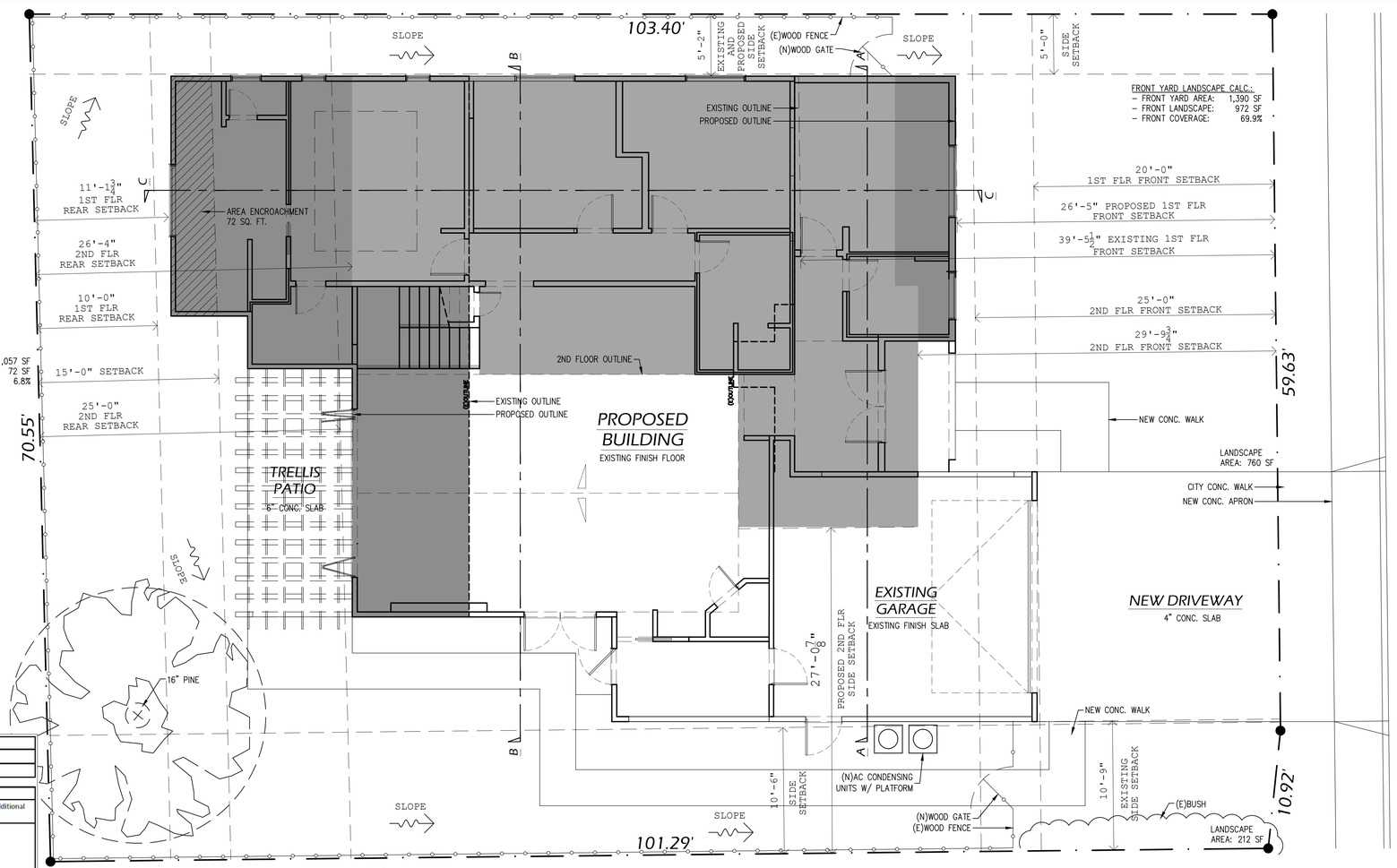
Huynh Residence

1408 Cranmer Drive
Walnut, CA 91789



REAR ENCROACHMENT CALC.:
- 15' SETBACK AREA: 1,057 SF
- BUILDING ENCROACHMENT: 72 SF
- PERCENT ENCROACHMENT: 6.8%

REQUIRED SPECIAL FEATURES

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

- Insulation below roof deck

HERS FEATURE SUMMARY

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

- Indoor air quality ventilation
- Kitchen range hood
- Minimum Airflow
- Verified EER/EER2
- Verified SEER/SEER2
- Verified Refrigerant Charge
- Fan Efficacy Watts/CFM
- Verified HSPF
- Verified heat pump rated heating capacity
- Duct leakage testing

PROPOSED SITE PLAN

Scale: 3/16" = 1'-0"

PROJECT DESCRIPTION

PROJECT INFORMATION:

