMENT REMOVE THAT IT WILL NOT	D FROM TRAP SHALL BE D ERODE.	EPOSITED IN A SUITAE	BLE AREA AND IN SUCH .	A MANNER			1///L NF0@		
	F. RILLS AND GULLIES	S MUST BE REPAIRED.						<u> </u>	_ 0)	
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	SR	STRAW ROLL		ABBREVIATIONS:				//)		
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	DATE – – –
	DETAIL SHEET ZHU RESIDENCE 29000 SUMMIT ROAD LOS GATOS, CA 95033
	CIVIL ENGINEERING, INC CIVIL ENGINEERING, INC CIVIL ENGINEERING, INC INFO@GREEN-CE.COM 1900 S. NORFOLK ST. SUITE #350 SAN MATEO, CA 94403
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	SCALE VERTICAL: 1"= AS SHOWN HORIZONTAL: 1"= AS SHOWN DATE: 11/22/2022
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APPROVED FOR ISSUANCE REFER TO ENCROACHMENT AND/OR CONSTRUCTION PERMIT AND PLAN COVER SHEET FOR SPECIAL CONDITIONS AND PERMIT NUMBERING	6 OF 8 SHEETS

LUBE GASKET AND PIPE-SET TOP TO GRADE AND ORIENT GRATE TO MATCH IMPROVEMENTS. N.T.S.

STANDARD BEST MANAGEMENT PRACTICE NOTES

- 1. Solid and Demolition Waste Management: Provide designated waste collection areas and containers on site away from streets, gutters, storm drains, and waterways, and arrange for regular disposal. Waste containers must be watertight and covered at all times except when waste is deposited. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C3) or latest.
- 2. <u>Hazardous Waste Management</u>: Provide proper handling and disposal of hazardous wastes by a licensed hazardous waste material hauler. Hazardous wastes shall be stored and properly labeled in sealed containers constructed of suitable materials. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-5 to C-6) or latest.
- 3. <u>Spill Prevention and Control</u>: Provide proper storage areas for liquid and solid materials, including chemicals and hazardous substances, away from streets, gutters, storm drains, and waterways. Spill control materials must be kept on site where readily accessible. Spills must be cleaned up immediately and contaminated soil disposed properly. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-7 to C-8, C-13 to C-14) or latest.
- 4. <u>Vehicle and Construction Equipment Service and Storage</u>: An area shall be designated for the maintenance, where onsite maintenance is required, and storage of equipment that is protected from stormwater run-on and runoff. Measures shall be provided to capture any waste oils, lubricants, or other potential pollutants and these wastes shall be properly disposed of off site. Fueling and major maintenance/repair, and washing shall be conducted off-site whenever feasible. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C9) or latest.
- 5. <u>Material Delivery, Handling and Storage</u>: In general, materials should not be stockpiled on site. Where temporary stockpiles are necessary and approved by the County, they shall be covered with secured plastic sheeting or tarp and located in designated areas near construction entrances and away from drainage paths and waterways. Barriers shall be provided around storage areas where materials are potentially in contact with runoff. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-11 to C-12) or latest.
- 6. <u>Handling and Disposal of Concrete and Cement</u>: When concrete trucks and equipment are washed on-site, concrete wastewater shall be contained in designated containers or in a temporary lined and watertight pit where wasted concrete can harden for later removal. If possible have concrete contractor remove concrete wash water from site. In no case shall fresh concrete be washed into the road right-of-way. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-15 to C-16) or latest.
- 2. <u>Pavement Construction Management</u>: Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent run-on and runoff pollution and properly disposing of wastes. Avoid paving in the wet season and reschedule paving when rain is in the forecast. Residue from saw-cutting shall be vacuumed for proper disposal. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-17 to C-18) or latest.
- 5. <u>Contaminated Soil and Water Management</u>: Inspections to identify contaminated soils should occur prior to construction and at regular intervals during construction. Remediating contaminated soil should occur promptly after identification and be specific to the contaminant identified, which may include hazardous waste removal. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages C-19 to C-20) or latest.
- . <u>Sanitary/Septic Water Management</u>: Temporary sanitary facilities should be located away from drainage paths, waterways, and traffic areas. Only licensed sanitary and septic waste haulers should be used. Secondary containment should be provided for all sanitary facilities. Refer to Erosion & Sediment Control Field Manual, 4th Edition (page C-21) or latest.
- 10. Inspection & Maintenance: Areas of material and equipment storage sites and temporary sanitary facilities must be inspected weekly. Problem areas shall be identified and appropriate additional and/or alternative control measures implemented immediately, within 24 hours of the problem being identified.

Best Management Practices and Erosion Control Details Sheet 1 County of Santa Clara

STANDARD EROSION CONTROL NOTES

1. Sediment Control Management

Tracking Prevention & Clean Up: Activities shall be organized and measures taken as needed to prevent or minimize tracking of soil onto the public street system. A gravel or proprietary device construction entrance/exit is required for all sites. Clean up of tracked material shall be provided by means of a street sweeper prior to an approaching rain event, or at least once at the end of each workday that material is tracked, or, more frequently as determined by the County Inspector. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages B-31 to B-33) or latest.

Storm Drain Inlet and Catch Basin Inlet Protection: All inlets within the vicinity of the project and within the project limits shall be protected with gravel bags placed around inlets or other inlet protection. At locations where exposed soils are present, staked fiber roles or staked silt fences can be used. Inlet filters are not allowed due to clogging and subsequent flooding. Refer to Erosion & Sediment Control Field Manual, 4th Edition (pages B-49 to B-51) or latest.

Storm Water Runoff: No storm water runoff shall be allowed to drain in to the existing and/or proposed underground storm drain system or other above ground watercourses until appropriate erosion control measures are fully installed.

Dust Control: The contractor shall provide dust control in graded areas as required by providing wet suppression or chemical stabilization of exposed soils, providing for rapid clean up of sediments deposited on paved roads, furnishing construction road entrances and vehicle wash down areas, and limiting the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

Stockpiling: Excavated soils shall not be placed in streets or on paved areas. Borrow and temporary stockpiles shall be protected with appropriate erosion control measures(tarps, straw bales, silt fences, ect.) to ensure silt does not leave the site or enter the storm drain system or neighboring watercourse.

- 2. Erosion Control: During the rainy season, all disturbed areas must include an effective combination of erosion and sediment control. It is required that temporary erosion control measures are applied to all disturbed soil areas prior to a rain event. During the non-rainy season, erosion control measures must be applied sufficient to control wind erosion at the site.
- 3. <u>Inspection & Maintenance</u>: Disturbed areas of the Project's site, locations where vehicles enter or exit the site, and all erosion and sediment controls that are identified as part of the Erosion Control Plans must be inspected by the Contractor before, during, and after storm events, and at least weekly during seasonal wet periods. Problem areas shall be identified and appropriate additional and/ or alternative control measures implemented immediately, within 24 hours of the problem being identified.
- 4. Project Completion: Prior to project completion and signoff by the County Inspector, all disturbed areas shall be reseeded, planted, or landscaped to minimize the potential for erosion on the subject site.
- 5. It shall be the Owner's/Contractor's responsibility to maintain control of the entire construction operation and to keep the entire site in compliance with the erosion control plan.
- 6. Erosion and sediment control best management practices shall be operable year round or until vegetation is fully established on landscaped surfaces.

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County of Santa Clara

2022 CALIFORNIA MECHANICAL CODE:

For a complete description of any and all plumbing code requirements, it is strongly recommended for a copy of the California Mechanical Code (Current Edition Enforced) to be readily available for review and reference at all times during construction. <u>CHAPTER 3: GENERAL REQUIREMENTS</u> (See entire Chapter for additional information) 303.0 Installation

303.1 Listed Appliances. Except as otherwise provided in the code, the installation of appliances regulated by this code shall be in accordance with the conditions of listing. The appliance installer shall leave the manufacturer's installation and operating instructions attached to the appliance. Clearances of listed appliances from combustible materials shall be as specified in the listing or on the rating plate. **303.4 Anchorage of Appliances.** Appliances designed to be fixed in position shall be securely fastened in place in accordance with the manufacturer's installation instructions. Supports for appliances shall be designed and constructed to sustain vertical and horizontal loads within the stress limitations specified in the building code.

304.0 Accessibility for Service
304.1 General. All appliances shall be located with respect to building construction and other equipment so as to permit access to the appliance. Sufficient clearance shall be maintained to permit cleaning of heating surfaces; the replacement of filters, blowers, motors, burners, controls, and vent connections; the lubrication of moving parts where necessary; the adjustment and cleaning of burners and pilots; and the proper functioning of explosion vents, if provided. For attic installation, the passageway and servicing area adjacent to the appliance shall be floored. [NFPA 54:9.2.1]
Unless otherwise specified, not less than 30 inches (762 mm) in depth, width, and height of working space shall be provided. *Exception: A platform shall not be required for unit heaters or room heaters*.
304.2 Sloped Roof. Where equipment or appliances that require service are installed on a roof having a slope of 4 units vertical in 12 units horizontal (33 percent slope) or more, a level platform of not less than 30 inches y 30 inches y 762 mm) shall be provided at the service side of the equipment or appliance.
304.4 Appliances in Attics and Under-Floor Spaces. An attic or under-floor space in which an appliance is installed shall be

accessible through an opening and passageway not less than the largest component of the appliance, and not less than 22 inches by 30 inches (559 mm by 762 mm). **304.4.1 Length of Passageway**. Where the height of the passageway is less than 6 feet (1829 mm), the distance from the passageway access to the appliance shall not exceed 20 feet (6096 mm) measured along the centerline of the passageway. [NFPA 54:9.5.1.1] **304.4.2 Width of Passageway**. The passageway shall be unobstructed and shall have solid flooring not less than 24 inches (610 mm) wide from the entrance opening to the appliance. [NFPA 54:9.5.1.2] **304.4.3 Work Platform.** A level working platform not less than 30 inches by 30 inches (762 mm by 762 mm) shall be provided in front of the service side of the appliance. [NFPA 54:9.5.2] Exception: A working platform need not be provided where the furnace is capable of being serviced from the required access

opening. The furnace service side shall not exceed 12 inches (305 mm) from the access opening.
304.4.4 Lighting and Convenience Outlet. A permanent 120V receptacle outlet and a luminaire shall be installed near the appliance. The switch controlling the luminaire shall be located at the entrance to the passageway. [NFPA 54:9.5.3]
305.0 Location.
305.1 Installation in Garages. Appliances in garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that burners and burner-ignition devices are located not less than 18 inches (457 mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1]
305.1.1 Physical Damage. Appliances installed in garages, warehouses, or other areas subject to mechanical damage shall

be guarded against such damage by being installed behind protective barriers or by being elevated or located out of the normal path of vehicles. 305.1.2 Access from the Outside. Where appliances are installed within a garage and are enclosed in a separate enclosed space having access only from outside of the garage, such appliances shall be permitted to be installed at floor level, provided the required combustion air is taken from the exterior of the garage.[NFPA54:9.1.10.3]

306.0 Automatic Control Devices. **306.1 General**. Heating appliances shall be equipped with a listed device or devices that will shut off the fuel supply to the main burner or burners in the event of pilot or ignition failure. Liquefied petroleum gas-air-burning heating appliances shall be equipped with a listed automatic device or devices that will shut off the flow of gas to the pilot in the event of ignition failure. *Exception: The listed shutoff devices shall not be required on range or cooking tops, log lighters, lights, or other open-burner manually operated appliances, or listed appliances not requiring such devices and specific industrial appliances as approved by the Authority Having Jurisdiction*. Heating appliances whose manual fuel controls are not readily accessible from the main portion of the building being heated shall be equipped with remote controls. Forced-air and gravity-type warm air furnaces shall be equipped with a listed air outlet temperature limit control that cannot be set for temperatures exceeding 250°F (121°C). Such controls shall be located in the bonnet or plenum, within 2 feet (610 mm) of the discharge side of the heating element of gravity furnaces or in accordance with the conditions of listing. Electric duct heaters shall be equipped with an approved automatic reset air outlet temperature limit control that will limit the outlet air temperature limit control that will prevent outlet air temperature limit control that will prevent outlet air temperature limit control that will prevent outlet air temperature limit control. **311.0 Heating or Cooling Air System**.

311.1 Source. A heating or cooling air system shall be provided with return air, outside air, or both. A heating or cooling air system regulated by this code and designed to replace required ventilation shall be arranged to discharge into a conditioned space not less than the amount of outside air specified in Chapter 4.
311.5 California Energy Code Requirement for Residential Air Infiltration. In mechanically ventilated residential buildings, air filters shall be provided to clean outdoor air and return air prior to its delivery to occupied spaces where specified in California Energy Code Sections 150.0(m)12 and 160.2(b). The air filters shall comply with California Energy Code requirements for labeling, ventilation system design and installation, air filter, efficacy, and air filter pressure drop.

312.0 Plumbing Connections.
312.1 General. Water supply, sanitary drainage, and back-flow protection shall be in accordance with the California Plumbing Code.
316.0 Protection of Piping, Tubing, Materials, and Structures.
316.1 General. Piping or tubing passing under or through walls shall be protected from breakage. Piping passing through or under

cinders or other corrosive materials shall be protected from external corrosion in an approved manner. Approved provisions shall be made for expansion of hot water piping. Voids around piping or tubing passing through concrete floors on the ground shall be sealed. **316.2 Installation**. Piping or tubing shall be installed so that the piping, tubing, or connections will not be subject to undue strains or stresses, and provisions shall be made for expansion, contraction, and structural settlement. No piping or tubing, unless

designed and listed for such use, shall be directly embedded in concrete or masonry. No structural member shall be seriously weakened or impaired by cutting, notching, or otherwise as defined in the building code. **316.3 Corrosion, Erosion, and Mechanical Damage**. Piping, or tubing subject to corrosion, erosion, or mechanical damage shall be protected in an approved manner.

316.4 Protectively Coated Pipe. Protectively coated pipe or tubing shall be inspected and tested, and a visible void, damage, or imperfection to the pipe coating shall be repaired in an approved manner.
316.5 Fire-Resistant Construction. Piping, tubing, and duct system penetrations of fire-resistance-rated walls, partitions, floors, floor/ceiling assemblies, roof/ceiling assemblies, or shaft enclosures shall be protected in accordance with the requirements of the

building code. **316.6 Steel Nail Plates**. Plastic piping or tubing, copper or copper alloy piping or tubing, and ducts penetrating framing members to within 1 inch (25.4 mm) of the exposed framing shall be protected by steel nail plates not less than No. 18 gauge (0.0478 inches) (1.2141 mm) in thickness. The steel nail plate shall extend along the framing member not less than 1-1/2 inches (38 mm) beyond the outside diameter of the pipe 316.7.1 or tubing. *Exception: See Section 1311.3.3*.

316.7 Sleeves. Sleeves shall be provided to protect piping through concrete and masonry walls and concrete floors. *Exception:*

 Sleeves shall not be required where openings are drilled or bored.

 CHAPTER 4: VENTILATION AIR SUPPLY (See entire Chapter for additional information)

401.0 General.
401.1 Applicability. This chapter contains requirements for ventilation air supply, exhaust, and makeup air requirements for occupiable spaces within a building. [OSHPD 1, 1R, 2, 3, 4 & 5] See Sections 404.0 through 418.0. [SFM] Air filters shall comply with all requirements of Part 12, Title 24, Chapter 12-71, SFM Standard 12-71-1. Spaces within buildings, except those within a dwelling unit in residential occupancies where occupants are non-transient, shall comply with Section 402.0, through Section 404.0. Requirements for ventilation, air rate for dwelling units in residential occupancies, where the occupants are non-transient, shall be in accordance with Section 405.0.
401.2 Filters [BSC-CG], [DSA-SS & DSA-SS/CC]. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual in compliance with Chapter 5, Division, 5.5 of the California Green Building Standards Code. (CALGreen).

402.0 Ventilation Air. [Not permitted for OSHPD 1,2, 3 & 4]
402.1 Occupiable Spaces. Occupiable spaces listed in Table 402.1 [OSHPD 1, 1R, 2, 3, 4 & 5] and Table 4-A shall be designed to have ventilation (outdoor) air in accordance with this chapter [DSA-SS & DSA-SS/CC]. Ventilation air requirements for occupancies regulated by the California Energy Commission are found in the California Energy Code. (CEC) Ventilation air requirements for occupancies regulated by the California Energy Commission and found in the California Energy Code supersede those of the California Mechanical Code.
402.1.1 Construction Documents. The outdoor air ventilation rate and air distribution assumptions made in the design of the

ventilation system shall be clearly identified on the construction documents. 402.1.2 Dwelling. Requirements for ventilation air rate for single-family dwellings shall be in accordance with this chapter or ASHRAE 62.2.
402.2 Natural Ventilation. Natural ventilation systems shall be designed in accordance with this section and shall include mechanical ventilation systems designed in accordance with Section 403.0, Section 404.0, or both. Exception (1): An engineered natural ventilation system where approved by the Authority Having Jurisdiction need not comply with Section 402.2.
Exception (2): The mechanical ventilation systems shall not be required where:

(a) Natural ventilation openings that comply with the requirements of Section 402.2 and are permanently open or have controls that prevent the openings from being closed during periods of expected occupancy.

(b) The zone is not served by heating or cooling equipment [ASHRAE 62.1:6.4].
402.2.1 Floor Area to Be Ventilated. Spaces, or portions of spaces, to be naturally ventilated shall be located within a distance based on the ceiling height, as determined in accordance with Section 402.2.1.1, Section 402.2.1.2, or Section 402.2.1.3, from operable wall openings in accordance with the requirements of Section 402.2.2. For spaces with ceilings which are not parallel to the floor, the ceiling height shall be determined in accordance with Section 402.2.1.4. [ASHRAE 62.1:6.4.1]
402.2.2 Location and Size of Openings. Spaces, or portions of spaces, to be naturally ventilated shall be permanently open to operable wall openings directly to the outdoors, the openable area of which is a minimum of 4 percent of the net occupiable floor area. Where openings are covered with louvers or otherwise obstructed, openable area shall be based on the net free unobstructed area through the opening. Where interior rooms, or portions of 402.2.3 rooms, without direct openings to the

outdoors are ventilated through adjoining rooms, the opening between rooms shall be permanently unobstructed and shall have a free area of not less than 8 percent of the area of the interior room nor less than 25 square feet (2.3 m2) [ASHRAE 62.1:6.4.2] **402.3 Mechanical Ventilation**. Where natural ventilation is not permitted by this section or the building code, mechanical ventilation systems shall be designed, constructed, and installed to provide a method of supply air and exhaust air. Mechanical ventilation systems shall include controls, manual or automatic, that enable the fan system to operate wherever the spaces served are occupied. The system shall be designed to maintain minimum outdoor airflow as required by Section 403.0 under any load

402.4 Outdoor Air Intake Protection. Required outdoor-air intakes shall be covered with a screen having not less than 1/4 inch (6.4 mm) openings, and shall have not more than 1/2 inch (12.7 mm) openings.
405.0 Indoor Air Quality for Residential Occupancies.
405.1 General. Rooms or occupied spaces within residential occupancies, where the occupants are non-transient, shall be

designed to have mechanical ventilation and exhaust air in accordance with Section 405.2 through Section 405.5.
405.2 Ventilation Air Rate. The required mechanical ventilation outdoor air rate (*Qtot*) shall be calculated in accordance with Equation 405.2. See subsections & exception as applicable.
405.3 Bathroom Exhaust. A mechanical exhaust directly to the outdoors shall be provided in each room containing a bathtub, shower, or tub/shower combination. The fan shall run intermittently (on demand) or continuously. A readily accessible manual control designed to be operated as needed or an automatic control shall be provided for intermittent operations. [HCD 1 & HCD 2] each bathroom shall also be mechanically ventilated in accordance with Division 4.5 of the California Green Building Standards

Code (CALGreen). See subsection as applicable. **405.4 Kitchen Exhaust**. A mechanical exhaust directly to the outdoors shall be provided in each kitchen. The fan shall run intermittently (one demand) or continuously. A readily accessible manual control designed to be operated as needed or an automatic control shall be provided for intermittent operations. **405.4.1 Exhaust Rate**. For intermittent controlled operations, the exhaust rate shell not be less than 100 ft3/min. (0.047m3/s)

403.4.1 Exhaust hate. For infinitent controlled operations, the exhaust hate she including downdraft appliances. For continuous operated ventilation the exhaust ratio not be less than 5 air changes per hour based on kitchen volume for enclosed kitchens.
 405.5 Ventilation Openings. Occupiable spaces shall be provided with a readily accessible ventilation opening, openable to the outdoors. The opening shall not be less than 5 square feet (0.464m2) or 4 percent of the occupied floor area. The openable area shall be based on free, unobstructed area through the opening.
 CHAPTER 5: EXHAUST SYSTEMS (See entire Chapter for additional information)

501.0 General. 501.1 Applicability. This chapter includes requirements for environmental air ducts, product-conveying systems, and commercial hoods and kitchen ventilation. Part I addresses environmental air ducts and product conveying systems. Part II addresses commercial hoods and kitchen ventilation. 622.0 Commercial

502.1 Exhaust Opening Protection. Exhaust openings terminating to the outdoors shall be covered with a corrosion-resistant screen having not less than 1/4 of an inch (6.4 mm) openings, and shall have not more than 1/2 of an inch (12.7 mm) openings. *Exception: Clothes dryers.* 502.2 Termination of Exhaust Ducts. Exhaust ducts shall terminate in accordance with Section 502.2.1 through Section 502.2.3. 502.2.1 Environmental Air Ducts. Environmental air duct exhaust shall terminate not less than 3 feet (914 mm) from a

property line, 10 feet (3048 mm) from a forced air inlet, and 3 feet (914 mm) from openings into the building. The discharge of environmental exhaust ducts shall not directed onto a public walkway.
504.0 Environmental Air Ducts.
504.1 General. Where not specified in this chapter, exhaust ducts shall be constructed and installed in accordance with Chapter 6, and shall be airtight as approved by the Authority Having Jurisdiction. Environmental air ducts that have an alternate function as part of an approved smoke-control system do not require design as Class 1 product-conveying ducts. See exceptions.
504.2 Independent Exhaust Systems. Single or combined mechanical exhaust systems shall be independent of other exhaust systems.
504.3 Domestic Range. Ducts used for domestic kitchen range ventilation shall be of metal and shall have smooth interior surfaces. *Exception: Ducts for domestic kitchen downdraft grill-range ventilation installed under a concrete slab floor shall be*

permitted to be of approved Schedule 40 PVC provided:

(3) The under-floor trench in which the duct is installed shall be completely backfilled with sand or gravel.
(4) Not more than 1 inch (25.4mm) of 6 inch diameter (152 mm) PVC coupling shall be permitted to protrude above the concrete floor surface.
(5) PVC nine ioints shall be solvent cemented to provide an air and grease tight duct.

(6) The duct shall terminate above grade outside the building and shall be equipped with a back-draft damper. 504.4 Clothes Dryers. A clothes dryer exhaust duct shall not be connected to a vent connector, gas vent, chimney, and shall not terminate into a crawl space, attic, or other concealed space. Exhaust ducts shall not be assembled with screws or other fastening means that extend into the duct and that are capable of catching lint, and that reduce the efficiency of the exhaust system. Exhaust ducts shall be constructed of rigid metallic material. Transition ducts used to connect the dryer to the exhaust duct shall be listed for that application or installed in accordance with the clothes dryer manufacturer's installation instructions. Clothes dryer exhaust ducts shall terminate to the outside of the building in accordance with Section 502.2.1 and shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination. Devices, such as fire or smoke dampers, that will obstruct the flow of the exhaust shall not be used. Where joining of ducts, the male end shall be inserted in the direction of airflow.

504.4.1 Provisions for Makeup Air. Makeup air shall be provided in accordance with the following:

Makeup air shall be provided for Type 1 clothes dryers in accordance with the manufacturer's installation instructions. [NFPA 54:10.4.3.1]. Where a closet is designed for the installation of a clothes dryer, an opening of not less than 100 square inches (0.065 m2) for make up air shall be provided in the door or by other approved means.
Provision for make up air shall be provided for Type 2 clothes dryers, with a minimum free area of not less than 1 square inch (0.0006 m2) thermal units per hour (Btu/h) (0.293 kW) total input rating of the dryer(s) installed. [NFPA 54:10.4.3.2]
504.4.2 Domestic Clothes Dryers. Where a compartment or space for a Type 1 clothes dryer is provided, not less than a 4 inch diameter (102 mm) exhaust duct of approved material shall be installed in accordance with Section 504.0. Type1 clothes

dryer exhaust ducts shall be of rigid metal and shall have smooth interior surfaces. The diameter shall be not less than 4 inches nominal (100 mm) and the thickness shall be not less than 0.016 of an inch (0.406 mm). **504.4.2.1 Length Limitation**. Unless otherwise permitted or required by the dryer manufacturer's instructions and approved by the Authority Having Jurisdiction, domestic dryer moisture exhaust ducts shall not exceed a total combined horizontal and vertical length of 14 feet (4267 mm), including two 90 degree (1.57rad) elbows. A length of 2 feet (610 mm) shall be deducted for each 90 degree (1.57 rad) elbow in excess of two. **504.4.2.2 Transition Ducts**. Listed clothes dryer transition ducts not more than 6 feet (1829 mm) in length shall be permitted

to be used to connect the Type 1 dryer to the exhaust ducts. Transition ducts and flexible clothes dryer transition ducts shall not be concealed within construction, and shall be installed in accordance with the manufacturer's installation instructions. CHAPTER 6: DUCT SYSTEMS (See entire Chapter for additional information) 601.0 General.

601.1 Applicability. Ducts and plenums that are portions of a heating, cooling, absorption or evaporative cooling, or exhaust system shall comply with the requirements of this chapter and Chapter 5. **601.2 Sizing Requirements**. Duct systems shall be sized in accordance with applicable standards in Chapter 17, or by other approved methods. <u>Exception</u>: Residential duct system shall be sized in accordance with ACCA, Manuel D, ACCA Manual Zr, as applicable, or by other approved methods.

602.0 Material.
602.1 General. Materials used for duct system shall comply with Section 602.2 through Section 602.6 as applicable.
603.0 Installation of Ducts.

603.1 General. Air ducts shall be installed in accordance with this chapter and the installation instructions. **603.2 Under Floor or Crawl Space**. Air ducts installed under a floor in a crawl space shall be installed in accordance with the following:

Shall not prevent access to an area of the crawlspace.
 Where it is required to move under ducts for access to areas of the crawl space, a vertical clearance of not less than 18 inches (457 mm) shall be provided.

605.0 Insulation of Ducts.
605.1 General. Air ducts conveying air at temperatures exceeding 140°F (60°C) shall be insulated to maintain an insulation surface temperature of not more than 140°F (60°C). Factory-made air ducts and insulations intended for installation on the exterior of ducts shall be legibly printed with the name of the manufacturer, the thermal resistance (R) value at installed thickness, flame-spread index and smoke developed index of the composite material. Internal duct liners and insulation shall be installed in accordance with SMACNA HVAC Duct Construction Standards-Metal and Flexible. [OSHPD 1, 2, 3 & 4] Cold air ducts shall be insulated wherever necessary or to prevent condensation. See Exceptions.
606.1 Smoke Dampers. Smoke dampers shall comply with UL 555S, and shall be installed in accordance with the manufacturer's

installation instructions where required by the building code. 606.2 Fire Dampers. Fire dampers shall comply with UL 555, and shall be installed in accordance with the manufacturer's installation instructions where required by the building code. Fire dampers shall have been tested for closure under airflow conditions and shall be labeled for both maximum airflow permitted and direction of flow. Where more than one damper is installed at a point in a single air path, the entire airflow shall be assumed to be passing through the smallest damper area. Ductwork shall be connected to damper sleeves or assemblies in accordance with the fire damper manufacturer's installation instructions. 608.0 Use of Under-Floor Space as Supply Plenum for Dwelling Units.

608.1 General. An under-floor space shall be permitted to be used as a supply plenum.
608.2 Dwelling Units. The use of under-floor space shall be limited to dwelling units not more than two stories in height. Except for the floor immediately above the under-floor plenum, supply ducts shall be provided extending from the plenum to registers on

other floor levels. <u>Exception</u>: In flood hazard areas, under-floor spaces shall not be used as supply plenums unless the flood opening requirements in the building code are met. 608.3 Enclosed. Such spaces shall be cleaned of all loose combustible scrap material and shall be tightly enclosed. 608.4 Flammable Materials. The enclosing material of the under-floor space, including the sidewall insulation, shall be not more flammable than 1 inch (25.4 mm) (nominal) wood boards (flame-spread index of 200). Installation of foam plastics is regulated by

the building code. **608.5 Access**. Access shall be through an opening in the floor and shall be not less than 24 inches by 24 inches (610 mm by 610 mm). **608.6 Automatic Control**. A furnace supplying warm air to under-floor space shall be equipped with an automatic control that will start the air-circulating fan where the air in the furnace bonnet reaches a temperature not exceeding 150°F (66°C). Such control shall be one that cannot be set to exceed 150°F (66°C).

608.7 Temperature Limit. A furnace supplying warm air to such space shall be equipped with an approved temperature limit control that will limit outlet air temperature to 200°F (93°C).
608.9 Floor Registers. Floor registers shall be designed for easy removal in order to give access for cleaning the receptacles.
CHAPTER 7: COMBUSTION AIR (See entire Chapter for additional information)

701.0 General. **701.1 Applicability**. Air for combustion, ventilation, and dilution of flue gases for appliances installed in buildings shall be obtained by application of one of the methods covered in Section 701.4 through Section 701.9.3. Where the requirements of Section 701.4 are not met, outdoor air shall be introduced in accordance with methods covered in Section 701.6 through Section 701.9.3. *Exceptions:* (1) This provision shall not apply to direct-vent appliances. (2) Type1 clothes dryers that are provided with make up air

in accordance with Section 504.4.1 [NFPA 54:9.3.1.1] **701.3 Makeup Air**. Where exhaust clothes dryers, and kitchen ventilation interfere with the operation of appliances, makeup air shall be provided. [NFPA 54:9.3.1.5] **701.4 Indoor Combustion Air**. The required volume of indoor air shall be determined in accordance with the method in Section 701.4.2, that where the air infiltration rate is known to be less than 0.40 *ACH* (air change per hour), the method in Section 701.4.2 shall be used. The total required volume shall be the sum of the required volume calculated for appliances.

in Section 701.4.2 shall be used. The total required volume shall be the sum of the required volume calculated for appliances located within the space. Rooms communicating directly with the space in which the appliances are installed through openings not furnished with doors, and through combustion air openings sized and located in accordance with Section 701 are considered a part of the required volume. [NFPA54:9.3.2] 701.5 Indoor Opening Size and Location. Openings used to connect indoor spaces shall be sized and located in accordance

(1) Combining spaces on the same story. Each openings used to connect indoor spaces shall be sized and located in accordance with the following:
 (1) Combining spaces on the same story. Each opening shall have a minimum free area of one square inch per 1000 Btu/h (0.002 m2/kW) of the total input rating of all appliances in the space, but not less than 100 inches (0.065 m2). One permanent opening shell commands with in 12 inches (305 mm) of the top of the enclosure, and one permanent opening shell commence within 12 inches (305 mm) of the bottom of the enclosure (see Figure 701.5). The minimum dimension of the part of the

air openings shall not be less than 3 inches (76 mm)
(2) Combining spaces in different stories. The volumes of spaces in different stories shall be considered as communicating spaces where such spaces are connected by one or more permanent openings indoors or floors, having a total minimum free area of 2 square inches per 1000 Btu/h (0.004 m2/kW) of total input rating of all appliances [NFPA 54:9.3.2.3]
701.6 Outdoor Combustion Air. Outdoor combustion air shall be provided through opening(s) to the outdoors in accordance with the methods in Section 701.6.1 or Section 701.6.2. The minimum dimension of air openings shall be not less than 3 inches (76

INFPA 54:9.3.3]
 701.6.1 Two Permanent Openings Method. Two permanent openings, one commencing within 12 inches (305 mm) of the top of the enclosure and one commencing) within 12 inches (305 mm) of the bottom of the enclosure, shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors as follows:

 (1) Where directly communicating with the outdoors or where communicating to the outdoors through vertical ducts, each

opening shall have a minimum free area of 1 square inch per 4000Btu/h (0.0005 m2/kW) of total input rating of appliances in the enclosure. [See Figure 701.6.1(1) and Figure 701.6.1(2)]
(2) Where communicating with the outdoors through horizontal ducts, each opening shall have a minimum free area of not less than 1 square inch per 2000 Btu/h (0.001 m2/kW) of total input rating of appliances in the enclosure. [See Figure 701.6.1(3)] [NFPA 54:9.3.3.1]

701.6.2 One Permanent Opening Method. One permanent opening, commencing within 12 inches (305 mm) of the top of the enclosure, shall be provided. The appliance shall have clearances of not less than 1 inch (25.4 mm) from the sides and back and 6 inches (152 mm) from the front of the appliance. The opening shall directly communicate with the outdoors or shall communicate through a vertical or horizontal duct to the outdoors or spaces that freely communicate with the outdoors (see Figure 701.6.2) and shall have a free area not less than the following:

(1) One square inch per 3000 Btu/h (0.0007 m2/kW) of the total input rating of appliances located in the enclosure.
 (2) Not less than the sum of the areas of vent connectors in the space. [NFPA 54:9.3.3.2]

701.7 Combination Indoor and Outdoor Combustion Air. The use of a combination of indoor and outdoor combustion air shall be in accordance with Section 701.7.1 through Section 701.7.3. (See Appendix F for example calculations) [NFPA 54:9.3.4]

701.9 Mechanical Combustion Air Supply. Where all combustion air is provided by a mechanical air supply system, the combustion air shall be supplied from outdoors at the minimum rate of not less than 0.35 cubic feet per minute per 1000 Btu/h [0.034 (m3/min)/kW] for appliances located within the space. [NFPA 54:9.3.6]
701.10 Louvers, and Screens. The required size of openings for combustion, ventilation, and dilution air shall be based on the net free area of each opening. Where the free area through a design of louver, grille, or screen is known, it shall be used in calculating the size opening required to provide the free area aspecified. Where the louver and grille design and free area are not known, it shall be assumed that wood louvers have 25 percent free area and metal louvers and grilles have 75 percent free area. Non motorized louvers and grilles shall be fixed in the open position. [NFPA 54:9.3.7.1]
701.10.1 Minimum Screen Mesh Size. Screens shall not be smaller than 1/4 of an inch (6.4 mm) mesh. [NFPA 54:9.3.7.2]
701.10.2 Motorized Louvers. Motorized louvers shall be interlocked with the appliance so they are proven in the full open

CHAPTER 8: CHIMNEYS and VENTS (See entire Chapter for additional information)
 801.0 General.

801.1 Applicability. The requirements of this govern the venting of fuel-burning appliances.
801.2 Venting of Gas Appliances. Low-heat and medium-heat gas appliances shall be vented in accordance with this chapter. Other gas appliances shall be vented in accordance with NFPA 211 or other applicable standards.
802.0 Venting of Appliances.
802.1 Listing. Type B and Type B-W gas vents shall comply with UL 441, Type L gas vents shall comply with UL 641.

802.1.1 Installation. Listed vents shall be installed in accordance with this chapter and the manufacturer's installation instructions. [NFPA 54:12.2.1]
 802.1.2 Prohibited Discharge. Appliance vents shall not discharge into a space enclosed by screens having openings less

than 1/4 of an inch (6.4 mm) mesh. 802.3 Minimum Safe Performance. Venting systems shall be designed and constructed to convey all flue and vent gases to the outdoors. [NFPA 54:12.1] 802.3.1 Appliance Draft Requirements. A venting system shall satisfy the draft requirements of the appliance in accordance with the manufacturer's instructions. [NFPA 54:12.4.1]

with the manufacturer's instructions. [NFPA 54:12:4:1] 802.3.2 Appliance Venting Requirements. Appliances required to be vented shall be connected to a venting system designed and installed in accordance with the provisions of Section 802.4 through Section 802.15. [NFPA 54:12.4.2] 802.3.3 Mechanical Draft Systems. Mechanical draft systems shall be listed in accordance with UL 378 and installed in accordance with both the appliance and the mechanical draft system manufacturer's installation instructions. [NFPA 54:12.4.3.1]

802.5 Masonry, Metal, and Factory-Built Chimneys. Chimneys shall be installed in accordance with Section 802.5.1 through Section 802.5.3.
 802.5.1 Factory-Built Chimneys. Factory-built chimneys shall be installed in accordance with UL 103, UL 959, or UL 2561. Factory-built chimneys shall be installed in accordance with the manufacturer's installation instructions. Factory-built chimneys used to vent appliances that operate at positive vent pressure shall be listed for such application. [NFPA 54:12.6.1.1]

used to Vent applicates that operate at positive Vent pressure shall be listed for such application. [NFPA 54:12.0.1.1]
 802.5.1.1 Decorative Shrouds. Decorative shrouds addressed in Section 802.5.4.3 shall be listed or labeled in accordance with UL 103 for factory-built residential chimneys, UL 127 for factory-built fireplaces, or UL 1482 for solid-fuel room heaters.
 802.5.1.2 Listing Requirements. Factory-built chimneys shall comply with the requirements of UL 103 or UL 959. Factory-built chimneys for use with wood-burning appliances shall comply with the Type HT requirements of UL 103.

[NFPA 21 1:6.1.3.1, 6.1.3.2]
802.5.2 Metal Chimneys. Metal chimneys shall be built and installed in accordance with NFPA 211, [NFPA 54:12.6.1.2]
802.5.4 Termination. A chimney for a residential-type or low-heat appliance shall extend not less than 3 feet (914 mm) above the highest point where it passes through a roof of a building and not less than 2 feet (610 mm) higher than a portion of a building within a horizontal distance of 10 feet (3048 mm). (See Figure 802.5.4) [NFPA 54:12.6.2.1]

802.5.4.1 Medium-Heat Gas Appliances. A chimney for a medium-heat appliance shall extend not less than 10 feet (3048 mm) above a portion of a building within 25 feet (7620 mm). [NFPA 54:12.6.2.2]
802.5.4.2 Chimney Height. A chimney shall extend at least 5 feet (1524 mm) above the highest connected appliance draft hood outlet or flue collar. [NFPA 54:12.6.2.3]
802.5.4.3 Decorative Shrouds. Decorative shrouds shall not be installed at the termination of factory-built chimneys except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed

in accordance with the manufacturer's installation instructions. [NFPA 54:12.6.2.4]
802.6 Gas Vents. The installation of gas vents shall meet the following requirements:
(1) Gas vents shall be installed in accordance with the manufacturer's installation instructions.

 (2) A Type B-W gas vent shall have a listed capacity not less than that of the listed vented wall furnace to which it is connected.
 (3) Gas vents installed within masonry chimneys shall be installed in accordance with the manufacture's installation instructions. Gas vents installed within masonry chimneys shall be identified with a permanent label installed at the point where the vent enters the chimney. The label shall contain the following language: "This gas vent is for appliances that burn gas. Do not

connect to solid or liquid-fuel burning appliances, or incinerators."
(4) Screws, rivets, and other fasteners shall not penetrate the inner wall of double-wall gas vent, except at the transition from the appliance draft hood outlet, flue collar, or single-wall metal connector to a double wall vent. [NFPA 54:12.7.2]

- 802.6.1 Gas Vent Termination. The termination of gas vents shall comply with the following requirements:(a) Gas vents that are 12 inches (305 mm) or less in size and located not less than 8 feet (2438 mm) from a vertical wall or
- similar obstruction shall terminate above the roof in accordance with Figure 802.6.1 and Table 802.6.1.(b) Gas vents that are over 12 inches (305 mm) in size or are located less than 8 feet (2438 mm) from a vertical wall or similar obstruction shall terminate not less than 2 feet (610 mm) above the highest point where they pass through the roof
- and not less than 2 feet (610 mm) above a portion of a building within 10 feet (3048 mm) horizontally. (c) Industrial appliances provided in Section 802.2.5.
- (d) Direct-vent systems as provided in Section 802.2.6.(e) Appliance with integral vents as provided in Section 802.2.7.
- (f) Mechanical draft systems as provided in Section 802.3.3 through Section 802.3.3.5.
 (g) Ventilating hoods and exhaust systems as provided in Section 802.3.4.
- **802.6.3 Gas Vents Serving Appliances on More than One Floor**. A common vent shall be permitted in multi-story installations to vent Category I appliances located on more than one floor level, provided the venting system is designed and installed in accordance with approved engineering methods. For the purpose of this section, crawl spaces, basements, and attics shall be considered as floor levels. [NFPA 54-12:12.7.4.1]
- 802.6.4 Support of Gas Vents. Gas vents shall be supported and spaced in accordance with the manufacturer's installation instructions. [NFPA 54:12.7.5]
- CHAPTER 9: INSTALLATION OF SPECIFIC APPLIANCES (See entire Chapter for additional information) 901.0 General.
- **901.1 Applicability**. This chapter addresses requirements for the design, construction, and installation of specific appliances. In addition to the requirements of this chapter, appliances shall comply with the general requirements of Chapter 3. **904.0 Central Heating Boilers and Furnaces**.
- 904.1 Location. Central heating furnace and low-pressure boiler installations in bedrooms or bathrooms shall comply with one of the following:
 (1) Central heating furnaces and low-pressure boilers shall be permitted to be installed in a closet located in the bedroom or bathroom, provided the closet is equipped with a listed, gasketed door assembly and a listed, self-closing device. The self-closing door assembly shall comply with the requirements of Section 904.1.1. The door assembly shall be installed with a
- threshold and bottom door seal and shall comply with the requirements of Section 904.1.2. Combustion air for such installations shall be obtained from the outdoors. The closet shall be for the exclusive use of the central heating furnace or low-pressure boiler.
 (2) Central heating furnaces and low-pressure boilers shall be of the direct-vent [NFPA 54:10.3.1(2)]
 904.1.1 Self-Closing Doors. Self-closing doors shall swing easily and freely, and shall be equipped with a self-closing device to cause the door to close and latch each time it is opened. The closing mechanism shall not have a hold-open feature.
- **904.1.2 Gasketing**. Gasketing on doors or frames shall be furnished only in accordance with the published listings of the door, frame, or gasketing material manufacturer. [NFPA 80:6.4.8] Exception: Where acceptable to the Authority Having Jurisdiction, gasketing of noncombustible or limited-combustible material (see NFPA 220) shall be permitted to be applied to the provided closing and latching of the door are not inhibited.
- 904.2 Clearance. Central heating furnaces and low-pressure boilers shall be provided with clearances in accordance with Section 904.2.1 through Section 904.2.7.
 904.2.1 Listed Units. Listed central heating furnaces and low-pressure boilers shall be installed with clearances in accordance with the terms of their listings and the manufacturer's installation instructions. INFPA 54-12:10.3.2.11
- 904.2.2 Unlisted Units. Unlisted central-heating furnaces and low pressure boilers shall be installed with clearances from combustible material not less than those specified in Table 904.2. [NFPA 54:10.3.2.2]
 904.2.3 Listed and Unlisted Units. Listed and unlisted central heating furnaces and low-pressure boilers shall be permitted to be installed with reduced clearances to combustible material provided that the combustible material or appliance is protected in accordance with Table 303.10.1 and Figure 303.10.1(1) through Figure 303. 10.1(3), and such reduction is
- allowed by the manufacturer's installation instructions. [NFPA 54:10.3.2.3] 904.2.4 Front Clearance. Front clearance shall be sufficient for servicing the burner and the furnace or boiler. [NFPA 54:10.3.2.4] 904.2.5 Adjacent to Plaster. Where the furnace plenum is adjacent to plaster on metal lath or noncombustible material
- 904.2.5 Adjacent to Plaster. Where the furnace plenum is adjacent to plaster on metal latit or noncombustible material attached to combustible material, the clearance shall be measured to the surface of the plaster or other noncombustible finish where the clearance specified is 2 inches (51 mm) or less. [NFPA 54:10.3.2.5]
 904.2.6 Interference. The clearance to these appliances shall not interfere with combustion air, draft hood clearance and
- relief, and accessibility for servicing. [NFPA 54:10.3.2.6] 904.2.7 Central Heating Furnaces. Central heating furnaces other than those listed in Section 603.13.2 or Section 603.13.3 shall have clearances from the supply ducts of not less than 18 inches (457 mm) from the furnace plenum for the first 3 feet (914 mm), then 6 inches (152 mm) for the next 3 feet (914 mm) and 1 inch (25.4 mm) beyond 6 feet (1829 mm).
- **904.3 Assembly and Installation**. A central-heating boiler or furnace shall be installed in accordance with the manufacturer's installation instructions in one of the following manners: (1) On a floor of noncombustible construction with noncombustible flooring and surface finish and with no combustible material

against the underside thereof. (2) On fire-resistive slabs or arches having no combustible material against the underside thereof. Exceptions:

Appliances listed for installation on a combustible floor.
 Installation on a floor protected in an approved manner. [NFPA 54:10.3.3]

[NFPA 54:10.3.2.9]

- 904.3.1 Under-Floor Installation. Furnaces installed in and under-floor area of the building shall be in accordance with the Section 904.3.1.1 through Section 904.3.1.3.
 904.9 Furnace (Upright and Horizontal). Upright furnaces shall be permitted to be installed in an attic, furred, or underfloor space exceeding 5 feet (1524 mm) in height, provided the required listings and furnace and duct clearances are observed. Horizontal be permitted to be installed in an attic, clearances are observed. Horizontal duct clearances are observed.
 904.10 Solid-Fuel Furnaces. Factory-built solid-fuel furnaces shall comply with UL 391 and shall be installed in accordance with
- the manufacturer's installation instructions. 904.13 Electric Central Furnaces. Electric central heating furnaces shall comply with UL 1995 or UL 60335-2-40 and shall be installed in accordance with the manufacturer's installation instructions. 908.0 Clothes Dryers.
- 908.1 Electric Clothes Dryers. Commercial electric clothes dryers shall comply with UL 1240 and installed in accordance with the manufacturer's installation instructions. Residential and coin-operated electric clothes dryers shall comply with UL 2158 and installed in accordance with the manufacturer's installation instructions.
 908.2 Gas-Fired Clothes Dryers. Gas-fired clothes dryers shall comply with Section 908.2.1 through Section 908.2.3.
 912.0 Gas Fireplaces, Vented.
- 912.1 Reserved.
 912.2 Installation. The installation of vented gas fireplaces shall comply with the following requirements:

 (1) (HCD1 & HCD2) Any newly installed gas fireplace shall be a direct-vent sealed-combustion type.
- (HCD1 & HCD2) Any newly installed gas fireplace shall be a direct-vent sealed-combustion type.
 (2) Listed vented gas fireplaces shall be installed in accordance with their listing and the manufacturer's installation instructions and where installed in or attached to combustible material shall be specifically listed for such installation.
 (3) Unlisted vented gas fireplaces shall not be installed in or attached to combustible material. They shall have a clearance at the sides and rear of not less than 18 inches (457 mm). Combustible floors under unlisted vented gas fireplaces shall be protected in an approved maimer. Unlisted appliances of other than the direct-vent type shall be equipped with a draft
- hood and shall be vented in accordance with Section 802.0. Appliances that use metal, asbestos, or ceramic material to direct radiation to the front of the appliance shall have a clearance of 36 inches (914 mm) in front and, where constructed with a double back of metal or ceramic, shall be installed with a clearance of not less than 18 inches (457 mm) at the sides and 12 inches (305 mm) at the rear.
- (4) Panels, grilles, and access doors that are required to be removed for normal servicing operations shall not be attached to the building.
 (5) Direct-vent gas fireplaces shall be installed with the vent-air intake terminal in the outdoors and in accordance with the manufacturer's installation instructions.
- manufacturer's installation instructions. 912.3 Combustion and Circulating Air. Combustion and circulating air shall be provided in accordance with Section 701.0. [NFPA 54:10.7.3] 913.0 Factory-Built Fireplaces and Fireplace Stoves.

913.0 Factory-Built Fireplaces and Fireplace Stoves. 913.1 Factory-Built Fireplaces. Factory-built fireplaces shall comply with UL 127 and installed in accordance with the

manufacturer's installation instructions.
913.1.1 Gasketed Fireplace Doors. A gasketed fireplace door shall not be installed on a factory-built fireplace, except where the fireplace system has been tested in accordance with UL 127.
913.2 Fireplace Stoves. Fireplace stoves shall comply with UL 737 and installed in accordance with the manufacturer's installation instructions.
913.3 Fireplace Accessories. Heat exchangers, glass doors assemblies, combustion air vents, and termination caps shall

- comply with UL 907 and installed in accordance with the manufacturer's installation instructions.
 920.0 Household Cooking Appliances.
 920.1 Electric Household Cooking Appliances. Electric household cooking appliances designed for permanent installations shall be installed in accordance with the manufacturer's installation instructions. Household electric ranges shall comply with UL 858.
- 921.2 Gas-Fired Household Cooking Appliances. Gas-fired household cooking appliances shall comply with Section 921.3 though Section 921.4.4.
 920.3 Floor-Mounted Units. Floor mounted units shall be installed in accordance with Section 921.3.1 and Section 921.3.2.
 920.3.1 Clearance from Combustible Material. The clearances specified as follows shall not interfere with combustion air, accessibility for operation, and servicing:
- Listed floor-mounted household cooking appliances, where installed on combustible floors, shall be set on their own bases or and shall be installed in accordance with their listing and the manufacturer's installation instructions.
- (2) Listed household cooking appliances with listed gas room heater sections shall be installed so that the warm air discharge side shall have a clearance of not less than 18 inches (457 mm) from adjacent combustible material. A clearance of not
- less than 36 inches (914 mm) shall be provided between the top of the heater section and the bottom of cabinets.
 (3) Listed household cooking appliances that include a solid or liquid fuel-burning section shall be spaced from combustible material and otherwise installed in accordance with their listing and the manufacturer's installation instructions for the supplementary fuel section of the appliance.
- supplementary fuel section of the appliance.
 (4) Unlisted floor-mounted household cooking appliances shall be installed with not less than 6 inches (152 mm) clearance at the back and sides to combustible material. Combustible floors under unlisted appliances shall be protected in an approved manner. [NFPA 54:10.15.1.1]
- **920.3.2 Vertical Clearance Above Cooking Top**. Household cooking appliances shall have a vertical clearance above the cooking top of not less than 30 inches (762 mm) to combustible material or metal cabinets. A minimum clearance of 24 inches (610 mm) is permitted where one of the following is installed:
- The underside of the combustible material or metal cabinet above the cooking top is protected with not less than1/4 of an inch (6.4 mm) insulating millboard covered with sheet metal not less than 0.0122 of an inch (0.3099 mm) thick.
 A metal ventilating hood of sheet metal not less than 0.0122 of an inch (0.3099 mm) thick is installed above the cooking top with a clearance of not less than 1/4 of an inch (6.4 mm) between the hood and the underside of the combustible
- material or metal cabinet, and the hood is as wide as the appliance and is centered over the appliance.
 (3) A listed cooking appliance or microwave oven installed over a listed appliance shall be in accordance with the terms of the upper appliance's listing and the manufacturer's installation instructions. Microwave ovens shall comply with UL 923.
 920.4 Built-In Units. Built-in units shall be installed in accordance with Section 921.4.1 through Section 921.4.4.
 920.4.1 Installation. Listed built-in household cooking appliances shall be installed in accordance with their listing and the
- manufacturer's installation instructions. The installation shall not interfere with combustion air, accessibility for operation, and servicing. Unlisted built-in household cooking appliances shall not be installed in or adjacent to combustible material.
 [NFPA54:10.15.2.1]
 920.4.2 Vertical Clearance. Built-in top (or surface) cooking appliances shall have a vertical clearance above the cooking top
- of not less than 30 inches (762 mm) to combustible material or metal cabinets. A clearance of not less than 24 inches (610 mm) is permitted where one of the following is installed: (1) The underside of the combustible material or metal cabinet above the cooking top is protected with not less than 1/4 of an
- inch (6.4 mm) insulating millboard covered with sheet metal not less than 0.0122 of an inch (0.3099 mm) thick.(2) A metal ventilating hood of sheet metal not less than 0.0122 of an inch (0.3099 mm) thick is installed above the cooking
- top with a clearance of not less than 1/4 of an inch (6.4 mm) between the hood and the underside of the combustible material or metal cabinet and the hood not less than the width of the appliance and is centered over the appliance.
 (3) A listed appliance or microwave oven installed over a listed cooking appliance shall be in accordance with the terms of
- (3) A listed appliance of microwave over installed over a listed cooking appliance shall be in accordance with the terms of the upper appliance listing and the manufacturer's installation instructions. [NFPA 54:10.15.2.2]
 920.4.3 Level Installation. Built-in household cooking appliances shall be installed so that the cooking top, broiler pan, or
- oven racks are level. [NFPA 54:10.15.2.4] 928.0 Refrigerators.
- **928.1 Clearance**. Refrigerators shall be provided with clearances for ventilation at the top and back in accordance with the manufacturer's instructions. Where such instructions are not available, not less than 2 inches (51 mm) shall be provided between the back of the refrigerator and the wall and not less than 12 inches (305 mm) above the top. [NFPA 54: 10.22.1]

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2022 CALIFORNIA PLUMBING CODE:

For a complete description of any and all plumbing code requirements, it is strongly recommended for a copy of the California Plumbing Code (Current Edition Enforced) to be readily available for review and reference at all times during construction. CHAPTER 3: GENERAL REGULATIONS (See entire Chapter for additional information)

301.0 Materials - Standards and Alternates. 301.2 Minimum Standards. Pipe, pipe fittings, traps, fixtures, material, and devices used in a plumbing system shall be listed of labeled (third-party certified) by a listing agency (accredited conformity assessment body) and shall comply with the approved applicable recognized standards referenced in this code, and shall be free from defects. Unless otherwise provided for in this code, materials, fixtures, or devices used or entering into the construction of plumbing systems, or parts thereof, shall be bmitted to the Authority Having Jurisdiction for approval.

301.2.1 Marking. Each length of pipe and each pipe fitting, trap, fixture, material, and device used in a plumbing system shall have cast, stamped, or indelibly marked on it the manufacturer's mark or name, which shall readily identify the manufacturer to the end user of the product. Where required by the approved standard that applies, the product shall be marked with the weight and the quality of the product. Materials and devices used or entering into the construction of plumbing and drainage systems or parts thereof shall be marked and identified in a manner satisfactory to the Authority Having Jurisdiction Such marking shall be done by the manufacturer. Field markings shall not be acceptable. tion: Markings shall not be required on nipples created from cutting and threading of approved pipe.

301.2.2 Standards. Standards listed or referred to in this chapter or other chapters cover materials that will conform to the requirements of this code, where used in accordance with the limitations imposed in this or other chapters thereof and their listing. Where a standard covers materials of various grades, weights, quality, or configurations, the portion of the listed standard that is applicable shall be used. Design and materials for special conditions or materials not provided for herein shall be permitted to be used by special permission of the Authority Having Jurisdiction after the Authority Having Jurisdiction has been satisfied as to their adequacy. A list of plumbing standards that appear in specific sections of this code is referenced in Table 1701.1. Standards referenced in Table 1701.1 shall be applied as indicated in the applicable referenced section. A list of additional approve standards, publications, practices, and guides that are not referenced in specific sections of this code appear in table 1701.2. An IAPMO Installation Standard is referenced in Appendix I for the convenience of the users of this code. It is not considered as a part of this code, and less formally adopted as such by the Authority Having Jurisdiction. 303.0 Disposal of Liquid Waste. 303.1 General. It shall be unlawful for a person to cause, suffer or permit the disposal of sewage, human excrement, or other

liquid wastes, in a place or manner, except through and by means of an approved drainage system, installed and maintained in accordance with the provisions of this code. 304.0 Connections to Plumbing System Required 304.1 General. Plumbing fixtures, drains, appurtenances, and appliances, used to receive or discharge liquid wastes or sewage

shall be connected properly to the drainage system of the building or premises, in accordance with the requirements of this code. 305.0 Damage to Drainage System or Public Sewer 305.1 Unlawful Practices. It shall be unlawful for a person to deposit, by any means whatsoever, into a plumbing fixture, floor drain, interceptor, sump, receptor, or device, which is connected to a drainage system, public sewer, private sewer, septic tank, or cesspool, any ashes, cinders, solids, rags, inflammable, poisonous, or explosive liquids or gases, oils, grease; or any other thing whatsoever that is capable of causing damage to the drainage system or public sewer.

307.0 Location. 307.1 System. Except as otherwise provided in this code, no plumbing system, drainage system, building sewer, private sewage disposal system, or parts thereof shall be located in a lot other than the lot that is the site of the building, structure, or premises served by such facilities

CHAPTER 4: PLUMBING FIXTURES and FIXTURE SETTINGS (See entire Chapter for additional information) 401.2 Quality of Fixtures. Plumbing fixtures shall be constructed of dense, durable, non-absorbent materials and shall have smooth, impervious surfaces, free from unnecessary concealed fouling surfaces. Except as permitted elsewhere in this code, fixtures shall comply with the quality and design of nationally recognized applicable standards referenced in Table 1701.1. 402.1 Cleaning. Plumbing fixtures shall be installed in a manner to afford easy access for repairs and cleaning. Pipes from fixtures shall be run to the nearest wall 402.2 Joints. Where a fixture comes in contact with the wall or floor, the joint between the fixture and the wall or floor shall be

402.3 Securing Fixtures. Floor-outlet or floor-mounted fixtures shall be rigidly secured to the drainage connection and to the floor, where so designed, by screws or bolts of copper, copper alloy, or other equally corrosion-resistant material. **402.4 Wall-Hung Fixtures**. Wall-hung fixtures shall be rigidly supported by metal supporting members so that no strain is transmitted to the connections. Flush tanks and similar appurtenances shall be secured by approved non-corrosive screws or

402.5 Setting. Fixtures shall be set level and in proper alignment with reference to adjacent walls. No water closet or bidet shall be set closer than 15 inches (381 mm) from its center to a side wall or obstruction nor closer than 30 inches (762 mm) center to center to a similar fixture. The clear space in front of a water closet, lavatory, or bidet shall be not less than 24 inches (610 mm).

No urinal shall be set closer than 12 inches (305 mm) from its center to a side wall or partition nor closer than 24 inches (610 mm) center to center. Exception: The installation of paper dispensers or accessibility grab bars shall not be considered obstructions. 402.7 Supply Fittings. The supply lines and fittings for every plumbing fixture shall be so installed as to prevent back-flow in accordance with Chapter 6.

402.8 Installation. Fixtures shall be installed in accordance with the manufacturer's installation instructions. 402.9 Design and Installation of Plumbing Fixtures. Plumbing fixtures shall be installed such that fixture fittings shall be in accordance with the back-flow prevention requirements of ASMEA112.18. 1/CSAB125.1. These requirements shall not be compromised by the designated fixture fitting mounting surface. 402.11 Future Fixtures. Where provisions are made for the future installation of fixtures, those provided for shall be (considered

in determining the required sizes of drain and water supply piping. Construction for future installations shall be terminated with a plugged fitting or fittings. Where the plugged fitting is at the point where the trap of a fixture is installed, the plumbing system for such fixture shall be complete and be in accordance with the plumbing requirements of this code. 404.0 Waste Fittings and Overflows 404.1 Waste Fittings. Waste fittings shell comply with ASME A112.1.8.2/CSA B125.2, ASTM F409 or Table 701.2 for above

ground drainage piping and fittings. 404.2 Overflows. Where a fixture is provided with an overflow, the waste shall be so arranged that the standing water in the fixture shall not rise in the overflow where the stopper is closed or remain in the overflow where the fixture is empty. The overflow pipe from a fixture shall be connected on the house or inlet side of the fixture trap, except that overflow on flush tanks shall be permitted to discharge into the water closets or urinals served by them, but it shall be unlawful to connect such overflows with any other part of the drainage system.

407.1 Application. Lavatories shall comply with ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/ CSA B45.4, ASME A112.19.12, CSA B45.5/IAPMO Z124, CSA B45.8/IAMPO Z403, CSA B45.8/IAPMO Z401 or CSA B45.12/ 407.2 Water Consumption. The maximum water flow rate of faucets shall comply with Section 407.2.1 through Section 407.2.2.1.

407.2.1 Maximum Flow Rate. The maximum flow rate for public lavatory faucets shall not exceed 0.5 gpm at 60 psi (1.9 L/m at 414 kPa) 407.2.1.1 Kitchen Faucets, [HCD 1] The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons (6.81 L) per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons (8.32 L) per minute at 60psi, and must default to a maximum flow rate of 1.8 gallons (6.81 L) per minute at 60 psi. Note: Where faucets meeting the maximum flow rate of 1.8 gpm (6.81 L) are unavailable, aerators or other means may be sed to achieve reduction 407.2.1.2 Residential Lavatory Faucets, [HCD 1] The maximum flow rate of residential lavatory faucets shall not exceed

1.2 gallons (4.54 L) per minute at 60 psi. The minimum flow rate of residential lavatory faucets shall not be less than 0.8 allons (3.03 L) per minute at 20 ps 407.5 Waste Outlet. Lavatories shall have a waste outlet and fixture tailpiece not less than 1-1/4 inches (32 mm) in diameter. Continuous wastes and fixture tailpieces shall be constructed from the materials specified in Section 701.4. Waste outlets shall be provided with an approved stopper or strainer. 407.6 Overflow. Overflows shall be installed in accordance with Section 404.1.

408.0 Showers 408.1 Application. Manufactured shower receptors and shower bases shall comply with ASME A112.19. 1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, CSA B45.12/IAPMO Z402, or CSA B45.5/IAPMO Z124. Prefabricated shower enclosures shall comply with IAPMO IGC154

408.2 Water Consumption. [HCD 1] Shower-heads shall have a maximum flow rate of 1.8 gallons (6.81 L) per minute measured at 80 psi and must comply with Division 4.3 of the California Green Building Standards Code (CALGreen). 408.2.1 Single Shower-head, [BSC-CG] [DSA-SS & DSA-SS/CC] Shower-heads shall have a maximum flow rate of not more than 1.8 gallons (6.81 L) per minute at 80 psi. Shower-heads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Shower-heads in compliance with Chapter 5. Division 5.3, of the California Green Building Standards Code (CALGreen). 408.2.2 Multiple Shower-heads Serving One Shower, IBSC-CGI IDSA-SS & DSA-SS/CCI When a shower is served by

more than one shower-head, the combined flow rate of all shower-heads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons (6.81 L) per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time in compliance with Chapter 5, Division 5.3. of the California Green Building Standards Code (CALGreen). Note: A hand-held shower shall be considered a shower-head. 408.3 Individual Shower and Tub-Shower Combination Control Valves. Showers and tub-shower combinations shall be

provided with individual control valves of the pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valve type that provide scald and thermal shock protection for the rated flow rate of the installed shower head. These valves shall be installed at the point of use and in and comply with ASSE 1016/ASME A112.1016/CSA B125.16 or ASME A112.18.1/CSA 408.3.1 Gang Showers. Where gang showers are supplied with a single temperature-controlled water supply pipe, it shall be controlled by a mixing valve that complies with ASSE 1069.

408.3.2 Temperature Limiting. The maximum water temperature discharging from an individual shower head shall be limited to 120°F (49°C) by one of the following methods: (1) A shower or tub shower combination valve conforming to ASSE 1016/ASME A112.1016/CSA B125.16 where either: (a) The valve is field-adjusted to the required, maximum temperature, or

(b) The handle position, stop, or temperature limiting control is set in accordance with the manufacturer's instructions to the required maximum temperature (2) For gang showers supplied by a single water supply pipe, a mixing valve that conforms to ASSE 1069 that is field-

adjusted to the required maximum temperature. (3) A limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70 or CSA B125.3. (4) A water heater conforming to ASSE 1084.

(5) Temperature actuated, flow reduction, device conforming to ASSE 1062. 408.4 Waste Outlet. Showers shall have a waste outlet and fixture tailpiece not less than 2 inches (50 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in Section 701 .2 for drainage piping. Strainers serving shower drains shall have a waterway at least equivalent to the area of the tailpiece. 408.5 Finished Curb or Threshold. Where a shower receptor has a finished dam, curb, or threshold it shall be not less than 1 inch (25.4 mm) lower than the sides and back of such receptor. In no case shall a dam or threshold be less than 2 inches (5 mm) or exceeding 9 inches (229 mm) in depth where measured from the top of the dam or threshold to the top of the drain. Each such receptor shall be provided with an integral nailing flange to be located where the receptor meets the vertical surface of the finished interior of the shower compartment. The flange shall be watertight and extend vertically not less than 1 inch (25.4 mm) above the top of the sides of the receptor. The finished floor of the receptor shall slope uniformly from the sides towards the drain not less than 1/4 inch per foot (20.8 mm/m), nor more than 1/2 inch per foot (41.8 mm/m). Thresholds shall be of sufficient width to accommodate a minimum 22 inch (559 mm) door. Shower doors shall open so as to maintain not less than a 22 inch (559 mm) unobstructed opening for egress. The immediate adjoining space to showers without thresholds shall be considered a wet location and shall comply with the requirements of the California Building, California Residential and California Electrical Codes. **408.6 Shower Compartments**. Shower compartments, regardless of shape, shall have a minimum finished interior of 1024 square inches (0.6606 m2) and shall also be capable of encompassing a 30 inch (762 mm) circle. The minimum required area and

dimensions shall be measured at a height equal to the top of the threshold and at a point tangent to its centerline. The area and dimensions shall be maintained to a point of not less than 70 inches (1778 mm) above the shower drain outlet with no protrusions other than the fixture valve or shower head, soap dishes, shelves, and safety grab bars, or rails. Fold-down seats in accessible shower stalls shall be permitted to protrude into the 30 inch (762 mm) circle 1) Showers that are designed to comply with Chapter 11A of the California Building Code. (2) The minimum required area and dimension shall not apply for a shower receptor having overall. dimensions of not less than

30 inches (762 mm) in width and 60 inches (1524 mm) in length. 409.0 Bathtubs and Whirlpool Bathtubs. 409.1 Application. Bathtubs shall comply with ASME A112.19.1/CSA B45.2, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, or CSA B45.5/IAPMO Z124. Whirlpool bathtubs shall comply with ASME A112.19.7/CSA B45.10. Pressure sealed doors

within a bathtub or whirlpool bathtub enclosure shall comply with ASME A112.19.15. 409.2 Waste Outlet. Bathtubs and whirlpool bathtubs shall have a waste outlet and fixture tailpiece not less than 1-1/2 inches (40 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in Section 701.2 for drainage piping. Waste outlets shall be provided with an approved stopper or strainer. 409.3 Overflow. Overflows shall be installed in accordance with Section 404.1. 409.4 Limitation of Hot Water Temperature in Bathtubs and Whirlpool Bathtubs. The maximum hot water temperature

discharging from the bathtub and whirlpool bathtub filler shall be limited to 120°F (49°C). The maximum temperature shall be egulated by one of the following means:) A limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70 or CSA B125.3. (2) A water heater conforming to ASSE 1084.

409.5 Back-flow Protection. The water supply to a bathtub and whirlpool bathtub filler valve shall be protected by an air gap or in accordance with Section 417.0. 409.6 Installation and Access. Bathtubs and whirlpool bathtubs shall be installed in accordance with the manufacturer's installation instructions. Access openings shall be of size and opening to permit the removal and replacement of the circulation

pump. Whirlpool pump access located in the crawl space shall be located not more than 20 feet (6096 mm) from an access door, trap door, or crawl hole. The circulation pump shall be located above the crown weir of the trap. The pump and the circulation piping shall be self-draining to minimize water retention. Suction fittings on whirlpool bathtubs shall be listed in accordance with SME A112.19.7/CSAB45.10 409.6.1 Flexible PVC Hoses and Tubing. Flexible PVC hoses and tubing intended to be used on whirlpool bathtub water circulation systems or pneumatic systems shall be in accordance with IAPMO Z1033.

410.0 Bidets. 410.1 Application. Bidets shall comply with ASME A112.19.2/CSA B45.1 or ASME A112.19.3/CSA B45.4. 410.2 Back-flow Protection. The water supply to the bidet shall be protected by an air gap or in accordance with Section 603 3 2 Section 603 3 5 or Section 603 3 6

410.3 Limitation of Water Temperature in Bidets. The maximum hot water temperature discharging from a bidet shall be limited to 110°F (43°C). The maximum temperature shall be regulated by one of the following mea (1) A limiting device conforming to either ASSE 1070/ASME A112.1070/CSA B125.70 or CSA B125.3 (2) A water heater conforming to ASSE 1084.

411.0 Water Closets. 411.1 Application. Water closets shall comply with ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, or CSA B45.5/ IAPMO Z124. Water closet bowls for public use shall be of the elongated type. In nurseries, schools, and other similar places where plumbing fixtures are provided for the use of children less than 6 years of age, water closets shall be of a size and height uitable for children's use.

411.2 Water Consumption. The effective flush volume of all water closets shall not exceed 1.28 gallons (4.8 L) per flush when tested in accordance with ASME A112.19, 2/CSA B45.1 411.2.1 Dual Flush Water Closets. Dual flush water closets shall comply with ASME A112.19.14. The effective flush volume for dual flush water closets shall be defined as the composite, average flush volume of two reduced flushes and one full flush 411.2.2 Performance. [HCD 1 & HCD 2] Water closets installed shall meet or exceed the minimum performance criteria developed for certification of high-efficiency toilets under the Water Sense program sponsored by the U.S. Environmental

Protection Agency (EPA). 411.2.3 Flushometer Valve Activated Water Closets. Flushometer valve activated water closets shall have a maximum flush volume of 1.6 gallons (6.0 Lpf) of water per flush in accordance with ASME A112.19.2/CSAB45.1 411.2.3.1 Flushometer Valve Activated Water Closets. [BSC-CG] [DSA-SS & DSA-SS/CC] Flushometer valve activated water closets shall have a maximum flush volume of 1.28 gallons (4.8 Lpf per flush in accordance with ASME A112.19.2/ CSA B45.1

411.2.4 Water Closets. [BSC-CG] [DSA-SS & DSA-SS/CC] The effective flush volume of all water closets shall not exceed 1.28 gallons (4.8 L) per flush. Tank-type water closets shall he certified to the performance criteria of the U.S. EPA Water Sense Specification for Tank-Type Toilets in compliance with Chapter 5, Division 5.3. of the California Green Building Standards Code (CAL-Green). 411.3 Water Closet Seats. Water closet seats shall be properly sized for the water closet bowl type, and shall be of smooth, nonabsorbent material. Seats, for public use, shall be of the elongated type and either of the open front type or have an automatic

seat cover dispenser. Plastic seats shall comply with IAPMO Z124.5. 413.0 Flushing Devices. 413.1 Where Required. Each water closet, urinal, clinical sink, or other plumbing fixture that depends on trap siphonage to lischarge its waste contents shall be provided with a flushometer valve, flushometer tank, or flush tank designed and installed so as to supply water in sufficient quantity and rate of flow to flush the contents of the fixture to which it is connected, to cleanse the fixture, and to refill the fixture trap, without excessive water use. Flushing devices shall comply with the anti- siphon requirements accordance with Section 603.5. 413.2 Flushometer Valves. Flushometer valves and tanks shall comply with ASSE 1037 or CSA B125.3, and shall be installed in accordance with Section 603.5.1. No manually controlled flushometer valve shall be used to flush more than one urinal, and each such urinal flushometer valve shall be an approved, self-closing type discharging a predetermined quantity of water. Flushometers shall be installed so that they will be accessible for repair. Flushometer valves shall not be used where the water pressure is insufficient to properly operate them. Where the valve is operated, it shall complete the cycle of operation automatically, opening

fully, and closing positively under the line water pressure. Each flushometer shall be provided with a means for regulating the flow hrough it. [OSPHD 1,2, 3 & 4] Sensor operated flush valves shall he capable of functioning during loss of normal power. 413.3 Flush Tanks. Flush tanks for manual flushing shall be equipped with a flush valve in accordance with ASME A112.19.5/ CSAB45 15 or CSAB125 3 and an anti-siphon fill valve (ballcock) that is in accordance with ASSE 1002 or CSA B125 3 and installed in accordance with Section 603,5.2. 413.4 Water Supply for Flush Tanks. An adequate quantity of water shall be provided to flush and clean the fixture served. The water supply for flushing tanks and flushometer tanks equipped for manual flushing shall be controlled by a float valve or other automatic device designed to refill the tank after each discharge and to completely shut off the water flow to the tank where the

tank is filled to operational capacity. Provision shall be made to automatically supply water to the fixture so as to refill the trap seal after each flushing 413.5 Overflows in Flush Tanks. Flush tanks shall be provided with overflows discharging into the water closet or urinal connected thereto. Overflows supplied as original parts with the fixture shall be of sufficient size to prevent tank flooding at the naximum rate at which the tank is supplied with water under normal operating conditions and where installed in accordance with the manufacturer's installation instructions. 414.0 Dishwashing Machines.

414.1 Application. Domestic dishwashing machines shall comply with UL 749. Commercial dishwashing machines shall comply with NSF 3 and UL 921. 414.2 Back-flow Protection. The water supply connection to a commercial dishwashing machine shall be protected by an air gap or a back-flow prevention device in accordance with Section 603.3.2, Section 603.3.5, Section 603.3.6, or ASSE 1004. 414.3 Drainage Connection. Domestic dishwashing 415.0 machines shall discharge indirectly through an air gap fitting 415.1 in accordance with Section 807.3 into a waste receptor, a wye

branch fitting on the tailpiece of a kitchen sink, or dishwasher I connection of a food waste disposer. Commercial dishwashing machines shall discharge indirectly through an air gap or direct connection in accordance with Section 704.3 with floor drain 417.0 Faucets and Fixture Fittings.

417.1 Application. Faucets and fixture fittings shall comply with ASME A112.18.1/CSA B125.1. Fixture fittings covered under the scope of NSF 61 shall be in accordance with the requirements of NSF 61. 417.1.2 Wash Fountains, [BSC-CG] [DSA-SS & DSA-SS/CC] Wash fountains shall have a maximum flow rate of not more than 1.8 gallons (6.8 L) per minute/20 [rim space (inches) at 60 psi in compliance with Chapter 5, Division 5.3 of the California Green Building Standards Code (CALGreen).

417.1.2 Metering Faucets for Wash Fountains, [BSC-CG][DSA-SS&DSA-SS/CC] Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons (0.76 L) per cycle/20 [rim space (inches) at 60 psi] in compliance with Chapter 5, Division 5.3 of the California Green Building Standards Code (CALGreen). 417.2 Deck Mounted Bath/Shower Valves. Deck mounted bath/shower transfer valves with integral back-flow protection shall comply with ASME A112.18.1/CSA B125.1. This shall include handheld showers and other bathing appliances mounted on the deck of bathtubs or other bathing appliances that incorporate a hose or pull out feature. **417.3 Handheld Showers**. Handheld showers shall comply with ASME A112.18.1/CSA B125.1. Handheld showers with integral back-flow protection shall comply with ASME A112.18.1/CSA B125.1 or shall have a back-flow prevention device that is in

accordance with ASME A112.18.3 or ASSE 1014 **417.4 Faucets and Fixture Fittings with Hose Connected Outlets**. Faucets and fixture fittings with pull out spout shall comply with ASME A112.18.1/CSA B125.1. Faucets and fixture with pull out spouts with integral back-flow protection shall comply with SME A112.18.1/CSA B125.1 shall have a back-flow preventer device that is in accordance with ASME A112.18.3. 417.5 Separate Controls for Hot and Cold Water. Where two separate handles control the hot and cold water, the left-hand control of the faucet where facing the fixture fitting outlet shall control the hot water. Faucets and diverters shall be connected to

the water distribution system so that hot water corresponds to the left side of the fixture fitting. Single-handle mixing valves stalled in showers and tub-shower combinations shall have the flow of hot water correspond to the markings on the fixture fitting. 418.0 Floor Drains. **418.1 Application.** Floor drains shall comply with ASME A112.3.1.ASMEA112.6.3. or CSAB79. 418.2 Strainer. Floor drains shall be considered plumbing fixtures, and each such drain shall be provided with an approved-type

strainer having a waterway equivalent to the area of the tailpiece. Floor drains shall be of an approved type and shall provide a watertight joint in the floor. 419.0 Food Waste Disposers. 419.1 Application. Food waste disposal units shall comply with UL 430. Residential food waste disposers shall also comply with

419.2 Drainage Connection. Approved we or other directional-type branch fittings shall be installed in continuous wastes connecting or receiving the discharge from a food waste disposer. No dishwasher drain shall be connected to a sink tailpiece. ontinuous waste, or trap on the discharge side of a food waste dispose 419.3 Water Supply. A cold water supply shall be provided for food waste disposers. Such connection to the water supply shall be protected by an air gap or back-flow prevention device in accordance with Section 603.2.

20.0 Sinks. 420.1 Application. Sinks shall comply with ASME A112.19.1/CSA B45.2,ASME A112.19.2/CSA B45.1 ASME A112.19.3/CSA B45.4, CSA B45.5/IAPMO Z124, CSA B45.8/IAPMO Z403, or CSA B45.12/IAPMO Z402. Moveable sink systems shall comply with ASME A112.19.12. Sync, assemblies with automatic soap, dispensers, faucets, or hand dryers shall comply with IAPMO IGC 127.

420.2 Water Consumption. Sink faucets shall have a maximum flow rate of not more than 2.2 gpm at 60 psi (8.3 L/m at 414 kPa) n accordance with ASME A112.18.1/CSAB125.1 Exceptions: (1) Clinical sinks (2) Laundry travs (3) Service sinks 420.2.1 Kitchen Faucets. [BSC-CG] [DSA-SS & DSA-SS/CC] Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons (6.8 L) per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but

not to exceed 2.2 gallons (8.3 L) per minute at 60psi, and must default to a maximum flow rate of 1.8 gallons (6.8 L) per minute at 60 psi in compliance with Chapter 5, Division 5.3 of the California Green Building Standards Code (CALGreen). 420.4 Waste Outlet. Kitchen and laundry sinks shall have a waste outlet and fixture tailpiece not less than 1-1/2 inches (40 mm) in diameter. Service sinks shall have a waste outlet and fixture tailpiece not less than 2 inches (50 mm) in diameter. Fixture tailpieces shall be constructed from the materials specified in Section 701.2 for drainage piping. Waste outlets shall be provided with an approved strainer.

CHAPTER 5: WATER HEATERS (See entire Chapter for additional information)

501.1 Applicability. The regulations of this chapter shall govern the construction, location, and installation of fuel-burning and other types of water heaters heating potable water, together with chimneys, vents, and their connectors. The minimum capacity for storage water heaters shall be in accordance with the first hour rating listed in Table 501.1(1). No water heater shall be hereinafter installed that does not comply with the manufacturer's installation instructions and the type and model of each size thereof pproved by the Authority Having Jurisdiction. A list of accepted water heater appliance standards are referenced in Table 501.1(2). Listed appliances shall be installed in accordance with the manufacturer's installation instructions. Unlisted water heaters shall be permitted in accordance with Section 504.3.2.

504.1 Location. Water heater installations in bedrooms and bathrooms shall be in accordance with one of the following [NFPA 54:10.27.1]

(1) Water heater shall be of the direct-vent type. [NFPA 54:10.27.1(2)] (2) Fuel-burning water heaters shall be permitted to be installed in a closet located in the bedroom or bathroom provided the closet is equipped with a listed, gasketed door assembly and a listed self-closing device. The self-closing door assembly shall meet the requirements of Section 504.1.1. The door assembly shall be installed with a threshold and bottom door seal and shall meet the requirements of Section 504.1.2. Combustion air for such installations shall be obtained from the outdoors in accordance with Section 506.4. The closet shall be for the exclusive use of the water heater.

504.1.1 Self-Closing Doors. Self-closing doors shall swing easily and freely and shall be equipped with a self-closing device to cause the door to close and latch each time it is opened. The closing mechanism shall not have a hold-open feature. [NFPA 80:6.1.4.2] 504.1.2 Gasketing. Gasketing on gasketcd doors or frames shall be furnished in accordance with the published listings of the door, frame, or gasketing material manufacturer. [NFPA 80:6.4.8]

Exception: Where acceptable to the Authority Having Jurisdiction, gasketing of non-combustible or limited combustible material shall be permitted to be applied to the frame, provided closing and latching of the door are not inhibited. 504.2 Vent. Water heaters of other than the direct-vent type shall be located as close as practical to the chimney or gas vent. i04.3 Clearance. The clearance requirements for water heaters shall comply with Section 504.3.1 or Section 504.3.2. 504.3.1 Listed Water Heaters. The clearances shall not be such as to interfere with combustion air. draft hood clearance and relief, and accessibility far servicing. Listed water heaters shall be installed in accordance with their listings and the

manufacturer's installation instructions. [NFPA 54:10.28.2.1] 504.3.2 Unlisted Water Heaters. Unlisted water heaters shall be installed with a clearance of 12 inches (305 mm) on all sides and rear. Combustible floors under unlisted water heaters shall be protected in an approved manner. [NFPA 54:10.28.2.2]. 504.4 Pressure-Limiting Devices. A water heater installation shall be provided with overpressure protection by means of an approved, listed device installed in accordance with the terms of its listing and the manufacturer's installation instructions. [NFPA 54:10.28.31

504.5 Temperature-Limiting Devices. A water heater installation or a hot water storage vessel installation shall be provided with over temperature protection by means of an approved, listed device installed in accordance with the terms of its listing and the manufacturer's installation instructions. [NFPA 54:10.28.4]. 504.6 Temperature. Pressure. and Vacuum Relief Devices. Temperature. pressure. and vacuum relief devices or combinations thereof, and automatic gas shutoff devices, shall be installed in accordance with the terms of their listings and the manufacturer's

stallation instructions. A shutoff valve shall not be placed between the relief valve and the water heater or on discharge pipes between such valves and the atmosphere. The hourly British thermal units (Btu) (kW+h) discharge capacity or the rated steam relief capacity of the device shall be not less than the input rating of the water heater 506.0 Air for Combustion and Ventilation. 506.1 General. Air for combustion, ventilation, and dilution of flue gases for appliances installed in buildings shall be obtained by application of one of the methods covered in Section 506.2 through Section 506.7.3. Where the requirements I of Section 506.2

are not met, outdoor air shall be introduced I in accordance with methods covered in Section 506.4 through Section 506.7.3. ception: This provision shall not apply to direct-vent appliances. [NFPA 54:9.3.1.1] 506.2 Indoor Combustion Air. The required volume of indoor air shall be determined in accordance with Section 506.2.1 or Section 506.2.2 except that where the air infiltration rate is known to be less than 0.40 ACH (air change per hour), Section 506.2.2 shall be used. The total required volume shall be the sum of the required volume calculated for appliances located within the

pace. Rooms communicating directly with the space in which the appliances are installed through openings not furnished with doors, and through combustion air openings sized and located in accordance with Section 506.3 are considered a part of the required volume [NFPA 54:9.3.2] 506.3 Indoor Opening Size and Location. Openings used to connect indoor spaces shall be sized and located in accordance with the following: 1) Combining spaces on the same story. Each opening shall have a free area of not less than 1 square inch per 1000 Btu/h

(0.002 mVkW) of the total input rating of appliances in the space, but not less than 100 square inches (0.065 m2). One permanent opening shall commence within 12 inches (305 mm) of the top of the enclosure and one permanent opening shall commence within 12 inches (305 mm) of the bottom of the enclosure (see Figure 506.3). The minimum dimension of air openings shall be not less than 3 inches (76 mm). (2) Combining spaces in different stories. The volumes of spaces in different stories shall be considered as communicating spaces where such spaces are connected by one or more permanent openings in doors or floors having a total minimum free area of 2 square inches per 1000 Btu/h (0.004 m2/kW) of total input rating of all appliances. [NFPA 54:9.3.2.3]

506.4 Outdoor Combustion Air. Outdoor combustion air shall be provided through opening(s) to the outdoors in accordance with methods in Section 506.4., or Section 506.4.2. The minimum dimension of air openings shall be not less than 3 inches (76 mm). [NFPA 54:9.3.3]. 506.4.1 Two Permanent Openings Method. Two permanent openings, one commencing within 12 inches (305 mm) of the

top and one commencing within 2 inches (305 mm) of the bottom of the enclosure shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors as follows: (1) Where directly communicating with the outdoors or where communicating to the outdoors through vertical ducts, each opening shall have a free area of not less than 1 square inch per 4000 Btu/h (0.0005 m2/kW) of total input rating of appliances in the enclosure. [See Figure 506.4(1) and Figure 506.4(2)]

(2) Where communicating with the outdoors through horizontal ducts, each opening shall have a free area of not less than 1 square inch per 2000 Btu/h (0.001 m2/kW) of total input rating of appliances in the enclosure. [See Figure 506.4(3)] [NFPA 54:9.3.3.1]

506.4.2 One Permanent Opening Method. One permanent opening, commencing within 12 inches (305 mm) of the top of the enclosure, shall be provided. The appliance shall have clearances of not less than 1 inch(25.4mm) from the sides and back and 6 inches (152 mm) from the front of the appliance. The opening shall directly communicate with the outdoors or shall municate through a vertical or horizontal duct to the outdoors or spaces that freely communicate with the outdoors (see Figure 506.4.2) and shall have a free area not less than the following: One square inch per 3000 Btu/h (0.0007 m2/kW) of the total input rating of appliances located in the enclosure, and (2) Not less than the sum of the areas of vent connectors in the space. [NFPA 54:9.3.3.2]

507.0 Appliance and Equipment Installation Requirements. 507.1 Dielectric Insulator. The Authority Having Jurisdiction shall have the authority to require the use of an approved dielectric nsulator on the water piping connections of water heaters and related water heating appliances. 507.2 Seismic Provisions. Water heaters shall be anchored or strapped to resist horizontal displacement due to earthquake motion. Strapping shall be at points within the upper one third (1/3) and lower one-third (1/3) of its vertical dimensions. At the lower point, a minimum distance of four (4) inches (102mm) shall be maintained above the controls with the strapping. Note: [HCD 1 & HCD 2] Reference Health and Safety Code Section 19211(a) which addresses new, replacement, and existing water heaters Note: The applicable subsection of Health and Safety Code Section 19211(a) which addresses new replacement, and existing water heaters is repeated here for clarity and reads as follows: Section 19211(a) Notwithstanding Section 19100, all new and

replacement water heaters, and all existing residential water heaters shall be braced, anchored, or strapped to resist falling or horizontal displacement due to earthquake motion. At a minimum, any water heater shall be secured in accordance with the California Plumbing Code, or modifications made thereto by a city, county, or city and county pursuant to Section 17958.5. 507.3 Support of Appliances. Appliances and equipment shall be furnished either with load-distributing bases or with an pproved number of supports to prevent damage to either the building structure or the appliance and the equipment. [NFPA 54.9181 507.4 Ground Support. A water heater supported from the ground shall rest on level concrete or other approved base extending not less than 3 inches (76 mm) above the adjoining ground level.

507.5 Drainage Pan. Where a water heater is located in an attic, in or on an attic-ceiling assembly, floor-ceiling assembly, or floorsubfloor assembly where damage results from a leaking water heater, a watertight pan of corrosion-resistant materials shall be installed beneath the water heater with not less than 3/4 of an inch (20 mm) diameter drain to an approved location. Such pan shall be not less than 1-1/2 inches (38 mm) in depth. 507.13 Installation in Garages. Appliances in garages and in adjacent spaces that open to the garage and are not part of the living space of a dwelling unit shall be installed so that burners and burner-ignition devices are located not less than 18 inches

mm) above the floor unless listed as flammable vapor ignition resistant. [NFPA 54:9.1.10.1] 507.13.1 Physical Damage. Appliance sin stalled in garages, warehouses, or other areas subject to mechanical damage shall be guarded against such damage by being installed behind protective barriers or by being elevated or located out of the normal path of vehicles. **507.13.2 Access from the Outside**. Access from the Outside. Where appliances are installed within a garage and are

enclosed in a separate enclosed space having access only from outside of the garage, such appliances shall be permitted to be installed at floor level, provided the required combustion air is taken from the exterior of the garage. [NFPA 54:9.1.10.3] 508.4 Appliances in Attics and Under-Floor Spaces. All attic or under-floor space in which an appliance is installed shall be accessible through an opening and passageway not less than as large as the largest component of the appliance, and not less than 22 inches by 30 inches (559 mm by 762 mm). 508.4.1 Length of Passageway. Where the height of the passageway is less than 6 feet (1829 mm), the distance from the passageway access to the appliance shall not exceed 20 feet (6096 mm) measured along the centerline of the passageway

[NFPA 54:9.5.1.1] 508.4.2 Width of Passageway. The passageway shall be unobstructed and shall have solid flooring not less than 24 inches (610 mm) wide from the entrance opening to the appliance. [NFPA 54:9.5.1] 508.4.3 Work Platform. A level working platform not less than 30 inches (762 mm) by 30 inches (762 mm) shall be provided in front of the service side of the appliance. [NFPA 54:9.5.2] 508.4.4 Lighting and Convenience Outlet. A permanent 120-volt receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. [NFPA

54.9 5 31 509.0 Venting of Appliances

509.1 Listing. Type B and Type B-W gas vents shall comply with UL 441 and Type L gas vents shall comply with UL 641. 509.1.1 Installation. Listed vents shall be installed in accordance with this chapter and the manufacturer's installatio instructions. [NFPA 54:12.2.1] 509.1.2 Prohibited Discharge. Appliance vents shall not discharge into a space enclosed by screens having openings less than 1/4 of an inch (6.4 mm) mesh.