Project Address:	1408 Cranmer Drive Walnut, CA 91789
APN:	871-202-2011
Zoning:	R1-7,200
Lot Area:	7,314 S.F.
Built:	1961
Sprinkler:	Non-Sprinkler

SCOPE OF WORK:

- EXISTING ONE-STORY 3BED/2BATH HOUSE TOTALING 1,259 SF TO BE RECONFIGURED WITH NEW TWO-STORY ADDITION. INCLUDING NEW ENTRY FOYER, KITCHEN, LIVING, DINING, LOFT, AND 5BED/4BATH. ADDING A TOTAL OF 1,201 S.F. ON THE FIRST FLOOR TOWARD THE FRONT AND BACK. A TOTAL OF 1,322 S.F. ON THE SECOND LEVEL, ALL NEW. NEW COVER PORCH AT THE ENTRY AND A TRELLIS CONCRETE PATIO AT THE REAR YARD.
- GARAGE DOOR RELOCATED TO FRONT FACING WITH NEW DRIVEWAY AND DRIVEWAY CURB APRON.
- EXISTING UTILITY CONNECTIONS WITH NEW HVAC, NEW WATER HEATER.

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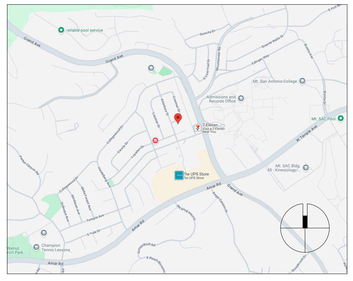
VICINITY MAP



DEFERRED SUBMITTAL

1) WHOLE HOUSE FIRE SPRINKLER, DEFFERED
2) MECHANICAL, ELECTRICAL, AND PLUMBING TO BE SEPARATE PERMITS.

NOTE: THE SCOPE OF WORK IS LIMITED TO WHAT IS SHOWN ON PLAN. ANY WORK BEYOND THIS WILL REQUIRE REVISED PLANS AND MY BE REQUIRED TO HAVE A PUBLIC HEARING BEFORE CONTINUING WORK. NO ADDITIONAL WORK MAY OCCUR WITHOUT REQUESTING APPROVAL BEFORE WORK THAT IS NOT LISTED ON PLAN.

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TABULATION

DATA TABULATION

a.	Total Lot Area:	7,314 s.f.
b.	Slope Area:	0 s.f.
c.	Easement Area:	0 s.f.
d.	Usable Area (d=a-(b+c)):	7,314 s.f.
e.	First Floor Area (Existing):	1,259 s.f.
f.	Second Floor Area (Existing):	0 s.f.
g.	First Floor Area (Proposed):	1,201 s.f.
h.	Second Floor Area (Proposed):	1,322 s.f.
i.	Garage Area:	463 s.f.
j.	Balcony/Patio Area:	64 s.f.
k.	Total Floor Area:	3,782 s.f.
l.	Total Building Footprint:	2,923 s.f.
m.	Lot Coverage (l/d):	39.9%
n.	Total Rear 15' Setback Area:	1,030 s.f
o.	Total Bld. Rear Encroachment:	72 s.f.
p.	Bld. Rear Encroachment Percent:	6.8%

* All Floor Area Are Measured to the Exterior Surface of the Wall.
** All Measurements are Taken from Inside-To-Inside Surface, Assuming 2x4 Stud and 1" Existing Cement Plaster.
*** Existing Elevation Reference from Previous House Addition Drawing.

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BUILDING CODE

BUILDING CODE:

Occupancy: R-3/U
Single Family Residence
w/ Attached Garage

Type: V-B

All Applicable Current Codes of the State of California, County of Los Angeles, and the City of WALNUT.

2022 (CBC)California Building Code
2022 (CRC)California Residential Code
2022 (CPC)California Plumbing Code
2022 (CMC)California Mechanical Code
2022 (CEC)California Electrical Code
2022 (CEC)California Energy Code
2022 (CFC)California Fire Code
2022 (CGBC)California Green Building Code

INSPECTIONS REQUIRED:

SPECIAL INSPECTION REQUIRED:
- SHEAR WALL NAILING, 4-INCH OR TIGHTER
- EPOXY RETROFIT BOLDS AND DOWELS

ENERGY:
- HERS INSPECTION AND REPORT

CONTACT INFORMATION

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Cupertino, CA 95014
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408.455.9920

SHEET INDEX

ARCHITECTURAL:

A0.1	COVER SHEET / SITE PLAN
CG01	CALGREEN
CG02	CALGREEN
A2.1	EXISTING FLOOR PLAN / ELEVATION
A2.2	PROPOSED 1ST FLOOR PLAN
A2.3	PROPOSED 2ND FLOOR PLAN
A2.4	PROPOSED ROOF PLAN
A2.2	ELECTRICAL 1ST FLOOR PLAN
A2.3	ELECTRICAL 2ND FLOOR PLAN
A3.1	PROPOSED RENDERING / MATERIAL BOARD
A3.2	PROPOSED ELEVATIONS
A3.3	PROPOSED ELEVATIONS
A3.4	PROPOSED SECTIONS
A3.5	PROPOSED SECTIONS
A4.1	DETAILS
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ARCHITECTURAL:

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S3.0	
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TITLE-24:

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SVBUILD

REVISION

HUYNH RESIDENCE
1408 CRANMER DRIVE
WALNUT, CA 91789

08.09.2025

COVER SHEET
SITE PLAN

A0.1

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

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

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

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

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

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

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

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

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

SECTION 302 MIXED OCCUPANCY BUILDINGS

302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.
Exceptions:
1. [HCD] Accessory structures and accessory occupancies serving residential buildings shall comply with Chapter 4 and Appendix A4, as applicable.
2. [HCD] For purposes of *CALGreen*, live/work units, complying with Section 419 of the *California Building Code*, shall not be considered mixed occupancies. Live/Work units shall comply with Chapter 4 and Appendix A4, as applicable.

DIVISION 4.1 PLANNING AND DESIGN

ABBREVIATION DEFINITIONS:

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

CHAPTER 4
RESIDENTIAL MANDATORY MEASURES

SECTION 4.102 DEFINITIONS

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

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

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

4.106 SITE DEVELOPMENT

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

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

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

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

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

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

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

Exception: Additions and alterations not altering the drainage path.

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

Exceptions:
1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   1.1 Where there is no local utility power supply or the local utility is unable to supply adequate power.
   1.2 Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 4.106.4, may adversely impact the construction cost of the project.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

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

Exemption: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger at the time of original construction in accordance with the *California Electrical Code*.

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

4.106.4.2 New multifamily dwellings, hotels and motels and new residential parking facilities.
When parking is provided, parking spaces for new multifamily dwellings, hotels and motels shall meet the requirements of Sections 4.106.4.2.1 and 4.106.4.2.2. Calculations for spaces shall be rounded up to the nearest whole number. A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by a local jurisdiction. See Vehicle Code Section 22511.2 for further details.

4.106.4.2.1Multifamily development projects with less than 20 dwelling units; and hotels and motels with less than 20 sleeping units or guest rooms.
The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1.EV Capable. Ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

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

Exceptions:

1.When EV chargers (Level 2 EVSE) are installed in a number equal to or greater than the required number of EV capable spaces.

2.When EV chargers (Level 2 EVSE) are installed in a number less than the required number of EV capable spaces, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed.

Notes:

a.Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.

b.There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or EV chargers are installed for use.

2.EV Ready. Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit.

Exception: Areas of parking facilities served by parking lifts.

4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more sleeping units or guest rooms.
The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1.EV Capable. Ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

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

Exception: When EV chargers (Level 2 EVSE) are installed in a number greater than five (5) percent of parking spaces required by Section 4.106.4.2.2, Item 3, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed over the five (5) percent required.

Notes:

a.Construction documents shall show locations of future EV spaces.

b.There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or EV chargers are installed for use.

2.EV Ready. Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit.

Exception: Areas of parking facilities served by parking lifts.

3.EV Chargers. Five (5) percent of the total number of parking spaces shall be equipped with Level 2 EVSE. Where common use parking is provided, at least one EV charger shall be located in the common use parking area and shall be available for use by all residents or guests.

When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces.

4.106.4.2.2.1 Electric vehicle charging stations (EVCS).
Electric vehicle charging stations required by Section 4.106.4.2.2, Item 3, shall comply with Section 4.106.4.2.2.1.

Exception: Electric vehicle charging stations serving public accommodations, public housing, motels and hotels shall not be required to comply with this section. See California Building Code, Chapter 11B, for applicable requirements.

4.106.4.2.2.1.1 Location.
EVCS shall comply with at least one of the following options:

1.The charging space shall be located adjacent to an accessible parking space meeting the requirements of the California Building Code, Chapter 11A, to allow use of the EV charger from the accessible parking space.

2.The charging space shall be located on an accessible route, as defined in the California Building Code, Chapter 2, to the building.

Exception: Electric vehicle charging stations designed and constructed in compliance with the California Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.2.1.1 and Section 4.106.4.2.2.1.2, Item 3.

4.106.4.2.2.1.2 Electric vehicle charging stations (EVCS) dimensions.
The charging spaces shall be designed to comply with the following:

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

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

3.One in every 25 charging spaces, but not less than one, shall also have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).

a.Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

4.106.4.2.2.1.3 Accessible EV spaces.
In addition to the requirements in Sections 4.106.4.2.2.1.1 and 4.106.4.2.2.1.2, all EVSE, when installed, shall comply with the accessibility provisions for EV chargers in the California Building Code, Chapter 11B. EV ready spaces and EVCS in multifamily developments shall comply with California Building Code, Chapter 11A, Section 1109A.