509.2 Connection to Venting Systems. Except as permitted in Section 509.2.1 through Section 509.2.5, appliances shall be connected to venting systems. [NFPA 54:12.3.1] 509.5 Masonry, Metal, and Factory-Built Chimneys. Chimneys shall be installed in accordance with Section 509.5.1 through

509.5.1 Factory-Built Chimneys. Factory-built chimneys shall be listed in accordance with UL 103. UL 959. or UL 2561. Factory-built chimneys shall be installed in accordance with the manufacturer's installation instructions. Factory-built chimneys used to vent appliances that operate at positive vent pressure shall be listed for such application. [NFPA 54:12.6.1.1] 509.5.1.1 Decorative Shrouds. Decorative shrouds addressed in Section 509.5.4.3 shall be listed or labeled i accordance with UL 103 for factory-built residential chimneys.

509.5.4 Termination. A chimney for a residential-type or low-heat appliance shall extend not less than 3 feet (914 mm) above the highest point where it passes through a roof of a building and not less than 2 feet (610 mm) higher than any portion of a building within a horizontal distance of 10 feet (3048 mm). [NFPA 54: 12.6.1.] (See Figure 509.5.4) 509.5.4.1 Medium-Heat Gas Appliances. A chimney for a medium-heat appliance shall extend not less than 10 feet (3048 mm) above a portion of a building within 25 feet (7620 mm). [NFPA 54:12.6.2.2] 509.5.4.2 Chimney Height. A chimney shall extend at least 5 feet (1524 mm) above the highest connected appliance draft hood outlet or flue collar. [NFPA 54:12.6.2.3] 509.5.4.3 Decorative Shrouds. Decorative shrouds shall not be installed at the termination of factory-built chimneys except where such shrouds are listed and labeled for use with the specific factory-built chimney system and are installed

in accordance with the manufacturer's installation instructions. [NFPA 54:12.6.2.4] 509.6 Gas Vents. Gas vents shall be installed in accordance with the manufacturer's installation instructions. [NFPA 54:12.7.1(1)] CHAPTER 6: WATER SUPPLY and DISTRIBUTION (See entire Chapter for additional information)

601.0 General 601.1 Applicability. This chapter shall govern the materials, design, and installation of water supply systems, including methods and devices used for back-flow prevention. 601.2 Water Supply and Flushing. Each plumbing fixture shall be provided with an adequate supply of potable running water pipe thereto in an approved manner so arranged as to flush and keep it clean and sanitary condition without danger of back-flow or cross connection. Water closet and urinals shall be flushed using an approved flush tank or flushometer valve. 601.2.1 Hot and Cold Water Required. In occupancies where plumbing fixtures are installed for private use, hot water shall

e required for bathing, washing, laundry, cooking purposes, dishwashing or maintenance. In occupancies where plumbing fixtures are installed for public use, hot water shall be required for bathing and washing purposes. This requirement shall not supersede the requirements for individual temperature control limitations for public lavatories and public and private bidets, bathtubs, whirlpool bathtubs, and shower control valves. 604.0 Materials 604.1 Pipe, Tube, and Fittings. Pipe, tube, fittings, solvent cements, thread sealants, solders, and flux used in potable water

systems intended to supply drinking water shall be in accordance with the requirements of NSF 61. Where fittings and valves are made from copper alloys containing more than 15 percent zinc by weight, and are used in plastic piping systems, they shall be resistant to dezincification and stress corrosion cracking in accordance with NSF 14. Materials used in the water supply system except valves and similar devices, shall be of a like material, except where otherwise approved by the Authority Having iction. Materials for building water piping and building supply piping shall comply with the applicable standards re

612.0 Residential Fire Sprinkler Systems

612.1 General. Residential sprinkler systems shall be installed in compliance with the California Residential Code, or the California Fire code. CHAPTER 7: SANITARY DRAINAGE (See entire Chapter for additional information)

701.0 Materials

701.1 Applicability. This chapter shall govern the materials, design, and installation of sanitary drainage systems and building 701.2 Drainage Piping. Materials for drainage piping shall be in accordance with one of the referenced standards in Table 701.2 except that: (1) No galvanized wrought-iron or galvanized steel pipe shall be used underground and shall be kept not less than 6 inches

- 152 mm) aboveground. (2) ABS and PVC DWV piping installations shall be installed in accordance with applicable standards referenced in Table 701.2 and the fire stop protection requirements in the California Building Code. Except for individual single-family dwelling units, materials exposed within ducts or plenums shall have a flame-spread index of not more than 25 and a smokedeveloped index of not more than 50, where tested in accordance with ASTM E84 or UL 723. Plastic piping installed in plenums shall be tested in accordance with all requirements of ASTM E84 or UL 723. Mounting methods, supports and
- sample sizes of materials for testing that are not specified in ASTM E84 or UL 723 shall be prohibited. (3) No vitrified clay pipe or fittings shall be used above-ground or where pressurized by a pump or ejector. They shall be kept not less than 12 inches (305 mm) below ground. (4) Copper or copper alloy tube for drainage and vent piping shall have a weight of not less than that of copper or copper
- alloy drainage tube type DWV (5) Stainless steel 304 pipe and fittings shall not be installed underground and shall be kept not less than 6 inches (152 mm) aboveground.

(6) Cast-iron soil pipe and fittings shall be listed and tested in accordance with standards referenced in Table 1701.1. Such pipe and fittings shall be marked with the country of origin and identification of the original manufacturer in addition to narkings required by referenced standards.

708.0 Grade of Horizontal Drainage Piping. 708.1 General. Horizontal drainage piping shall he run in practical alignment and a uniform slope of not less than 1/4 inch per foot (20.8 mm/m) or 2 percent toward the point of disposal provided that, where it is impractical due to the depth of the street sewer, to the structural features, or to the arrangement of a building or structure to obtain a slope of 1/4 inch per foot (20.8 mm/m) or 2 percent, such pipe or piping 4 inches (100 mm) or larger in diameter shall be permitted to have a slope of not less than 1/8 inch per foot (10.4 mm/m) or 1 percent, where first approved by the Authority Having Jurisdiction.

709.0 Gravity Drainage Required. 709.1 General. Where practicable, plumbing fixtures shall be drained to the public sewer or private sewage disposal system by 710.0 of Fixtures Located Below the Next Upstream Manhole or Below the Main Sewer Level. 710.1 Back-flow Protection. Fixtures installed on a floor level that is lower than the next upstream manhole cover of the public or rivate sewer shall be protected from back-flow of sewage by installing an approved type of backwater valve. Fixtures on such

floor level that are not below the next upstream manhole cover shall not be required to be protected by a backwater valve. Fixtures on floor levels above such elevation shall not discharge through the back-water valve. Clean-outs for drains that pass through a back-water valve shall be clearly identified with a permanent label stating "backwater valve downstream". **710.2 Sewage Discharge**. Drainage piping serving fixtures that are located below the crown level of the main sewer shall discharge into an approved watertight sump or receiving tank, so located as to receive the sewage or wastes by gravity. From such sump or receiving tank, the sewage or other liquid wastes shall be lifted and discharged into the building drain or building sewer by approved ejectors, pumps, or other efficient approved mechanical devices

710.3 Sewage Ejector and Pumps. A sewage ejector or sewage pump receiving the discharge of water closets or urinals: (1) Shall have a discharge capacity of not less than 20 fpm (1.26L/s). In single dwelling units, the ejector or pump shall be capable of passing a 1-1/2 inch (38 mm) diameter solid ball, and the discharge piping of each ejector or pump shall have a backwater valve and gate valve, and be not less than 2 inches (50 mm) in diameter.

(3) In other than single-dwelling units, the ejector or pump shall be capable of passing a 2 inch (51 mm) diameter solid ball, and the discharge piping of each ejector or pump shall have a backwater valve and gate valve, and be not less than 3 inches (80 mm) in diameter. 713.0 Sewer Required.

713.1 Where Required. A building in which plumbing fixtures are installed and premises having drainage piping thereon shall a connection to a public or private sewer, except as provided in Section 713.2, and Section 713.4. 713.2 Private Sewage Disposal System. Where no public sewer intended to serve a lot or premises is available in a thoroughfare or right of way abutting such lot or premises, drainage piping from a building or works shall be connected to an approved private sewage disposal system.

719.0 Clean-outs 719.1 Locations. Clean-outs shall be placed inside the building near the connection between the building drain and the building sewer or installed outside the building at the lower end of the building drain and extended to grade. Additional building sewer clean-outs shall be installed at intervals not to exceed 100 feet (30480 mm) in straight runs and for each aggregate horizontal change in direction exceeding 135 degrees (2.36 rad).

719.2 No Additional Clean-outs. Where a building sewer or a branch thereof docs not exceed 10 feet (3048 mm) in length and is a straight-line projection from a building drain that is provided with a clean-out, no clean-out will be required at its point connection to the building drain. 719.3 Building Sewer Clean-outs. Required building sewer clean-outs shall be extended to grade and shall be in

accordance with the appropriate sections of Section 707.0. for construction. and materials. Where building sewers are located under buildings, the clean-out requirements of Section 707.0 shall apply. CHAPTER 8: INDIRECT WASTES (See entire Chapter for additional information)

801.0 Genera 801.1 Applicability. This chapter shall govern the materials, design, and installation of indirect waste piping, receptors, and connections; and provisions for discharge and disposal of condensate wastes, chemical wastes, industrial wastes, and clear water 801.2 Air or Air Break Required. Indirect waste piping shall discharge into the building drainage system through an air gap or air break as set forth in this code. Where a drainage air gap is required by this code, the minimum vertical distance as measured from the lowest point of the indirect waste pipe or the fixture outlet to the flood-level rim of the receptor shall be not less than 1 inch

807.3 Domestic Dishwashing Machine. No domestic dish-washing machine shall be directly connected to a drainage system or food waste disposer without the use of an approved dishwasher air gap fitting on the discharge side of the dishwashing machine. Listed air gaps shall be installed with the flood-level (FL) marking at or above the flood level of the sink or drainboard, whichever is

CHAPTER 9: VENTS (See entire Chapter for additional information)

901.0 General. This chapter shall govern the materials, design, and installation of plumbing vent systems. 901.1 Applicability. This chapter shall govern the materials, design, and installation of plumbing vent systems. 901.2 Vents Required. Each plumbing fixture trap, except as otherwise provided in this code, shall be protected against

siphonage and back-pressure, and air circulation shall be ensured throughout all parts of the drainage system by means of vent pipes installed in accordance with the requirements of this chapter and as otherwise required by this code. 909.0 Special for Island Fixtures.

909.1 General, for island sinks and similar equipment shall be roughed in above the floor and shall be permitted to be vented by extending the vent as high as possible, but not less than the drainboard and then returning it downward and connecting it to the norizontal sink drain immediately downstream from the vertical fixture drain. The return vent shall be connected to the horizontal drain through a wye-branch fitting and shall in addition, be provided with a foot vent taken off the vertical fixture vent by means of a wve branch immediately below the floor and extending to the nearest partition and then through the roof to the open or shall be permitted to be connected to other vents at a point not less than 6 inches (152 mm) above the flood-level rim of the fixtures served. Drainage fittings shall be used on the vent below the floor level, and a slope of not less than 1/4 inch per foot (20.8 mm/m) back to the drain shall be maintained. The return bend used under the drainboard shall be a one piece fitting or an assembly of a 45 degree (0.79 rad), a 90 degree (1.57 rad), and a 45 degree (0.79 rad) elbow in the order named. Pipe sizing shall be as

elsewhere required in this code. The island sink drain, upstream of the returned vent, shall serve no other fixtures. An accessible clean-out shall be installed in the vertical portion of the foot vent.

CHAPTER 10: TRAPS and INTERCEPTORS (See entire Chapter for additional information) 1001.0 General 1001.1 Applicability. This chapter shall govern the materials, design, and installation of traps and interceptors.

1001.2 Where Required Each plumbing fixture, shall be separately trapped by an approved type of liquid seal trap. This section

shall not apply to fixtures with integral traps. Not more than one trap shall be permitted on a trap arm. Food waste disposers installed with a set of restaurant, commercial, or industrial sinks shall be connected to a separate trap. Each domestic clothes washer and each laundry tub shall be connected to a separate and independent trap, except that a trap serving a laundry tub shall be permitted to also receive the waste from a clothes washer set adjacent thereto. The vertical distance between a fixture outlet and the trap weir shall be as short as practicable, but in no case shall the tailpiece from a fixture exceed 24 inches (610 mm) in length. One trap shall be permitted to serve a set of not more than three single compartment sinks or laundry tubs of the same depth or three lavatories immediately adjacent 1002.0 to each other and in the same room where the waste outlets are not more than 30 inches (762 mm) apart and the trap is centrally located where three compartments are installed CHAPTER 11: STORM DRAINAGE (See entire Chapter for additional information) 1101.0 General.

1101.1 Applicability. This chapter shall govern the materials, design, and installation of storm water drainage systems.

1101.2 Where Required. Roofs, paved areas, yards, courts, courtyards, vent shafts, light wells, or similar areas having rainwater, shall be drained into a separate storm sewer system, or into a combined sewer system where a separate storm sewer system is not available, or to some other place of disposal satisfactory to the Authority Having Jurisdiction. In the case of one and two family dwellings, storm water shall be permitted to be discharged on flat areas, such as streets or lawns, so long as the storm water shall flow away from the building and away from adjoining property, and shall not create a nuisance. CHAPTER 12: FUEL GAS PIPING (See entire Chapter for additional information) 1201.0 General.

1201.1 Applicability. The regulations of this chapter shall govern the installation of fuel gas piping in or in connection with a building, structure or within the property lines of premises up to 5 pounds-force per square inch (psi) (34 kPa), other than service pipe. Fuel oil piping systems shall be installed in accordance with NFPA 31.

1208.0 Gas Piping System Design, Materials, and Components. **1208.1 Installation of Piping System**. Where required by the Authority Having Jurisdiction, a piping sketch or plan shall be prepared before proceeding with the installation. This plan shall show the proposed location of piping, the size of different branches, the various load demands, and the location of the point of delivery. [NFPA 54:5.1.1] 1208.4 Sizing of Gas Piping Systems. Gas piping systems shall be of such size and so installed as to provide a supply of gas to meet the maximum demand and supply gas to each appliance inlet at not less than the minimum supply pressure required by the appliance. [NFPA 54:5.4.1]

Image: State Stat
Image: Control of the second secon
Image: Construction of the drawings may not be used in whole, or in part, without expressed written consent given by Britt Rowe All construction shall comply with all local & national building codes. All contractors shall verify all conditions to assure conformance to these codes.
BRITT - ROWE 108 N. Santa Cruz Ave.

CEILING FRAMING PLAN - SHEAR PLAN

1. SEE SHEETS SN.1 & SN.2 FOR ADDITIONAL STRUCTURAL NOTES.

2. SEE SHEET SN.2 FOR TYPICAL CEILING JOIST/HEADER SPAN TABLE FOR HEADERS/BEAMS NOT SPECIFICALLY IDENTIFIED ON THIS PLAN.

37° 08' 12" N 121° 58' 00" W

AR WALL NAILING	SHEAR WALL TRANSFER	SOLE PLATE NAILING	ANCHOR BOLTS @ (E) 2X PTDF MUD SILL	ANCHOR BOLTS @ (N) 3X PTDF MUD SILL	HOLD DOWN TYPE
D @ 6"OC (EDGE)	A35, RBC OR LTP4 CLIPS @	100 0 000	5/8" DIA. X 12" AB	5/8" DIA. X 12" AB	HDU2 (UNO)
@ 12"OC (FIELD)	24"OC	100 @ 0 00	@ 16"OC	@ 32"OC	HDU4
D @ 3"OC (EDGE)	A35, RBC OR LTP4 CLIPS @	100 @ 2000	5/8" DIA. X 12" AB	5/8" DIA. X 12" AB	HDU4 (UNO)
@ 12"OC (FIELD)	12"OC	160 @ 3 00	@ 12"OC	@ 16"OC	
S: WSWH: AB1" X 30"	SHEAR TRANSFER PER MANUF. CONNECTION KIT PROVIDED WITH PURCHASE OF PRODUCT	INSTALL PER MANUFAC DETAILS. USE "SIMPSO BOLTS. ICC: ESR 2652.	TURER'S INSTALLATION IN N" PROPRIETARY FOUNDAT	STRUCTIONS, SPECIFICATION TION TEMPLATES TO LOCAT	DNS & PRODUCT E ALL ANCHOR & HD

1. SEE FOUNDATION PLAN(S) & FRAMING PLAN(S) FOR LOCATIONS, SIZE & ANCHORAGE OF HOLD DOWNS.

2. ALL HARDWARE SHALL BE MANUFACTURED BY "SIMPSON STRONG TIE COMPANY INC." OR EQUAL (UNO). REVIEW THE LATEST CATALOG PRIOR TO INSTALLATION FOR ANY SPECIAL REQUIREMENTS, INSTALLATION, PROCEDURES ALTERNATIVE OPTIONS, ETC.... USE COMMON NAILS TYP. (BOX NAILS PROHIBITED) 3. INSTALL 5/8" DIA. X 12" ANCHOR BOLTS @ 48" OC MAXIMUM SPACING @ ALL NON-SHEAR WALLS. FOLLOW THIS SCHEDULE FOR ANCHOR BOLT SPACING WHERE SHEAR WALLS ARE DESIGNATED ON FRAMING PLAN(S). ALL ANCHOR BOLTS SHALL HAVE A 7" MIN EMBEDMENT INTO CONCRETE. USE .229" X 3" X 3" SQUARE WASHERS (TYP.) OR SIMPSON EQUIVALENT PROPRIETARY PRODUCT. ALL MUD SILLS SHALL HAVE (2) ANCHOR BOLTS PER PIECE MINIMUM & (1) ANCHOR BOLT WITHIN 12" FROM EACH END & NO CLOSER THAN 6" FROM EACH END OF

FOR NEW CONSTRUCTION, ALL ANCHOR BOLTS SHALL BE INSTALLED ON 3X PTDF MUD SILL OR EQUAL.
 USE "SIMPSON" DESIGNATED ANCHOR/HD BOLTS OR ENGINEER OF RECORD APPROVED ANCHORS/THREADED RODS WITH NUT/WASHER/NUT @ ALL HOLD DOWN LOCATIONS SHOWN ON

6. ALL HOLD DOWN AND ANCHOR BOLTS SHALL BE SECURELY TIED IN PLACE PRIOR TO FOUNDATION STEEL INSPECTION. USE "SIMPSON ANCHOR MATE" BOLT HOLDERS OR PROPRIETARY 7. ALL ANCHOR BOLTS (WET SET AND RETROFIT) & OTHER HARDWARE IN DIRECT CONTACT WITH PTDF LUMBER SHALL BE HOT DIPPED GALVANIZED (HDG) OR STAINLESS STEEL (SS). 8. USE 4X/6X DF#1 POSTS @ ALL SHEAR WALL ENDS PER FRAMING PLAN(S) & USE (2)-2X (STITCH NAILED PER CBC NAILING TABLE) OR 3X DF STUDS @ ALL INTERMEDIATE ABUTTING SHEAR

OSE 4X/0X DF#1 POSTS @ ALL SHEAR WALL ENDS PER PRAVING PDAN(3) & USE (2)-2X (311 CH NAILED PER CBC NAILING TABLE) OR 3X DF 310DS @ ALL INTERMEDIATE ABOTTING SHEAR PANEL VERTICAL JOINTS. STAGGER EDGE NAILING @ JOINT PER WALL TYPE @ SW SCHEDULE.
 USE (2)-2X (STITCH NAILED PER CBC NAILING TABLE), OR 3X DF STUDS @ 16"OC @ SHEAR WALLS WHERE SHEAR MATERIAL IS APPLIED TO BOTH SIDES OF THE WALL. USE 4X/6X DF#1 POSTS @ INTERMEDIATE ABUTTING PANEL VERTICAL JOINTS. STAGGER EDGE NAILING @ JOINT, SPACING PER WALL TYPE @ SW SCHEDULE. STAGGER ABUTTING PANEL EDGES @ MULTI-POSTS @ INTERMEDIATE ABUTTING PANEL VERTICAL JOINTS. STAGGER EDGE NAILING @ JOINT, SPACING PER WALL TYPE @ SW SCHEDULE. STAGGER ABUTTING PANEL EDGES @ MULTI-

10. USE ONE PIECE PLYWOOD PANELS @ SHEAR WALLS 48" WIDE OR LESS IN WIDTH. ALL SHEAR WALLS SHALL BE 24" WIDE MINIMUM. USE FULL HEIGHT SHEAR WALL PANELS WHERE POSSIBLE, WHERE CUT, MINIMUM PANEL HEIGHT SHALL BE 12". PROVIDE 3X DF SOLID BLOCKING W/EDGE NAILING PER WALL TYPE @ SW SCHEDULE @ ALL HORIZONTAL PANEL JOINTS. 11. ALL INTERIOR SHEAR WALL PANELS SHALL BE EXTENDED TO THE FULL HEIGHT OF THE ROOF. PROVIDE RR & EN (TYP.) SEE APPLICABLE DETAILS AS PROVIDED. 13. OSB WALL SHEATHING MAY BE SUBSTITUTED FOR CDX PLYWOOD UPON ENGINEER OF RECORD'S APPROVAL AND/OR SPECIFICATION.

			SUPPORTS/CONNE	ECTORS	
	GRADE	LEFT/TOP	CENTER	RIGHT/BOTTOM	POST BASE
EAM)	2.0E	PSL HDR: ST6236		4X6: ST6236	(2) A35
	2.0E	4X6: CCQ46	4X6KP: ST22	4X6: CCQ46	(2) A35
EAM) OK TO TRIM @ RR	2.0E	6X6: ST6236		6X6: ST6236	(2) A35

1. ALL HARDWARE SHALL BE MANUFACTURED BY "SIMPSON STRONG TIE COMPANY INC." OR EQUAL (UNO). REVIEW THE LATEST CATALOG PRIOR TO INSTALLATION FOR ANY SPECIAL

3. "FH" = FULL HEIGHT POST. USE ST6236 STRAP (HORIZONTAL) ACROSS TOP PLATES WHERE FULL HEIGHT POSTS ARE INSTALLED & CONTINUOUS TOP PLATES ARE INTERRUPTED. 4. SEE SHEET SD.1 FOR TYPICAL POST/HEADER AND POST/FLUSH BEAM FRAMING CONNECTIONS.

6. "TOP FLUSH HEADER/BEAM" IS DEFINED AS A HEADER/BEAM WHERE THE TOP OF THE MEMBER IS INSTALLED FLUSH WITH THE WALL TOP PLATES.

7. "FLUSH HEADER/BEAM" IS DEFINED AS A HEADER/BEAM WHERE THE BOTTOM OF THE MEMBER IS INSTALLED FLUSH WITH THE WALL TOP PLATES. 8. NOMINAL BEAMS/HEADERS (IE: DF/PTDF) MAY BE SUBSTITUTED WITH ENGINEERED LUMBER (PSL, LVL, ETC...) OF THE SAME DIMENSION OR GREATER.

9. ANY OTHER BEAM SUBSTITUTION (IE: SIZE, GRADE, ETC... MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD. (S.O.R.)

10. FOR ANY HARDWARE/CONNECTOR/FASTENER SUBSTITUTIONS, PLEASE CONTACT THE STRUCTURAL ENGINEER OF RECORD (S.O.R.) PRIOR TO INSTALLATION.

REVISIONS: 7/29/23 Image: Construction of the drawings may not be used in whole, or in part, without expressed written consent gives by Britt Rowe. All constructions shall comply with all local & national building codes. All contractors shall verify all conditions to assure conformance to these codes Image: Construction of the drawings may not be used in whole, or in part, without expressed written consent gives by Britt Rowe. All constructions shall comply with all local & national building codes. All contractors shall verify all conditions to assure conformance to these codes Image: Construction of the drawings may not be used in whole, or in part, without expressed written consent gives by Britt Rowe. All constructions shall comply with all local & national building codes. All contractors shall verify all conditions to assure conformance to these codes Image: Construction of the drawings may not be used to the drawing to the drawings may not be used to the drawing to the drawing to the drawings may not be used to the drawing					
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7-31-20 Professional Stamp

ROOF RAFTERS: 2X8 DF#2 @ 24"OC TYP. BLOCKING: 2X DF#2 (MATCH RR HEIGHT) VALLEYS & RIDGES: SEE PLAN PURLIN(S): 2X8 DF#2 AS NOTED

DESIGNATED SHEAR WALL: SEE SW SCHEDULE & DETAILS

- 2X4 WALLS: 4X4 DF#1
 - 2X6 WALLS: 4X6 OR 6X6 DF#1

ROOF FRAMING PLAN

ROOF SLOPE: 4/12 TYP.

- OVERHANG: 18" TYP.
- ROOFING MATERIAL: CLASS A, ASPHALT SHINGLES TYP.
- 1. SEE SHEETS SN.1 & SN.2 FOR ADDITIONAL STRUCTURAL NOTES.
- 2. SEE SHEET SN.2 FOR TYPICAL CEILING JOIST/HEADER SPAN TABLE FOR HEADERS/BEAMS NOT SPECIFICALLY IDENTIFIED ON THIS PLAN. 3. SEE SHEET S.2 FOR SHEAR WALL SCHEDULE & BEAM SCHEDULE.

0 2' 4'

1/4" = 1'-0"

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ROOF FRAMING PLAN	7/29/23	Noted	MAR <i>MC</i> .
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	S	.3	

ROOF SLOPE: 4/12 TYP. OVERHANG: 12"-18" TYP. VERIFY W/OWNER ROOFING MATERIAL: CLASS A, ASPHALT SHINGLES

1. SEE SHEETS SN.1 & SN.2 FOR ADDITIONAL STRUCTURAL NOTES.

2. SEE SHEET SN.2 FOR TYPICAL CEILING JOIST/HEADER SPAN TABLE.

3. SEE SHEET A4.1 FOR ROOF & ATTIC NOTES.

FOUNDATION PLAN

1. SEE SHEETS SN.1 & SN.2 FOR ADDITIONAL FOUNDATION & STRUCTURAL NOTES.

2. VERIFY ALL DIMENSIONS W/ARCH. PLAN(S).

3. FOLLOW ALL RECOMMENDATIONS CONTAINED WITHIN THE SOIL REPORT PREPARED BY MILSTONE GEOTECHNICAL, (PROJECT #225800), DATED APRIL, 2023

TTOM POST BAS
36 (2) A35
46 (2) A35
36 (2) A35
2: 4

Notes:

REQUIREMENTS, INSTALLATION, PROCEDURES ALTERNATIVE OPTIONS, ETC

2. USE ST22 MIN. STRAP @ ALL KING POSTS TO WALL OR BEAMS BELOW. 3. "FH" = FULL HEIGHT POST. USE ST6236 STRAP (HORIZONTAL) ACROSS TOP PLATES WHERE FULL HEIGHT POSTS ARE INSTALLED & CONTINUOUS TOP PLATES ARE INTERRUPTED.

SEE SHEET SD.1 FOR TYPICAL POST/HEADER AND POST/FLUSH BEAM FRAMING CONNECTIONS.
 SEE SHEET SN.2 FOR HEADER SPAN TABLE FOR ALL BEAMS/HEADERS NOT LISTED IN THIS TABLE.

6. "TOP FLUSH HEADER/BEAM" IS DEFINED AS A HEADER/BEAM WHERE THE TOP OF THE MEMBER IS INSTALLED FLUSH WITH THE WALL TOP PLATES.

"FLUSH HEADER/BEAM" IS DEFINED AS A HEADER/BEAM WHERE THE BOTTOM OF THE MEMBER IS INSTALLED FLUSH WITH THE WALL TOP PLATES.
 NOMINAL BEAMS/HEADERS (IE: DF/PTDF) MAY BE SUBSTITUTED WITH ENGINEERED LUMBER (PSL, LVL, ETC...) OF THE SAME DIMENSION OR GREATER.

9. ANY OTHER BEAM SUBSTITUTION (IE: SIZE, GRADE, ETC... MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD. (S.O.R.) 10.FOR ANY HARDWARE/CONNECTOR/FASTENER SUBSTITUTIONS, PLEASE CONTACT THE STRUCTURAL ENGINEER OF RECORD (S.O.R.) PRIOR TO INSTALLATION.

SHEAD WALL SCHEDILLE

SHEAR WALL SCHEDOLL								
TYPE	SHEAR MATERIAL	SHEAR WALL NAILING	SHEAR WALL TRANSFER	SOLE PLATE NAILING	ANCHOR BOLTS @ (E) 2X PTDF MUD SILL	ANCHOR BOLTS @ (N) 3X PTDF MUD SILL	HOLD DOWN TYPE	
D1	3/8" CDX PLYWD. OR	8D @ 6"OC (EDGE)	A35, RBC OR LTP4 CLIPS @	C OR LTP4 CLIPS @ 16D @ 6"OC 5/8" DIA. X 12" AB @ 16"OC		0 100 0 100 5/8" DIA, X 12" AB 5/8" DIA, X 12"	5/8" DIA. X 12" AB	HDU2 (UNO)
PT	15/32" OSB	8D @ 12"OC (FIELD)	24"OC			@ 32"OC	HDU4	
-	3/8" CDX PLYWD. OR	8D @ 3"OC (EDGE)	A35, RBC OR LTP4 CLIPS @	405 0 0100	5/8" DIA, X 12" AB	5/8" DIA. X 12" AB	HDU4 (UNO)	
PZ	15/32" OSB	8D @ 12"OC (FIELD)	12"OC	16D @ 3'OC	@ 12"OC	@ 16"OC		
S1	SIMP. STRONG WALL WSWH18x10	BOLTS: WSWH: AB1" X 30"	SHEAR TRANSFER PER MANUF. CONNECTION KIT	R KIT DETAILS. USE "SIMPSON" PROPRIETARY FOUNDATION TEMPLATES TO LOCATE ALL ANCHOF BOLTS. ICC: ESR 2652.				
			PROVIDED WITH PURCHASE OF PRODUCT					

SHEAR WALL SCHEDULE NOTES:

1. SEE FOUNDATION PLAN(S) & FRAMING PLAN(S) FOR LOCATIONS, SIZE & ANCHORAGE OF HOLD DOWNS.

2. ALL HARDWARE SHALL BE MANUFACTURED BY "SIMPSON STRONG TIE COMPANY INC." OR EQUAL (UNO). REVIEW THE LATEST CATALOG PRIOR TO INSTALLATION FOR ANY SPECIAL REQUIREMENTS, INSTALLATION, PROCEDURES ALTERNATIVE OPTIONS, ETC USE COMMON NAILS TYP. (BOX NAILS PROHIBITED) 3. INSTALL 5/8" DIA. X 12" ANCHOR BOLTS @ 48" OC MAXIMUM SPACING @ ALL NON-SHEAR WALLS. FOLLOW THIS SCHEDULE FOR ANCHOR BOLT SPACING WHERE SHEAR WALLS ARE DESIGNATED ON FRAMING PLAN(S). ALL ANCHOR BOLTS SHALL HAVE A 7" MIN EMBEDMENT INTO CONCRETE. USE .229" X 3" X 3" SQUARE WASHERS (TYP.) OR SIMPSON EQUIVALENT PROPRIETARY PRODUCT. ALL MUD SILLS SHALL HAVE (2) ANCHOR BOLTS PER PIECE MINIMUM & (1) ANCHOR BOLT WITHIN 12" FROM EACH END & NO CLOSER THAN 6" FROM EACH END OF THE MUD SILL.

4. FOR NEW CONSTRUCTION, ALL ANCHOR BOLTS SHALL BE INSTALLED ON 3X PTDF MUD SILL OR EQUAL.

5. USE "SIMPSON" DESIGNATED ANCHOR/HD BOLTS OR ENGINEER OF RECORD APPROVED ANCHORS/THREADED RODS WITH NUT/WASHER/NUT @ ALL HOLD DOWN LOCATIONS SHOWN ON FOUNDATION & FRAMING PLAN(S). 6. ALL HOLD DOWN AND ANCHOR BOLTS SHALL BE SECURELY TIED IN PLACE PRIOR TO FOUNDATION STEEL INSPECTION. USE "SIMPSON ANCHOR MATE" BOLT HOLDERS OR PROPRIETARY TEMPLATES AS APPLICABLE.

ALL ANCHOR BOLTS (WET SET AND RETROFIT) & OTHER HARDWARE IN DIRECT CONTACT WITH PTDF LUMBER SHALL BE HOT DIPPED GALVANIZED (HDG) OR STAINLESS STEEL (SS).
 USE 4X/6X DF#1 POSTS @ ALL SHEAR WALL ENDS PER FRAMING PLAN(S) & USE (2)-2X (STITCH NAILED PER CBC NAILING TABLE) OR 3X DF STUDS @ ALL INTERMEDIATE ABUTTING SHEAR

9. USE (2)-2X (STITCH NAILED PER CBC NAILING @ JOINT PER WALL TYPE @ SW SCHEDULE.
9. USE (2)-2X (STITCH NAILED PER CBC NAILING TABLE), OR 3X DF STUDS @ 16"OC @ SHEAR WALLS WHERE SHEAR MATERIAL IS APPLIED TO BOTH SIDES OF THE WALL. USE 4X/6X DF#1 POSTS @ INTERMEDIATE ABUTTING PANEL VERTICAL JOINTS. STAGGER EDGE NAILING @ JOINT, SPACING PER WALL TYPE @ SW SCHEDULE. STAGGER ABUTTING PANEL EDGES @ MULTI-

STORY APPLICATIONS. 11. ALL INTERIOR SHEAR WALL PANELS SHALL BE EXTENDED TO THE FULL HEIGHT OF THE ROOF. PROVIDE RR & EN (TYP.) SEE APPLICABLE DETAILS AS PROVIDED.

USE ONE PIECE PLYWOOD PANELS @ SHEAR WALLS 48" WIDE OR LESS IN WIDTH. ALL SHEAR WALLS SHALL BE 24" WIDE MINIMUM. USE FULL HEIGHT SHEAR WALL PANELS WHERE POSSIBLE. WHERE CUT, MINIMUM PANEL HEIGHT SHALL BE 12". PROVIDE 3X DF SOLID BLOCKING W/EDGE NAILING PER WALL TYPE @ SW SCHEDULE @ ALL HORIZONTAL PANEL JOINTS.

 12. KEEP 1/16" CLEAR BETWEEN ALL PLYWOOD PANEL EDGES (TYP.)
 13. OSB WALL SHEATHING MAY BE SUBSTITUTED FOR CDX PLYWOOD UPON ENGINEER OF RECORD'S APPROVAL AND/OR SPECIFICATION. 14. SEE APPLICABLE SHEAR WALL DETAILS @ "SD" SHEETS AS PROVIDED.

1. ALL HARDWARE SHALL BE MANUFACTURED BY "SIMPSON STRONG TIE COMPANY INC." OR EQUAL (UNO). REVIEW THE LATEST CATALOG PRIOR TO INSTALLATION FOR ANY SPECIAL

1. VARIATIONS OF NOTED HOLES, CUTS & NOTCHES MAY BE APPROVED BY THE S.O.R.

Extension from Ceiling to Roof @ Designated Shear Walls per Framing Plan(s)

- See Manufacturer's Specifications for dimensions, fasteners and allowable loads. See Manufacturer's Specifications for Hold Down bolt information.
- Secure all steel reinforcing in place prior to pouring concrete. Use Simpson "Anchor Mate" (AM) for <u>ALL</u> wet set anchors and "Anchor Bolt Stabilizer" (ABS) in addition for <u>ALL</u> hold down anchors. Use .229 X 3" X 3" hot dipped galvanized (HDG) or stainless steel (SS) square washers @ all AB'S Typ. (UNO)

Hold Down @ Concrete Slab/Stem

HD2 "Wet-Set" application 2x DF#2 ridge: See - referenced detail @ Framing 2x DF#2 RR w/CDX/OSB roof sheathing per Framing Plan for rafter to ridge Plan(s) connection FN A35/RBC or LPT4 (face) clips per SW Schedule ≁₩₹₽ Double 2x DF#2 "raked" top plates w/EN per SW Schedule wall type. 2x DF#2 roof brace (45° max.) per framing plans (4) 16d @ ridge 2x DF#2 CJ w/A35/RBC or LTP4 (face) per SW Schedule wall type. 2x DF#2 CJ per Framing Plan(s): Parallel to Shear Wall: RR lapped @ CJ \bigotimes Provide MSTA30 strap @ 2x DF#2 solid blocking @ equal spacing as CJ attic shear wall ends when wall height exceeds 4'-0" Double 2x DF#2 top plates w/EN per SW Schedule wall type. 2x DF#2 studs @ 16'OC w/ CDX/OSB wall sheathing

CJ/RR Parallel to Shear Wall

per SW Schedule wall type

See CBC Table 2304.10.2 for Nailing Requirements not Noted on this Drawing

"California" Roof Framing

R27

2X DF#2 STUDS @ 16"OC

Ridge Beam Flush Up w/Rafters

Ridge Beam w/Rafters Over Top

Shape ride beam or

needed.

provide filler block as

MAT FOUNDATION @ CONCRETE PORCH

MF3

Finish roofing material

@ PORCH OR EXTERIOR PATIO

2. IN ADDITION TO HARDWARE SPECIFIED, PROVIDE MINIMUM NAILING PER CBC TABLE 2304.10.2. 3. BEVEL CUT FLUSH BEAM @ RR AS PERMITTED (SIMILAR).

1. USE ALL RECOMMENDED FASTENERS PER SIMPSON STRONG TIE.

4. HEADERS MAY BE INSTALLED FLUSH UP TO BEAM: SEE BEAM SCHEDULE FOR INDICATION.

CJ PERPENDICULAR TO WALL

CEILING JOISTS @ INTERIOR NON-BEARING WALL

CEILING JOISTS @ FLUSH CEILING BEAM

CB1

CJ2

NOTES:

FR9

JOISTS PERPENDICULAR TO BEAM

JOISTS PARALLEL TO BEAM

CJ PARALLEL TO WALL

NOTES:

Rake Wall @ Flat Ceiling

NOTES:

1. See SW Schedule Wall Types for specific panel material, nailing, clips & hold downs @ designated shear walls. 2. See Framing Plan(s) for ceiling joist, rafter size(s), orientation & spacing (UNO). 3. "Non-Shear Walls" shall be provided w/minimum nailing per CBC Table 2304.10.2

Eave @ Rake Wall w/2x Ridge

NOTES:

Balloon Framing - Vaulted Ceiling

R16 Platform Framing Application RR's w/CDX/OSB roof sheathing: Nail w/10d @ 6:10 (UNO)

Maintain 1" clear for air flow - over insulation.

CJ's per Framing Plan(s) Nail CJ to RR w/(8) 10d

as applicable

Ceiling finish per Architectural Plan(s)

H2.5A clips @ each rafter

Insulation @ wall & ceiling per Architectural Plan(s) and/or T24 Calculations.

2x DF Studs @ 16"OC w/CDX/ OSB wall sheathing: Nail @ 6:12 max. See Shear Schedule.

2x DF#2 flat "Lookout"

48"OC, notched into RR's

interior rafter. Use (Optional)

extending back to next

T&G or V-Rustic starter

board per Arch. Plan(s)

Finish roofing material

per Architectural Plan(s)

2x Barge rafter w/shingle

Double 2x DF#2 sloping rake

w/EN @ 6"OC max. See SW

top plate down to wall plate

Use 2x6 DF#2 studs @ full

height "Balloon" framed rake

walls with double 2x DF#2

sloped top plates.

2x DF#2 solid fire

blocking where

required.

Schedule or designated

mold per Architectural

Plan(s)

shear walls

Interior wall finish per Architectural Plan(s)

Finish roofing material per RR's w/CDX/OSB roof Architectural Plan(s). sheathing: Nail w/10d @ 6:10 (UNO) 2x DF vertical solid block, shaped to roof slope with A35 or LTP4 @ each block min. See shear wall schedule for No venting required when Closed Cell Spray Foam is spacing requirements @ used. SW'S: EN blocking @ 6"OC EN @ 6"OC max. @ wall double top plates: See Shear Schedule for EN @ SW's Use Closed Cell Spray Provide V-Rustic (or Foam insulation @ all equal) "Starter Board" @ enclosed vaulted ceilings × blocking line to fascia areas. and gutter. Ceiling finish per Architectural Plan(s) H2.5A clips @ each rafter Insulation @ wall & ceiling per 2x exterior grade painted Architectural Plan(s) and/or T24 fascia and gutter as applicable. UNO. See Calculations. Architectural Plan(s) 2x DF Studs @ 16"OC w/CDX/ OSB wall sheathing: Nail @ 6:12 max. See Shear Schedule. Exterior wall finish per Architectural Plan(s). Interior wall finish per Architectural Plan(s)

Notes

1. See Roof Framing Plan(s) for roof slope & overhang dimension. 2. See Detail R1 for optional angled block application. 3. Provide minimum nailing per CBC Table 2304.10.2 (UNO)

Eave @ Vaulted Ceiling R3 No Ceiling Joists

NOTES:

R18

1. See Framing Plan(s) for Ridge/Rafter size(s), orientation & spacing (UNO).

Rafters @ 2x Ridge Board

See Framing Plan(s) for Purlin size(s), orientation & location (UNO).
 See Framing Plan(s) for locations, spacing and sizes of roof supports typ.
 Provide minimum nailing per CBC Table 2304.10.2

Roof Support @ 2x Purlin **R26**

Exterior wall finish per Architectural Plan(s) 2x DF#2 studs @ 16"OC with CDX/OSB wall sheathing nailed @ 6/12 max. See SW Schedule for nailing @ designated shear walls

Rake Wall @ Vaulted Ceiling

1. See SW Schedule Wall Types for specific panel material, nailing, clips & hold downs @ designated shear walls. 2. See Framing Plan(s) for ceiling joist, rafter size(s), orientation & spacing (UNO). 3. "Non-Shear Walls" shall be provided w/minimum nailing per CBC Table 2304.10.2

Eave @ Rake Wall - Balloon Frame

A. GENERAL STRUCTURAL NOTES:

- 1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS & CONFIRM EXISTING CONDITIONS & REPORT ALL DISCREPANCIES AND/OR FIELI ONDITIONS WHICH ARE DIFFERENT THAN THOSE INDICATED ON THE STRUCTURAL PLANS TO THE STRUCTURAL ENGINEER OF RECORD ND ARCHITECT/DESIGNER PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- ARCHITECTURAL INFORMATION SHOWN ON THE STRUCTURAL PLANS, SUCH AS FLOOR ELEVATIONS, PLATE HEIGHTS, ROOF HEIGHTS/ SLOPES, ETC... SHALL BE VERIFIED AND COMPARED TO THE "ARCHITECTURAL DRAWINGS". REPORT ALL DISCREPANCIES TO BOTH THE TRUCTURAL ENGINEER OF RECORD AND THE ARCHITECT/DESIGNER. STRUCTURAL DRAWINGS ARE INTENDED TO PROVIDE INFORMATION REGARDING THE STRUCTURAL FRAMING & FOUNDATION AND THEIR
- ELEMENTS ONLY. NON STRUCTURAL ELEMENTS SUCH AS DECORATIVE ARCHITECTURAL DETAILS, STAIR FRAMING, CONCRETE PADS, ETC... MAY NOT BE COVERED IN THE STRUCTURAL PLANS. CONTRACTORS ARE ADVISED TO REVIEW ALL OTHER PLANS IN THE ONSTRUCTION DOCUMENT SET FOR NON STRUCTURAL ITEMS WHICH MAY BE EMBEDDED IN, ATTACHED TO, OR OTHERWISE
- TERFERING WITH THE STRUCTURAL ELEMENTS 4. STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR THE VENTILATION OF UNDERFLOOR JOIST AND/OR ATTIC. THE TRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR ANY CONCRETE FLAT WORK INCLUDING DRIVEWAYS, WALKWAYS, DOOR
- PADS AND OTHER SIMILAR ITEMS. CONTRACTORS SHALL FOLLOW THE ARCHITECTURAL PLANS AND/OR OWNER'S SPECIFICATIONS FOR FINAL LOCATIONS, GEOMETRY & DIMENSIONS OF SUCH ITEMS. 5. ALL DRAWINGS AND SUBSEQUENT REVISIONS, IF ANY, SHALL BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO THE DMMENCEMENT OF CONSTRUCTION. NO STRUCTURAL MEMBERS SHALL BE SUBSTITUTED, RELOCATED AND/OR OMITTED WITHOUT
- WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD. 6. CONTRACTOR AND/OR SUBCONTRACTORS SHALL BE RESPONSIBLE FOR THE ORDER AND MEANS OF CONSTRUCTION AND ALL
- EMPORARY SHORING, BRACING AND ERECTION DURING CONSTRUCTION 7. THE CONTRACTOR SHALL PROVIDE ALL THIRD PARTY DESIGNS (PREFABRICATED TRUSSES, STAIR RAILINGS/GUARDRAILS, ETC...) TO THE STRUCTURAL ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO FABRICATION TO ASSURE CONFORMANCE WITH THE STRUCTURAL DESIGN.

CBC CHAPTER 16: STRUCTURAL DESIGN

1604.1 GENERAL. BUILDING, STRUCTURES AND PARTS THEREOF SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH STRENGTH DESIGN, LOAD AND RESISTANCE FACTOR DESIGN, ALLOWABLE STRESS DESIGN, EMPIRICAL DESIGN OR CONVENTIONAL CONSTRUCTION METHODS, AS PERMITTED BY THE APPLICABLE MATERIAL CHAPTERS. CBC CHAPTER 17: STRUCTURAL TESTS & SPECIAL INSPECTIONS

SECTION 1703: APPROVALS

1703.1 APPROVED AGENCY, AN APPROVED AGENCY SHALL PROVIDE ALL INFORMATION AS NECESSARY FOR THE BUILDING OFFICIAL TO DETERMINE THAT THE AGENCY MEETS THE APPLICABLE REQUIREMENTS SPECIFIED IN SECTIONS 1703.1.1 THROUGH 1703.1. 1703.2 WRITTEN APPROVAL. ANY MATERIAL, APPLIANCE, EQUIPMENT, SYSTEM OR METHOD OF CONSTRUCTION MEETING THE REQUIREMENTS OF THIS CODE SHALL BE APPROVED IN WRITING AFTER SATISFACTORY COMPLETION OF THE REQUIRED TESTS AND SUBMISSION OF REQUIRED TEST REPORTS.

- SECTION 1704: SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION 1704.1 GENERAL, SPECIAL INSPECTIONS AND TESTS, STATEMENTS OF SPECIAL INSPECTIONS, RESPONSIBILITIES OF CONTRACTORS SUBMITTALS TO THE BUILDING OFFICIAL AND STRUCTURAL OBSERVATIONS SHALL MEET THE APPLICABLE REQUIREMENTS OF THIS SECTION. 1704.2 SPECIAL INSPECTIONS AND TESTS. WHERE APPLICATION IS MADE TO THE BUILDING OFFICIAL FOR CONSTRUCTION AS SPECIFIED IN SECTIONS 105 OR 1.8.4, AS APPLICABLE, THE OWNER OR THE OWNER'S AUTHORIZED AGENT, OTHER THAN THE CONTRACTOR, SHALL EMPLOY
- ONE OR MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION ON THE TYPES OF WORK SPECIFIED IN SECTION 1705 AND IDENTIFY THE APPROVED AGENCIES TO THE BUILDING OFFICIAL. THESE SPECIAL INSPECTIONS AND TESTS ARE IN ADDITION TO THE INSPECTIONS BY THE BUILDING OFFICIAL THAT ARE IDENTIFIED IN SECTION 110
- EXCEPTIONS: 1. SPECIAL INSPECTIONS AND TESTS ARE NOT REQUIRED FOR CONSTRUCTION OF A MINOR NATURE OR AS WARRANTED BY CONDITIONS IN THE JURISDICTION AS APPROVED BY THE BUILDING OFFICIAL. THE JURISDICTION AS APPROVED BY THE BUILDING OFFICIAL.
- THE JURISDICTION AS APPROVED BY THE BUILDING OFFICIAL.
 UNLESS OTHERWISE REQUIRED BY THE BUILDING OFFICIAL. SPECIAL INSPECTIONS AND TESTS ARE NOT REQUIRED FOR GROUP U OCCUPANCIES THAT ARE ACCESSORY TO A RESIDENTIAL OCCUPANCY INCLUDING, BUT NOT LIMITED TO, THOSE LISTED IN SECTION 312.1.
 SPECIAL INSPECTIONS AND TESTS ARE NOT REQUIRED FOR PORTIONS OF STRUCTURES DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION PROVISIONS OF SECTION 221.1.7 OR THE CONVENTIONAL LIGHT-FRAME CONSTRUCTION PROVISIONS OF SECTION2308. [OSHPD2] NOT PERMITTED BY OSHPD.
 THE CONTRACTOR IS PERMITTED TO EMPLOY THE APPROVED AGENCIES WHERE THE CONTRACTOR IS ALSO THE OWNER.
 [HCD1] THE PROVISIONS OF HEALTH AND SAFETY CODE DIVISION 13, PART 6 AND THE CALIFORNIA CODE OF REGULATIONS, TITLE 25, DIVISION 1, CHAPTER 3, COMMENCING WITH SECTION 3000, SHALL APPLY TO THE CONSTRUCTION AND INSPECTION OF FACTORY-BUILT HOUSING AS DEFINED IN HEALTH AND SAFETY CODE SECTION 19971.
 1704.2.5 SPECIAL INSPECTION OF FABRICATED ITEMS. WHERE FABRICATION OF STRUCTURAL, LOAD-BEARING OR LATERAL LOAD-RESISTING MEMBERS OR ASSEMBLIES IS BEING CONDUCTED ON THE PREMISES OF A FABRICATOR'S SHOP, SPECIAL INSPECTIONS OF THE FABRICATED ITEMS SHALL BE PERFORMED DURING FABRICATION.
 EXCEPTIONS;
- EXCEPTIONS: 1. SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE FABRICATOR MAINTAINS APPROVED DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR CONTROL OF THE WORKMANSHIP AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND THIS CODE. APPROVAL SHALL BE BASED UPON REVIEW OF FABRICATION AND QUALITY CONTROL PROCEDURES AND PERIODIC INSPECTION OF FABRICATION PRACTICES BY THE DUE DUE CEEICIAL

2. SPECIAL INSPECTIONS ARE NOT REQUIRED WHERE THE FABRICATOR IS REGISTERED AND APPROVED IN ACCORDANCE WITH SECTION 1704.3 STATEMENT OF SPECIAL INSPECTIONS. WHERE SPECIAL INSPECTIONS OR TESTS ARE REQUIRED BY SECTION 1705, THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE SHALL PREPARE A STATEMENT OF SPECIAL INSPECTIONS IN ACCORDANCE WITH SECTION 1704.3.1 FOR SUBMITTAL BY THE APPLICANT IN ACCORDANCE WITH SECTION 1704.2.3. EXCEPTION: THE STATEMENT OF SPECIAL INSPECTIONS IS PERMIT- TED TO BE PREPARED BY A QUALIFIED PERSON APPROVED BY THE BUILDING OFFICIAL FOR CONSTRUCTION NOT DESIGNED BY A REGISTERED DESIGN PROFESSIONAL.

704.6 STRUCTURAL OBSERVATIONS. STRUCTURAL OBSERVATIONS SHALL BE PROVIDED FOR THOSE STRUCTURES WERE ONE OR MORE OF 'HE FOLLOWING CONDITIONS EXIST: THE STRUCTURE IS CLASSIFIED AS RISK CATEGORY, III OR IV. THE STRUCTURE IS A HIGH-RISE BUILDING. (N/A) THE STRUCTURE IS A SSIGNED TO SEISMIC DESIGN CATEGORY E, AND IS GREATER THAN TWO STORIES ABOVE THE GRADE PLANE.

SEARCH OBSERVATION IS REQUIRED BY THE REGISTER DESIGN, PROFESSIONAL RESPONSIBLE FOR THE STRUCTURAL DESIGN. SEARCH OBSERVATION IS SPECIFICALLY REQUIRED BY THE BUILDING OFFICIAL. SECTION 1705: REQUIRED SPECIAL INSPECTIONS AND TESTS

SEE CBC SECTIONS 1705, 1706, 1707, 1708 & 1709 FOR REQUIRED INSPECTIONS AND TESTS. 1705.1 GENERAL. SPECIAL INSPECTIONS AND TESTS OF ELEMENTS AND NONSTRUCTURAL COMPONENTS OF BUILDINGS AND STRUCTURES SHALL MEET THE APPLICABLE REQUIREMENTS OF THIS SECTION. 1705.1.1 SPECIAL CASES. SPECIAL INSPECTIONS AND TESTS SHALL BE REQUIRED FOR PROPOSED WORK THAT IS, IN THE OPINION OF THE BUILDING OFFICIAL, UNUSUAL IN ITS NATURE, SUCH AS, BUT NOT LIMITED TO, THE FOLLOWING EXAMPLES. CONSTRUCTION MATERIALS AND SYSTEMS THAT ARE ALTERNATIVES TO MATERIALS AND SYSTEMS PRESCRIBED BY THIS CODE. UNUSUAL DESIGN APPLICATIONS OF MATERIALS DESCRIBED IN THIS CODE. MATERIALS AND SYSTEMS REQUIRED TO BE INSTALLED IN ACCORDANCE WITH ADDITIONAL MANUFACTURER'S INSTRUCTIONS THAT PRESCRIBE REQUIREMENTS NOT CONTAINED IN THIS CODE OR IN STANDARDS REFERENCED BY THIS CODE. CBC CHAPTER 18: SOILS AND FOUNDATIONS

SECTION 1801: GENERAL

1801.1 SCOPE. THE PROVISIONS OF THIS CHAPTER SHALL APPLY TO BUILDING AND FOUNDATION SYSTEMS 1801.2 DESIGN BASIS. ALLOWABLE BEARING PRESSURES, ALLOWABLE STRESSES AND DESIGN FORMULAS PROVIDED IN THIS CHAPTER SHALL BE USED WITH THE ALLOWABLE STRESS DESIGN LOAD COMBINATIONS SPECIFIED IN SECTION 1605.3. THE QUALITY AND DESIGN OF MATERIALS USED STRUCTURALLY IN EXCAVATIONS AND FOUNDATIONS SHALL COMPLY WITH THE REQUIREMENTS SPECIFIED IN CHAPTERS 16, 19, 21, 22 AND 23 OF THIS CODE. EXCAVATIONS AND FILLS SHALL ALSO COMPLY WITH CHAPTER 33. SECTION 1803: GEOTECHNICAL INVESTIGATIONS

1803.1 GENERAL GEOTECHNICAL INVESTIGATIONS SHALL BE CONDUCTED IN ACCORDANCE WITH SECTION 1803.2 AND REPORTED I ACCORDANCE WITH SECTION 1803.6. WHERE REQUIRED BY THE BUILDING OFFICIAL OR WHERE GEOTECHNICAL INVESTIGATIONS INVOLVE IN ITU TESTING, LABORATORY TESTING OR ENGINEERING CALCULATIONS, SUCH INVESTIGATIONS SHALL BE CONDUCTED BY A REGISTERED DESIGN PROFESSIONAL 1803.1.1 GENERAL AND WHERE REQUIRED FOR APPLICATIONS LISTED IN SECTION 1.8.2.1.1 REGULATED BY THE DEPARTMENT OF WITH HEALTH AND SAFETY CODE SECTIONS 17953 THROUGH 1795 1803.2 INVESTIGATIONS REQUIRED. GEOTECHNICAL INVESTIGATIONS SHALL BE CONDUCTED IN ACCORDANCE WITH SECTIONS 1803.3

THROUGH 1803.5. EXCEPTION: THE BUILDING OFFICIAL SHALL BE PERMITTED TO WAIVE THE REQUIREMENT FOR A GEOTECHNICAL INVESTIGATION WHERE SATISFACTORY DATA FROM ADJACENT AREAS IS AVAILABLE THAT DEMONSTRATES AN INVESTIGATION IS NOT NECESSARY FOR ANY OF THE CONDITIONS IN SECTIONS 1803.5.1 THROUGH 1803.5.6 AND SECTIONS 1803.5.10 AND 1803.5.11. 1803.3 BASIS OF INVESTIGATION. SOIL CLASSIFICATION SHALL BE BASED ON OBSERVATION AND ANY NECESSARY TESTS OF THE MATERIALS DISCLOSED BY BORINGS, TEST PITS OR OTHER SUBSURFACE EXPLORATION MADE IN APPROPRIATE LOCATIONS. ADDITIONAL STUDIES SHALL

BE MADE AS NECESSARY TO EVALUATE SLOPE STABILITY, SOIL STRENGTH, POSITION AND ADEQUACY OF LOAD-BEARING SOILS, THE EFFECT OF MOISTURE VARIATION ON SOIL-BEARING CAPACITY, COMPRESSIBILITY, LIQUEFACTION AND EXPANSIVENESS. 1803.4 QUALIFIED REPRESENTATIVE. THE INVESTIGATION PROCEDURE AND APPARATUS SHALL BE IN ACCORDANCE WITH GENERALL ACCEPTED ENGINEERING PRACTICE. THE REGISTERED DESIGN PROFESSIONAL SHALL HAVE A FULLY QUALIFIED REPRESENTATIVE ON SITE DURING ALL BORING OR SAMPLING OPERATION 1803.5 INVESTIGATED CONDITIONS. GEOTECHNICAL INVESTIGATIONS SHALL BE CONDUCTED AS INDICATED IN SECTIONS 1803.5.1 THROUGH

1803.6 REPORTING. WHERE GEOTECHNICAL INVESTIGATIONS ARE REQUIRED, A WRITTEN REPORT OF THE INVESTIGATIONS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL BY THE PERMIT APPLICANT AT THE TIME OF PERMIT APPLICATION. THIS GEOTECHNICAL REPORT SHALL INCLUDE, BUT NEED NOT BE LIMITED TO, THE FOLLOWING INFORMATION: A PLOT SHOWING THE LOCATION OF THE SOIL INVESTIGATIONS.

2. A COMPLETE RECORD OF THE SOIL BORING AND PENETRATION TEST LOGS AND SOIL SAMPLES. A RECORD OF THE SOIL PROFILE ELEVATION OF THE WATER TABLE. IF ENCOUNTERED

5. RECOMMENDATIONS FOR FOUNDATION TYPE AND DESIGN CRITERIA, INCLUDING BUT NOT LIMITED TO: BEARING CAPACITY OF NATURAL R COMPACTED SOIL; PROVISIONS TO MITIGATE THE EFFECTS OF EXPANSIVE SOILS; MITIGATION OF THE EFFECTS OF LIQUEFACTION, DIFFERENTIAL SETTLEMENT AND VARYING SOIL STRENGTH: AND THE EFFECTS OF ADJACENT LOADS. EXPECTED TOTAL AND DIFFERENTIAL SETTLEMENT.

DEEP FOUNDATION INFORMATION IN ACCORDANCE WITH SECTION 1803.5.5. SPECIAL DESIGN AND CONSTRUCTION PROVISIONS FOR FOUNDATIONS OF STRUCTURES FOUNDED ON EXPANSIVE SOILS, AS NECESSARY

COMPACTED FILL MATERIAL PROPERTIES AND TESTING IN ACCORDANCE WITH SECTION 1803.5.8 0. CONTROLLED LOW-STRENGTH MATERIAL PROPERTIES AND TESTING IN ACCORDANCE WITH SECTION 1803.5.9. 11. [OSHPD 2] THE REPORT SHALL CONSIDER THE EFFECTS OF SEISMIC HAZARD IN ACCORDANCE WITH SECTION 1803.

1803.7 GEO-HAZARD REPORTS. [OSHPD 2] GEO-HAZARD REPORTS SHALL BE REQUIRED FOR ALL PROPOSED CONSTRUCTION.

REPORTS ARE NOT REQUIRED FOR ONE-STORY, WOOD-FRAME AND LIGHT-STEEL-FRAME BUILDINGS OF TYPE V CONSTRUCTION AND 4,000 SQUARE FEET (371 M2) OR LESS IN FLOOR AREA, NOT LOCATED WITHIN EARTHQUAKE FAULT ZONES OR SEISMIC HAZARD ZONES AS SHOWN IN THE MOST RECENTLY PUBLISHED MAPS FROM THE CALIFORNIA GEOLOGICAL SURVEY (COS): NONSTRUCTURAL, ASSOCIATED STRUCTURAL OR VOLUNTARY STRUCTURAL ALTERATIONS AND INCIDENTAL STRUCTURAL ADDITIONS OR ALTERATIONS, AND STRUCTURAL REPAIRS FOR OTHER THAN EARTHQUAKE DAMA

2. A PREVIOUS REPORT FOR A SPECIFIC SITE MAY BE RESUBMITTED, PROVIDED THAT A REEVALUATION IS MADE AND THE REPORT IS FOUND O BE CURRENTLY APPROPRIATE. THE PURPOSE OF THE GEO-HAZARD REPORT SHALL BE TO IDENTIFY GEOLOGIC AND SEISMIC CONDITIONS THAT MAY REQUIRE PROJECT MITIGATIONS. THE REPORTS SHALL CONTAIN DATA WHICH PROVIDE AN ASSESSMENT OF THE NATURE OF THE SITE AND POTENTIAL FOR EARTHQUAKE DAMAGE BASED ON APPROPRIATE INVESTIGATIONS OF THE REGIONAL AND SITE GEOLOGY, PROJECT FOUNDATION CONDITIONS AND THE POTENTIAL SEISMIC SHAKING AT THE SITE. THE REPORT SHALL BE PREPARED BY A CALIFORNIA-CERTIF

ENGINEERING GEOLOGIST IN CONSULTATION WITH A CALIFORNIA-REGISTERED GEOTECHNICAL ENGINEER. THE PREPARATION OF THE GEO-HAZARD REPORT SHALL CONSIDER THE MOST RECENT CGS NOTE 48: CHECKLIST FOR THE REVIEW OF ENGINEERING GEOLOGY AND SEISMOLOGY REPORTS FOR CALIFORNIA PUBLIC SCHOOL, HOSPITALS, AND ESSENTIAL SERVICES BUILDINGS. IN ADDITION, THE MOST RECENT VERSION OF CGS SPECIAL PUBLICATION 42, FAULT RUPTURE HAZARD ZONES IN CALIFORNIA, SHALL BE CONSIDERED FOR PROJECT SITES PROPOSED WITHIN AN ALQUIST-PRIOLO EARTHQUAKE FAULT ZONE. THE MOST RECENT VERSION OF CGS SPECIAL PUBLICATION 11 SUIDELINES FOR EVALUATING AND MITIGATING SEISMIC HAZARDS IN CALIFORNIA, SHALL BE CONSIDERED FOR PROJECT SITES PROPOSED WITHIN A SEISMIC HAZARD ZONE. ALL CONCLUSIONS SHALL BE FULLY SUPPORTED BY SATISFACTORY DATA AND ANALYSIS.

SECTION 1804: EXCAVATION, GRADING AND FILL 1804.1 EXCAVATION NEAR FOUNDATIONS. EXCAVATION FOR ANY PURPOSE SHALL NOT REDUCE LATERAL SUPPORT FROM ANY FOUNDATION DRADJACENT FOUNDATION WITHOUT FIRST UNDERPINNING OR PROTECTING THE FOUNDATION AGAINST DETRIMENTAL LATERAL OR VERTICAL MOVEMENT, OR BOTH IN ACCORDANCE WITH SECTION 1803.5.7 1804.2 UNDERPINNING. WHERE UNDERPINNING IS CHOSEN TO PROVIDE THE PROTECTION OR SUPPORT OF ADJACENT STRUCTURES, THE UNDERPINNING SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH PROVISIONS OF THIS CHAPTER AND CHAPTER 33. 1804.2.1 UNDERPINNING SEQUENCING. UNDERPINNING SHALL BE INSTALLED IN A SEQUENTIAL MANNER THAT PROTECTS THE NEIGH-

BORING STRUCTURE AND THE WORKING CONSTRUCTION SITE. THE SEQUENCE OF INSTALLATION SHALL BE IDENTIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS. 1804.3 PLACEMENT OF BACKFILL. THE EXCAVATION OUTSIDE THE FOUNDATION SHALL BE BACKFILLED WITH SOIL THAT IS FREE OF ORGANIC MATERIAL, CONSTRUCTION DEBRIS, COBBLES AND BOULDERS OR WITH A CONTROLLED LOW-STRENGTH MATERIAL (CLSM). THE BACKFILL SHALL BE PLACED IN LIFTS AND COMPACTED IN A MANNER THAT DOES NOT DAMAGE THE FOUNDATION OR THE WATERPROOFING OR DAMF PROOFING MATERIA

EXCEPTION: CLSM NEED NOT BE COMPACTED. 1804.4 SITE GRADING. THE GROUND IMMEDIATELY ADJACENT TO THE FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PER- CENT SLOPE) FOR A MINIMUM DISTANCE OF 10 FEET (3048 MM) MEASURED PERPENDICULAR TO THE FACE OF THE WALL. IF PHYSICAL OBSTRUCTIONS OR LOT LINES PROHIBIT 10 FEET (3048 MM) OF HORIZONTAL DISTANCE, A 5-PERCENT SLOPE SHALL BE PROVIDED TO AN APPROVED ALTERNATIVE METHOD OF DIVERTING WATER AWAY FROM THE FOUNDATION. SWALES USED FOR THIS PURPOSE SHALL BE SLOPED A MINIMUM OF 2 PERCENT WHERE LOCATED WITHIN 10 FEET

(3048 MM) OF THE BUILDING FOUNDATION. IMPERVIOUS SURFACES WITHIN 10 FEET (3048 MM) OF THE BUILDING FOUNDATION SHALL BE SLOPED A MINIMUM OF 2 PERCENT AWAY FROM THE BUILDING. EXCEPTION: WHERE CLIMATIC OR SOIL CONDITIONS WARRANT, THE SLOPE OF THE GROUND AWAY FROM THE BUILDING FOUNDATION SHALL BE PERMITTED TO BE REDUCED TO NOT LESS THAN ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2-PERCENT SLOPE). THE PROCEDURE USED TO ESTABLISH THE FINAL GROUND LEVEL ADJACENT TO THE FOUNDATION SHALL ACCOUNT FOR ADDITIONAL

SETTLEMENT OF THE BACKFIL 6 COMPACTED FILL MATERIAL. WHERE SHALLOW FOUNDATIONS WILL BEAR ON COMPACTED FILL MATERIAL, THE COMPACTED FILL SHALL COMPLY WITH THE PROVISIONS OF AN APPROVED GEOTECHNICAL REPORT, AS SET FORTH IN SECTION 1803. EXCEPTION: COMPACTED FILL MATERIAL 12 INCHES (305 MM) IN DEPTH OR LESS NEED NOT COMPLY WITH AN APPROVED REPORT, PROVIDED THE IN-PLACE DRY DENSITY IS NOT LESS THAN 90 PERCENT OF THE MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT DETERMINED IN ACCORDANCE WITH ASTM D1557. THE COMPACTION SHALL BE VERIFIED BY SPECIAL INSPECTION IN ACCORDANCE WITH SECTION 1705.6. 804.7 CONTROLLED LOW-STRENGTH MATERIAL (CLSM). WHERE SHALLOW FOUNDATIONS WILL BEAR ON CONTROLLED LOW-STRENGTH MATERIAL (CLSM), THE CLSM SHALL COMPLY WITH THE PROVISIONS OF AN APPROVED GEOTECHNICAL REPORT, AS SET FORTH IN SECTION

SECTION 1805: DAMP-PROOFING AND WATERPROOFING

1805.1 GENERAL. WALLS OR PORTIONS THEREOF THAT RETAIN EARTH AND ENCLOSE INTERIOR SPACES AND FLOORS BELOW GRADE SHALL BE WATERPROOFED AND DAMP-PROOFED IN ACCORDANCE WITH THIS SECTION, WITH THE EXCEPTION OF THOSE SPACES CONTAINING GROUPS OTHER THAN RESIDENTIAL AND INSTITUTIONAL WHERE SUCH OMISSION IS NOT DETRIMENTAL TO THE BUILDING OR OCCUPANCY. VENTILATION FOR CRAWL SPACES SHALL COMPLY WITH SECTION 1203.4

1805 2 DAMP-PROOFING. WHERE HYDROSTATIC PRESSURE WILL NOT OCCUR AS DETERMINED BY SECTION 1803 5.4. FLOORS AND WALLS FOR HER THAN WOOD FOUNDATION SYSTEMS SHALL BE DAMP-PROOFED IN ACCORDANCE WITH THIS SECTION. WOOD FOUNDATION SYSTEMS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AWC PWF. 5.3 WATERPROOFING. WHERE THE GROUND-WATER INVESTIGATION REQUIRED BY SECTION 1803.5.4 INDICATES THAT A HYDROSTATIC PRESSURE CONDITION EXISTS, AND THE DESIGN DOES NOT INCLUDE A GROUND-WATER CONTROL SYSTEM AS DESCRIBED IN SECTION 1805.1.3, WALLS AND FLOORS SHALL BE WATERPROOFED IN ACCORDANCE WITH THIS SECTION.

1805.4 SUBSOIL DRAINAGE SYSTEM. WHERE A HYDROSTATIC PRESSURE CONDITION DOES NOT EXIST, DAMP-PROOFING SHALL BE PROVIDED AND A BASE SHALL BE INSTALLED UNDER THE FLOOR AND A DRAIN INSTALLED AROUND THE FOUNDATION PERIMETER. A SUBSOIL DRAINAGE SYSTEM DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTION 1805.1.3 SHALL BE DEEMED ADEQUATE FOR LOWERING THE GROUND-WATER TABLE SECTION 1806: PRESUMPTIVE LOAD BEARING VALUES OF SOILS

1806.1 LOAD COMBINATIONS. THE PRESUMPTIVE LOAD-BEARING VALUES PROVIDED IN TABLE 1806.2 SHALL BE USED WITH THE ALLOWABLE RESS DESIGN LOAD COMBINATIONS SPECIFIED IN ASCE 7, SECTION 2.4 OR THE ALTERNATIVE ALLOWABLE STRESS DESIGN LOAD COMBINATIONS OF SECTION 1605.2, THE VALUES OF VERTICAL FOUNDATION PRESSURE AND LATERAL BEARING PRESSURE GIVEN IN THE BLE 1806.2 SHALL BE PERMITTED TO BE INCREASED BY ONE-THIRD WHERE USED WITH THE ALTERNATIVE ALLOWABLE STRESS DESIGN D COMBINATIONS OF SECTION 1605.2 THAT INCLUDE WIND OR EARTHQUAKE LOADS. 1806.2 PRESUMPTIVE LOAD-BEARING VALUES. THE LOAD-BEARING VALUES USED IN DESIGN FOR SUPPORTING SOILS NEAR THE SURFACE SHALL NOT EXCEED THE VALUES SPECIFIED IN TABLE 1806.2 UNLESS DATA TO SUBSTANTIATE THE USE OF HIGHER VALUES ARE SUBMITTED AND APPROVED. WHERE THE BUILDING OFFICIAL HAS REASON TO DOUBT THE CLASSIFICATION, STRENGTH OR COMPRESSIBILITY OF THE SOIL, THE REQUIREMENTS OF SECTION 1803.5.2 SHALL BE SATISFIED.

PRESUMPTIVE LOAD-BEARING VALUES SHALL APPLY TO MATERIALS WITH SIMILAR PHYSICAL CHARACTERISTICS AND DISPOSITIONS. MI IF ORGANIC SILT, ORGANIC CLAYS, PEAT OR UNPREPARED FILL SHALL NOT BE ASSUMED TO HAVE A PRESUMPTIVE LOAD-BEARING CAPACITY UNLESS DATA TO SUBSTANTIATE THE USE OF SUCH A VALUE ARE SUBMITTED EXCEPTION: A PRESUMPTIVE LOAD-BEARING CAPACITY SHALL BE PERMITTED TO BE USED WHERE THE BUILDING OFFICIAL DEEMS THE LOAD-IG CAPACITY OF MUD, ORGANIC SILT OR UNPREPARED FILL IS ADEQUATE FOR THE SUPPORT OF LIGHTWEIGHT OR TEMPORARY 1806.3 LATERAL LOAD RESISTANCE. WHERE THE PRESUMPTIVE VALUES OF TABLE 1806.2 ARE USED TO DETERMINE RESISTANCE TO LATERAL LOADS, THE CALCULATIONS SHALL BE IN ACCORDANCE WITH SECTIONS 1806.3.1 THROUGH 1806.3.4.

SECTION 1807: FOUNDATION WALLS, RETAINING WALLS AND EMBEDDED POSTS AND POLES 1807.1 FOUNDATION WALLS. FOUNDATION WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTIONS 1807.1.1 THROUGH 1807.1.6. FOUNDATION WALLS SHALL BE SUPPORTED BY FOUNDATIONS DESIGNED IN ACCORDANCE WITH SECTION 1808. 1807.1.1 DESIGN LATERAL SOIL LOADS. FOUNDATION WALLS SHALL BE DESIGNED FOR THE LATERAL SOIL LOADS SET FORTH IN SECTION

1807.1.2 UNBALANCED BACKFILL HEIGHT. UNBALANCED BACKFILL HEIGHT IS THE DIFFERENCE IN HEIGHT BETWEEN THE EXTERIOR FINISH GROUND LEVEL AND THE LOWER OF THE TOP OF THE CONCRETE FOOTING THAT SUPPORTS THE FOUNDATION WALL OR THE INTERIOR FINISH GROUND LEVEL. WHERE AN INTERIOR CONCRETE SLAB ON GRADE IS PROVIDED AND IS IN CONTACT WITH THE INTERIOR SURFACE OF THE FOUNDATION WALL, THE UNBALANCED BACKFILL HEIGHT SHALL BE PERMITTED TO BE MEASURED FROM THE EXTERIOR FINISH GROUND LEVEL TO THE TOP OF THE INTERIOR CONCRETE SLAB. 1807.1.3 RUBBLE STONE FOUNDATION WALLS. FOUNDATION WALLS OF ROUGH OR RANDOM RUBBLE STONE SHALL NOT BE LESS THAN 16 ICHES (406 MM) THICK. RUBBLE STONE SHALL NOT BE USED FOR FOUNDATION WALLS OF STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C. D. E OR F

807.1.5 CONCRETE AND MASONRY FOUNDATION WALLS. CONCRETE AND MASONRY FOUNDATION WALLS SHALL BE DESIGNED IN CCORDANCE WITH CHAPTER 19 OR 21, AS APPLICABLE. EXCEPTION: CONCRETE AND MASONRY FOUNDATION WALLS SHALL BE PERMITTED TO BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTION 1807.1.6. 1807.1.6 PRESCRIPTIVE DESIGN OF CONCRETE AND MASONRY FOUNDATION WALLS. CONCRETE AND MASONRY FOUNDATION WALLS ARE LATERALLY SUPPORTED AT THE TOP AND BOTTOM SHALL BE PERMITTED TO BE DESIGNED AND CONSTRUCTED IN

ACCORDANCE WITH THIS SECTION. 1807.1.6.1 FOUNDATION WALL THICKNESS. THE THICKNESS OF PRESCRIPTIVELY DESIGNED FOUNDATION WALLS SHALL NOT BE LESS THAN THE THICKNESS OF THE WALL SUPPORTED, EXCEPT THAT FOUNDATION WALLS OF AT LEAST 8-INCH WALLS SHALL NOT BE LESS THAN THE THICKNESS OF THE WALL SUPPORTED, EXCEPT THAT FOUNDATION WALLS OF AT LEAST 8-INCH (203 MM) NOMINAL WIDTH SHALL BE PERMITTED TO SUPPORT BRICK-VENEERED FRAME WALLS AND 10 INCH WIDE (254 MM) CAVITY WALLS PROVIDED THE REQUIREMENTS OF SECTION 1807.1.6.2 OR 1807.1.6.3 ARE MET. 1807.1.6.2 CONCRETE FOUNDATION WALLS. CONCRETE FOUNDATION WALLS SHALL COMPLY WITH THE FOLLOWING:

THE THICKNESS SHALL COMPLY WITH THE REQUIREMENTS OF TABLE 1807.1.6.2. 2. THE SIZE AND SPACING OF VERTICAL REINFORCEMENT SHOWN IN TABLE 1807.1.6.2 ARE BASED ON THE USE OF

REINFORCEMENT WITH A MINIMUM YIELD STRENGTH OF 60,000 POUNDS PER SQUARE INCH (PSI) (414 MPA). VERTICAL REINFORCEMENT WITH A MINIMUM YIELD STRENGTH OF 40,000 PSI (276 MPA) OR 50,000 PSI (345 MPA) SHALL BE PERMITTED, PROVIDED THE SAME SIZE BAR IS USED AND THE SPACING SHOWN IN THE TABLE IS REDUCED BY MULTIPLYING THE PACING BY 0.67 OR 0.83, RESPECTIVELY.

VERTICAL REINFORCEMENT, WHEN REQUIRED, SHALL BE PLACED NEAREST THE INSIDE FACE OF THE WALL A DISTANCE, D, FROM THE OUTSIDE FACE (SOIL FACE) OF THE WALL. THE DISTANCE, D, IS EQUAL TO THE WALL THICKNESS, T, MINUS 1.25 INCHES (32 MM) PLUS ONE-HALF THE BAR DIAMETER, DB, [D = T - 1.25 + DB/2). THE REINFORCEMENT SHALL BE PLACED VITHIN A TOLERANCE OF ± 3/8 INCH (9.5 MM) WHERE D IS LESS THAN OR EQUAL TO 8 INCHES (203 MM) OR ± 1/2 INCH (12 7 MM) WHERE D IS GREATER THAN 8 INCHES (203 MM).

4. IN LIEU OF THE REINFORCEMENT SHOWN IN TABLE 1807.1.6.2, SMALLER REINFORCING BAR SIZES WITH CLOSER SPACINGS HAT PROVIDE AN EQUIVALENT CROSS- SECTIONAL AREA OF REINFORCEMENT PER UNIT LENGTH SHALL BE PERMITTED CONCRETE COVER FOR REINFORCEMENT MEASURED FROM THE INSIDE FACE OF THE WALL SHALL NOT BE LESS THAN 3/4 (19.1 MM). CONCRETE COVER FOR REINFORCEMENT MEASURED FROM THE OUTSIDE FACE OF THE WALL SHALL NOT

HE LESS THAN 1-1/2 INCH (38 MM) FOR NO. 5 BARS AND SMALLER, AND NOT LESS THAN 2 INCHES (51 MM) FOR LARGER 6. CONCRETE SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH, F'C, OF NOT LESS THAN 2,500 PSI (17.2 MPA). THE UN-FACTORED AXIAL LOAD PER LINEAR FOOT OF WALL SHALL NOT EXCEED 1.2 T F'C WHERE T IS THE SPECIFIED WALL HICKNESS IN INCHES.

1807.2 RETAINING WALLS, RETAINING WALLS SHALL BE DESIGNED IN ACCORDANCE WITH SECTIONS 1807.2.1 THROUGH 1807.2.5 1807.3 EMBEDDED POSTS AND POLES. DESIGNS TO RESIST BOTH AXIAL AND LATERAL LOADS EMPLOYING POSTS OR POLES AS COLUMNS EMBEDDED IN EARTH OR IN CONCRETE FOOTINGS IN EARTH SHALL BE IN ACCORDANCE WITH SECTIONS 1807.3.1 THROUGH 1807.3.3. SECTION 1808: FOUNDATIONS

1808.1 GENERAL. FOUNDATIONS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTIONS 1808.2 THROUGH 1808.9. SHALLOW FOUNDATIONS SHALL ALSO SATISFY THE REQUIREMENTS OF SECTION 1809. DEEP FOUNDATIONS SHALL ALSO SATISFY THE **REQUIREMENTS OF SECTION 1810** 1808.2 DESIGN FOR CAPACITY AND SETTLEMENT. FOUNDATIONS SHALL BE SO DESIGNED THAT THE ALLOWABLE BEARING CAPACITY OF THE SOIL IS NOT EXCEEDED, AND THAT DIFFERENTIAL SETTLEMENT IS MINIMIZED. FOUNDATIONS IN AREAS WITH EXPANSIVE SOILS SHALL BE DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 1808.6.

1808.3 DESIGN LOADS. FOUNDATIONS SHALL BE DESIGNED FOR THE MOST UNFAVORABLE EFFECTS DUE TO THE COMBINATIONS OF LOADS SPECIFIED IN SECTION 1805.2 OR 1605.3. THE DEAD LOAD IS PERMITTED TO INCLUDE THE WEIGHT OF FOUNDATIONS AND OVERLYING FILL. REDUCED LIVE LOADS, AS SPECIFIED IN SECTIONS 1607.10 AND 1607.12, SHALL BE PERMITTED TO BE USED IN THE DESIGN OF FOUNDATIONS. 1808.4 VIBRATORY LOADS. WHERE MACHINERY OPERATIONS OR OTHER VIBRATIONS ARE TRANSMITTED THROUGH THE FOUNDATION, CONSIDERATION SHALL BE GIVEN IN THE FOUNDATION DESIGN TO PREVENT DETRIMENTAL DISTURBANCES OF THE SOL 1808.5 SHIFTING OR MOVING SOILS. WHERE IT IS KNOWN THAT THE SHALLOW SUBSOILS ARE OF A SHIFTING OR MOVING CHARACTER.

FOUNDATIONS SHALL BE CARRIED TO A SUFFICIENT DEPTH TO ENSURE STABILITY. 1808.6 DESIGN FOR EXPANSIVE SOILS. FOUNDATIONS FOR BUILDINGS AND STRUCTURES FOUNDED ON EXPANSIVE SOILS SHALL BE GNED IN ACCORDANCE WITH SECTION 1808.6.1 OR 1808.6.2. XCEPTIONS: FOUNDATION DESIGN NEED NOT COMPLY WITH SECTION 1808.6.1 OR 1808.6.2 WHERE ONE OF THE FOLLOWING CONDITIONS IS THE SOIL IS REMOVED IN ACCORDANCE WITH SECTION 1808.6.3

 THE BUILDING OFFICIAL APPROVES STABILIZATION OF THE SOIL IN ACCORDANCE WITH SECTION 1808.6.4.
 808.7 FOUNDATIONS ON OR ADJACENT TO SLOPES. THE PLACEMENT OF BUILDINGS AND STRUCTURES ON OR ADJACENT TO SLOPES PER THAN ONE UNIT VERTICAL IN THREE UNITS HORIZONTAL (33.3- PERCENT SLOPE) SHALL COMPLY WITH SECTIONS 1808.7.1 THROUGH 1808.8 CONCRETE FOUNDATIONS. THE DESIGN, MATERIALS AND CONSTRUCTION OF CONCRETE FOUNDATIONS SHALL COMPLY WITH

SECTIONS 1808 8.1 THROUGH 1808 8.6 AND THE PROVISIONS OF CHAPTER 19 EXCEPTION: WHERE CONCRETE FOOTINGS SUPPORTING WALLS OF LIGHT-FRAME CONSTRUCTION ARE DESIGNED IN ACCORDANCE WITH TABLE 1809.7, A SPECIFIC DESIGN IN ACCORDANCE WITH CHAPTER 19 IS NOT REQUIRE 1808.8.1 CONCRETE OR GROUT STRENGTH AND MIX PROPORTIONING. CONCRETE OR GROUT IN FOUNDATIONS SHALL HAVE A SPECIFIED OMPRESSIVE STRENGTH (F'C) NOT LESS THAN THE LARGEST APPLICABLE VALUE INDICATED IN TABLE 1808.8.1.

WHERE CONCRETE OR GROUT IS IS TO BE PUMPED, THE MIX DESIGN, INCLUDING SLUMP, SHALL BE ADJUSTED TO PRODUCE A PUMP-ABLE MIXTURE 808.8.2 CONCRETE COVER. THE CONCRETE COVER PROVIDED FOR PRESTRESSED AND NON-PRESTRESSED REINFORCEMENT IN FOUNDATIONS SHALL BE NO LESS THAN THE LARGEST APPLICABLE VALUE SPECIFIED IN TABLE 1808.8.2. LONGITUDINAL BARS SPACED

THAN 1-1/2 INCHES (38 MM) CLEAR DISTANCE APART SHALL BE CONSIDERED BUNDLED BARS FOR WHICH THE CONCRETE COVER PROVIDED SHALL ALSO BE NO LESS THAN THAT REQUIRED BY SECTION 20.8.1.3.4 OF ACI 318. CONCRETE COVER SHALL BE MEASURED FROM THE CONCRETE SURFACE TO THE OUTERMOST SURFACE OF THE STEEL TO WHICH THE COVER REQUIREMENT APPLIES. WHEF CONCRETE IS PLACED IN A TEMPORARY OR PERMANENT CASING OR A MANDREL, THE INSIDE FACE OF THE CASING OR MANDREL SHALL BE CONSIDERED THE CONCRETE SURFACE. 1808.8.3 PLACEMENT OF CONCRETE, CONCRETE SHALL BE PLACED IN SUCH A MANNER AS TO ENSURE THE EXCLUSION OF ANY FOREIGN

MATTER AND TO SECURE A FULL-SIZE FOUNDATION. CONCRETE SHALL NOT BE PLACED THROUGH WATER UNLESS A TREMIE OR OTHER METHOD APPROVED BY THE BUILDING OFFICIAL IS USED. WHERE PLACED UNDER OR IN THE PRESENCE OF WATER, THE CONCRETE SHALL BE DEPOSITED BY APPROVED MEANS TO ENSURE MINIMUM SEGREGATION OF THE MIX AND NEGLIGIBLE TURBULENCE OF THE WATER. WHERE DEPOSITING CONCRETE FROM THE TOP OF A DEEP FOUNDATION ELEMENT, THE CONCRETE SHALL BE CHUTED RECTLY INTO SMOOTH-SIDED PIPES OR TUBES OR PLACED IN A RAPID AND CONTINUOUS OPERATION THROUGH A FUNNEL HOPPER ENTERED AT THE TOP OF THE ELEMENT. 808.8.4 PROTECTION OF CONCRETE. CONCRETE FOUNDATIONS SHALL BE PROTECTED FROM FREEZING DURING DEPOSITING AND FOR

A PERIOD OF NOT LESS THAN FIVE DAYS THEREAFTER. WATER SHALL NOT BE ALLOWED TO FLOW THROUGH THE DEPOSITED 1808.8.5 FORMING OF CONCRETE. CONCRETE FOUNDATIONS ARE PERMITTED TO BE CAST AGAINST THE EARTH WHERE, IN THE OPINION OF THE BUILDING OFFICIAL, SOIL CONDITIONS DO NOT REQUIRE FORMWORK. WHERE FORMWORK IS REQUIRED, IT SHALL BE IN ACCORDANCE WITH SECTION 26.10 OF ACI 318.

1808.8.6 SEISMIC REQUIREMENTS. SEE SECTION 1905 FOR ADDITIONAL REQUIREMENTS FOR FOUNDATIONS OF STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E OR F. FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E OR F, PROVISIONS OF ECTION 18.13 OF ACI 318 SHALL APPLY WHERE NOT IN CONFLICT WITH THE PROVISIONS OF SECTIONS 1808 THROUGH 1810. EXCEPTIONS: DETACHED ONE-AND TWO-FAMILY DWELLINGS OF LIGHT-FRAME CONSTRUCTION AND TWO STORIES OR LESS ABOVE GRADE PLANE

SECTION 1809: SHALLOW FOUNDATIONS

1809.1 GENERAL. SHALLOW FOUNDATIONS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTIONS 1809.2 THROUGH 1809.2 SUPPORTING SOILS. SHALLOW FOUNDATIONS SHALL BE BUILT ON UNDISTURBED SOIL, COMPACTED FILL MATERIAL OR CONTROLLED LOW-STRENGTH MATERIAL (CLSM). COMPACTED FILL MATERIAL SHALL BE PLACED IN ACCORDANCE WITH SECTION 1804.5. CLSM SHALL BE PLACED IN ACCORDANCE WITH SECTION 1804.6 1809.3 STEPPED FOOTINGS. THE TOP SURFACE OF FOOTINGS SHALL BE LEVEL. THE BOTTOM SURFACE OF FOOTINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT EXCEEDING ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10-PERCENT SLOPE). FOOTINGS SHALL BE EXTENDED WHERE IT IS NECESSARY TO CHANGE THE ELEVATION OF THE TOP SURFACE OF THE FOOTING OR WHERE THE SURFACE OF THE GROUND SLOPES MORE THAN ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10-PERCENT SLOPE)

OOTINGS SHALL BE 12 INCHES (305 MM) 1809.5 FROST PROTECTION. EXCEPT OR OTHERWISE PROTECTED FROM FROST, FOUNDATIONS AND OTHER PERMANENT SUPPORTS OF LDINGS AND STRUCTURES SHALL BE PROTECTED FROM FROST BY ONE OF THE FOLLOWING METHODS: EXTENDING BELOW THE FROST LINE OF THE LOCALITY.

ERECTING ON SOLID ROCK EXCEPTION: FREE-STANDING BUILDINGS MEETING ALL OF THE FOLLOWING CONDITIONS SHALL NOT BE REQUIRED TO BE PROTECTED: ASSIGNED TO RISK CATEGORY 1 2. AREA OF 600 SQUARE FEET (56 M2) OR LESS FOR LIGHT-FRAME CONSTRUCTION OR 400 SQUARE FEET (37 M2) OR LESS FOR OTHER

EAVE HEIGHT OF 10 FEET (3048MM) OR LESS. SHALLOW FOUNDATIONS SHALL NOT BEAR ON FROZEN SOIL UNLESS SUCH FROZEN CONDITION IS OF A PERMANENT CHARACTER. 1809.6 LOCATION OF FOOTINGS. FOOTINGS ON GRANULAR SOIL SHALL BE SO LOCATED THAT THE LINE DRAWN BETWEEN THE LOWER EDGES OF ADJOINING FOOTINGS SHALL NOT HAVE A SLOPE STEEPER THAN 30 DEGREES (0.52 RAD) WITH THE HORIZONTAL, UNLESS THE MATERIAL PORTING THE HIGHER FOOTING IS BRACED OR RETAINED OR OTHERWISE LATERALLY SUPPORTED IN AN APPROVED MANNER OR A GREATER SLOPE HAS BEEN PROPERLY ESTABLISHED BY ENGINEERING ANALYSIS

MASONRY-UNIT FOOTINGS SUPPORTING WALLS OF LIGHT-FRAME CONSTRUCTION SHALL BE PERMITTED TO BE DESIGNED IN ACCORDANCE

EXCEPTION: FOR PLAIN CONCRETE FOOTINGS SUPPORTING GROUP R-3 OCCUPANCIES, THE EDGE THICKNESS IS PERMITTED TO BE 6 INCHES (152 MM), PROVIDED THAT THE FOOTING DOES NOT EXTEND BEYOND A DISTANCE GREATER THAN THE THICKNESS OF THE FOOTING ON EITHER SIDE OF THE SUPPORTED WAL SECTION 1810: DEEP FOUNDATIONS

1810.1 GENERAL. DEEP FOUNDATIONS SHALL BE ANALYZED, DESIGNED, DETAILED AND INSTALLED IN ACCORDANCE WITH SECTIONS 1810.1 THROUGH 1810.4. 1810.2 ANALYSIS. THE ANALYSIS OF DEEP FOUNDATIONS FOR DESIGN SHALL BE IN ACCORDANCE WITH SECTIONS 1810.2.1 THROUGH 1810.2.5. 1810.3 DESIGN AND DETAILING. DEEP FOUNDATIONS SHALL BE DESIGNED AND DETAILED IN ACCORDANCE WITH SECTIONS 1810.3.1 THROUGH 1810.4 INSTALLATION. DEEP FOUNDATIONS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 1810.4. WHERE A SINGLE DEEP FOUNDATION ELEMENT COMPRISES TWO OR MORE SECTIONS OF DIFFERENT MATERIALS OR DIFFERENT TYPES SPLICED TOGETHER, EACH SECTION SHALL SATISFY THE APPLICABLE CONDITIONS OF INSTALLATION.

CBC CHAPTER 19: CONCRETE

SECTION 1901: GENERAL 1991.1 SCOPE. THE PROVISIONS OF THIS CHAPTER SHALL GOVERN THE MATERIALS, QUALITY CONTROL, DESIGN AND CONSTRUCTION OF CONCRETE USED IN STRUCTURE 1901.2 PLAIN AND REINFORCED CONCRETE. STRUCTURAL CONCRETE SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS CHAPTER AND ACI 318 AS AMENDED IN SECTION 1905 OF THIS CODE. EXCEPT FOR THE PROVISIONS OF SECTIONS 1904 AND 1907, THE DESIGN AND CONSTRUCTION OF SLABS ON GRADE SHALL NOT BE GOVERNED BY THIS CHAPTER UNLESS THEY TRANSMIT VERTICAL LOADS OR LATERAL FORCES FROM OTHER PARTS OF THE STRUCTURE TO THE SOIL. 1901.3 ANCHORING TO CONCRETE. ANCHORING TO CONCRETE SHALL BE IN ACCORDANCE WITH ACI 318 AS AMENDED IN SECTION 1905, AND PPLIES TO CAST-IN (HEADED BOLTS, HEADED STUDS AND HOOKED J OR L BOLTS), POST-INSTALLED EXPANSION (TORQUE-CONTROLLED AND DISPLACEMENT-CONTROLLED), UNDERCUT, SCREW, AND ADHESIVE ANCHORS.

ARE NOT REQUIRED TO COMPLY WITH THE PROVISIONS OF SECTION 18.13 OF ACI 318. 2. SECTION 18.13.4.3(A) OF ACI 318 SHALL NOT APPLY.

1809.4 DEPTH AND WIDTH OF FOOTINGS. THE MINIMUM DEPTH OF FOOTINGS BELOW THE UNDISTURBED GROUND SURFACE SHALL BE 12 INCHES (305 MM). WHERE APPLICABLE, THE REQUIREMENTS OF SECTION 1809.5 SHALL ALSO BE SATISFIED. THE MINIMUM WIDTH OF

CONSTRUCTING IN ACCORDANCE WITH ASCE 32. 3.

THAN LIGHT-FRAME CONSTRUCTION

1809.7 PRESCRIPTIVE FOOTINGS FOR LIGHT-FRAME CONSTRUCTION. WHERE A SPECIFIC DESIGN IS NOT PROVIDED, CONCRETE OR 1809.8 PLAIN CONCRETE FOOTINGS. THE EDGE THICKNESS OF PLAIN CONCRETE FOOTINGS SUPPORTING WALLS OF OTHER THAN LIGHT-FRAME CONSTRUCTION SHALL NOT BE LESS THAN 8 INCHES (203 MM) WHERE PLACED ON SOIL OR ROCK.

1901.4 COMPOSITE STRUCTURAL STEEL AND CONCRETE STRUCTURES. SYSTEMS OF STRUCTURAL STEEL ACTING COMPOSITELY WITH REINFORCED CONCRETE SHALL BE DESIGNED IN ACCORDANCE WITH SECTION 2206 OF THIS CODE. 1901.6 SPECIAL INSPECTIONS AND TESTS. SPECIAL INSPECTIONS AND TESTS OF CONCRETE ELEMENTS OF BUILDINGS AND STRUCTURES AND CONCRETING OPERATIONS SHALL BE AS REQUIRED BY CHAPTER 17. SECTION 1902: DEFINITIONS

1902.1 GENERAL. THE WORDS AND TERMS DEFINED IN ACI 318 SHALL, FOR THE PURPOSES OF THIS CHAPTER AND AS USED ELSEWHERE IN THIS CODE FOR CONCRETE CONSTRUCTION, HAVE THE MEANINGS SHOWN IN ACI 318 AS MODIFIED BY SECTION 1905.1.1. SECTION 1903: SPECIFICATIONS FOR TESTS AND MATERIALS

1903.1 GENERAL. MATERIALS USED TO PRODUCE CONCRETE, CONCRETE ITSELF AND TESTING THEREOF SHALL COMPLY WITH THE APPLICABLE STANDARDS LISTED IN ACI 318. EXCEPTION: THE FOLLOWING STANDARDS AS REFERENCED IN CHAPTER 35 SHALL BE PERMITTED TO BE USED.

ASTM C595 ASTM C1157

903.2 SPECIAL INSPECTIONS. WHERE REQUIRED, SPECIAL INSPECTIONS AND TESTS SHALL BE IN ACCORDANCE WITH CHAPTER 17. 1903.3 GLASS FIBER-REINFORCED CONCRETE. GLASS FIBER-REINFORCED CONCRETE (GFRC) AND THE MATERIALS USED IN SUCH CONCRETE SHALL BE IN ACCORDANCE WITH THE PCI MNL 128 STANDARD. 03.4 FLAT WALL INSULATING CONCRETE FORM (ICF) SYSTEMS. INSULATING CONCRETE FORM MATERIAL USED FOR FORMING FIAT CONCRETE WALLS SHALL CONFORM TO ASTM E2634 SECTION 1904: DURABILITY REQUIREMENTS

1904.1 STRUCTURAL CONCRETE. STRUCTURAL CONCRETE SHALL CONFORM TO THE DURABILITY REQUIREMENTS OF ACI 318. EXCEPTION: FOR GROUP R-2 AND R-3 OCCUPANCIES NOT MORE THAN THREE STORIES ABOVE GRADE PLANE. THE SPECIFIED COMPRESSIVE ENGTH, F'C, FOR CONCRETE IN BASEMENT WALLS, FOUNDATION WALLS, EXTERIOR WALLS AND OTHER VERTICAL SURFACES EXPOSED TO THE WEATHER SHALL BE NOT LESS THAN 3 000 PSI (20.7 MPA) 4.2 NONSTRUCTURAL CONCRETE. THE REGISTERED DESIGN PROFESSIONAL SHALL ASSIGN NONSTRUCTURAL CONCRETE A FREEZE-THAW EXPOSURE CLASS, AS DEFINED IN ACI 318, BASED ON THE ANTICIPATED EXPOSURE OF NONSTRUCTURAL CONCRETE. NONSTRUCTURAL CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH, F'C, OF 2,500 PSI (17.2 MPA) FOR CLASS FO; 3,000 PSI (20.7 MPA) FOR CLASS F1; AND 3,500 PSI (24.1 MPA) FOR CLASSES F2 AND F3. NONSTRUCTURAL CONCRETE SHALL BE AIR AINED IN ACCORDANCE WITH ACI 318. SECTION 1905: MODIFICATIONS TO ACI 318

1905.1 GENERAL. THE TEXT OF ACI 318 SHALL BE MODIFIED AS INDICATED IN SECTIONS 1905.1.1 THROUGH 1905.1.8. SECTION 1906: FOOTINGS FOR LIGHT-FRAME CONSTRUCTION

1906.1 PLAIN CONCRETE FOOTINGS. FOR GROUP ARE THREE OCCUPANCIES AND BUILDINGS OF OTHER OCCUPANCIES LESS THAN TWO STORIES ABOVE GRADE PLAN OF LIGHT FRAME CONSTRUCTION, THE REQUIRED THICKNESS OF PLAIN CONCRETE FOOTINGS IS PERMITTED TO BE 6 INCHES (152 MM), PROVIDED THAT THE FOOTING DOES NOT EXTEND MORE THAN 4 INCHES (102 MM) ON EITHER SIDE OF THE SUPPORTED WALL

SECTION 1907: MINIMUM SLAB PROVISIONS

1907.1 GENERAL. THE THICKNESS OF CONCRETE FLOOR SLABS SUPPORTED DIRECTLY ON THE GROUND SHALL NOT BE LESS THAN 3-1/2 CHES (89 MM). A 6-MIL (0.006 INCH; 0.15 MM) POLYETHYLENE VAPOR RETARDER WITH JOINTS LAPPED NOT LESS THAN 6 INCHES (152 MM) SHALL BE PLACED BETWEEN THE BASE COURSE OR SUB-GRADE AND THE CONCRETE FLOOR SLAB, OR OTHER APPROVED EQUIVALENT METHODS OR MATERIALS SHALL BE USED TO RETARD VAPOR TRANSMISSION THROUGH THE FLOOR SLAB.

- EXCEPTION: A VAPOR RETARDER IS NOT REQUIRED: FOR DETACHED STRUCTURES ACCESSORY TO OCCUPANCIES IN GROUP R-3, SUCH AS GARAGES, UTILITY BUILDINGS OR OTHER INHEATED FACILITIES.
- FOR UNHEATED STORAGE ROOMS HAVING AN AREA OF LESS THAN 70 SQUARE FEET (6.5 M2) AND CARPORTS ATTACHED TO CCUPANCIES IN GROUP R-3
- FOR BUILDINGS OF OTHER OCCUPANCIES WHERE MIGRATION OF MOISTURE THROUGH THE SLAB FROM BELOW WILL NOT BE DETRIMENTAL TO THE INTENDED OCCUPANCY OF THE BUILDING. FOR DRIVEWAYS, WALKS, PATIOS AND OTHER FLATWORK THAT WILL NOT BE ENCLOSED AT A LATER DATE.

5. WHERE APPROVED BASED ON LOCAL SITE CONDITIONS. ADDITIONAL CONCRETE AND FOUNDATION NOTES:

1. IF A SOIL REPORT IS PROVIDED, THE SOILS ENGINEER OF RECORD SHALL REVIEW GRADING & DRAINAGE PLANS, FOUNDATION PLANS, & DETAILS & PROVIDE WRITTEN DOCUMENTATION INDICATING THEIR CONFORMANCE WITH HIS/HER SOIL REPORT. THE SOIL ENGINEER OF RECORD (AS APPLICABLE), SHALL BE PRESENT AT THE PROJECT SITE TO OBSERVE & INSPECT ALL EARTHWORK. RADING, FOUNDATION EXCAVATIONS & PROVIDE WRITTEN DOCUMENTATION OF THEIR OBSERVATIONS TO THE LOCAL BUILDING FFICIAL PRIOR TO POURING OF ANY CONCRETE FOOTING OR RETAINING WALL. COMPRESSIVE STRENGTH: CONCRETE SHALL BE IN COMPLIANCE WITH CHAPTER 19 & SHALL COMPLY WITH THE DURABILITY CRITERIA PER CBC SECTION 1904. FOR CONCRETE DESIGNED & CONSTRUCTED IN ACCORDANCE WITH THE CODES NOTES ABOVE, THE COMPRESSIVE STRENGTH OF CONCRETE (F'C) SHALL BE NOT LESS THAN 2500 PSI @ 28 DAYS.

REINFORCEMENT: SEE PLANS AND DETAILS FOR SPECIFIC REINFORCEMENT. LAP ALL REINFORCING BARS PER CRC BUT IN NO CAS ESS THAN 40 BAR DIAMETER. REBAR SIZES #4 & SMALLER SHALL BE GRADE 40, REBAR #5 & LARGER SHALL BE GRADE 60. ASTM 615.

WET SET ANCHOR BOLTS: PROVIDE ANCHORAGE OF WOOD FRAMING MEMBERS PER CBC, USE 5/8" DIAMETER BY 12 INCH ANCHOR BOLTS, SPACED AT 48"OC MAXIMUM. USE .229" X 3" X 3" SQUARE PLATE WASHERS AT EACH ANCHOR BOLT. SEE STRUCTURAL ENGINEER OF RECORD'S DESIGNATED SHEAR WALL SCHEDULE FOR ANCHOR BOLT SPACING REQUIREMENTS AT IDENTIFIED BRACED WALL PANEL INES. (SHEAR WALLS).

- RETROFIT ANCHOR BOLTS: PROVIDE 5/8", 7/8", 1" OR GREATER THREADED RODS (PER FOUNDATION PLAN) WITH .229" X 3" X 3" SQUARE PLATE WASHERS, ANCHORS SET INTO EXISTING FOUNDATIONS/STEM WALLS WITH "SIMPSON SET-XP" EPOXY SYSTEM, (ICC-ESR 2508)
- THREADED RODS SHALL BE A36 STEEL (UNO). IF IN CONTACT WITH PTDF LUMBER, THREADED RODS SHALL BE STAINLESS STEEL OR HOT DIPPED, ZINC COATED GALVANIZED. IF INSTALLED AS RETROFIT ANCHORS, USE "SIMPSON" EPOXY SET XP SYSTEM (ICC #2508). 8. HOLD DOWNS SHALL BE INSTALLED PER MANUFACTURERS' INSTALLATION INSTRUCTIONS, SEE FOUNDATION & FRAMING PLAN(S) FOR
- OLD DOWN TYPE & LOCATIONS. DO NOT SCALE OFF OF STRUCTURAL PLANS. COORDINATE THEIR LOCATION WITH DIMENSIONS PROVIDED ON ARCHITECTURAL PLANS.

9. ALL SPECIFIED RETROFIT HOLD DOWNS SHALL REQUIRE A SPECIAL INSPECTION PER CBC CHAPTER 17. **CBC CHAPTER 21: MASONRY**

SECTION 2101: GENERAL

2101.1 SCOPE. THIS CHAPTER SHALL GOVERN THE MATERIALS, DESIGN, CONSTRUCTION AND QUALITY OF MASONRY. 101.2 DESIGN METHODS. MASONRY SHALL COMPLY WITH THE PROVISIONS OF TMS 402/ACI 530/ASCE 5 OR TMS 403 AS WELL AS APPLICABLE

2101.3 SPECIAL INSPECTION. THE SPECIAL INSPECTION OF MASONRY SHALL HE AS DEFINED IN CHAPTER 17, OR AN ITEMIZED TESTING AND INSPECTION PROGRAM SHALL HE PROVIDED THAT MEETS OR EXCEEDS THE REQUIREMENTS OF CHAPTER 17. SECTION 2103: MASONRY CONSTRUCTION MATERIALS

2103.1 MASONRY UNITS. CONCRETE MASONRY UNITS, CLAY OR SHALE MASONRY UNITS, STONE MASONRY UNITS, GLASS UNIT MASONRY AND AAC MASONRY UNITS SHALL COMPLY WITH ARTICLE 2.3 OF TMS 602. ARCHITECTURAL CAST STONE SHALL CONFORM TO ASTM C1364 AND TMS 504. ADHERED MANUFACTURED STONE MASONRY VENEER UNITS SHALL CONFORM TO ASTM C1670 [OSHPD 1R, 2B, & 5] ARCHITECTURAL CAST STONE CONSTRUCTION SHALL BE CONSIDERED AS AN ALTERNATIVE SYSTEM. EXCEPTION: STRUCTURAL CLAY TILE FOR NONSTRUCTURAL USE IN FIREPROOFING OF STRUCTURAL MEMBERS AND IN WALL FURRING SHALL NOT BE REQUIRED TO MEET THE COMPRESSIVE STRENGTH SPECIFICATIONS. THE FIRE-RESISTANCE RATING SHALL BE DETERMINED IN ACCORDANCE WITH ASTM E119 OR UL 263 AND SHALL COMPLY WITH THE REQUIREMENTS OF TABLE 705.5. 2103.2 MORTAR. MORTAR FOR MASONRY CONSTRUCTION SHALL COMPLY WITH SECTION 2103.2.1, 2103.2.2, 2103.2.3 OR 2103.2.4. 4 METAL REINFORCEMENT AND ACCESSORIES. METAL REINFORCEMENT AND ACCESSORIES SHALL CONFORM TO ARTICLE 2.4 OF TMS 02. WHERE UNIDENTIFIED REINFORCEMENT [OSHPD 1R, 2B & 5], OR BAR, REINFORCEMENT WITHOUT MILL CERTIFICATION, IS APPROVED

FOR USE, NOT LESS THAN THREE TENSION AND THREE BENDING TESTS SHALL BE MADE ON REPRESENTATIVE SPECIMENS OF THE REINFORCEMENT FROM EACH SHIPMENT AND GRADE OF REINFORCING STEEL PROPOSED FOR USE IN THE WORK. [OSHPD 1R, 28 & 5] ALTERNATIVELY, THE FREQUENCY OF SAMPLING FOR UNIDENTIFIABLE REINFORCING BARS SPECIFIED IN SECTION 1910.2 CAN BE USED.

REBAR METRIC CONVERSION TABLE

BAR SIZE	INCHES (DIAMETER)	MILLIMETER (DIAMETER)	CENTIMETER (DIAMETER)
13	3/8*	9.52 MM	0.95 CM
4	1/2"	12.70 MM	1.27 CM
5	5/8*	15.87 MM	1.58 CM
6	3/4*	19.05 MM	1.90 CM
17	7/8*	22.22 MM	2.22 CM
8	1"	25.40 MM	2.54 CM

CBC CHAPTER 22: STEEL

SECTION 2203: PROTECTION OF STEEL FOR STRUCTURAL PURPOSES 2203.1 GENERAL. PAINTING OF STRUCTURAL STEEL ELEMENTS SHALL BE IN ACCORDANCE WITH AISC 360. PAINTING OF OPEN-WEB STEEL

JOISTS AND JOIST GIRDERS SHALL BE IN ACCORDANCE WITH SJI 100 AND SJI 200. INDIVIDUAL STRUCTURAL MEMBERS AND ASSEMBLE PANELS OF COLD-FORMED STELL CONSTRUCTION SHALL BE PROTECTED A GAINST CORROSION IN ACCORDANCE WITH THE REQUIREMENTS CONTAINED IN AISI S100. PROTECTION OF COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION SHALL BE IN ACCORDANCE WITH AISI S240 OR AISI S220, AS APPLICABLE.

SECTION 2204: CONNECTIONS 4.1 WELDING. THE DETAILS OF DESIGN, WORKMANSHIP AND TECHNIQUE FOR WELDING AND QUALIFICATION OF WELDING PERSONNE

HALL BE IN ACCORDANCE WITH THE SPECIFICATIONS LISTED IN SECTIONS 2205, 2206, 2207, 2208, 2210 AND 2211. FOR SPECIAL INSPECTION F WELDING, SEE SECTION 1705.2 2204.2 BOLTING. THE DESIGN, INSTALLATION AND INSPECTION OF BOLTS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTIONS 2205, 2206, 2207, 2210 AND 2211. FOR SPECIAL INSPECTION OF THE INSTALLATION OF HIGH-STRENGTH BOLTS, SEE SECTION 1705.2. 24.3 ANCHOR RODS. ANCHOR RODS SHALL BE SET IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS. THE PROTRUSION OF THE THREADED ENDS THROUGH THE CONNECTED MATERIAL SHALL FULLY ENGAGE THE THREADS OF THE NUTS BUT SHALL NOT BE GREATER THAN THE LENGTH OF THE THREADS ON THE BOLTS.

SECTION 2205: STRUCTURAL STEEL 2205.1 GENERAL. THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL ELEMENTS IN BUILDINGS, STRUCTURES AND PORTIONS

THEREOF SHALL BE IN ACCORDANCE WITH AISC 360. 2205.2 SEISMIC DESIGN. WHERE REQUIRED, THE SEISMIC DESIGN, FABRICATION AND ERECTION OF BUILDINGS, STRUCTURES AND PORTIONS THEREOF SHALL BE IN ACCORDANCE WITH SECTION 2205.2.1 OR 2205.2.2, AS APPLICABLE. SECTION 2211: COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

SHALL BE IN ACCORDANCE WITH AISI S200 AND SECTIONS 2211.2 THROUGH 2211.7, OR AISI S220, AS APPLICABLE.

.1 GENERAL. THE DESIGN AND INSTALLATION OF STRUCTURAL AND NONSTRUCTURAL MEMBERS UTILIZED IN COLD-FORMED STEEL IGHT-FRAME CONSTRUCTION WHERE THE SPECIFIED MINIMUM BASE STEEL THICKNESS IS NOT GREATER THAN 0.1180 INCHES (2.997 MM)

STEEL SHAPE	ASTM/GRADE	Fy	Fu
"W" (I-BEAM)	A36	36 ksi	58 ksi
"M", "S", "HP", "C", "MC" & "L"	A36	36 ksi	58 ksi
RECTANGULAR/SQUARE "HSS".	A500, GRADE B	46 ksi	58 ksi
ROUND "HSS"	A500, GRADE B	48 ksi	58 ksi
STEEL PIPE	A53, GRADE B	35 ksi	60 ksi
ALL OTHER SHAPES	A36	36 ksi	58 ksi

CBC CHAPTER 23: WOOD

SECTION 2303: MINIMUM STANDARDS AND QUALITY

2303.1 GENERAL. STRUCTURAL SAWN LUMBER: END-JOINTED LUMBER: PREFABRICATED WOOD I-JOISTS: STRUCTURAL GLUED-LAMINATED TIMBER; WOOD STRUCTURAL PANELS; FIBERBOARD SHEATHING (WHEN USED STRUCTURALLY); HARDBOARD SIDING (WHEN USED STRUCTURALLY); PARTICLEBOARD; PRESERVATIVE-TREATED WOOD; STRUCTURALLOG MEMBERS; STRUCTURAL COMPOSITE LUMBER ROUND TIMBER POLES AND PILES; FIRE-RETARDANT-TREATED WOOD; HARDWOOD PLYWOOD; WOOD TRUSSES; JOIST HANGERS; NAILS; AND STAPLES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THIS SECTION. 303.1.1 SAWN LUMBER. SAWN LUMBER USED FOR LOAD-SUPPORTING PURPOSES, INCLUDING END-JOINTED OR EDGE-GLUED LUMBER, MACHINE STRESS-RATED OR MACHINE-EVALUATED LUMBER, SHALL BE IDENTIFIED BY THE GRADE MARK OF A LUMBER GRADING OR INSPECTION AGENCY THAT HAS BEEN APPROVED BY AN ACCREDITATION BODY THAT COMPLIES WITH DOC PS 20 OR EQUIVALENT. BRADING PRACTICES AND IDENTIFICATION SHALL COMPLY WITH RULES PUBLISHED BY AN AGENCY APPROVED IN ACCORDANCE WITH HE PROCEDURES OF DOC PS 20 OR EQUIVALENT PROCEDURES.

2303.1.1.1 CERTIFICATE OF INSPECTION. IN LIEU OF A GRADE MARK ON THE MATERIAL, A CERTIFICATE OF INSPECTION AS TO SPECIES AND GRADE ISSUED BY A LUMBER GRADING OR INSPECTION AGENCY MEETING THE REQUIREMENTS OF THIS SECTION IS PERMITTED TO BE ACCEPTED FOR PRECUT, REMANUFACTURED OR ROUGH-SAWN LUMBER AND FOR SIZES LARGER THAN 3 INCHES (76 MM) NOMINAL THICKNESS. 303.1.1.2 END-JOINTED LUMBER. APPROVED END-JOINTED LUMBER IS PERMITTED TO BE USED INTERCHANGEABLY WITH

SOLID-SAWN MEMBERS OF THE SAME SPECIES AND GRADE, END-JOINTED LUMBER USED IN AN ASSEMBLY REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL HAVE THE DESIGNATION "HEAT RESISTANT ADHESIVE" OR "HRA" INCLUDED IN ITS GRADE

MUD SILL	PTDF/REDWOOD/PSL PLUS
ROOF RAFTERS	DF#2 OR BETTER
FLOOR JOISTS	DF#2 OR BETTER
CEILING JOISTS	DF#2 OR BETTER

MUD SILL	PTDF/REDWOOD/PSL PLUS
4X BEAMS	DF#1 OR BETTER
6X BEAMS/LARGER	DF#1 OR BETTER
STUDS (2X4/3X4)	DF#2 OR BETTER
STUDS (2X6/LARGER)	DF#2 OR BETTER
STUDS (BALLOON FRAMED WALLS)	2X6 DF#2 OR BETTER
POSTS (4x4/LARGER)	DF#1 OR BETTER
POSTS (6X6/LARGER)	DE#1 OR BETTER

2303.1.2 PREFABRICATED WOOD I-JOISTS, STRUCTURAL CAPACITIES AND DESIGN PROVISIONS FOR PREFABRICATED WOOD I-JOISTS HALL BE ESTABLISHED AND MONITORED IN ACCORDANCE WITH ASTM D5055. PARALLAM, MICRO-LAM, TJI JOISTS, ETC SPECIFIED ON DRAWINGS & INSTALLED PER MANUFACTURERS'/STRUCTURAL ENGINEER'S SPECIFICATIONS AND/OR DETAILS. ICC ESR-1153 & 1387.

2303.1.3 STRUCTURAL GLUED-LAMINATED TIMBER. GLUED	D-LAMINATED TIMBERS SHALL BE MANUFACTURED AND IDENTIFIED AS
REQUIRED IN ANSI/AITC A 190.1 AND ASTM D 3737. STRUC	TURAL ENGINEER SHALL SPECIFY SIZES/GRADES ON PLANS. (UNO). GLU-LAM
MEMBERS SHALL MEET OR EXCEED THE FOLLOWING STR	RESS VALUES:
BENDING (FB)	2400 PSI

HORIZONTAL SHEAR (FV)	165 P
TENSION (FT)	1150 P
COMPRESSION (FC)	1650 P
BEARING STRESS	450 P
MODULUS OF ELASTICITY	1800 K
2303.1.4 STRUCTURAL GLUED CROSS-LAMINATED TIMBER	CROS

ACCORDANCE WITH ANSI/APA PRG 320. 2303.1.5 WOOD STRUCTURAL PANELS, WOOD STRUCTURAL PANELS, WHEN USED STRUCTURALLY (INCLUDING THOSE USED FOR SIDING. AND WALL SHEATHING, SUB-FLOORING, DIAPHRAGMS AND BUILT-UP MEMBERS), SHALL CONFORM TO THE REQUIREMENTS FOR THEIR TYPE IN DOC PS 1, DOC PS 2 OR ANSI/APA PRP 210. EACH PANEL OR MEMBER SHALL BE IDENTIFIED FOR GRADE, BOND CLASSIFICATION, AND PERFORMANCE CATEGORY BY THE TRADEMARKS OF AN APPROVED TESTING AND GRADING AGENCY. THE PERFORMANCE CATEGORY VALUE SHALL BE USED AS THE "NOMINAL PANEL THICKNESS" OR "PANEL THICKNESS" WHENEVER REFERENCED IN THIS CODE. WOOD STRUCTURAL PANEL COMPONENTS SHALL BE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE APPLICABLE STANDARDS LISTED IN SECTION 2306.1 AND IDENTIFIED BY THE TRADEMARKS OF AN APPROVED TESTING AND NSPECTION AGENCY INDICATING CONFORMANCE TO THE APPLICABLE STANDARD. IN ADDITION, WOOD STRUCTURAL PANELS WHEN PERMANENTLY EXPOSED IN OUTDOOR APPLICATIONS SHALL BE OF EXTERIOR TYPE. EXCEPT THAT WOOD STRUCTURAL PANEL ROOF

3/4" T&G (48/24) OR 23/32" T&G OSI WALL SHEATHING 3/8" MIN_CDX (16/0) OR 15/32" OS ROOF SHEATHING: 1/2" MIN. CDX (24/0) OR 19/32" OSB

SHEATHING EXPOSED TO THE OUTDOORS ON THE UNDERSIDE IS PERMITTED TO BE EXPOSURE 1 TYPE. MINIMUM SIZES ARE AS

2303.1.6 FIBERBOARD. FIBERBOARD FOR ITS VARIOUS USES SHALL CONFORM TO ASTM C208. FIBERBOARD SHEATHING, WHEN USED STRUCTURALLY, SHALL BE IDENTIFIED BY AN APPROVED AGENCY AS CONFORMING TO ASTM 0208. 2303.1.7 HARDBOARD. HARDBOARD SIDING USED STRUCTURALLY SHALL BE IDENTIFIED BY AN APPROVED AGENCY CONFORMING TO CPA/ANSI AOS.6. HARDBOARD UNDERLAYMENT SHALL MEET THE STRENGTH REQUIREMENTS OF 7/32 INCH (5.6 MM) OR 1/4 INCH (6.4 MM) ERVICE CLASS HARDBOARD PLANED OR SANDED ON ONE SIDE TO A UNIFORM THICKNESS OF NOT LESS THAN 0.200 INCH (5.1 MM). PME-INISHED HARDBOARD PANELING SHALL MEET THE REQUIREMENTS OF CPA/ANSI AOS.5. OTHER BASIC HARDBOARD PRODUCTS SHAL MEET THE REQUIREMENTS OF CPA/ANSI A05.4. HARDBOARD PRODUCTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. 2303.1.8 PARTICLEBOARD. PARTICLEBOARD SHALL CONFORM TO ANSI A208.1. PARTICLEBOARD SHALL BE IDENTIFIED BY THE GRADE MARK OR CERTIFICATE OF INSPECTION ISSUED BY AN APPROVED AGENCY. PARTICLEBOARD SHALL NOT BE UTILIZED FOR APPLICATIONS OTHER THAN INDICATED IN THIS SECTION UNLESS THE PARTICLEBOARD COMPLIES WITH THE PROVISIONS OF SECTION 2306.3. 2303.1.9 PRESERVATIVE-TREATED WOOD. LUMBER, TIMBER, PLYWOOD, PILES AND POLES SUPPORTING PERMANENT STRUCTURES REQUIRED BY SECTION 2304 12 TO BE PRESERVATIVE TREATED SHALL CONFORM TO THE REQUIREMENTS OF THE APPLICABLE AWP TANDARD U1 AND M4 FOR THE SPECIES, PRODUCT, PRESERVATIVE AND END USE. PRESERVATIVES SHALL BE LISTED IN SECTION 4 OF AWPA U1. LUMBER AND PLYWOOD USED IN WOOD FOUNDATIONS SHALL CONFORM TO CHAPTER 18. 10 STRUCTURAL COMPOSITE LUMBER. STRUCTURAL CAPACITIES FOR STRUCTURAL COMPOSITE LUMBER SHALL BE ESTABLISHED AND MONITORED IN ACCORDANCE WITH ASTM D5456. 2303.1.11 STRUCTURAL LOG MEMBERS. STRESS GRADING OF STRUCTURAL LOG MEMBERS OF NON-RECTANGULAR SHAPE, AS TYPICALLY JSED IN LOG BUILDINGS, SHALL BE IN ACCORDANCE WITH ASTM D3957. SUCH STRUCTURAL LOG MEMBERS SHALL BE IDENTIFIED BY THE

GRADE MARK OF AN APPROVED LUMBER GRADING OR INSPECTION AGENCY. IN LIEU OF A GRADE MARK ON THE MATERIAL, A CERTIFICATE OF INSPECTION AS TO SPECIES AND GRADE ISSUED BY A LUMBER GRADING OR INSPECTION AGENCY MEETING THE REQUIREMENTS OF THIS SECTION SHALL BE PERMITTED 2303.1.12 ROUND TIMBER POLES AND PILES. ROUND TIMBER POLES AND PILES SHALL COMPLY WITH ASTM D3200 AND ASTM D25, RESPECTIVELY. 2303.1.13 ENGINEERED WOOD RIM BOARD. ENGINEERED WOOD RIM BOARDS SHALL CONFORM TO ANSI/APA PRR 410 OR SHALL BE EVALUATED IN ACCORDANCE WITH ASTM D7672. STRUCTURAL CAPACITIES SHALL BE IN ACCORDANCE WITH ANSI/ APA PRR 410 OR STABLISHED IN ACCORDANCE WITH ASTM D7672. RIM BOARDS CONFORMING TO ANSI/APA PRR 410 SHALL BE MARKED IN ACCORDANCE WITH THAT STANDARD 2 FIRE-RETARDANT-TREATED WOOD. FIRE-RETARDANT-TREATED WOOD IS ANY WOOD PRODUCT WHICH, WHEN IMPREGNATED WITH CHEMICALS BY A PRESSURE PROCESS OR OTHER MEANS DURING MANUFACTURE, SHALL HAVE, WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723, A LISTED FLAME SPREAD INDEX OF 25 OR LESS. ADDITIONALLY, THE ASTM E84 OR UL 723 TEST SHALL BE CONTINUED FOR A 20-MINUTE PERIOD AND THE FLAME FRONT SHALL NOT PROGRESS MORE THAN 10-1/2 FEET. (3200 MM) BEYOND THE CENTERLINE OF THE

2303.3 HARDWOOD AND PLYWOOD. HARDWOOD AND DECORATIVE PLYWOOD SHALL BE MANUFACTURED AND IDENTIFIED AS REQUIRED IN 2303.4 TRUSSES. WOOD TRUSSES SHALL COMPLY WITH SECTIONS 2303.4.1 THROUGH 2303.4.7 2303.4.1 DESIGN. WOOD TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE AND ACCEPTED ENGINEERING PRACTICE. MEMBERS ARE PERMITTED TO BE JOINED BY NAILS, GLUE, BOLTS, TIMBER CONNECTORS, METAL CONNECTOR PLATES OR OTHER APPROVED FRAMING DEVICES 2303.4.2 TRUSS PLACEMENT DIAGRAM. THE TRUSS MANUFACTURER SHALL PROVIDE A TRUSS PLACEMENT DIAGRAM THAT IDENTIFIES THE PROPOSED LOCATION FOR EACH INDIVIDUALLY DESIGNATED TRUSS AND REFERENCES THE CORRESPONDING TRUSS DESIGN DRAW-ING. THE TRUSS PLACEMENT DIAGRAM SHALL BE PROVIDED AS PART OF THE TRUSS SUBMITTAL PACKAGE, AND WITH THE SHIPMENT OF TRUSSES DELIVERED TO THE JOB SITE. TRUSS PLACEMENT DIAGRAMS THAT SERVE ONLY AS A GUIDE FOR INSTALLATION AND DO NOT DEVIATE FROM THE PERMIT SUBMITTAL DRAWINGS SHALL NOT BE REQUIRED TO BEAR THE SEAL OR SIGNATURE OF THE TRUSS DESIGNER 2303.4.3 TRUSS SUBMITTAL PACKAGE. THE TRUSS SUBMITTAL PACKAGE PROVIDED BY THE TRUSS MANUFACTURER SHALL CONSIST OF HINDIVIDUAL TRUSS DESIGN DRAWING, THE TRUSS PLACEMENT DIAGRAM, THE PERMANENT INDIVIDUAL TRUSS MEMBER RESTRAINT/BRACING METHOD AND DETAILS AND ANY OTHER STRUCTURAL DETAILS GERMANE TO THE TRUSSES; AND, AS APPLICABLE, THE COVER/TRUSS INDEX SHEET NOTE: THE STRUCTURAL ENGINEER OF RECORD SHALL BE PROVIDED THE OPPORTUNITY TO REVIEW THE INDIVIDUAL TRUSS DESIGNS AND THE TRUSS PLACEMENT DIAGRAM PRIOR TO FABRICATION AND/OR INSTALLATION.

URNERS AT ANY TIME DURING THE TES

SECTION 2304: GENERAL CONSTRUCTION REQUIREMENTS 2304.1 GENERAL. THE PROVISIONS OF THIS SECTION APPLY TO DESIGN METHODS SPECIFIED IN SECTION 2301.2. 104.2 SIZE OF STRUCTURAL MEMBERS. COMPUTATIONS TO DETER- MINE THE REQUIRED SIZES OF MEMBERS SHALL BE BASED ON THE NET DIMENSIONS (ACTUAL AND NOT NOMINAL SIZES. 304.3 WALL FRAMING. THE FRAMING OF EXTERIOR AND INTERIOR WALLS SHALL BE IN ACCORDANCE WITH THE PROVISIONS SPECIFIED IN TION 2308 LINEESS & SPECIFIC DESIGN IS FURNI 2304.3.1 BOTTOM PLATES. STUDS SHALL HAVE FULL BEARING ON A 2-INCH THICK (ACTUAL 1-1/2 INCH, 38 MM) OR LARGER PLATE OR SILL HAVING A WIDTH AT LEAST EQUAL TO THE WIDTH OF THE STUDS 2304.3.2 FRAMING OVER OPENINGS. HEADERS, DOUBLE JOISTS, TRUSSES OR OTHER APPROVED ASSEMBLIES THAT ARE OF ADEQUATE SIZE TO TRANSFER LOADS TO THE VERTICAL MEMBERS SHALL BE PROVIDED OVER WINDOW AND DOOR OPENINGS IN LOAD-BEARING WALLS AND PARTITIONS 2304.4 FLOOR AND ROOF FRAMING. THE FRAMING OF WOOD- JOISTED FLOORS AND WOOD FRAMED ROOFS SHALL BE IN ACCORDANCE WITH

THE PROVISIONS SPECIFIED IN SECTION 2308 UNLESS A SPECIFIC DESIGN IS FURNISHED 2304.5 FRAMING AROUND FLUES AND CHIMNEYS. COMBUSTIBLE FRAMING SHALL BE A MINIMUM OF 2 INCHES (51 MM), BUT SHALL NOT BE LESS THAN THE DISTANCE SPECIFIED IN SECTIONS 2111 AND 2113 AND THE CALIFORNIA MECHANICAL CODE, FROM FLUES, CHIMNEYS AND FIREPLACES, AND 6 INCHES (152 MM) AWAY FROM FLUE OPENINGS. 2304.6 EXTERIOR WALL SHEATHING, WALL SHEATHING ON THE OUTSIDE OF EXTERIOR WALLS, INCLUDING GABLES, AND THE CONNECTION OF THE SHEATHING TO FRAMING SHALL BE DESIGNED IN ACCORDANCE WITH THE GENERAL PROVISIONS OF THIS CODE AND SHALL BE CAPABLE OF RESISTING WIND PRESSURES IN ACCORDANCE WITH SECTION 1609. 2304.8 FLOOR AND ROOF SHEATHING. STRUCTURAL FLOOR SHEATHING AND STRUCTURAL ROOF SHEATHING SHALL COMPLY WITH SECTIONS 2304.8.1 AND 2304.8.2. RESPECTIVELY. 304.9 LUMBER DECKING. LUMBER DECKING SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE GENERAL PROVISIONS OF THIS CODE AND SECTIONS 2304.9.1 THROUGH 2 304.9.5.3. OTHER LUMBER DECKING PATTERNS AND CONNECTION DESIGNS SHALL BE SUBSTANTIATED THROUGH ENGINEERING ANALYSIS.

2304.10 CONNECTORS AND FASTENERS. CONNECTORS IN FASTENERS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF SECTIONS 2304.10.1 THROUGH 2304.10.8. 2304.10.1 CONNECTION FIRE RESISTIVE RATING. FIRE RESISTANCE RATINGS FOR CONNECTIONS IN TYPE IV-A, IV-B, OR IV-C CONSTRUCTION SHALL BE DETERMINED BY ONE OF THE FOLLOWING: TESTING IN ACCORDANCE WITH SECTION 703.2 WHERE THE CONNECTION IS PART OF THE FIRE RESISTANCE TEST

ENGINEERING ANALYSIS THAT DEMONSTRATES THAT THE TEMPERATURE RISE AT ANY PORTION OF THE CONNECTION IS LIMITED TO AN AVERAGE TEMPERATURE RISE OF 200°F (139°C), AND THE MAXIMUM TEMPERATURE RISE OF 325°F (181°C), FOR A TIMI CORRESPONDING TO THE REQUIRED FIRE-RESISTANCE RATING OF THE STRUCTURAL ELEMENT BEING CONNECTED. FOR THE

PURPOSE OF THIS ANALYSIS. THE CONNECTION INCLUDES CONNECTORS, FASTENERS, AND PORTIONS OF WOOD MEMBERS INCLUDED IN THE STRUCTURAL DESIGN OF THE CONNECTION. 2304.10.2 FASTENER REQUIREMENTS. CONNECTIONS FOR WOOD MEMBERS SHALL BE DESIGNED IN ACCORDANCE WITH THE APPROPRIATE METHODOLOGY IN SECTION 2302.1. THE NUMBER AND SIZE OF FASTENERS CONNECTING WOULD MEMBERS SHALL BE IOT LESS THAN SET FORTH IN TABLE 2304.10.2. 2304.10.3 SHEATHING FASTENERS. SHEATHING NAILS OR OTHER APPROVED SHEATHING CONNECTORS SHALL BE DRIVEN SO THAT THEIR D OR CROWN IS FLUSH WITH THE SURFACE OF THE SHEATHING. 2304.10.4 JOIST HANGERS AND FRAMING ANCHORS. CONNECTIONS DEPENDING ON JOIST HANGERS OR FRAMING ANCHORS, TIES AND OTHER MECHANICAL FASTENINGS, NOT OTHERWISE COVERED, ARE PERMITTED WHERE APPROVED. THE VERTICAL LOAD-BEARING CAPACITY, TORSIONAL MOMENT CAPACITY, AND DEFLECTION CHARACTERISTICS OF JOIST HANGERS SHALL BE DETERMINED IN CCORDANCE WITH ASTM D7147 2304.10.5 OTHER FASTENERS. CLIPS, STAPLES, GLUES, AND OTHER APPROVED METHODS OF FASTENING ARE PERMITTED WERE

2304.10.6 FASTENERS AND CONNECTORS IN CONTACT WITH PRESERVATIVE-TREATED AND FIRE-RETARDANT-TREATED WOOD. FASTENERS, INCLUDING NUTS AND WASHERS, AND CONNECTORS IN CONTACT WITH PRESERVATIVE-TREATED AND FIRE-RETARDANT. TREATED WOOD SHALL BE IN ACCORDANCE WITH SECTIONS TO 304.10.6.1 THROUGH 2304.10.6.4. THE COATING WEIGHT FOR ZINC-DATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A153. STAINLESS STEEL DRIVEN FASTENERS SHALL BE IN ACCORDANCE WITH THE MATERIAL REQUIREMENTS OF ASTM F1667.

TABLE 2304.10.2 FASTENING SCHEDULE (THE FOLLOWING ARE MINIMUM REQUIREMENTS UNO)

ROOF			
1. BLOCKING BETWEEN CEILING JOISTS, RAFTERS OR TRUSSES TO TOP PLATE OR OTHER FRAMING BELOW	(4) 8D BOX (2-1/2" X 0.113"); OR (3) 8D COMMON (2-1/2" X 0.131"); OR (3) 10D BOX (3" X 0.128"); OR (3) 3" X 0.128"); OR (3) 3" - 14 GAUGE STAPLES, 7/16" CROWN	EACH END, TOENAIL	
BLOCKING BETWEEN RAFTERS OR TRUSS NOT AT THE WALL TOP PLATE, TO RAFTER OR TRUSS	(2) 8D COMMON (2-1/2" X 0.131") (3) 3" X 0.131" NAILS (3) 3"-14 GAUGE STAPLES	EACH END, TOENAIL	
	(2) 16D COMMON (3-1/2" X 0.162") (3) 3" X 0.131" NAILS	END NAIL	
FLAT BLOCKING TO TRUSS AND WEB FILLER	16D COMMON (3-1/2" X 0.162") @ 6"OC 3" X 0.131" NAILS @ 6"OC 3" X 14 GAUGE STAPLES @ 6"OC	FACE NAIL	
2. CEILING JOISTS TO TOP PLATE	(4) 8D BOX (2-1/2" X 0.113"); OR (3) 8D COMMON (2-1/2" X 0.131"); OR (3) 10D BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3"-14 GAUGE STAPLES, 7/16" CROWN	EACH JOIST, TOENAIL	
3. CEILING JOIST, NOT ATTACHED TO PARALLEL RAFTER, LAPS OVER PARTITION (NO THRUST) SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1	(3) 16D COMMON (3-1/2" X 0.162"); OR (4) 10D BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3"-14 GAUGE STAPLES, 7/16" CROWN	FACE NAIL	
4. CEILING JOIST ATTACHED TO PARALLEL RAFTER (HEEL JOINT) SEE SECTION 2308.7.3.1, TABLE 2308.7.3.1	PER TABLE 2308.7.3.1	FACE NAIL	
5. COLLAR TIE TO RAFTER	(3) 10D COMMON (3-1/2" X 0.148"); OR (4) 10D BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3"-14 GAUGE STAPLES, 7/16" CROWN	FACE NAIL	
6. RAFTER OR ROOF TRUSS TO TOP PLATE SEE SECTION 2308.7.5, TABLE 2308.7.5	(3) 10D COMMON (3' X 0.148'); OR (3) 16D BOX (3-1/2' X 0.135'); OR (4) 10D BOX (3' X 0.128'); OR (4) 3'' X 0.128'); OR (4) 3'' X 13'' NAILS (4) 3''-14 GAUGE STAPLES, 7/16'' CROWN	(2) TOENAILS ON ONE SIDE AND 1 TOENAIL ON OPPOSITE SIDE OF RAFTER OR TRUSS	
7. ROOF RAFTERS TO RIDGE VALLEY OR HIP RAFTERS; OR ROOF RAFTER TO 2 INCH RIDGE BEAM	(2) 16D COMMON (3-1/2' X 0.162'); OR (3) 16D BOX (3-1/2' X 0.135'); OR (3) 10D BOX (3-1/2' X 0.135'); OR (3) 10D BOX (3-1/2' X 0.128'); OR (3) 3'-4 (4 GUES TAPLES 7/1/6' CROWN	END NAIL	

	(3) 10D COMMON (3-1/2" X 0.148"), OR (4) 16D BOX (3-1/2" X 0.135"); OR (4) 10D BOX (3-1/2" X 0.125"); OR (4) 3" X 0.131" NAILS; OR (4) 3"-14 GAUGE STAPLES, 7/16" CROWN	TOENAIL
	Wall	
	16D COMMON (3-1/2" X 0.162")	24"OC FACE NAIL
8. STUD TO STUD (NOT AT BRACED WALL PANELS)	10D BOX (3-1/2" X 0.128"); OR 3" X 0.131" NALS; OR 3"-14 GAUGE STAPLES, 7/16" CROWN	16"OC FACE NAIL
9. STUD TO STUD AND ABUTTING STUDS AT	16D BOX (3-1/2" X 0.135"); OR 3" X 0.131" NAILS; OR (3) 3"-14 GAUGE STAPLES, 7/16" CROWN	12'OC FACE NAIL
INTERSECTING WALL CORNERS (@ BRACED WALL PANELS)	16D BOX	12'OC FACE NAIL
	(3) 3" X 0.131" NAILS	12"OC FACE NAIL
	16D COMMON (3-1/2" X 0.162")	16'OC EACH EDGE, FACE NAIL
10. BULL-OF HEADER (2 TO 2 HEADER)	16D BOX (3-1/2" X 0.135")	12'OC EACH EDGE, FACE NAIL
11. CONTINUOUS HEADER TO STUD	(4) 8D COMMON (2-1/2" X 0.131"); OR (4) 10D BOX (3" X 0.128"); OR (5) 8D BOX (2-1/2" X 0.113")	TOENAIL
	16D COMMON (3-1/2" X 0.162")	16"OC FACE NAIL
12. TOP PLATE TO TOP PLATE	10D BOX (3" X 0.128"): OR 3" X 0.131" NAILS; OR 3" X 14 GAUGE STAPLES, 7/16" CROWN	12'OC FACE NAIL
13. TOP PLATE TO TOP PLATE, AT END JOINTS	(8) 16D COMMON (3-1/2" X 0.162"); OR (12) 16D BOX (3-1/2" X 0.135") (12) 100 BOX (3-1/2" X 0.135") (12) 100 BOX (3-0.128"); OR (12) 3" X 0.131" NAILS; OR (12) 3" 14 GAUGE STAPLES, 7/16" CROWN	EACH SIDE OF END JOINT, FACE NAIL (MINIMUM 24" LAP SPLICE LENGTH EACH SIDE OF END JOINT)
	16D COMMON (3-1/2" X 0.162")	16"OC FACE NAIL
14. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING (NOT AT BRACED WALL PANELS)	16D BOX (3-1/2" X 0.135"); OR 3" X 0.131" NAILS; OR 3" 14 GAUGE STAPLES, 7/16" CROWN	12'OC FACE NAIL
15. BOTTOM PLATE TO JOIST, RIM JOIST, BAND JOIST OR BLOCKING AT BRACED WALL PANELS	(2) 15D COMMON (3-1/2" X 0.162"); OR (3) 15D BOX (3-1/2" X 0.135"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAUGE STAPLES, 7/16" CROWN	16°OC FACE NAIL
16. STUD TO TOP PLATE OR BOTTOM PLATE	(3) 16D BOX (3-1/2" X 0.135") (4) 8D COMMON (2-1/2" X 0.131"); OR (4) 10D BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" 14 GAUGE STAPLES, 7/16" CROWN	TOENAIL
	(2) 16D COMMON (3-1/2" X 0.162"); OR (3) 16D BOX (3-1/2" X 0.135"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAUGE STAPLES, 7/16" CROWN	END NAIL
17. TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS	(2) 16D COMMON (3-1/2" X 0.162"); OR (3) 10D BOX (3-1/2" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAUGE STAPLES, 7/16" CROWN	FACE NAIL
18. 1" BRACE TO EACH STUD AND PLATE	(3) 8D BOX (2-1/2" X 0.113"); OR (2) 8D COMMON (2-1/2" X 0.131"); OR (2) 10D BOX (3" X 0.128"); OR (2) 3" X 0.13" NAILS; OR (2) 3" 1.4 GAUGE STAPLES, 7/16" CROWN	FACE NAIL

19. 1° X 6' SHEATHING TO EACH BEARING	(3) 8D BOX (2-1/2" X 0.113"); OR (2) 8D COMMON (2-1/2" X 0.131"); OR (2) 10D BOX (3" X 0.128"); OR (2) 1-3/4" 16 GAUGE STAPLES, 1" CROWN	FACE NAIL
20. 1° X 8° AND WIDER SHEATHING TO EACH BEARING	(3) 8D BOX (2-1/2" X 0.113"); OR (3) 8D COMMON (2-1/2" X 0.131"); OR (3) 10D BOX (3" X 0.128"); OR (3) 1-3/4" 16 GAUGE STAPLES, 1" CROWN	
	WIDER THAN 1" X 8" (4) 8D BOX (2-1/2" X 0.113"); OR (3) 8D COMMON (2-1/2" X 0.131"); OR (3) 10D BOX (3" X 0.132"); OR (4) 1-3/4" 16 GAUGE STAPLES, 1" CROWN	FACE NAIL
	FLOOR	
21. JOIST TO SILL, TOP PLATE, OR GIRDER	(4) 8D BOX (2-1/2" X 0.113"); OR (3) 8D COMMON (2-1/2" X 0.131"); OR (3) 10D BOX (3" X 0.128"); OR (3) 3" X 0.131" NAILS; OR (3) 3" 14 GAUGE STAPLES, 7/16" CROWN	TOENAIL
	8D BOX (2-1/2" X 0.113")	4"OC TOENAIL
22. RIM JOIST, BAND JOIST, OR BLOCKING TO TOP PLATE, SILL OR OTHER FRAMING BELOW	BD COMMON (2-1/2" X 0.131"); OR 10D BOX (3" X 0.128"); OR 3" X 0.131" NAILS; OR 3" 14 GAUGE STAPLES, 7/16" CROWN	6"OC TOENAIL
23. 1" X 6" SUBFLOOR OR LESS TO EACH JOIST	(3) 8D BOX (2-1/2" X 0.113"); OR (2) 8D COMMON (2-1/2" X 0.131"); OR (3) 10D BOX (3" X 0.128"); OR (3) 3" X 0.13"1 "NALLS; OR (2) 1-3/4" 16 GAUGE STAPLES, 1" CROWN	FACE NAIL
24. 2' SUBFLOOR TO JOIST OR GIRDER	(3) 16D BOX (3-1/2" X 0.135"); OR (2) 16D COMMON (3-1/2" X 0.162")	EACH BEARING, FACE NAIL
25. 2' PLANKS (PLANK & BEAM - FLOOR & ROOF)	(3) 16D BOX (3-1/2" X 0.135"); OR (2) 16D COMMON (3-1/2" X 0.162")	EACH BEARING, FACE NAIL
	20D COMMON (4" X 0.192")	32"OC, FACE NAIL @ T&B STAGGERED ON OPPOSITE SIDES
26. BUILT-UP GIRDERS & BEAMS. 2' LUMBER LAYERS	10D BOX (3" X 0.128"); OR 3" X 0.131" NAILS; OR 3" X 14 GAUGE STAPLES, 7/16" CROWN	24'OC FACE NAIL @ T&B STAGGERED ON OPPOSITE SIDES
	AND: (2) 20D COMMON (4" X 0.192"), OR (3) 10D BOX (3" X 0.128"); OR (3) 3" X 0.13" NAILS; OR 3" X 14 GAUGE STAPLES, 7/16" CROWN	ENDS AND @ EACH SPLICE, FACE NAIL
27. LEDGER STRIP SUPPORTING JOISTS OR RAFTERS	(3) 16D COMMON (3-1/2" X 0.162"); OR (4) 16D BOX (3-1/2" X 0.135"); OR (4) 10D BOX (3" X 0.128"); OR (4) 3" X 0.131" NALLS; OR (4) 3" X 14 GAUGE STAPLES, 7/16" CROWN	EACH JOIST OR RAFTER, FACE NAIL
28. JOIST TO BAND JOIST OR RIM JOIST	(3) 16D COMMON (3-1/2" X 0.162"); OR (4) 10D BOX (3" X 0.128"); OR (4) 3" X 0.131" NAILS; OR (4) 3" X 14 GAUGE STAPLES, 7/16" CROWN	END NAIL
29. BRIDGING OR BLOCKING TO JOIST, RAFTER OR TRUSS	(2) 8D COMMON (2-1/2" X 0.131"); OR (2) 10D BOX (3" X 0.128"); OR (2) 3" X 0.131" NAILS; OR (2) 3" 14 GAUGE STAPLES, 7/16" CROWN	EACH END, TOENAIL
WOOD STRUCTURAL PANELS (WSP), S (UNLESS OTHERWISE SF	SUBFLOOR, ROOF & INTERIOR WALL SH PECIFIED ON SHEAR WALL SCHEDULE OR PL	EATHING TO FRAMING. ANS) (A)
	6D COMMON OR DEFORMED (2" X 0.113"); OR 2-3/8" X 0.113" NAIL (SUBFLOOR & WALL)	6"OC EDGE, 12"OC FIELD

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	8D BOX OR DEFORMED (2-1/2" X 0.131" X 0.281 HEAD (ROOF) OR RSRS-01 (2-3/8" X 0.113") NAIL (ROOF)	6"OC EDGE, 12"OC FIELD
10. 3/8" - 1/2"	1-3/4" 16 GAUGE, 7/16" CROWN (SUBFLOOR & WALL)	4"OC EDGE, 8"OC FIELD
	2-3/8" X 0.266" HEAD NAIL (ROOF)	3*OC EDGE, 3*OC FIELD
	1-3/4" 16 GAUGE, 7/16" CROWN (ROOF)	3°OC EDGE, 3°OC FIELD
	8D COMMON (2-1/2' X 0.131'); OR DEFORMED (2' X 0.113') (SUBFLOOR & WALL)	6'OC EDGE, 12'OC FIELD
1. 19/32" - 3/4"	8D COMMON OR DEFORMED (2-1/2" X 0.131" X 0.281" HEAD (ROOF) OR RSRS-01 (2-3/8" X 0.113") NAIL (ROOF)	4°OC EDGE, 6°OC FIELD
	2-3/8" X 0.113" X 0.266" HEAD NAIL; OR 2" 16 GAUGE STAPLE, 7/16" CROWN	4"OC EDGE, 8"OC FIELD
12. 7/8" - 1-1/4"	10D COMMON (3" X 0.148"); OR DEFORMED (2-1/2" X 0.131" X 0.281" HEAD)	6"OC EDGE, 12"OC FIELD

STRUCTURAL PANEL AND PARTICLEBOARD DIAPHRAGMS AND SHEAR WALLS, REFER TO SECTION 2305. NAILS FOR WALL SHEATHING ARE PERMITTED TO BE COMMON, BOX OR CASING. UNLESS OTHERWISE PROHIBITED BY THE STRUCTURAL ENGINEER OF RECORD. SEE SPECIFIC SHEAR WALL SCHEDULE NOTES. 2304.10.6.1 FASTENERS AND CONNECTORS FOR PRESERVATIVE-TREATED WOOD. FASTENERS, INCLUDING NUTS AND WASHERS, IN CONTACT WITH PRESERVATIVE-TREATED WOOD SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER. FASTENERS OTHER THAN NAILS, TIMBER RIVETS, WOOD SCREWS AND LAG SCREWS SHALL BE

PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC- COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B695, CLASS 55 MINIMUM. CONNECTORS THAT ARE USED IN EXTERIOR APPLICATIONS AND IN CONTACT WITH PRESERVATIVE-TREATED WOOD SHALL HAVE COATING TYPES AND WEIGHTS IN ACCORDANCE WITH THE TREATED WOOD OR CONNECTOR MANUFACTURER'S RECOMMENDATIONS. IN THE ABSENCE OF MANUFACTURER'S RECOMMENDATIONS, A MINIMUM OF ASTM A653, TYPE G185 ZINC-COATED GALVANIZED STEEL, OR EQUIVALENT, SHALL BE USED. <u>EXCEPTION.</u> PLAIN CARBON STEEL FASTENERS, INCLUDING NUTS AND WASHERS, IN SBX/DOT AND ZINC BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT SHALL BE PERMITTED. 2304.10.6.2 FASTENINGS FOR WOOD FOUNDATIONS. FASTENINGS, INCLUDING NUTS AND WASHERS, FOR WOOD FOUNDATIONS SHALL BE AS REQUIRED IN AWC PWF. 2304.10.6.3 FASTENERS FOR FIRE-RETARDANT-TREATED WOOD USED IN EXTERIOR APPLICATIONS OR WET OR DAMP LOCATIONS. FASTENERS, INCLUDING NUTS AND WASHES, FOR FIRE-RETARDANT-TREATED WOOD USED IN EXTERIOR APPLICATIONS OR WET OR DAMP LOCATIONS SHALL BE OF HOT-DIPPED ZINC-COATED GALVANIZED STEEL, STAILLES STEEL, SILICON BRONZE OR COPPER. FASTENERS OTHER THAN NALS, TIMBER RIVETS, WOOD SCREWS AND LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY PERPORTED THAN NALS, TIMBER RIVETS, WOOD SCREWS AND LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY

DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM 8695, CLASS 55 MINIMUM. 2304.10.6.4 FASTENERS FOR FIRE-RETARDANT-TREATED WOOD USED IN INTERIOR APPLICATIONS. FASTENERS, INCLUDING NUTS AND WASHERS, FOR FIRE-RETARDANT-TREATED WOOD USED IN INTERIOR APPLICATIONS. FASTENERS, INCLUDING NUTS AND WASHERS, FOR FIRE-RETARDANT-TREATED WOOD USED IN INTERIOR LOCATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IN THE ABSENCE OF MANUFACTURER'S RECOMMENDATIONS. SECTION 2304.10.5.3 SHALL APPLY. 2304.10.7 LOAD PATH. WHERE WALL FRAMING MEMBERS ARE NOT CONTINUOUS FROM THE FOUNDATION SILL TO THE ROOF, THE MEMBERS SHALL BE SECURED TO ENSURE A CONTINUOUS LOAD PATH. WHERE REQUIRED, SHEET METAL CLAMPS, TIES OR CLIPS SHALL BE FORMED OF GALVANIZED STEEL OR OTHER APPROVED CORROSION-RESISTANT MATERIAL NOT LESS THAN 0.0329-INCH (0.836 MM) BASE METAL THICKNESS. 2304.10.8 FRAMING REQUIREMENTS. WOOD COLLMNS AND POSTS SHALL BE FRAMED TO PROVIDE FULL END BEARING, ALTERNATIVELY, COLUMN-AND-POST END CONNECTIONS SHALL BE FASTENED TO RESIST LATERAL AND NET INDUCED UPLIFT FORCES. 2304.12 PROTECTION AGAINST DECAY AND TERMITES. WOOD SHALL BE FASTENED TO RESIST LATERAL AND NET INDUCED UPLIFT FORCES. 2304.12 PROTECTION AGAINST DECAY AND TERMITES. WOOD SHALL BE PROTECTED FROM DECAY AND TERMITES IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF SECTIONS 2304.12.1 THROUGH 2304.12.7. 2304.12 LOCATIONS REQUIRING WATER-BORNE PRESERVATIVES OR NATURALLY DURABLE WOOD. WOOD USED ABOVE GROUND IN THE LOCATIONS REQUIRING WATER-BORNE PRESERVATIVES OR NATURALLY DURABLE WOOD. WOOD USED ABOVE GROUND IN THE LOCATIONS SPECIFIED IN SECTIONS 2304.12.1.1 THROUGH 2304.12.7. 2304.12.1 LOCATIONS REQUIRING WATER-BORNE PRESERVATIVES OR NATURALLY DURABLE WOOD. WOOD USED ABOVE GROUND IN THE LOCATIONS SPECIFIED IN SECTIONS 2304.12.1.1 THROUGH 2304.12.5, 2304.12.3 AND 2304.12.5 SHALL BE NATURALLY DURABLE WOOD OR PRESERVATIVE-TREATED WOOD USING WATER-BORNE PRESERVATIVES, IN ACCORDANCE WITH AWPA U FOR ABOVE-GROUND DISE.

2304.12.1.1 JOISTS, GIRDERS AND SUBFLOOR. WOOD JOISTS OR WOOD STRUCTURAL FLOORS THAT ARE CLOSER THAN 18 INCHES (457 MM) OR WOOD GIRDERS THAT ARE CLOSER THAN 12 INCHES (305 MM) TO THE EXPOSED GROUND IN CRAWL SPACES OR UN-EXCAVATED AREAS LOCATED WITHIN THE PERIMETER OF THE BUILDING FOUNDATION SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD. 2304.12.1.2 WOOD SUPPORTED BY EXTERIOR FOUNDATION WALLS. WOOD FRAMING MEMBERS, INCLUDING WOOD SHEATHING, THAT ARE IN CONTACT WITH EXTERIOR FOUNDATION WALLS AND ARE LESS THAN 8 INCHES (203 MM) FROM EXPOSED EARTH SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD. <u>EXCEPTION:</u> [DSA-SS AND OSHPD 1,2 & 4] AT EXTERIOR WALLS WHERE THE EARTH IS PAVED WITH AN ASPHALT OR CONCRETE SLAB AT LEAST 18 INCHES (457 MM) WIDE AND DRAINING AWAY FROM THE BUILDING, THE BOTTOM OF SILLS ARE PERMITTED TO BE 6

INCHES (152 MM) ABOVE THE TOP OF SUCH SLAB. OTHER EQUIVALENT MEANS OF TERMITE AND DECAY PROTECTION MAY BE ACCEPTED BY THE ENFORCEMENT AGENCY.
2304.12.1.3 EXTERIOR WALLS BELOW GRADE. WOOD FRAMING MEMBERS AND FURRING STRIPS IN DIRECT CONTACT WITH THE INTERIOR OF EXTERIOR MASONRY OR CONCRETE WALLS BELOW GRADE SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD.
2304.12.1.4 SLEEPERS AND SILLS. SLEEPERS AND SILLS ON A CONCRETE OR MASONRY SLAB THAT IS IN DIRECT CONTACT WITH EARTH SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE- TREATED WOOD.
2304.12.1.4.1 ADDITIONAL REQUIREMENTS. [DSA-SS AND OSHPD 1, 2 & 4] STUD WALLS OR PARTITIONS AT SHOWER OR TOILET ROOMS WITH MORE THAN TWO PLUMBING FIXTURES, EXCLUDING FLOOR DRAINS, AND STUD WALLS ADJACENT TO UNROOFED PAVED AREAS SHALL REST ON A CONCRETE CURB EXTENDING AT LEAST 6 INCHES (152 MM) ABOVE FINISHED FLOOR OR PAVEMENT LEVEL.
2304.12.1.5 WOOD SIDIG. CLEARANCE BETWEEN WOOD SIDIG AND EARTH ON THE EXTERIOR OF A BUILDING SHALL NOT BE LESS THAN 6 INCHES (152 MM) OR LESS THAN 2 INCHES (51 MM) VERTICAL FROM CONCRETE STEPS, PORCH SLABS, PATIO SLABS AND SIMILAR HORIZONTAL SURFACES EXPOSED TO THE WEATHER EXCEPT WHERE SIDING, SHEATHING AND WALL FRAMING ARE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD.
2304.12.2 OTHER LOCATIONS. WOOD USED IN THE LOCATIONS SPECIFIED IN SECTIONS 2304.12.2.1 THROUGH 2304.12.2.8 SHALL BE NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD.

BORNE PRESERVATIVES ARE USED. PRIOR TO APPLICATION OF THE PROTECTIVE FINISH, THE WOOD SHALL BE DRIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. 2304.12.2.1 GIRDER ENDS. THE ENDS OF WOOD GIRDERS ENTERING EXTERIOR MASONRY OR CONCRETE WALLS SHALL BE PROVIDED WITH A 1/2 INCH (12.7 MM) AIRSPACE ON TOP, SIDES AND END, UNLESS NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD IS USED 2304.12.2.2 POSTS OR COLUMNS. POSTS OR COLUMNS SUP- PORTING PERMANENT STRUCTURES AND SUPPORTED BY A CONCRETE OR MASONRY SLAB OR FOOTING THAT IS IN DIRECT CONTACT WITH THE EARTH SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE-TREATED WOOD. EXCEPTION: POSTS OR COLUMNS THAT ARE NOT EXPOSED TO THE WEATHER, ARE SUPPORTED BY CONCRETE PIERS OR METAL PEDESTALS PROJECTED AT LEAST 1 INCH (25 MM) ABOVE THE SLAB OR DECK AND 8 INCHES (152 MM) ABOVE EXPOSED EARTH AND ARE SEPARATED BY AN IMPERVIOUS MOISTURE BARRIER. 2304.12.2.3 SUPPORTING MEMBER FOR PERMANENT APPURTENANCES, NATURALLY DURABLE OR PRESERVATIVE- TREATED WOOD SHALL BE UTILIZED FOR THOSE PORTIONS OF WOOD MEMBERS THAT FORM THE STRUCTURAL SUPPORTS OF BUILDINGS, BALLONIES, PORCHES OR SIMILAR PERMANENT BUILDING APPURTENANCES WHERE SUCH MEMBERS ARE EXPOSED TO THE WEATHER WITHOUT ADEQUATE PROTECTION FROM A ROOF, EAVE, OVERHANG OR OTHER COVERING TO PREVENT MOISTURE OR WATER ACCUMULATION ON THE SURFACE OR AT JOINTS BETWEEN MEMBERS. EXCEPTION: SAWN LUMBER IN BUILDINGS LOCATED IN A GEOGRAPHICAL REGION WHERE EXPERIENCE HAS DEMONSTRATED THAT CLIMATIC CONDITIONS PRECLUDE THE NEED TO USE DURABLE MATERIALS WHERE THE STRUCTURE IS EXPOSED TO THE WEATHER. 2304.12.2.4 SUPPORTING MEMBERS FOR PERMEABLE FLOORS AND ROOFS. WOOD STRUCTURAL MEMBERS THAT SUPPORT MOISTURE-PERMEABLE FLOORS OR ROOFS THAT ARE EXPOSED TO THE WEATHER, SUCH AS CONCRETE OR MASONRY SLABS, SHALL BE OF NATURALLY DURABLE OR PRESERVATIVE- TREATED WOOD UNLESS SEPARATED FROM SUCH FLOORS OR ROOFS BY AN 2304.12.2.5 VENTILATION BENEATH BALCONY OR ELEVATED WALKING SURFACE. ENCLOSED FRAMING IN EXTERIOR BALCONIES AND ATED WALKING SURFACES THAT HAVE WEATHER EXPOSED SURFACES SHALL BE PROVIDED WITH OPENINGS THAT PROVIDE A

NET FREE CROSS VENTILATION AREA NOT LESS THAN 1/150 OF THE AREA OF EACH SEPARATE SPACE. 2304.12.2.6 WOOD IN CONTACT WITH THE GROUND OR FRESH WATER. WOOD USED IN CONTACT WITH EXPOSED EARTH SHALL BE NATURALLY DURABLE FOR BOTH DECAY AND TERMITE RESISTANCE OR PRESERVATIVE TREATED IN ACCORDANCE WITH AWPA U1 FOR SOIL OR FRESH WATER USE. <u>EXCEPTION:</u> UNTREATED WOOD IS PERMITTED WHERE SUCH WOOD IS CONTINUOUSLY AND ENTIRELY BELOW THE GROUND-WATER LEVEL OR SUBMERGED IN FRESH WATER. 2304.12.2.6.1 POSTS OR COLUMNS. POSTS AND COLUMNS THAT ARE SUPPORTING PERMANENT STRUCTURES AND EMBEDDED IN CONCRETE THAT IS EXPOSED TO THE WEATHER OR IN DIRECT CONTACT WITH THE EARTH SHALL BE OF PRESERVATIVE-TREATED WOOD. 2304.12.2.7 TERMITE PROTECTION. IN GEOGRAPHICAL AREAS WHERE HAZARD OF TERMITE DAMAGE IS KNOWN TO BE VERY HEAVY, WOOD FLOOR FRAMING IN THE LOCATIONS SPECIFIED IN SECTION 2304.12.2.1 AND EXPOSED FRAMING OF EXTERIOR DECKS OR BALCONIES SHALL BE OF NATURALLY DURABLE SPECIES (TERMITE RESISTANT) OR PRESERVATIVE TREATED IN ACCORDANCE WITH AWPA U1 FOR THE SPECIES, PRODUCT PRESERVATIVE AND END USE OR PROVIDED WITH APPROVED METHODS OF TERMITE PROTECTION. 2304.12.2.8 WOOD USED IN RETAINING WALLS AND CRIBS. WOOD INSTALLED IN RETAINING OR CRIB WALLS SHALL BE PRESERVATIVE

TREATED IN ACCORDANCE WITH AWPA UI FOR SOIL AND FRESH WATER USE. 2304.12.3 ATTIC VENTILATION. FOR ATTIC VENTILATION, SEE SECTION 1202.2.2. 2304.12.4 UNDER-FLOOR VENTILATION (CRAWL SPACE). FOR UNDER-FLOOR VENTILATION (CRAWL SPACE), SEE SECTION 1202.4. SECTION 2305: GENERAL DESIGN REQUIREMENTS FOR LATERAL FORCE-RESISTING SYSTEMS. 2305.1 GENERAL. STRUCTURES USING WOOD-FRAME SHEAR WALLS OR WOOD-FRAME DIAPHRAGMS TO RESIST WIND, SEISMIC OR OTHER LATERAL LOADS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AF&PA SDPWS AND THE APPLICABLE PROVISIONS OF SECTIONS 2305. 2306 AND 2307.

2305.1.1 OPENINGS IN SHEAR PANELS. OPENINGS IN SHEAR PANELS THAT MATERIALLY AFFECT THEIR STRENGTH SHALL BE DETAILED ON THE PLANS, AND SHALL HAVE THEIR EDGES ADEQUATELY REINFORCED TO TRANSFER ALL SHEARING STRESSES. 2305.2 DIAPHRAGM DEFLECTION. THE DEFLECTION OF WOOD-FRAME DIAPHRAGMS SHALL BE DETERMINED IN ACCORDANCE WITH AF&PA SDPWS. THE DEFLECTION OF A BLOCKED WOOD STRUCTURAL PANEL DIAPHRAGM UNIFORMLY FASTENED THROUGHOUT WITH STAPLES IS PERMITTED TO BE CALCULATED IN ACCORDANCE WITH EQUATION 23-1. IF NOT UNIFORMLY FASTENED, THE CONSTANT 0.188 (FOR SI: 1/1627)

IN THE THIRD TERM SHALL BE MODIFIED BY AN APPROVED METHOD. <u>SECTION 2306: ALLOWABLE STRESS DESIGN</u> 2306.1 ALLOWABLE STRESS DESIGN. THE DESIGN AND CONSTRUCTION OF WOOD ELEMENTS IN STRUCTURES USING ALLOWABLE STRESS DESIGN SHALL BE IN ACCORDANCE WITH THE APPLICABLE STANDARDS OUTLINED IN THIS SECTION:

SECTION 2307: LOAD AND RESISTANCE FACTOR DESIGN 2307.1 LOAD AND RESISTANCE FACTOR DESIGN. THE DESIGN AND CONSTRUCTION OF WOOD ELEMENTS AND STRUCTURES USING LOAD AND RESISTANCE FACTOR DESIGN SHALL BE IN ACCORDANCE WITH AWC NDS AND AWC SDPWS. SECTION 2308: CONVENTIONAL LIGHT-FRAME CONSTRUCTION

2308.1 GENERAL. THE REQUIREMENTS OF THIS SECTION ARE INTENDED FOR CONVENTIONAL LIGHT-FRAME CONSTRUCTION. OTHER CONSTRUCTION METHODS ARE PERMITTED TO BE USED, PROVIDED A SATISFACTORY DESIGN IS SUBMITTED SHOWING COMPLIANCE WITH OTHER PROVISIONS OF THIS CODE. INTERIOR NON LOAD-BEARING PARTITIONS, CEILINGS AND CURTAIN WALLS OF CONVENTIONAL LIGHT-FRAME CONSTRUCTION ARE NOT SUBJECT TO THE LIMITATIONS OF SECTION 2308.2. 2308.1.1 PORTIONS EXCEEDING LIMITATIONS OF CONVENTIONAL LIGHT-FRAME CONSTRUCTION. WHEN PORTIONS OF A BUILDING OF OTHERWISE CONVENTIONAL LIGHT-FRAME CONSTRUCTION EXCEED THE LIMITS OF SECTION 2308.2, THOSE PORTIONS AND THE SUP-PORTING LOAD PATH SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE AND THE PROVISIONS OF THIS CODE. FOR THE PURPOSES OF THIS SECTION, THE TERM "PORTIONS" SHALL MEAN PARTS OF BUILDINGS CONTAINING VOLUME AND AREA SUCH AS A ROOM OR A SERIES OF ROOMS. THE EXTERN "PORTIONS" SHALL MEAN PARTS OF BUILDINGS CONTAINING VOLUME AND AREA SUCH AS A ROOM OR A SERIES OF ROOMS. THE EXTERN "PORTIONS OF THIS CODE AND SHALL BE COMPATIBLE WITH THE PERFORMANCE OF THE CONVENTIONAL LIGHT-FRAMED ELEMENTS WITH OTHER APPLICABLE PROVISIONS OF THIS CODE AND SHALL BE COMPATIBLE WITH THE PERFORMANCE OF THE CONVENTIONAL LIGHT-FRAMED SYSTEM.

2308.1.2 CONNECTIONS AND FASTENERS. CONNECTORS AND FASTENERS USED IN CONVENTIONAL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 2304.10. 2308.2 LIMITATIONS. BUILDINGS ARE PERMITTED TO BE CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF CONVENTIONAL LIGHT-FRAME CONSTRUCTION, SUBJECT TO THE LIMITATIONS IN SECTIONS 2308.2.1 THROUGH 2308.2.6. 2308.3 FOUNDATIONS AND FOOTINGS. FOUNDATIONS AND FOOTINGS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH CHAPTER 18. CONNECTIONS TO FOUNDATIONS AND FOOTINGS SHALL COMPLY WITH THIS SECTION. 2308.3.1 FOUNDATION PLATES OR SILLS. FOUNDATION PLATES OR SILLS SHALL BE BOLTED OR ANCHORED TO THE FOUNDATIONS SHALL COMPLY WITH SECTION 2304.3.1. FOUNDATION PLATES OR SILLS SHALL BE DOLTED OR ANCHORED TO THE FOUNDATION WITH NOT LESS THAN 1/2 INCH-DIAMETER (12.7 MM) STEEL BOLTS OR APPROVED ANCHORS SPACED TO PROVIDE EQUIVALENT ANCHORAGE AS THE

STEEL BOLTS. BOLTS SHALL BE EMBEDDED AT LEAST 7 INCHES (178 MM) INTO CONCRETE OR MASONRY. BOLTS SHALL BE SPACED NOT MORE THAN 6 FEET (1829 MM) ON CENTER AND THERE SHALL BE NOT LESS THAN TWO BOLTS OR ANCHOR STRAPS PER PIECE WITH ONE BOLT OR ANCHOR STRAP LOCATED NOT MORE THAN 12 INCHES (305 MM) OR LESS THAN 4 INCHES (102 MM) FROM EACH END OF EACH PIECE. A PROPERLY SIZED NUT AND WASHER SHALL BE TIGHTENED ON EACH BOLT TO THE PLATE.
 EXCEPTIONS:
 ALONG BRACED WALL LINES IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY E, STEEL BOLTS WITH A MINIMUM NOMINAL DIAMETER OF 5/8 INCH (15.9 MM) OR APPROVED ANCHOR STRAPS LOAD-RATED IN ACCORDANCE WITH SECTION 2304.10.3 AND SPACED TO PROVIDE EQUIVALENT ANCHORAGE SHALL BE USED.

 BOLTS IN BRACED WALL LINES IN STRUCTURES OVER TWO STORIES ABOVE GRADE SHALL BE SPACED NOT MORE THAN 4 FEET (1219 MM) ON CENTER.
 2308.3.2 BRACED WALL LINE SILL PLATE ANCHORAGE IN SEISMIC DESIGN CATEGORIES D AND E. SILL PLATES ALONG BRACED WALL LINES IN BUILDINGS ASSIGNED TO SEISMIC DESIGN CATEGORY D OR E SHALL BE ANCHORED WITH ANCHOR BOLTS WITH STEEL PLATE WASHERS BETWEEN THE FOUNDATION SILL PLATE AND THE NUT, OR APPROVED ANCHOR STRAPS LOAD-RATED IN ACCORDANCE WITH SECTION 2304.10.3. SUCH WASHERS SHALL BE A MINIMUM OF 0.229 INCH BY 3 INCHES BY 3 INCHES (5.82 MM BY 76 MM) Y76 MM) IN SIZE. THE HOLE IN THE PLATE WASHER SPERMITTED TO BE DIAGONALLY SLOTTED WITH A WIDTH OF UP TO 3/16 INCH (4.76 MM) LARGER THAN THE BOLT DIAMETER AND A SLOT LENGTH NOT TO EXCEED 1-3/4 INCHES (44 MM), PROVIDED A STANDARD CUT WASHER IS PLACED BETWEEN THE PLATE WASHER AND THE NUT.

2308.4 FLOOR FRAMING. FLOOR FRAMING SHALL COMPLY WITH THIS SECTION. 2308.4.1 GIRDERS. GIRDERS FOR SINGLE-STORY CONSTRUCTION OR GIRDERS SUPPORTING LOADS FROM A SINGLE FLOOR SHALL BE NOT LESS THAN 4 INCHES BY 6 INCHES (102 MM BY 152 MM) FOR SPANS 6 FEET (1829 MM) OR LESS, PROVIDED THAT GIRDERS ARE SPACED NOT MORE THAN 8 FEET (2438 MM) ON CENTER. OTHER GIRDERS SHALL BE DESIGNED TO SUPPORT THE LOADS SPECIFIED IN THIS CODE. GIRDER END JOINTS SHALL OCCUR OVER SUPPORTS. WHERE 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 (76 MM) OF BEARING. 2308.4.1.1 ALLOWABLE GIRDER SPANS. THE ALLOWABLE SPANS OF GIRDERS THAT ARE FABRICATED OF DIMENSION LUMBER SHALL NOT EXCEED THE VALUES SET FORTH IN TABLE 2308.4.1.1(1) OR 2308.4.1.1(2).

2308.4.2 FLOOR JOISTS. FLOOR JOISTS SHALL COMPLY WITH THIS SECTION. 2308.4.2.1 SPAN. SPANS FOR FLOOR JOISTS SHALL BE IN ACCORDANCE WITH TABLE 2308.4.2.1(1) OR 2308.4.2.1(2) OR THE AWC STJR.

 DERPENDICULAR TO THE WALL. THE SUPPORT SHALL BE A FOUNDATION OR FLOOR, CEILING OR ROOF DIAPHRAGM OR SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.
 <u>EXCEPTION:</u> JACK STUDS, TRIMMER STUDS AND CRIPPLE STUDS AT OPENINGS IN WALLS THAT COMPLY WITH TABLE 2308.4.1.1(1) OR 2308.5.2 FRAMING DETAILS. STUDS SHALL BE PLACED WITH THEIR WIDE DIMENSION PERPENDICULAR TO THE WALL. NOT LESS THAN THREE STUDS SHALL BE INSTALLED AT EACH CORNER OF AN EXTERIOR WALL.
 <u>EXCEPTIONS</u>:
 IN INTERIOR NONBEARING WALLS AND PARTITIONS, STUDS ARE PERMITTED TO BE SET WITH THE LONG DIMENSION PARALLEL TO THE WALL.
 AT CORNERS, TWO STUDS ARE PERMITTED, PROVIDED THAT WOOD SPACERS OR BACKUP CLEATS OF 3/8 INCH-THICK (9.5 MM) WOOD STRUCTURAL PANEL, 3/8 INCH (9.5 MM) TYPE M "EXTERIOR GLUE" PARTICLEBOARD, 1 INCH-THICK (25 MM) LUMBER OR OTHER APPROVED DEVICES THAT WILL SERVE AS AN ADEQUATE BACKING FOR THE ATTACHMENT OF FACING MATERIALS ARE

USED. WHERE FIRE-RESISTANCE RATINGS OR SHEAR VALUES ARE INVOLVED, WOOD SPACERS, BACKUP CLEATS OR OTHER DEVICES SHALL NOT BE USED UNLESS SPECIFICALLY APPROVED FOR SUCH USE. 2308.5.3 PLATES AND SILLS. STUDS SHALL HAVE PLATES AND SILLS IN ACCORDANCE WITH THIS SECTION. 2308.5.3.1 BOTTOM PLATE OR SILL. STUDS SHALL HAVE FULL BEARING ON A PLATE OR SILL. PLATES OR SILLS SHALL BE NOT LESS THAN 2 INCHES (5 1 MM) NOMINAL IN THICKNESS AND HAVE A WIDTH NOT LESS THAN THE WIDTH OF THE WALL STUDS. 2308.5.3.2 TOP PLATES. BEARING AND EXTERIOR WALL STUDS SHALL BE CAPPED WITH DOUBLE TOP PLATES INSTALLED TO PRO VIDE OVERLAPPING AT CORNERS AND AT INTERSECTIONS WITH OTHER PARTITIONS. END JOINTS IN DOUBLE TOP PLATES SHALL BE OFFSET NOT LESS THAN 48 INCHES (1219 MM), AND SHALL BE NAILED IN ACCORDANCE WITH TABLE 2304.10.1. PLATES SHALL BE A NOMINAL 2 INCHES (51 MM) IN DEPTH AND HAVE A WIDTH NOT LESS THAN THE WIDTH OF THE STUDS.

EXCEPTION: A SINGLE TOP PLATE IS PERMITTED, PROVIDED THAT THE PLATE IS ADEQUATELY TIED AT CORNERS AND INTERSECTING WALLS BY NOT LESS THAN THE EQUIVALENT OF 3-INCH BY 6-INCH (76 MM BY 152 MM) BY 0.036-INCH- THICK (0.914 MM) GALVANIZED STEEL PLATE THAT IS NAILED TO EACH WALL OR SEGMENT OF WALL BY (6) 8D [2-1/2 INCH X 0.113 INCH (64 MM X 2.87 MM)) BOX NAILS OR EQUIVALENT ON EACH SIDE OF THE JOINT. FOR THE BUTT-JOINT SPLICE BETWEEN ADJACEN SINGLE TOP PLATES, NOT LESS THAN THE EQUIVALENT OF A 3 INCH BY 12 INCH (76 MM BY 304 MM) BY 0.036-INCH-THICK (0.914 MM) GALVANIZED STEEL PLATE THAT IS NAILED TO EACH WALL OR SEGMENT OF WALL BY (12) 80 [2-1/2 INCH X 0.113 INCH (64 MM BY 2.87 MM)] BOX NAILS ON EACH SIDE OF THE JOINT SHALL BE REQUIRED, PROVIDED THAT THE RAFTERS, JOISTS OR TRUSSES ARE CENTRERED OVER THE STUDS WITH A TOLERANCE OF NOT MORE THAN 1 INCH (25 MM). THE TOP PLATE SHALL NOT BE REQUIRED OVER HEADERS THAT ARE IN THE SAME PLANE AND IN LINE WITH THE UPPER SURFACE OF THE ADJACENT TOP PLATES AND ARE TIED TO ADJACENT WALL SECTIONS AS REQUIRED FOR THE BUTT JOINT SPLICE BETWEEN ADJACENT SINGLE TOP PLATES. WHERE BEARING STUDS ARE SPACED AT 24-INCH (610 MM) INTERVALS, TOP PLATES ARE LESS THAN TWO 2 INCH BY 6 INCH (51 MM BY 152 MM) OR TWO 3 INCH BY 4 INCH (76 MM BY 102 MM) MEMBERS AND THE FLOOR JOISTS, FLOOR TRUSSES OR ROOF TRUSSES THAT THEY SUPPORT ARE SPACED AT MORE THAN 16 INCH (406 MM) INTERVALS, SUCH JOISTS OR TRUSSES SHALL BEAR WITHIN 5 INCHES (127 MM) OF THE STUDS BENEATH OR A THIRD PLATE SHALL BE INSTALLED. 2308.5.4 NON LOAD-BEARING WALLS AND PARTITIONS. IN NON LOAD-BEARING WALLS AND PARTITIONS, THAT ARE NOT PART OF A 3RACED WALL PANEL, STUDS SHALL BE SPACED NOT MORE THAN 24 INCHES (610 MM) ON CENTER. IN INTERIOR NON LOAD-BEARING WALLS AND PARTITIONS, STUDS ARE PERMITTED TO BE SET WITH THE LONG DIMENSION PARALLEL TO THE WALL. WHERE STUDS ARE SET WITH THE LONG DIMENSIONS PARALLEL TO THE WALL, USE OF UTILITY GRADE LUMBER OR STUDS EXCEEDING 10 FEET (3048 MM) IS NOT PERMITTED. INTERIOR NON LOAD-BEARING PARTITIONS SHALL BE CAPPED WITH NOT LESS THAN A SINGLE TOP PLATE INSTALLED TO PROVIDE OVERLAPPING AT CORNERS AND AT INTERSECTIONS WITH OTHER WALLS AND PARTITIONS. THE PLATE SHALL BE CONTINUOUSLY TIED AT JOINTS BY SOLID BLOCKING NOT LESS THAN 16 INCHES (406 MM) IN LENGTH AND EQUAL IN SIZE TO THE PLATE OR BY 1/2 INCH BY 1-1/2 INCH (12.7 MM BY 38 MM) METAL TIES WITH SPLICED SECTIONS FASTENED WITH (2) 16D NAILS ON EACH SIDE OF THE JOINT. 2308.5.5 OPENINGS IN WALLS AND PARTITIONS. OPENINGS IN EXTERIOR AND INTERIOR WALLS AND PARTITIONS SHALL COMPLY WITH SECTIONS 2308.5.5.1 THROUGH 2308.5.5.3 2308.5.5.1 OPENINGS IN EXTERIOR BEARING WALLS. HEADERS SHALL BE PROVIDED OVER EACH OPENING IN EXTERIOR

BEARING WALLS. THE SIZE AND SPANS IN TABLE 2308.4.1.1(1) ARE PERMITTED TO BE USED FOR ONE-AND TWO-FAMILY DWELLINGS. HEADERS FOR OTHER BUILDINGS SHALL BE DESIGNED IN ACCORDANCE WITH SECTION 2301.2, ITEM 1 OR 2. HEADERS SHALL BE OF TWO PIECES OF NOMINAL 2 INCH (51 MM) FRAMING LUMBER SET ON EDGE AS PERMITTED BY TABLE 2308.4.1.1(1) AND NAILED TOGETHER IN ACCORDANCE WITH TABLE 2304.10.1 OR OF SOLID LUMBER OF EQUIVALENT SIZE. WALL STUDS SHALL SUPPORT THE ENDS OF THE HEADER IN ACCORDANCE WITH TABLE 2308.4.1.1(1). EACH END OF A LINTEL OR HEADERS SHALL HAVE A BEARING LENGTH OF NOT LESS THAN 1-1/2 INCHES (38 MM) FOR THE FULL WIDTH OF THE LINTEL. 2308.5.5.2 OPENINGS IN INTERIOR BEARING PARTITIONS. HEADERS SHALL BE PROVIDED OVER EACH OPENING IN INTERIOR BEARING PARTITIONS AS REQUIRED IN SECTION 2308.5.5.1. THE SPANS IN TABLE 2308.4.1.1(1) OR 2308.4.1.1(2) AS APPLICABLE. 2308.5.5.3 OPENINGS IN INTERIOR NON-BEARING PARTITIONS. OPENINGS IN NON-BEARING PARTITIONS ARE PERMITTED TO BE USED. WALL STUDS SHALL SUPPORT THE ENDS OF THE HEADER IN ACCORDANCE WITH TABLE 2308.4.1.1(1) OR 2308.4.1.1(2) AS APPLICABLE. 2308.5.5.3 OPENINGS IN INTERIOR NON-BEARING PARTITIONS. OPENINGS IN NON-BEARING PARTITIONS ARE PERMITTED TO BE FRAMED WITH SINGLE STUDS AND HEADERS. EACH END OF A LINTEL OR HEADER SHALL HAVE A BEARING LENGTH OF NOT LESS THAN 1-1/2 INCHES (38 MM) FOR THE FULL WIDTH OF THE LINTEL. 2308.5.6 (RIPPLE WALLS. FOUNDATION CRIPPLE WALLS SHALL SHALL BE FRAMED OF STUDS THAT ARE NOT LESS THAN THE SIZE OF THE STUDDING ABOVE. EXTERIOR CRIPPLE WALLS SHALL BE FRAMED OF STUDS THAT ARE NOT LESS THAN THE SIZE OF THE STUDDING ABOVE. EXTERIOR CRIPPLE WALLS SHALL BE FRAMED OF STUDS THAT ARE NOT LESS THAN THE SIZE OF THE STUDDING ABOVE. EXTERIOR CRIPPLE WALLS SHALL BE FRAMED OF STUDS THAT ARE NOT LESS THAN THE SIZE OF THE STUDDING ABOVE. EXTERIOR CRIPPLE WALLS SHALL BE FRAMED OF STUDS THAT ARE NOT LESS THAN THE SIZE OF THE

STODING JOUND LONCHING, WHERE EXCEEDING 4 FEET (1219 MM) IN HEIGHT, SUCH WALLS SHALL BE FRAMED OF STUDS HAVING THE SIZE REQUIRED FOR AN ADDITIONAL STORY. SEE SECTION 2308.6.6 FOR CRIPPLE WALL BRACING. 2308.5.7 BRIDGING, UNLESS COVERED BY INTERIOR OR EXTERIOR WALL COVERINGS OR SHEATHING MEETING THE MINIMUM REQUIREMENTS OF THIS CODE, STUD PARTITIONS OR WALLS WITH STUDS HAVING A HEIGHT-TO-LEAST-THICKNESS RATIO EXCEEDING 50 SHALL HAVE BRIDGING THAT IS NOT LESS THAN 2 INCHES (51 MM) IN THICKNESS AND OF THE SAME WIDTH AS THE STUDS FITTED SNUGLY AND NAILED THERETO TO PROVIDE ADEQUATE LATERAL SUPPORT. BRIDGING SHALL BE PLACED IN EVERY STUD CAVITY AND AT A FREQUENCY SUCH THAT NO STUD SO BRACED SHALL HAVE A HEIGHT-TO-LEAST-THICKNESS RATIO EXCEEDING 50 WITH THE HEIGHT OF THE STUD MEASURED BETWEEN HORIZONTAL FRAMING AND BRIDGING OR BETWEEN BRIDGING, WHICHEVER IS GREATER. 2308.5.8 PIPES IN WALLS. STUD PARTITIONS CONTAINING PLUMBING, HEATING OR OTHER PIPES SHALL BE FRAMED AND THE JOISTS UNDERNEATH SPACED TO PROVIDE PROPER CLEARANCE FOR THE PIPING. WHERE A PARTITION CONTAINING PIPING RUNS PARALLEL TO THE FLOOR JOISTS, THE JOISTS UNDERNEATH SUCH PARTING OR OTHER PIPES ANALL BE FRAMED AND THE JOISTS PARALLEL TO THE FLOOR SHALL BE BRIDGED. WHERE PLUMBING, HEATING OR OTHER PIPES AND SPACED TO PERMIT THE PASSAGE OF PIPES AND SHALL BE BRIDGED. WHERE PLUMBING, HEATING OR OTHER PIPES AND PARCED TO PERMIT THE PASSAGE OF PIPES AND SHALL BE BRIDGED. WHERE PLUMBING, HEATING OR OTHER PIPES AND ON PARTLY IN, A PARTITION, NECESSITATING THE CUTTING OF THE SULES OR PLATES, A METAL TIE NOT LESS THAN 0.058 INCH (1.47 MM) (16 GALVANIZED GAGE) AND 1-1/2 INCHES (38 MM) IN WIDTH SHALL BE FASTENED TO EACH PLATE ACROSS AND TO EACH SIDE OF THE

OPENING WITH NOT LESS THAN (6) 16D NAILS. 2308.5.9 CUTTING AND NOTCHING. IN EXTERIOR WALLS AND BEARING PARTITIONS, A WOOD STUD SHALL NOT BE CUT OR NOTCHED IN EXCESS OF 25 PERCENT OF ITS DEPTH. IN NONBEARING PARTITIONS THAT DO NOT SUPPORT LOADS OTHER THAN THE WEIGHT OF THE PARTITION, A STUD SHALL NOT BE CUT OR NOTCHED IN EXCESS OF 40 PERCENT OF ITS DEPTH. 2308.5.10 BORED HOLES. THE DIAMETER OF BORED HOLES IN WOOD STUDS SHALL NOT EXCEED 40 PERCENT OF THE STUD DEPTH. THE DIAMETER OF BORED HOLES IN WOOD STUDS SHALL NOT EXCEED 60 PERCENT OF THE STUD DEPTH IN NONBEARING PARTITIONS. THE DIAMETER OF BORED HOLES IN WOOD STUDS SHALL NOT EXCEED 60 PERCENT OF THE STUD DEPTH IN ANY WALL, WHERE EACH STUD IS DOUBLED, PROVIDED THAT NOT MORE THAN TWO SUCH SUCCESSIVE DOUBLED STUDS ARE SO BORED. THE EDGE OF THE BOARD WHOLE SHALL NOT BE CLOSER THAN 5/8 INCH (15.9 MM) TO THE EDGE OF THE STUD. BORED HOLES SHALL NOT BE LOCATED AT THE SAME SECTION OF A STUD AS A CUT OR NOTCH. 2308.5.11 EXTERIOR WALLS, INCLUDING GABLES, OF ENCLOSED BUILDINGS SHALL BE SHEATHED WITH ONE OF THE

MATERIALS OF THE NOMINAL THICKNESS SPECIFIED IN TABLE 2308.5.11 WITH FASTENERS IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 2304.10 OR FASTENERS DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE. ALTERNATIVELY, SHEATHING MATERIALS AND FASTENERS COMPLYING WITH SECTION 2304.6 SHALL BE PERMITTED.

2308.6 WALL BRACING. BUILDINGS SHALL BE PROVIDED WITH EXTERIOR AND INTERIOR BRACED WALL LINES AS DESCRIBED IN SECTIONS 2308.6.1 THROUGH 2308.6.10.2. 2308.7 ROOF AND CEILING FRAMING. THE FRAMING DETAILS REQUIRED IN THIS SECTION APPLY TO ROOFS HAVING A SLOPE OF NOT LESS THAN THREE UNITS VERTICAL IN 12 UNITS HORIZONTAL (25-PERCENT SLOPE). WHERE THE ROOF SLOPE IS LESS THAN THREE UNITS ERTICAL IN 12 UNITS HORIZONTAL (25-PERCENT SLOPE), MEMBERS SUPPORTING RAFTERS AND CEILING JOISTS SUCH AS RIDGE BOARD, HIPS AND VALLEYS SHALL BE DESIGNED AS BEAMS. 2308.7.1 CEILING JOIST SPANS. SPANS FOR CEILING JOISTS SHALL BE IN ACCORDANCE WITH TABLE 2308.7.1(1) OR 2308.7.1(2). FOR OTHER GRADES AND SPECIES, AND OTHER LOADING CONDITIONS, REFER TO THE AWC STIR. 2308.7.2 RAFTER SPANS. SPANS FOR RAFTERS SHALL BE IN ACCORDANCE WITH TABLE 2308.7.2(1), 2308.7.2(2), 2308.7.2(3), 2308.7.2(4), 2308.7.2(5) OR 2308.7.2(6). FOR OTHER GRADES AND SPECIES AND OTHER LOADING CONDITIONS, REFER TO THE AWC STIR. THE SPAN OF EACH RAFTER SHALL BE MEASURED ALONG THE HORIZONTAL PROJECTION OF THE RAFTER. 308.7.3 CEILING JOIST AND RAFTER FRAMING. RAFTERS SHALL BE FRAMED DIRECTLY OPPOSITE EACH OTHER AT THE RIDGE HERE SHALL BE A RIDGE BOARD NOT LESS THAN 1-INCH (25 MM) NOMINAL THICKNESS AT RIDGES AND NOT LESS IN DEPTH THA HE CUT END OF THE RAFTER. AT VALLEYS AND HIPS, THERE SHALL BE A SINGLE VALLEY OR HIP RAFTER NOT LESS THAN 2-INCH (5 1 MM) NOMINAL THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. 2308.7.3.1 CEILING JOIST AND RAFTER CONNECTIONS. CEILING JOISTS AND RAFTERS SHALL BE NAILED TO EACH OTHER AND THE ASSEMBLY SHALL BE NAILED TO THE TOP WALL PLATE IN ACCORDANCE WITH TABLES 2304.10.1 AND 2308.7.5. CEILIN JOISTS SHALL BE CONTINUOUS OR SECURELY JOINED WHERE THEY MEET OVER INTERIOR PARTITIONS AND BE FASTENED TO ADJACENT RAFTERS IN ACCORDANCE WITH TABLES 2304.10.1 AND 2308.7.3.1 TO PROVIDE A CONTINUOUS RAFTER TIE ACROSS THE BUILDING WHERE SUCH JOISTS ARE PARALLEL TO THE RAFTERS. CEILING JOISTS SHALL HAVE A BEARING SURFACE OF NOT LESS THAN 1-1/2 INCHES (38 MM) ON THE TOP PLATE AT EACH END. WHERE CEILING JOISTS ARE NOT PARALLEL TO RAFTERS. AN

EQUIVALENT RAFTER TIE SHALL BE INSTALLED IN A MANNER TO PROVIDE A CONTINUOUS TIE ACROSS THE BUILDING, AT A SPACING OF NOT MORE THAN 4 FEET (1219 MM) ON CENTER. THE CONNECTIONS SHALL BE IN ACCORDANCE WITH TABLES AND 2304.10.1, OR CONNECTIONS OF EQUIVALENT CAPACITIES SHALL BE PROVIDED. WHERE CEILING JOISTS OR RAFTER TIES ARE NOT PROVIDED AT THE TOP OF THE RAFTER SUPPORT WALLS, THE RIDGE FORMED BY THESE RAFTERS SHALL ALSO BE SUPPORTED BY A GIRDER CONFORMING TO SECTION 2308.8. RAFTER TIES SHALL BE SPACED NOT MORE THAN 4 FEET (1219 MM) ON CENTER. RAFTER TIE CONNECTIONS SHALL BE BASED ON THE EQUIVALENT RAFTER SPACING IN TABLE 2308.7.3.1. RAFTER-TO-CEILING JOIST CONNECTIONS AND RAFTER TIE CONNECTION SHALL BE OF SUFFICIENT SIZE AND NUMBER TO PREVENT SPLITTING FROM NAILING. ROOF FRAMING MEMBER CONNECTION TO BRACED WALL LINES SHALL BE IN ACCORDANCE WITH SECTION 2308.6.7.2. 2308.7.4 NOTCHES AND HOLES. NOTCHING AT THE ENDS OF RAFTERS OR CEILING JOIST SHALL NOT EXCEED ONE-FOURTH THE DEPTH. NOTCHES IN THE TOP OR BOTTOM OF THE RAFTER OR CEILING JOIST SHALL NOT EXCEED ONE-FOURTH THE DEPTH. NOTCHES IN THE TOP OR BOTTOM OF THE RAFTER OR CEILING JOIST SHALL NOT EXCEED ONE-FOURTH THE DEPTH. NOTCHES IN THE TOP OF THE RAFTER OR CEILING JOIST SHALL NOT EXCEED ONE-SIXTH THE DEPTH AND SHALL NOT BE LOCATED IN THE MIDDLE ONE-THIRD OF THE SPAN, EXCEPT THAT A NOTCH NOT MORE THAN ONE-THIND OF THE DEPTH IS PERMITTED IN THE TOP OF THE RAFTER OR CEILING JOIST NOT FURTHER FROM THE FACE OF THE SUPPORT THAN THE

DEPTH IS PERMITTED IN THE TOP OF THE RAFTER OR CEILING JOIST NOT FURTHER FROM THE FACE OF THE SUPPORT THAN THE DEPTH OF THE MEMBER. HOLES BORED IN RAFTERS OR CEILING JOISTS SHALL NOT BE WITHIN 2 INCHES (51 MM) OF THE TOP AND BOTTOM AND THEIR DIAMETER SHALL NOT EXCEED ONE-THIRD THE DEPTH OF THE MEMBER. 2308.7.5 WIND UPLIFT. THE ROOF CONSTRUCTION SHALL HAVE RAFTER AND TRUSS TIES TO THE WALL BELOW. RESULTANT UPLIFT LOADS SHALL BE TRANSFERRED TO THE FOUNDATION USING A CONTINUOUS LOAD PATH. THE RAFTER OR TRUSS TO WALL CONNECTION SHALL COMPLY WITH TABLES 2304.10.1 AND 2308.7.5. 2308.7.6 FRAMING AROUND OPENINGS. TRIMMER AND HEADER RAFTERS SHALL BE DOUBLED, OR OF LUMBER OF EQUIVALENT CROSS SECTION, WHERE THE SPAN OF THE HEADER EXCEEDS 4 FEET (1219 MM). THE ENDS OF HEADER RAFTERS THAT ARE MORE THAN 6 FEET (1829 MM) IN LENGTH SHALL BE SUPPORTED BY FRAMING ANCHORS OR RAFTER HANGERS UNLESS BEARING ON A BEAM, PARTITION OR WALL. 2308.7.7 PURLINS. PURLINS TO SUPPORT ROOF LOADS ARE PERMITTED TO BE INSTALLED TO REDUCE THE SPAN OF RAFTERS WITHIN ALLOWABLE LIMITS AND SHALL BE SUPPORTED BY STRUTS TO BEARING WALLS. THE MAXIMUM SPAN OF 2-INCH BY 4-INCH (51

MM BY 102 MM) PURLINS SHALL BE 4 FEET (1219 MM). THE MAXIMUM SPAN OF THE 2-INCH BY 6-INCH (51 MM BY 152 MM) PURLIN SHALL BE 6 FEET (1829 MM), BUT IN NO CASE SHALL THE PURLIN BE SMALLER THAN THE SUPPORTED RAFTER. STRUTS SHALL BE NOT LESS THAN 2-INCH BY 4-INCH (51 MM BY 100 KM) MEMBERS. THE UNBRACED LENGTH OF STRUTS SHALL NOT EXCEED 8 FEET (2438 MM) AND THE SLOPE OF THE STRUTS SHALL BE NOT LESS THAN 45 DEGREES (0.79 RAD) FROM THE HORIZONTAL. 2308.7.8 BLOCKING. ROOF RAFTERS AND CEILING JOISTS SHALL BE SUPPORTED LATERALLY TO PREVENT ROTATION AND LATERAL DISPLACEMENT IN ACCORDANCE WITH SECTION 2308.4.6 AND CONNECTED TO BRACED WALL LINES IN ACCORDANCE WITH SECTION 2308.6.7.2. 2308.7.9 ENGINEERED WOOD PRODUCTS. PREFABRICATED WOOD I-JOISTS, STRUCTURAL GLUED-LAMINATED TIMBER AND STRUCTURAL COMPOSITE LUMBER SHALL NOT BE NOTCHED OR DRILLED EXCEPT WHERE PERMITTED BY THE MANUFACTURER'S RECOMMENDATIONS OR WHERE THE EFFECTS OF SUCH ALTERATIONS ARE SPECIFICALLY CONSIDERED IN THE DESIGN OF THE MEMBER BY A REGISTERED DESIGN PROFESSIONAL. 2308.7.10 ROOF SHEATHING, ROOF SHEATHING SHALL BE IN ACCORDANCE WITH TABLES 2304.8(3) AND 2304.8(5) FOR WOOD STRUCTURAL PANELS, AND TABLES 2304.8(1) AND 2304.8(2) FOR LUMBER AND SHALL COMPLY WITH SECTION 2304.8.2. 2308.7.11 JOINTS. JOINTS IN LUMBER SHEATHING SHALL DCCUR OVER SUPPORTS UNLESS APPROVED END-MATCHED LUMBER IS

2308.7.12 ROOF PLANKING. PLANKING SHALL BE DESIGNED IN ACCORDANCE WITH THE GENERAL PROVISIONS OF THIS CODE. IN LIEU OF SUCH DESIGN, 2-INCH (51 MM) TONGUE-AND GROOVE PLANKING IS PERMITTED IN ACCORDANCE WITH TABLE 2308.7.12. JOINTS IN SUCH PLANKING ARE PERMITTED TO BE RANDOMLY SPACED, PROVIDED THE SYSTEM IS APPLIED TO NOT LESS THAN

SED, IN WHICH CASE EACH PIECE SHALL BEAR ON AT LEAST TWO SUPPORTS.

THREE CONTINUOUS SPANS, PLANKS ARE CENTER MATCHED AND END MATCHED OR SPLINED, EACH PLANK BEARS ON AT LEAST ONE SUPPORT, AND JOINTS ARE SEPARATED BY NOT LESS THAN 24 INCHES (610 MM) IN ADJACENT PIECES. 2308.7.13 WOOD TRUSSES, WOOD TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH SECTION 2303.4. CONNECTION TO BRACED WALL LINES SHALL BE IN ACCORDANCE WITH SECTION 2308.6.7.2. 2308.7.14 ATTIC VENTILATION. FOR ATTIC VENTILATION, SEE SECTION 1203.2. 2308.7.0F ELEMENTS. COMBINING OF ENGINEERED ELEMENTS OR SYSTEMS AND CONVENTIONALLY SPECIFIED ELEMENTS OR SYSTEMS SHALL BE PERMITTED SUBJECT TO THE LIMITS OF SECTIONS 2308.8.1 AND 2308.8.2.

- ADDITIONAL FLOOR FRAMING NOTES:
 THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWING(S) & NOTIFY THE DESIGNER AND STRUCTURAL ENGINEER OF RECORD OF ANY DISCREPANCIES THAT CANNOT BE ADJUSTED IN THE FIELD. IF EXISTING CONDITIONS DIFFER FROM THAT WHICH IS SPECIFIED, THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS SHALL NOTIFY THE DESIGNER AND STRUCTURAL ENGINEER OF RECORD.
 DOUBLE ALL FLOOR JOISTS UNDER BEARING WALL ABOVE, PARALLEL TO FLOOR JOIST DIRECTION. PROVIDE 2X/4X SOLID BLOCKING (PER
- FRAMING PLAN(S), PERPENDICULAR TO FLOOR JOIST DIRECTION.
 DOUBLE ALL FLOOR FRAMING MEMBERS @ PERIMETER OF FLOOR DIAPHRAGM OPENINGS AND SIDE EDGES OF OF CANTILEVERED FLOOR FRAMING.
 PROVIDE 4X/6X DF#1 (OR EQUAL) SOLID COMPRESSION BLOCKING IN FLOOR ASSEMBLIES UNDER ALL CONCENTRATED LOADS FROM
- ABOVE. 5. VERIFY ALL LOADS FROM ABOVE AND CONFIRM/VERIFY FOOTING, ISOLATED PIER LOCATIONS OR CALCULATED FRAMING ACCORDINGLY. 6. RECOMMENDED OPTION FOR SUBFLOOR FASTENING: GLUE AND USE WOOD SCREWS @ 6"OC EDGES AND 10"OC FIELD FOR A "SQUEAK-

LESS" FLOOR.

FRAMING TABLE: TYPIC	AL HEADERS & CEILING JOISTS	
ROUGH OPENING/SPAN	APPLICATION	SIZE/GRADE
SPANS UP TO 4'-0"	HEADER @ 2X4 WALL (1- TRIMMER) HEADER @ 2X6 WALL (1- TRIMMER)	4X6 DF#1 6X8 DF#1
SPANS UP TO 6'-0"	HEADER @ 2X4 WALL (2- TRIMMER) HEADER @ 2X6 WALL (2- TRIMMER)	4X8 DF#1 6X8 DF#1
SPANS UP TO 10'-0"	HEADER @ 2X4 WALL (2- TRIMMER) HEADER @ 2X6 WALL (2- TRIMMER)	4X10 DF#1 OR 3.5" X 9.5" PSL 6X10 DF#1 OR 5.25" X 9.5" PSL
SPANS UP TO 12'-0"	HEADER @ 2X4 WALL (4X4 DF#1 POST) HEADER @ 2X6 WALL (4X6 DF#1 POST)	4X12 DF#1 OR 3.5" X 11.88" PSL 6X12 DF#1 OR 5.25" X 11.88" PSL
SPANS > 12'-0"	HEADER @ 2X4 WALL (4X4 DF#1 POST) HEADER @ 2X6 WALL (4X6 DF#1 POST)	SEE FRAMING PLANS FOR SIZE(S)
SPANS UP TO 12'-10"	CEILING JOISTS @ 16"OC	2X6 DF#2
SPANS > 12'-10" < 16'-3"	CEILING JOISTS @ 16"OC	2X8 DF#2
SPANS > 16'-3" < 19'-10"	CEILING JOISTS @ 16"OC	2X10 DF#2
SPANS > 19'-10"	CEILING JOISTS @ 16°OC	SEE FRAMING PLANS FOR SIZE(S)
SPANS UP TO 10'-6"	CEILING JOISTS @ 24*OC	2X6 DF#2
SPANS > 10'-6" < 13'-3"	CEILING JOISTS @ 24"OC	2X8 DF#2
SPANS > 13'-3" < 16'-3"	CEILING JOISTS @ 24"OC	2X10 DF#2
SPANS > 16'-3"	CEILING JOISTS @ 24"OC	SEE FRAMING PLANS FOR SIZE(S)
@ ALL FLAT CEILINGS	COLLAR TIES @ RR /16"OC = @ 64"OC COLLAR TIES @ RR/24"OC = @ 60"OC	2X8 DF#2

NOTES: 1. THIS TABLE APPLIES TO ALL HEADERS & CEILING JOISTS NOT SPECIFICALLY IDENTIFIED BY NUMBER OR LETTER ON THE FRAMING PLAN(S). 2. SEE TYPICAL HEADER FRAMING DETAILS FR5 & FR6 @ SHEET SD.1 FOR INSTALLATION OF HEADERS.

WHERE 2X RIDGE BOARDS & CEILING JOISTS ARE SPECIFIED, PROVIDE 2X COLLAR TIES @ 64"/60"OC (UNO) @ MID-HEIGHT OF RAFTERS.
 SEE TYPICAL EAVE CONSTRUCTION DETAILS & CEILING SPLICE DETAILS FOR LAP NAILING REQUIREMENTS.
 SEE SHEETS SN.1 & SN.2 FOR STRUCTURAL NOTES & ADDITIONAL MINIMUM NAILING REQUIREMENTS.

UNDERFLOOR VENTILATION CALCS (CRC R408)

	MAIN RESIDENCE	AC
AREA OF ACCESSIBLE UNDERFLOOR TO BE VENTILATED	3,746 SF	86
AREA/150 PER CRC R806 VENTILATION REQUIRED	NONE (MAT FOUNDATION)	NC
NUMBER OF VENTS REQUIRED (6" X 14.5" VENT = .60 SF)		
TOTAL VENTILATION PROVIDED		

FOUNDATION/FLOOR FRAMING NOTESTYPE & SIZE12" THICK MAT FOUNDATION: (12"W X 18"D FTG.)CONCRETECOMPRESSIVE STRENGTH (F'C) OF 2500 PSI @ 28 DAYS (UNO)REINFORCINGSEE DETAILS PROVIDED & NOTES BELOW & @ SHEET SN.1.MUD SILL3X6 PTDF: (SEE SHEAR WALL SCHEDULE & DETAILS)MUD SILL ANCHORAGE5/8" DIA. X 12" (HDG) AB @ 48"OC (UNO) SEE SHEAR WALL SCHE

 SOIL ENGINEER AND/OR STRUCTURAL ENGINEER SHALL BE RETAINED TO PROVIDE OR SPECIAL INSPECTION SERVICES AS REQUIRED DURING THE GRADING & FOUNDA PHASES OF THE PROJECT (AS APPLICABLE). ALL REPORTS SHALL BE SUBMITTED IN AGENCY FOR REVIEW AND APPROVAL.

- 2. THE GENERAL CONTRACTOR SHALL INVESTIGATE THE (E) FOUNDATION (AS APPLIC EXISTING TYPE OF FOUNDATION MATCHES THE PROPOSED FOUNDATION SHOWN OF GENERAL CONTRACTOR SHALL NOTIFY THE PROJECT ARCHITECT/DESIGNER & STE RECORD, PRIOR TO THE COMMENCEMENT OF ANY WORK, OF ANY & ALL DISCREPAN LIMITED TO, EXISTENCE OF DRILLED PIERS, GRADE BEAMS, SLABS WITH PRE-OR P ANYTHING ELSE NOT SHOWN ON THE APPROVED PLANS. THE GENERAL CONTRACT RESPONSIBILITY & LIABILITY FOR ANY & ALL DAMAGES THAT MAY OCCUR FROM TH THIS NOTIFICATION.
- THE GENERAL CONTRACTOR SHALL VERIFY TYPE AND CONSTRUCTION OF ALL EXIS TO PERFORMING ANY SAW-CUTTING OR SLAB MODIFICATION.
- ALL STEEL REINFORCING SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING C
 ALL METAL FASTENERS AND/OR ANCHORS THAT ARE IN CONTACT WITH PTDF LUMBER
- SHALL BE "HOT DIPPED GALVANIZED" (HDG) METAL OR STAINLESS STEEL (SS).6. WET SET ANCHOR BOLTS: PROVIDE 5/8" DIAMETER X 12" @ 48"OC MAXIMUM SPACIN
- PER CBC 2305.3.11. SEE SHEAR WALL SCHEDULE FOR ANCHOR BOLT SPACING @ DE
 RETROFIT ANCHOR BOLTS: 5/8" OR 7/8" DIAMETER THREADED RODS AS NOTED ON F
 X 3" WASHERS PER CBC 2305.3.11. ANCHORS SET INTO EXISTING CONCRETE SHALL
- SET-XP" EPOXY (ICC-ESR 2508).
- PROTECTION FOR WOOD & WOOD BASED PRODUCTS AGAINST DECAY SHALL BE IN (
 DOUBLE ALL FLOOR JOISTS/FRAMING MEMBERS UNDER BEARING WALLS ABOVE, PA
- 10. DOUBLE ALL FLOOR JOISTS/FRAMING MEMBERS @ PERIMETER OF FLOOR DIAPHRA OF FLOOR CANTILEVERS.
- VERIFY LOCATIONS OF CONCENTRATED POINT LOADS FROM ABOVE & VERIFY/PRO ISOLATED PIER AS APPLICABLE.
- 12. PROVIDE 4X/6X DF#1 SOLID COMPRESSION BLOCKING IN FLOOR ASSEMBLY UNDER

		RE	VISIONS:		#
		7/2	9/23		
ACCESSORY BUILDING					
367 SF					
NONE (MAT FOUNDATION)					
				R	
D)			Los Gato	s, CA 9503	30 30
			408.354.0	6224 (offic	e)
HEDULE & NOTES BELOW			www.brit	t-rowe.con	n
E TESTING, OBSERVATION AND/ DATION CONSTRUCTION N WRITING TO THE ENFORCING		Br an	itt Rowe sha nd ownershi d specificati	all retain al p to all dra ons. The c	l rights wings ontents
ICABLE) TO CONFIRM THAT THE ON THE APPROVED PLANS. THE TRUCTURAL ENGINEER OF PANCIES INCLUDING, BUT NOT POST TENSIONED CABLES, OP		of t exp by	he drawings n whole, or ressed writ / Britt Rowe shall comply national buil	s may not to in part, wit ten conser . All constr with all loo ding codes	be used hout ht given uction cal & s. All
CTOR SHALL ASSUME ALL THE FAILURE OF PROVIDING		c	contractors condition onformance	shall verify is to assur to these c	/ all e odes.
ISTING CONCRETE SLABS PRIOR					
OF CONCRETE. BER OR EXPOSED TO WEATHER					
NG W/.229" X 3" X 3" WASHERS DESIGNATED SHEAR WALL LINES. FOUNDATION PLAN W/.229" X 3" L BE PROVIDED WITH "SIMPSON			e	33	, -+
N COMPLIANCE WITH CRC R317. PARALLEL TO JOIST DIRECTION. AGM OPENINGS & SIDE EDGES			u enc	Road CA 950	-04-01
OVIDE CONCRETE FOOTING/		i	id Z	mmit itos.	: 558
R ALL CONCENTRATED POINT			e se	Sul Sul	APN
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			HAD TE		CHICINE
			Exp.	6-30-25	₩ ₩
			STATE O	IVIL F CALIFORN	
		Profe	ssional Star	7-31-23	
			SI	1.2	2

alculation Description			c	Calculation Date	/Time: 2023-03-17T1	3:13:09-07:00	(Page 5 of 11)	Project Name:	Zhu Residenc	e		
	on: Title 24 Analysis		li li	nput File Name:	0230178 Zhu Reside	nce.ribd22x		Calculation De	scription: Title	e 24 Analysis		
UILDING - FEATURES I	NFORMATION							FENESTRATION	GLAZING			
01	02	03		04	05	06	07	01	02	03	04	05
Project Name	Conditioned Flo	or Area (ft ²) Number of D Units	welling Number	of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems	Name	Туре	Surface	Orientation	Azimuth
Zhu Residence	3168	3 1		4	1	0	1	Window	Window	Front Wall	Front	345
ONE INFORMATION								window	window		FIGIL	545
01	02	03	04		05	06	07	Window 2	Window	Front Wall	Front	345
Zone Name	Zone Type	HVAC System Name	Zone Floor	Area (ft ²)	Avg. Ceiling Height	Water Heating System 1	Status	Window 3	Window	Front Wall	Front	345
Zone 1	Conditioned	HVAC System1	316	в	10	DHW Sys 1	New	Window 4	Window	Front Wall	Front	345
								Window 5	Window	Left Wall	Left	75
PAQUE SURFACES								Window 6	Window	Left Wall	Left	75
01	02	03	04	05	06	07	08	Window o	Window	Leit Wall	cert	
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft ²) Window and Door Area (ft2)	Tilt (deg)	Window 7	Window	Rear Wall	Back	165
Front Wall	Zone 1	R-19 Wall	345	Front	570	128	90	Window 8	Window	Rear Wall	Back	165
Left Wall	Zone 1	R-19 Wall	R S 75 P	R Cleft V	D 290 R	23.75	90	Window 9	Window	Rear Wall	Back	165
Rear Wall	Zone 1	R-19 Wall	165	Back	780	120	90	Window 10	Window	Rear Wall	Back	165
Right Wall	Zone 1	R-19 Wall	255	Right	520	58.8	90			Decentric II	De al	105
Roof	Zone 1	R-38 HP Attic	n/a	n/a	3168	n/a	n/a	Window 11	Window	Rear Wall	Васк	165
Raised Floor	Zone 1	R-19 Floor Crawlspace	n/a	n/a	3168	n/a	n/a	Window 12	Window	Right Wall	Right	255
аттіс								Window 13	Window	Right Wall	Right	255
01	02	03	04	05	06	07	08	Door	Window	Right Wall	Right	255
Name	Construction	Туре	Roof Rise (x in 12)	Roof Reflectan	ce Roof Emittance	e Radiant Barrier	Cool Roof		Mindau	D'alterration	D'alte	255
	Attic RoofZone 1	Ventilated	4	0.1	0.85	No	No	Window 14	Window	Right Wall	Right	255

CERTIFICATE OF CO Project Name: Zhu Calculation Descrip	MPLIANCE - RESID Residence tion: Title 24 Analy	ENTIAL PERFO	ORMAN		PLIANCE	METHOD) Calcu Input	latio File	n Date/ Name:	Time: 202 0230178 2	3-03-171 hu Resid	[13:13:09-07 ence.ribd22;	:00 K		CF1R-PRF-01E (Page 9 of 11)
HVAC - HEAT PUMPS															
01	02	03	04		05	06	07	08		09	10	11	12		13
					Heating					Cooling					
Name	System Type	Number of Units	Efficie Typ	ncy HS e C	PF / PF2 / C OP	ap 47	Cap 17	Effic Ty	iency /pe	ency SEER / El e SEER2 C		Zonally Controlled	Compressor Type	HERS Verification	
Heat Pump System 1	Central split HP	1	HSP	F S	9.5 6	0000	46800	EER	SEER	16	11.7	Not Zonal	Single Speed	Н	eat Pump System 1-hers-htpump
HVAC HEAT PUMPS -	HERS VERIFICATION														
01 02 03 04 05 06 07 08											09				
Name	Verified Airflow	Airflow Ta	rget	Verified	EER/EER2	SE	/erified ER/SEER2		Verified Cl	Refrigeran narge	t V HSI	/erified PF/HSPF2	Verified Heating Cap 47		Verified Heating Cap 17
Heat Pump System 1-hers-htpump	Required	350		Not Re	equired	R	equired	Т	C	No		Yes	Yes		Yes
			-		11	_		+	0	, 		- 0			
AL AL	02			HE	B	5	PR	0) \		ER	10			12
01	02	03		04 05 06 07 08 09 10								10	11		12
Name	Туре	Design T	/pe	Duct Ins Supply	. R-value Return	Duc Suppl	t Location y Retu	irn	Surfa Supply	Return	Вур	bass Duct	Duct Leakag	ge	HERS Verification
Air Distribution System 1	Unconditioned attic	Non-Veri	fied	R-6	R-6	Attic	Atti	ic	n/a	n/a	No B	ypass Duct	Sealed and Te	sted	Air Distribution System 1-hers-dist

Registration Date/Time: 2023-03-17 13:18:25

Report Version: 2022.0.000 Schema Version: rev 20220901

HERS Provider:

Report Generated: 2023-03-17 13:14:02

CalCERTS inc.

Registration Number: 223-P010032737A-000-000-0000000-0000

CA Building Energy Efficiency Standards - 2022 Residential Compliance

04 fied Duct ocation Required 02 Type HVAC F	ETHOD Calculation Input File 05 Verified Duct Design Not Required Ean	on Date/Time: 2023 Name: 0230178 Zh 06 Buried Ducts Not Required Fan Pow	-03-17T13:13:09-07 u Residence.ribd22> 07 Deeply Buried Ducts Credit not taken 03 rer (Watts/CFM) 0.3	:00 x 08 Low-leakage Air Handler Not Required HVAC	CF1R-PRF-01 (Page 10 of 11 09 Low Leakage Ducts Entirely in Conditioned Space No 04 Name Fan 1-hers-fan					
04 fied Duct ocation Required 02 Type HVAC F	Verified Duct Design Not Required	06 06 06 Buried Ducts Not Required Fan Pow	07 Deeply Buried Ducts Credit not taken 03 ver (Watts/CFM) 0.3	08 Low-leakage Air Handler Not Required HVAC	09 Low Leakage Ducts Entirely in Conditioned Space No 04 Name Fan 1-hers-fan					
04 fied Duct ocation Required 02 Type HVAC F	05 Verified Duct Design Not Required	06 Buried Ducts Not Required Fan Pow	07 Deeply Buried Ducts Credit not taken 03 rer (Watts/CFM) 0.3	08 Low-leakage Air Handler Not Required	09 Low Leakage Ducts Entirely in Conditioned Space No No 04 Name Fan 1-hers-fan					
04 fied Duct ocation Required 02 Type HVAC F	05 Verified Duct Design Not Required	06 Buried Ducts Not Required Fan Pow	07 Deeply Buried Ducts Credit not taken 03 ner (Watts/CFM) 0.3	08 Low-leakage Air Handler Not Required	09 Low Leakage Ducts Entirely in Conditioned Space No No 04 Name Fan 1-hers-fan					
04 fied Duct ccation Required 02 Type HVAC F	05 Verified Duct Design Not Required	06 Buried Ducts Not Required Fan Pow	07 Deeply Buried Ducts Credit not taken 03 rer (Watts/CFM) 0.3	08 Low-leakage Air Handler Not Required	09 Low Leakage Ducts Entirely in Conditioned Space No No 04 Name Fan 1-hers-fan					
fied Duct ocation Required 02 Type HVAC F	Verified Duct Design Not Required	Buried Ducts Not Required Fan Pow	Deeply Buried Ducts Credit not taken 03 ver (Watts/CFM) 0.3	Low-leakage Air Handler Not Required	Low Leakage Ducts Entirely in Conditioned Space No 04 Name Fan 1-hers-fan					
Required 02 Type HVAC F	Not Required	Not Required	O3 ver (Watts/CFM)	Not Required	No 04 Name : Fan 1-hers-fan					
O2 Type HVAC F	e Fan	Fan Pow	03 ver (Watts/CFM) 0.3	HVAC	04 Name Fan 1-hers-fan					
02 Type HVAC F	e Fan	Fan Pow	03 ver (Watts/CFM) 0.3	HVAC	04 Name Fan 1-hers-fan					
Type HVAC F	e Fan	Fan Pow	o.3	HVAC	Name Fan 1-hers-fan					
HVAC F	Fan	S Ir	0.3	HVAC	Fan 1-hers-fan					
alc	-KI	<u> </u>			Fan 1-hers-fan					
01 02 03										
V	erified Fan Watt Drav	VIDI	Require	ed Fan Efficacy (Wat	ts/CFM)					
	Required			0.3						
04	05	06	07	08	09					
Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SRE	Includes Fault Indicator Display?	HERS Verification	Status					
xhaust	No	n/a	No	Yes						
×	04 Fan Type	Verified Fan Watt Draw Required 04 05 Fan Type Heat/Energy Recovery? ihaust No	Verified Fan Watt Draw Required 04 05 06 Includes IAQ Recovery Effectiveness - SRE shaust No n/a Registration Date/Time: Registration Date/Time:	Verified Fan Watt Draw Require Required Required 04 05 06 07 Fan Type Includes Heat/Energy Recovery? IAQ Recovery Effectiveness - SRE Includes Fault Indicator Display? thaust No n/a No	Verified Fan Watt Draw Required Fan Efficacy (Wat Required 0.3 04 05 06 07 08 Includes Heat/Energy Recovery? Includes No n/a No Yes Registration Date/Time:					

esign Ratings Compliance Margins nry ¹ EDR Total ² EDR (EDR2total) Source Energy (EDR1) Efficiency ¹ EDR (EDR2efficiency) (EDR2total) 18.6 32.5 17.5 31.8 7.4 1.1 0.7 RESULT ³ : PASS icient equipment (PV) system and batteries : greater than or equal to zero and unmet load hour limits are not exceeded	sign Ratings Compliance Margins hcy ¹ EDR fficiency) Total ² EDR (EDR2total) Source Energy (EDR1) Efficiency ¹ EDR (EDR2efficiency) Total ² EDR (EDR2total) 8.6 32.5		Calculation Date/Tim Input File Name: 023	e: 2023-03-17T13:13:0 0178 Zhu Residence.ril	09-07:00 bd22x	CF1R-PRF-01E (Page 2 of 11)					
Incy ¹ EDR (Fficiency) Total ² EDR (EDR2total) Source Energy (EDR1) Efficiency ¹ EDR (EDR2efficiency) Total ² EDR (EDR2total) 18.6 32.5	Import EDR (fficiency) Total ² EDR (EDR2total) Source Energy (EDR1) Efficiency ¹ EDR (EDR2efficiency) Total ² EDR (EDR2total) 8.6 32.5	esign Ratings			Compliance Margins						
18.6 32.5 17.5 31.8 7.4 1.1 0.7 RESULT ³ : PASS icient equipment (PV) system and batteries : greater than or equal to zero and unmet load hour limits are not exceeded h PV* PV scaling SPROVIDER	8.6 32.5 7.5 31.8 RESULT ³ : PASS cient equipment (PV) system and batteries greater than or equal to zero and unmet load hour limits are not exceeded IPV' PV scaling SPROVIDER	ency ¹ EDR efficiency)	Total ² EDR (EDR2total)	Source Energy (EDR1)	ce Energy Efficiency ¹ EDR Total ² EDR EDR1) (EDR2efficiency) (EDR2total)						
17.5 31.8 7.4 1.1 0.7 RESULT ³ : PASS icicient equipment (PV) system and batteries : greater than or equal to zero and unmet load hour limits are not exceeded PV* PV scaling	7.5 31.8 7.4 1.1 0.7 RESULT ³ : PASS cient equipment (PV) system and batteries greater than or equal to zero and unmet load hour limits are not exceeded PV' PV scaling PV' PV scaling PROVIDER	18.6	32.5								
RESULT ³ : PASS icient equipment (PV) system and batteries greater than or equal to zero and unmet load hour limits are not exceeded PV' PV scaling SPROVIDER	RESULT ³ : PASS cient equipment (PV) system and batteries greater than or equal to zero and unmet load hour limits are not exceeded	7.5	31.8	7.4	1.1	0.7					
icient equipment (PV) system and batteries greater than or equal to zero and unmet load hour limits are not exceeded	cient equipment (PV) system and batteries greater than or equal to zero and unmet load hour limits are not exceeded PV' PV scaling	RESUL	³ : PASS								
		S P	RTS,	D E R							

CERTIFICATE OF COMP Project Name: Zhu Res Calculation Description	LIANCE - RESIDENTIAL PERFO idence n: Title 24 Analysis	RMANCE COMPLIANCE METH	IOD Calculation Date/Time Input File Name: 02303	: 2023-03-17T13:13:09-07:00 178 Zhu Residence.ribd22x		CF1R-PRF-01E (Page 3 of 11)
ENERGY USE SUMMARY	Standard Design Source Energy (EDR1) (kBtu/ft ² -yr)	Standard Design TDV Energy (EDR2) (kTDV/ft ² -yr)	Proposed Design Source Energy (EDR1) (kBtu/ft ² -yr)	Proposed Design TDV Energy (EDR2) (kTDV/ft ² -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	3.16	13.98	2.06	16.02	1.1	-2.04
Space Cooling	0.34	16.07	0.27	16.98	0.07	-0.91
IAQ Ventilation	0.31	3.32	0.31	3.32	0	0
Water Heating	1.05	11.06	0.6	7.1	0.45	3.96
Self Utilization/Flexibility Credit				0		0
Efficiency Compliance Total	4.86	44.43	3.24	43.42	1.62	1.01
Photovoltaics	-0.87	-29.32	-0.87	-29.36		
Battery		HERS	PROVI	DER		
Flexibility						
Indoor Lighting	0.64	6.35	0.64	6.35		
Appl. & Cooking	1.92	12.33	1.92	12.29		
Plug Loads	2.01	20.93	2.01	20.93		
Outdoor Lighting	0.18	1.65	0.18	1.65		

Registration Date/Time: 2023-03-17 13:18:25	HERS Provider: CalCERTS inc.	
Report Version: 2022.0.000 Schema Version: rev 20220901	Report Generated: 2023-03-17 13:14:02	

Registration Number: 223-P010032737A-000-000-0000000-0000 CA Building Energy Efficiency Standards - 2022 Residential Compliance

8.74

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TOTAL COMPLIANCE

Registration Date/Time: 2023-03-17 13:18:25 Report Version: 2022.0.000 Schema Version: rev 20220901

7.12

55.28

HERS Provider: CalCERTS inc. Report Generated: 2023-03-17 13:14:02

ICE METHOD CF1R-PRF-01E Calculation Date/Time: 2023-03-17T13:13:09-07:00 (Page 6 of 11) Input File Name: 0230178 Zhu Residence.ribd22x							CEF Pro Cal	CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD CF1R-PRF-02 Project Name: Zhu Residence Calculation Date/Time: 2023-03-17T13:13:09-07:00 (Page 7 of 1 Calculation Description: Title 24 Analysis Input File Name: 0230178 Zhu Residence.ribd22x										
									OP	AQUE DOORS								
06	07	08	09	10	11	12	13	14		01			02			03		04
Width (ft)	Height (ft)	Mult.	Area (ft ²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading		Name Door 2			Side of Bui Front W	ilding /all	Ar	48		U-factor 0.5
		1	10	0.35	NFRC	0.23	NFRC	Bug Screen	OP	PAQUE SURFACE CONSTRU	UCTIONS							
		1	10	0.35	NFRC	0.23	NFRC	Bug Screen		01	0	2	03	04	05	06	07	08
		1	30	0.35	NFRC	0.23	NFRC	Bug Screen		Construction Name	Surfac	е Туре	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
		1 1 1	15 8.75	0.35	NFRC NFRC	0.23	NFRC NFRC	Bug Screen Bug Screen		R-19 Wall	Exterio	r Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-19	None / None	0.074	Inside Finish: Gypsum Board Cavity / Frame: R-19 in 5-1/2 in. (R-18) / 2x6 Exterior Finish: 3 Coat Stucco
2 S	E		30 30 30	0.35	NFRC NFRC NFRC	0.23 0.23 0.23	NFRC NFRC NFRC	Bug Screen Bug Screen Bug Screen		Attic RoofZone 1 Attic Ro		Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / O	0.059	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-6.0 insul.
		1 1 1	15 15 8 75	0.35	NFRC NFRC	0.23	NFRC NFRC	Bug Screen Bug Screen	R	R-19 Floor Crawispace Floors O Crawisp		over space	Wood Framed Floor	2x6 @ 16 in. O. C.	R-19	None / None	0.049	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x6
		1	8.75	0.35	NFRC	0.23	NFRC	Bug Screen		R-38 HP Attic	Ceilings att	(below ic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board
		1	21.3	0.35	NFRC	0.23	NFRC	Bug Screen								1		
		1	20	0.35	NFRC	0.23	NFRC	Bug Screen	BU	JILDING ENVELOPE - HERS	S VERIFICA	TION						
										01 Juality Insulation Installat	tion (OIII)	High P-va	02	03 Building Envelope Air	Loakago	04 CEM50		05
										Not Required		mgn N-va	Not Required	N/A	Leakage	n/a		n/a
Registration Date/Time: HERS Provider: CalCERTS inc. 2023-03-17 13:18:25 CalCERTS inc. Report Version: 2022.0.000 Report Generated: 2023-03-17 13:14:02 Schema Version: rev 20220901 13:14:02 13:14:02								CalCERTS inc. 17 13:14:02	Re	Registration Number: Registration Number: Registration Number: 223-P010032737A-000-0000000000000000000000000000000					Registration Date/Time: HERS Pro 2023-03-17 13:18:25 Report Version: 2022.0.000 Report (Schema Version: rev 20220901			5 Provider: CalCERTS inc. Drt Generated: 2023-03-17 13:14:02

Project Name: Zhu Residence	Calculation Date/Time: 2023-03-17T13:13:09-07:00 (Page 11 of
Calculation Description: Title 24 Analysis	Input File Name: 0230178 Zhu Residence.ribd22x
DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name:	Documentation Author Signature:
Additi balley	Signature Date:
FRI Energy Consultants, LLC.	2023-03-17 13:17:35
Address: 21 N. Harrison Ave,	CEA/ HERS Certification Identification (If applicable):
City/State/Zip: Campbell, CA 95008 RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California:	Phone: 408-866-1620
City/State/Zip: Campbell, CA 95008 RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California: 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for 2. I certify that the energy features and performance specifications identified on this Certificate 3. The building design features or system design features identified on this Certificate of Complik calculations, plans and specifications submitted to the enforcement agency for approval with	Phone: 408-866-1620 the building design identified on this Certificate of Compliance. of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. nce are consistent with the information provided on other applicable compliance documents, worksheets, his building permit application.
City/State/Zip: Campbell, CA 95008 RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California: 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for 2. I certify that the energy features and performance specifications identified on this Certificate of Complia 3. The building design features or system design features identified on this Certificate of Complia 3. calculations, plans and specifications submitted to the enforcement agency for approval with Responsible Designer Name: Mike Rowe	Phone: 408-866-1620 the building design identified on this Certificate of Compliance. of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. nee are consistent with the information provided on other applicable compliance documents, worksheets, his building permit application. Responsible Designer Signature: Mike Rowe
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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.

Registration Number: 223-P010032737A-000-000-0000000-0000 CA Building Energy Efficiency Standards - 2022 Residential Compliance Registration Date/Time: 2023-03-17 13:18:25 Report Version: 2022.0.000 Schema Version: rev 20220901

HERS Provider: CalCERTS inc. Report Generated: 2023-03-17 13:14:02

CERTIFICATE OF Project Name: Zl Calculation Desc	COMPLIANCE - RESI nu Residence ription: Title 24 Ana	DENTIAL PERFORMAN	CE COMPLIAI	NCE METHOD Calculai Input Fi	ion Date	e /Time: 2023 :: 0230178 Zi	3-03-17T hu Reside	13:13:09-07:0 ence.ribd22x	00	c (F1R-PRF-01E Page 4 of 11
ENERGY USE INTE	NSITY	8	<i>u</i> ,2		2			11.01.15.2		Marsin Darrow	
		Standard Design (KBtu)	/tt yr)	Proposed Design (KBtu/f	:" - yr)	Compliant	ce Margin	(KBtu/ft ⁻ - yr	,	wargin Percer	itage
Gros	s EUI ¹	11.77		9.47			2.3			19.54	
Net	EUI ²	6.41		4.12			2.29			35.73	
Notes 1. Gross EUI is E 2. Net EUI is En	Energy Use Total (not ir ergy Use Total (includir	ncluding PV) / Total Buildi ng PV) / Total Building Are	ng Area. a.								
REQUIRED PV SYS	TEMS	_									
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 (%)
3.14	NA	Standard (14-17%)	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	98
	FEATURES		HEI	RS PRO	ЭV	-D	ER				
The following are f	eatures that must be i	nstalled as condition for r	neeting the mo	odeled energy performance	for this o	computer ana	vsis.				
Insulation b Northwest B HERS FEATURE SUI	elow roof deck Energy Efficiency Allian MMARY	ce (NEEA) rated heat pun	np water heate	r; specific brand/model, or	equivale	nt, must be in:	stalled				
The following is a s	summary of the feature	es that must be field-verif	fied by a certifi	ed HERS Rater as a conditio	on for me	eting the mod	eled ener	gy performanc	e for this com	nputer analysis	. Additional
Indoor air q Kitchen ran Minimum A Verified SEE Fan Efficacy Verified HSF Verified HSF Verified hea Duct leakag	uality ventilation ge hood irflow R/SEER2 Watts/CFM 9F t pump rated heating o e testing	capacity		quirea to be completed in		megiati y					
Registration Num	ber: 223-P010032737A-00 v Efficiency Standards	00-000-0000000-0000 - 2022 Residential Compl	ance	Registration Date	/Time: 2023- 022.0.000	03-17 13:18:25		HERS	Provider:	2023-03-17	CalCERTS in 13:14:02

Schema Version: rev 20220901

CERTIFICATE OF CO Project Name: Zhu Calculation Descrip	MPLIANCE - RESIDE Residence tion: Title 24 Analy:	S NTIAL PERFORMA	NCE COMPLIANCI	METHOD	Calculati Input File	on Date/Tim Name: 023	ne: 2023 0178 Zh	-03-17T1 nu Reside	3:13:09-07 nce.ribd22	/:00 x		CF1R-PRF-01E (Page 8 of 11)
WATER HEATING SYS	TEMS											
01	02	03	04		05	06			07	08		09
Name	System Type	Distribution Type	Water Heater Na	ne Numbe	r of Units	Solar Hea Syster	ating n	Cor Distr	npact ibution	HERS Verifica	ition	Water Heater Name (#)
DHW Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1		1	n/a		N	one	n/a		DHW Heater 1 (1)
WATER HEATERS - NE	EA HEAT PUMP											
01	02	03		04		05		06		07		08
Name	# of Units	Tank Vol.	gal) NEEA I	leat Pump Irand	NEEA H	leat Pump Iodel	Та	nk Locatio	n Du	ct Inlet Air Sour	ce D	uct Outlet Air Source
DHW Heater 1	1	80	R	heem	RheemP H	ROPH80T2R 37515	_	Outside		Zone 1		Zone 1
			()		\mathbf{D}	<u> </u>	11					
WATER HEATING - HE	RS VERIFICATION					27		1	0	00		
Name	Pipe Insu	lation P	arallel Piping	Compact	Distributior	Compa	ct Distri Type	bution	Recircula	ntion Control	Shov	ver Drain Water Heat Recovery
DHW Sys 1 - 1/1	. Not Req	uired N	lot Required	Not R	equired		None		Not I	Required		Not Required
SPACE CONDITIONIN	G SYSTEMS											
01	02	03	04		05	06			07	08		09
Name	System Type	Heating Unit Name	Heating Equipme Count	nt Cooling	Unit Name	Cooling Equ Coun	ipment t	Fan	Name	Distribution N	lame	Required Thermostat Type
HVAC System1	Heat pump heating cooling	Heat Pump System 1	1	Heat Pur	np System 1	1		HVA	C Fan 1	Air Distribut System 1	ion	Setback

Registration Number:	Registration Date/Time:	HERS Provider:	
223-P010032737A-000-000-0000000-0000	2023-03-17 13:18:25		CalCERTS inc.
CA Building Energy Efficiency Standards - 2022 Residential Compliance	Report Version: 2022.0.000 Schema Version: rev 20220901	Report Generated: 2023-03-17	13:14:02

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ZHU RESIDENCE	SUMMIT RU APN: 558-04-014	LOS GATOS, CA 95
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2022 Single-Family Residential Mandatory Requirements Summary

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

§ 110.6(a)1:	Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NERC-400, ASTM F283, or AAMA/WDMA/CSA 101/LS 2/A440-2011 *
§ 110.6(a)5:	Labeling. Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.
§ 110.7:	Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	Radiant Barrier. When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	Roof Deck, Ceiling and Rafter Roof Insulation. Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.
§ 150.0(b):	Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.10 Masonry walls must meet Tables 150.1-A or B. *
§ 150.0(d):	Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor. *
§ 150.0(f):	Slab Edge Insulation. Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a waler vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)1:	Vapor Retarder. In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to §150.0(d).
§ 150.0(g)2:	Vapor Retarder. In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.
§ 150.0(q):	a maximum U-factor of 0.45; or area-weighted average U-factor of all fenestration must not exceed 0.45.*
ireplaces, Decor	ative Gas Appliances, and Gas Log:
§ 110.5(e)	Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.
§ 150.0(e)3:	Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control. *
pace Conditioni	ng, Water Heating, and Plumbing System:
§ 110.0-§ 110.3:	Certification. Heating, ventilation, and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.
§ 110.2(a):	HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-N.
§ 110.2(b):	Controls for Heat Pumps with Supplementary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating. *
§ 110.2(c):	Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat. *
§ 110.3(c)3:	Insulation. Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 110.3(c)6:	Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.

§ 110.5:	Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and
	spa heaters.
§ 150.0(h)1:	Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.
§ 150.0(h)3A:	Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer.
§ 150.0(h)3B:	Liquid Line Drier. Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code. *
§ 150.0(j)2:	Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment' maintenance, and wind as required by §120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2" higher than the base of the water heater
§ 150.0(n)3:	Solar Water-heating Systems. Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the executive director.
ucts and Fans:	
§ 110.8(d)3:	Ducts. Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	CMC Compliance. All alr-distribution system ducts and plenums must meet CMC §§ 601.0-605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼", If mastic or tape is used. Building cavities, air handler support platforms, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts; ducts installed in
§ 150.0(m)2:	these spaces must not be compressed. * Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	Field-Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	Gravity Ventilation Dampers. Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
§ 150.0(m)9:	Protection of Insulation. Insulation must be protected from damage due tosunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or painted with a water retardant and solar radiation-resistant coating.
§ 150.0(m)10:	Porous Inner Core Flex Duct. Porous inner cores of flex ducts must have a non-porous layer or air barrier between the inner core and outer vapor barrier.
§ 150.0(m)11:	Duct System Sealing and Leakage Test. When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with Reference Residential Appendix RA3.1.
§ 150.0(m)12:	Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

2022 Single-Family Residential Mandatory Requirements Summary

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

the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."

*Exceptions may apply.

2022 Single-Family Residential Mandatory Requirements Summary

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§ 150.0(m)13:

2022 Single-Family Residential Mandatory Requirements Summary

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 \geq 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy \leq 0.45 watts per CFM for gas furnace air handlers and \leq 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow \geq 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy \leq 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3. *

Ventilation and Inc	door Air Quality:
§ 150.0(o)1:	Requirements for Ventilation and Indoor Air Quality. All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1. *
§ 150.0(o)1B:	Central Fan Integrated (CFI) Ventilation Systems. Continuous operation of CFI air handlers is not allowed to provide the whole- dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed andcontrolled per §150.0(o)1Biii&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses. Single-family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow specified in § 150.0(o)1Ci-iii.
§ 150.0(o)1G:	Local Mechanical Exhaust. Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand- controlled exhaust system meeting requirements of §150.0(o)1Giii,enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Giii-iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1Gvi. *
§ 150.0(o)1H&I:	Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems. The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	Field Verification and Diagnostic Testing. Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G
Pool and Spa Syst	tems and Equipment:
§ 110.4(a):	Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDbS; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating. *
§ 110.4(b)1:	Piping. Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.
§ 110.4(b)2:	Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)3:	Directional Inlets and Time Switches for Pools. Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5:	Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves. *
Lighting:	
	Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable
§ 110.9:	requirements of § 110.9. *
§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.
§ 150.0(k)1B:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1C:	Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)1E:	Blank Electrical Boxes. The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 150.0(k)1F:	Lighting Integral to Exhaust Fans. Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).
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§ 150.0(k)1G:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1H:	Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)11:	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.
3 150.0(k)2B:	Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.*
150.0(k)2A:	Accessible Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
3 150.0(k)2B:	Multiple Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
150.0(k)2C:	Mandatory Requirements. Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	Energy Management Control Systems. An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	Automatic Shutoff Controls. In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	Dimmers. Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall- mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	Independent controls. Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 150.0(k)3A:	Residential Outdoor Lighting. For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	Internally illuminated address signs. Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 150.0(k)5:	Residential Garages for Eight or More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with th applicable requirements for nonresidential garages in §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
lar Readiness:	
§ 110.10(a)1:	Single-family Residences. Single-family residences located in subdivisions with 10 or more single-family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b)-(e).
§110.10(b)1A:	Minimum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single-family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. *
§ 110.10(b)2:	Azimuth. All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° of true north.
§ 110.10(b)3A:	Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment.
§ 110.10(b)3B:	Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the horizontal distance of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.*
110.10(b)4:	Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.
3 110.10(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):	provided to the occupant.
110.10(e)1:	Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2:	Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric."

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CRC Chapter 3

Section R337: Materials and Construction Methods for Exterior Wildfire Exposure

R337.1 SCOPE, PURPOSE AND APPLICATION

R337.1.1 Scope: Section R337 and all subsections applies to building materials, systems and or assemblies used in the exterior design and construction of new buildings located within a Wildland-Urban Interface (WUI) Fire Area as defined in Section R337.2. **R337.1.2 Purpose**. The purpose of Section R337 is to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface (WUI) Fire Area to resist the intrusion of flame or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses.

R337.1.3 Application. New buildings located in any Fire Hazard Severity Zone, or any Wildland-Urban Interface (WUI) Fire Area designated by the enforcing agency constructed after the application date shall comply with the provisions of the section. This shall include all new buildings with residential, commercial, educational, institutional or similar occupancy type use, which shall be referred to in this section as "applicable building". (see definition in Section R337.2), as well as new buildings and structures accessory to those applicable buildings (see Exceptions 1 and 4) Exceptions:

- 1. Group U occupancy accessory buildings of any size located at least 50 feet (15m) from an applicable building on the same lot. 2. Group U occupancy, agricultural buildings, as defined in Section 202 of the California Building Code of any size located at
- least 50 feet (15m) from an applicable building. 3. Group C occupancy special buildings conforming to the limitations specified in Section 450.4.1 of the California Building Code. 4. New accessory buildings and miscellaneous structures specified in section R337.10 shall comply only with the requirements
- of that section. 5. Additions to and remodels of buildings originally constructed prior to July 1, 2008.
- R337.1.3.1 Application date and where required. New buildings for which an application for a building permit is submitted on or after July 1, 2008 located in any Fire Hazard Severity Zone or Wildland Interface Fire Area shall comply with all sections of this chapter, including all of the following areas:
- 1. All unincorporated lands designated by the State Board of Forestry and Fire Protection as State Responsibility Area (SRA) including:
- 1.1 Moderate Fire Hazard Severity Zones 1.2. High Fire Hazard Severity Zones
- 1.3. Very-High FireHazardSeverityZones
- 2. Land designated as Very-High Fire Hazard Severity Zone by cities and other local agencies. 3. Land designated as Wildland Interface Fire Area by cities and other local agencies.
- Exceptions:
- 1. New buildings located in any Fire Hazard Severity Zone within State Responsibility Areas, for which an application for a build- ing permit is submitted on or after January 1, 2008, shall comply with all sections of this chapter.
- 2. New buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland Interface Fire Area designated by cities and other local agencies for which an application for a building permit is submitted on or after December 1, 2005 but prior to July 1, 2008, shall only comply with the following sections of this chapter: 2.1 SectionR337.5 - Roofing
- 2.2. Section R337.6 Vents

R337.1.4 Inspection and certification. Building permit applications and final completion approvals for buildings within the scope and application of this chapter shall comply with the following:

- 1. Building permit issuance. The local building official shall, prior to construction, provide the owner or applicant a certification that the building as proposed to be built complies with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. Issuance of a building permit by the local building official for the proposed building shall be considered as complying with this section.
- 2. Building permit final. The local building official shall, upon completion of construction, provide the owner or applicant with a copy of the final inspection report that demonstrates the building was constructed in compliance with all applicable state and local building standards, including those for materials and construction methods for wildfire exposure as described in this chapter. Issuance of a certificate of occupancy by the local building official for the proposed building shall be considered as complying with this section.

R337.1.5 Vegetation management compliance. Prior to building permit final approval, the property shall be in compliance with the vegetation management requirements prescribed in California Fire Code Section 4906, including California Public Resources

Code 4291 or California Government Code Section 51182. Acceptable methods of compliance inspection and documentation shall be deter- mined by the enforcing agency and may include any of the following: 1. Local, state, or federal fire authority or designee authorized to enforce vegetation management requirements.

- 2. Enforcing agency.
- 3. Third party inspection and certification authorized to enforce vegetation management requirements.
- 4. Property owner certification authorized by the enforcing agency.

R337.2 DEFINITIONS

For the purposes of Section R337, certain terms are defined below:

APPLICABLE BUILDING. A building that has residential, commercial, educational, institutional, or similar occupancy type use. **DIRECTOR** means the Director of the California Department of Forestry and Fire Protection (Cal-Fire).

EXTERIOR WALL ASSEMBLY. A system or assembly of exterior wall components, including exterior wall covering materials that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space from the detrimental effects of the exterior environment. EXTERIOR WALL COVERING. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of

providing a weather-resisting barrier, insulation, or for aesthetics, including but not limited to, veneers, siding, exterior insulation, and finish systems, architectural trim, and embellishments, such as cornices, soffits, finishes, gutters, and leaders. FIRE PROTECTION PLAN. A document prepared for a specific project or development proposed for a Wildland-Urban Interface (WUI) Fire Area. It describes ways to minimize and mitigate potential for loss from wildfire exposure. See the California Fire Code,

Chapter 49, for required elements of a Fire Protection Plan. FIRE HAZARD SEVERITY ZONES. Geographical areas designated pursuant to California Public Resources Codes Sections 4201 through 4204 and classified as Very-High, High, or Moderate in State Responsibility Areas or as Local Responsibility Areas

win Very-High Fire Hazard Severity Zones designated pursuant to California Government Code Sections 51175 through 51189. See California Fire Code, Chapter 49. The California Code of Regulations, Title 14, Section 1280, entitles the maps of these geographical areas as "Maps of the Fire Hazard Severity Zones in the State Responsibility Area of California". **IGNITION-RESISTANT MATERIAL.** A type of building material that complies with the requirements in Section R337.4.

LOCAL RESPONSIBILITY AREA (LRA). Areas of the state in which the financial responsibility of preventing and suppressing fires is the primary responsibility of a city, county, city and county, or district.

LOG WALL CONSTRUCTION. A type of construction in which exterior walls are constructed of solid wood members and where the smallest horizontal dimension of each solid wood member is at least 6 inches (152 mm). RAFTER TAIL. The portion of roof rafter framing in a slop- ing roof assembly that projects beyond and overhangs an exterior wall.

ROOF EAVE. The lower portion of a sloping roof assembly that projects beyond and overhangs an exterior wall at the lower end of the rafter tails. Roof eaves may be either "open" or "enclosed." Open roof eaves have exposed rafter tails and an unenclosed space on the underside of the roof deck. Enclosed roof eaves have a boxed-in roof eave soffit with a horizontal underside or sloping rafter tails with an exterior covering

applied to the underside of the rafter tails. **ROOF EAVE SOFFIT**. An enclosed boxed-in soffit under a roof eave with exterior covering material applied to the soffit framing creating a horizontal surface on the exposed underside

STATE RESPONSIBILITY AREA. Lands that are classified by the Board of Forestry pursuant to Public Resources Code Section 4125 where the financial responsibility of preventing and suppressing forest fires is primarily the responsibility of the state. WILDFIRE. Any uncontrolled fire spreading through vegetative fuels that threatens to destroy life, property or resources as defined in Public Resources Code Sections 4103 and 4104

WILDFIRE EXPOSURE. One or a combination of radiant heat, convective heat, direct flame contact and burning embers being projected by vegetation fire to a structure and its immediate environment.

WILDLAND-URBAN INTERFACE (WUI). A geographical area identified by the state as a "Fire Hazard Severity Zone" in accordance with the Public Resources Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, or other areas designated by the enforcing agency to be at a significant risk from wildfires.

R337.3 STANDARDS OF QUALITY

337.3.1 General. Building material, systems, assemblies and methods of construction used in Section R337 shall be in accordance with Section R337.3.

R337.3.2 Qualification by testing. Material and material assemblies tested in accordance with the requirements of Section R337.3 shall be accepted for use when the results and conditions of those tests are met. Product evaluation testing of material and material assemblies shall be approved or listed by the State Fire Marshal, or identified in a current report issued by an approved agency

R337.3.3 Approved agency. Product evaluation testing shall be performed by an approved agency as defined in Section 1702 of the California Building Code. The scope of accreditation for the approved agency shall include building product compliance with the California Building Code.

R337.3.4 Labeling. Material and material assemblies tested in accordance with the requirements of Section R337.3 shall bear an identification label showing the fire test results. That identification label shall be issued by a testing and/or inspecting agency approved by the State Fire Marshal.

1. Identification mark of the approved testing and/or inspecting agency.

- 2. Contact and identification information of the manufacturer.
- 3. Model number or identification of the product or material. 4. Pre-test weathering specified in this section.
- 5. Compliance standard as described under Section R337.3.7. 337.3.5 Weathering and surface treatment protection.
- standards, as applicable to the materials and the conditions of use. requirements of Section 2303.2 of the California Building Code.
- ofRegulations.

R337.3.5.3 Surface treatment protection. The use of paints, coatings, stains, or other surface treatments are not an approved method of protection as required in this section. **R337.3.6 Alternates for materials, design, tests and methods of construction**. The enforcing agency is permitted to modify the provisions of this chapter for site-specific conditions in accordance with Section 1.11.2.4. When required by the enforcing agency for the purposes of granting modifications, afire protection plan shall be submitted in accordance with the California Fire Code, Chapter 49.

R337.3.7 Standards of quality. The State Fire Marshal standards for exterior wildfire exposure protection listed below and as referenced in this chapter are located in the California Referenced Standards Code, Part 12 and Chapter 44 of this code. See all listed standards as outlined.

R337.4 IGNITION RESISTANT CONSTRUCTION R337.4.1 General. The materials prescribed herein for ignition resistance shall conform to the requirements of Section R337. **R337.4.2 Ignition-resistant material**. Ignition-resistant material shall comply with one of the following:

- 1. The requirements in Section R337.4.3 or.. 2. One of the alternative methods in Section R337.4.4.
- acceptance in Items 1 and 2 below, or with the conditions of acceptance of ASTM-E2768:
- a flame front that does not progress more than 10 1/2 feet (3200mm) beyond the centerline of the burner at any time during the test period.

R337.5 ROOFING

R337.5.1 General. Roofs shall comply with the requirements of Sections R337 and R902. Roofs shall have a roofing assembly installed in accordance with its listing and the manufacturer's installation instructions. **R337.5.2 Roof coverings.** Where the roof profile allows a space between the roof covering and roof decking, the spaces shall be constructed to prevent the intrusion of flames and embers, be fire-stopped with approved materials or have one layer of minimum 72 pound (32.4 kg) mineral-surfaced non-perforated cap sheet complying with ASTM D3909 installed over the combustible

R337.5.3 Roof valleys. Where valley flashing is installed, the flashing shall be not less than 0.019 inch (0.48 mm) No. 26 gage galvanized sheet corrosion-resistant metal installed over not less than one layer of minimum 72-pound (32.4 kg) mineral-surfaced non-perforated cap sheet complying with ASTM D3909, at least 36 inch-wide (914 mm) running the full length of the valley. R337.5.4 Roof gutters. Roof gutters shall be provided with the means to prevent the accumulation of leaves and debris in the autter.

R337.6 VENTS

R337.6.1 General. Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical plane, shall be in accordance with Section 1202 of the California Building Code and Sections R337.6.1 through R337.6.2 to resist building ignition from the intrusion of burning embers and flame through the ventilation openings. R337.6.2 Requirements. Ventilation openings shall be fully covered with Wildfire Flame and Ember Resistant vents, approved and listed by the California State Fire Marshal, or WUI vents tested to ASTM-E2886, and listed by complying with all of the following requirements:

- 1. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test. 2. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
- 3. The maximum temperature of the unexposed side of the vent shall not exceed 662° F (350° C). R337.6.2.1 Off ridge and ridge vents. Vents that are installed on a sloped roof, such as dormer vents, shall comply with all of the following:
- 1. Vents shall be covered with a mesh where the dimensions of the mesh therein shall be a minimum of 1/16 inch (1.6mm)
- and shall not exceed 1/8 inch (3.2mm) in diameter.
- 2. The mesh material shall be noncombustible. The mesh material shall be corros

R337.7 EXTERIOR COVERING

337.7.1 Scope. The provisions of this section shall govern the materials and construction methods used to resist building ignition and/or safeguard against the intrusion of flames resulting from small ember and short-term direct flame contact exposure. R337.7.2 General. The following exterior covering materials and/or assemblies shall comply with this section:

- Exterior wall coverings
- Exterior wall assemblies
- 3. Exterior exposed underside of roof eave overhangs. 4. Exterior exposed underside of roof eave soffits.
- 5. Exposed underside of exterior porch ceilings.
- 6. Exterior exposed underside of floor projections. 7. Exterior underfloor areas.
- Exceptions to R337.7.2:
- 1. Exterior wall architectural trim, embellishments, fascias and gutters.
- 2. Roof or wall top cornice projections and similar assemblies.
- 3. Deck walking surfaces shall comply with Section R337.9 only.

R337.7.3 Exterior wall coverings. The exterior wall covering shall comply with one or more of the following requirements, except as permitted for exterior wall assemblies complying with Section R337.7.4: 1. Non-combustible material.

- Section B337.4.2
- 3. Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements of Section 2303.2 of the California Building Code.

and terminate at 2 inch (50.8 mm) nominal solid wood blocking between rafters at all roof overhangs, or in the case of enclosed eaves, terminate at the enclosure. R337.7.4 Exterior wall assemblies. Exterior wall assemblies of buildings or structures shall be constructed using one or more of the following methods, unless they are covered by an exterior wall covering complying with Section R337.7.3:

- or glue-laminated planks splined, tongue and groove, or set close together and well spiked.
- 2. Log wall construction assembly.
- forth in ASTM-E2707 with the conditions of acceptance shown in Section R337.7.4.1.
- 4. Assembly that meets the performance criteria in accordance with the test procedures for a 10-minute direct flame contact
- exposure test set forth in SFM Standard 12-7A-1
- accordance with ASTM-E119 or UL 263.
- the exterior wall covering or cladding on the exterior side of the framing.

ASTM-E119, or UL 263. **337.7.5 Open roof eaves**. The exposed roof deck on the underside of unenclosed roof eaves shall consist of one or more of the followina:

- 1. Noncombustible material
- Section 704A.2
- of Section 2303.2 of the California Building Code.
- with ASTM-E119, or UL 263.
- 6. Assembly suitable for exterior fire exposure containing one layer of 5/8 inch (16mm) Type X gypsum sheathing applied behind

R337.3.5.1 General. Material and material assemblies tested in accordance with the requirements of Section R337.3 shall maintain their fire test performance under conditions of use when installed in accordance with the manufacturers instructions. R337.3.5.2 Weathering. Fire-retardant-treated wood and fire-retardant-treated wood shingles and shakes shall meet the fire test performance requirements of this chapter after being subjected to the weathering conditions contained in the following

R337.3.5.2.1 Fire-retardant-treated wood. Fire- retardant-treated wood shall be tested in accordance with ASTM D2898. "Standard Practice for Accelerated Weathering of Fire-Retardant Treated Wood for Fire Testing (Method A)" and the

R337.3.5.2.2 Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shingles and shakes shall be approved and listed by the State Fire Marshal in accordance with Section 208(c), Title 19 California Code

R337.4.3 Conditions of acceptance for ignition-resistant materials. The material shall comply with the conditions of 1. The material shall exhibit a listed flame spread index not exceeding 25 when tested in accordance with ASTM-E84 or UL 723. 2. Additionally, the ASTM-E84 or UL 723 test shall be continued for an additional 20-minute period, and the material shall exhibit

2. Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use, and shall meet the requirements of

R337.7.3.1 Extent of exterior wall covering. Exterior wall coverings shall extend from the top of the foundation to the roof,

1. Assembly of sawn lumber, or glue-laminated wood with the smallest minimum nominal dimension of 4 inches (102mm). Sawn

3. Assembly that has been tested in accordance with the test procedures for a 10-minute direct flame contact exposure test set

5. Assembly suitable for exterior fire exposure with a one-hour fire-resistance rating, rated from the exterior side, as tested in

7. Assembly suitable for exterior fire exposure containing any of the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual as complying with a one-hour fire-resistance rating, as tested in accordance with

2. Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of

3. Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements

4. Materials approved for not less than one-hour fire-resistance rated construction on the exterior side, as tested in accordance

5. One layer of 5/8-inch (16mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the roof deck. 6. The exterior portion of a 1-hour fire-resistance rated exterior assembly, as tested in accordance with ASTM-E119, or UL 263, Applied to the underside of the roof deck designed for exterior fire exposure including assemblies using the gypsum panel and sheathing products listed in the Gypsum Association Fire Resistance Design Manual.

Exception to Section R337.7.5: The following materials do not require protection: 1. Fascia and other architectural trim boards.

R337.7.6 Enclosed roof eaves and roof soffits. The exposed underside of enclosed roof eaves, having either a boxed in roof eave, soffit with a horizontal underside, or sloping rafter tails with an exterior covering applied to the underside of the rafter tails, shall be protected by one or more of the following:

1. Noncombustible material.

- 2. Ignition-resistant material. The ignition-resistant material shall be labeled for exterior use and shall meet the requirements of Section B337.4.2 3. Fire-retardant-treated wood. The fire-retardant-treated wood shall be labeled for exterior use and shall meet the requirements
- of Section 2303.2 of the California Building Code. 4. Materials approved for not less than one-hour fire-resistance rated construction on the exterior side, as tested in accordance
- with ASTM-E119, or UL 263. 5. One layer of 5/8-inch (16mm) Type X gypsum sheathing applied behind an exterior covering on the underside of the rafter tails
- or soffit. 6. The exterior portion of a 1-hour fire-resistance rated exterior assembly, as tested in accordance with ASTM-E119, or UL 263, Applied to the underside of the roof deck designed for exterior fire exposure including assemblies using the gypsum panel and
- sheathing products listed in the Gypsum Association Fire Resistance Design Manual. 7. Boxed-in roof eaves and soffit assemblies with a horizontal underside that meet the performance criteria in Section R337.7.11
- when tested in accordance with the test procedures set forth in ASTM-E2957. 8. Boxed-in roof eave soffit assemblies with a horizontal underside that meet the performance criteria in accordance with the test procedures set forth in SFM Standard 12-7A-3.

R337.7 EXTERIOR WINDOWS, SKYLIGHTS AND DOORS

337.8.1 General.

337.8.2 Exterior glazing. The following exterior glazing materials and/or assemblies shall comply with this section: Exterior windows

- 2. Exterior glazed doors.
- 3. Glazed openings within exterior doors.
- 4. Glazed openings within exterior garage doors. 5. Exterior structural glass veneer.
- 6. Skylights.
- Vents.
- 337.8.2.1 Exterior windows, skylights and exterior glazed door assembly requirements. Exterior windows, skylights and exterior, glazed door assemblies shall comply with one of the following requirements: 1. Be constructed of multi-pane glazing with a minimum of one tempered pane meeting the requirements of Section R308, Safety Glazing, or..
- 2. Be constructed of glass block, units, or...
- 3. Have a fire resistance rating of not less than 20-minutes when tested according to NFPA 257, or...
- 4. Be tested to meet the performance requirements of SFM Standard 12-7A-2 337.8.2.2 Operable skylights. Operable skylights shall be protected by a non-combustible mesh screen where the
- dimensions of the openings in the screen shall not exceed 1/8 inch (3.2mm). 337.8.2.3 Structural glass veneer. The wall assembly behind structural glass veneer shall comply with Section R337.7.3, Exterior Walls.
- 337.8.3 Exterior doors. Exterior doors shall comply with one of the following:
- 1. The exterior surface or cladding shall be of noncombustible material, or
- 2. The exterior surface or cladding shall be of Ignition-resistant material, or 3. Shall be constructed of solid core wood that comply with the following requirements:
- 3.1. Stiles and rails shall not be less than 1-3/8 inches thick.
- 3.2. Panels shall not be less than 1-1/4 inches thick, except for the exterior perimeter of the panel that shall be permitted to taper to a tongue not less than 3/8 inch thick. 4. The exterior door assembly shall have a fire resistance rating of not less than 20 minutes when tested according to NFPA 252.
- 5. The exterior surface or cladding shall be tested to meet the performance requirements of Section R337.7.3.1 when tested in accordance with ASTM-E2707. 6. The exterior surface or cladding be tested to meet the performance requirements of SFM Standard 12-7A-1.
- R337.8.3.1 Exterior door glazing. Glazing in exterior doors shall comply with Section R337.8.2.1.

R337.9 DECKING

R337.9.1 General. The walking surface material of decks, porches, balconies and stairs shall comply with the requirements of this

R337.9.2 Where required. The walking surface material of decks, porches, balconies and stairs shall comply with the requirements of this section when any portion of such surface is within 10 feet (3048mm) of the building.

R337.9.3 Decking surfaces. The walking surface material of decks, porches, balconies and stairs shall be constructed with one of the following materials: 1. Material that complies with the performance requirements of Section R337.9.4 when tested in accordance with both ASTM-

- E2632 and ASTM-E2726
- 2. Ignition-resistant material that complies with the performance requirements of Section R337.9.4. 3. Material that complies with the performance requirements of both SFM Standard 12-7A-4 and Section R337.4.3.
- 4. Exterior fire-retardant-treated wood.
- 5. Noncombustible material. 6. Any material that complies with the performance requirements of SFM Standard 12-7A-4A when attached exterior wall covering is also either noncombustible or ignition-resistant material.
- Exception: Wall material may be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM-E84 with a Class B flame spread rating.
- 7. Any material that complies with the performance requirements of Section R337.9.5 when tested in accordance ASTM-E2632 and when attached exterior wall covering is also composed of only noncombustible or ignition-resistant materials. Exception: Wall material shall be permitted to be of any material that otherwise complies with this chapter when the decking surface material complies with the performance requirements ASTM-E84 with a Class B flame spread index.

R337.10 ACCESSORY BUILDINGS AND MISCELLANEOUS STRUCTURES

R337.10.1 General. Group U occupancy accessory buildings and miscellaneous structures that have the potential to pose a significant exterior fire exposure hazard during wildfires shall be constructed to conform to the ignition-resistance requirements of the section.

R337.10.2 Applicability. Unless otherwise addressed by the exceptions of Section R337.1.3, the provisions of this section shall apply to buildings accessory to an applicable building on the same lot. This section shall also apply to attached and detached miscellaneous structures that require a building permit, including but not limited to; trellises, arbors, patio covers, gazebos, and similar structures.

- <u>Exceptions</u>: 1. Decks shall comply with the requirements of Section R337.9.
- 2. Awnings and canopies shall comply with the requirements of Section 3105 of the California Building Code.

3. Exterior wall, architectural, trim, embellishments, and fascia. R337.10.3 Where required. Miscellaneous structures that require a permit, and accessory buildings, have any size, when separated from in applicable building on the same lot by distance of less than 3 feet (914mm), shall comply with Section R337.10.3.1. Accessory buildings that are greater than 120 square feet (11 m2) or less when separated from an applicable building on the same lot by a distance of 3 feet (914mm) or more but less than 50 feet (15m), shall comply with Section R337.10.3.2. When required by the enforcing agency, miscellaneous structures that require a permit, and accessory buildings that are 120 square feet (11 m2) or less, when separated from an applicable building on the same lot by distance of 3 feet (914mm) or more but less than 50 feet (15m), shall comply with either Section R337.10.3.4 or Section R337.10.3.3, respectively. No requirements shall apply to accessory buildings or miscellaneous structures when located 50 feet (15m) or more from applicable building on the same lot.

R337.10.3.1. Structures and accessory buildings within 3 feet (914mm). Miscellaneous structures that require a permit and accessory buildings attached, or separated from an applicable building on the same lot by a distance of less than 3 feet (914mm) shall be constructed of non-combustible materials, or of ignition-resistant materials as described in Section B337.4.2

R337.10.3.2. Accessory structures greater than 120 square feet (11 m2), located 3 feet (914mm) or more but less than 50 feet (15m). Accessory buildings that are greater than 120 square feet (11 m2) in size and separated from an applicable building on the same lot by a distance of 3 feet (914mm) or more, but less than 50 feet (15m) shall be constructed of noncombustible materials, or of ignition-resistant materials as described in section R337.4.2.

R337.10.3.3. Accessory buildings 120 square feet (11 m2) or less, located 3 feet (914mm) or more but less than 50 feet (15m). When required by the enforcing agency, accessory buildings 120 square feet (11 m2) or less and separated from an applicable building on the same lot by a distance of 3 feet (914mm) or more, but less than 50 feet (15m) shall be constructed of noncombustible materials, or of ignition-resistant materials as described in section R337.4.2. R337.10.3.4. Miscellaneous structures located 3 feet (914mm) or more but less than 50 feet (15m). When required by

the enforcing agency, miscellaneous structures that require a permit and are separated from an applicable building on the same lot by a distance of 3 feet (914mm) or more, but less than 50 feet (15m) shall be constructed of noncombustible materials, or of ignition-resistant materials as described in section R337.4.2.

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