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

Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the location or the proposed location of the EV space, at the time of original construction in accordance with the California Electrical Code.

2.Multiple EV spaces required. Construction documents shall indicate the raceway termination point and the location of installed or future EV spaces, receptacles or EV chargers. Construction documents shall also provide information on amperage of installed or future receptacles or EVSE, raceway method(s), wiring schematics and electrical load calculations. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the location or the proposed location of the EV space at the time of original construction in accordance with the California Electrical Code.

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

4.106.4.2.5 Electric Vehicle Ready Space Signage.
Electric vehicle ready spaces shall be identified by signage or pavement markings, in compliance with Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s).

4.106.4.3 Electric vehicle charging for additions and alterations of parking facilities serving existing multifamily buildings.
When new parking facilities are added, or electrical systems or lighting of existing parking facilities are added or altered and the work requires a building permit, ten (10) percent of the total number of parking spaces added or altered shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE.

Notes:

1.Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.

2.There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

DIVISION 4.2 ENERGY EFFICIENCY

4.201 GENERAL

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

DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION

4.303 INDOOR WATER USE

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

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

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

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

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

4.303.1.3 Showerheads.

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

4.303.1.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to only allow one shower outlet to be in operation at a time.

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

4.303.1.4 Faucets.

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

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

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

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

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

4.303.1.4.5 Pre-rinse spray valves.
When installed, shall meet the requirements in the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations), Sections 1605.1 (h)(4) Table H-2, Section 1605.3 (h)(4)(A), and Section 1607 (d)(7) and shall be equipped with an integral automatic shutoff.

FOR REFERENCE ONLY: The following table and code section have been reprinted from the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations),Section 1605.1 (h)(4) and Section 1605.3 (h)(4)(A).

TABLE H-2

STANDARDS FOR COMMERCIAL PRE-RINSE SPRAY VALVES MANUFACTURED ON OR AFTER JANUARY 28, 2019

PRODUCT CLASS [spray force in ounce force (ozf)]	MAXIMUM FLOW RATE (gpm)
Product Class 1 (≤ 5.0 ozf)	1.00
Product Class 2 (> 5.0 ozf and ≤ 8.0 ozf)	1.20
Product Class 3 (> 8.0 ozf)	1.28

Title 20 Section 1605.3 (h)(4)(A): Commercial prerinse spray values manufactured on or after January 1, 2006, shall have a minimum spray force of not less than 4.0 ounces-force (ozf)[113 grams-force(gf)]

4.303.2 Submeters for multifamily buildings and dwelling units in mixed-used residential/commercial buildings.
Submeters shall be installed to measure water usage of individual rental dwelling units in accordance with the *California Plumbing Code*.

CON. **4.303.3 Standards for plumbing fixtures and fittings.** Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code*.

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

TABLE - MAXIMUM FIXTURE WATER USE

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

4.304 OUTDOOR WATER USE

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

NOTES:

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

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE

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

4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

CON. **4.408.1 CONSTRUCTION WASTE MANAGEMENT.** Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance.

Exceptions:

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.
3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.

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

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

4.408.3 WASTE MANAGEMENT COMPANY. Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1.

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

CON. **4.408.4 WASTE STREAM REDUCTION ALTERNATIVE [LR].** Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 3.4 lbs./sq.ft. of the building area shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 2 pounds per square foot of the building area, shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

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

Notes:

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

4.410 BUILDING MAINTENANCE AND OPERATION

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

1. Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
2. Operation and maintenance instructions for the following:
   a. Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, electric vehicle chargers, water-heating systems and other major appliances and equipment.
   b. Roof and yard drainage, including gutters and downspouts.
   c. Space conditioning systems, including condensers and air filters.
   d. Landscape irrigation systems.
   e. Water reuse systems.
3. Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
4. Public transportation and/or carpool options available in the area.
5. Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain the relative humidity level in that range.
6. Information about water-conserving landscape and irrigation design and controllers which conserve water.
7. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
8. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
9. Information about state solar energy and incentive programs available.
10. A copy of all special inspections verifications required by the enforcing agency or this code.
11. Information from the Department of Forestry and Fire Protection on maintenance of defensible space around residential structures.
12. Information and/or drawings identifying the location of grab bar reinforcements.

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY

SECTION 4.501 GENERAL

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

SECTION 4.502 DEFINITIONS

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

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

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

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

DISCLAIMER:*THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE

RESIDENTIAL MANDATORY MEASURES, SHEET 2 (January 2023)

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

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

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

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

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

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

4.503 FIREPLACES

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

4.504 POLLUTANT CONTROL

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

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

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

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

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

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

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

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

TABLE 4.504.1 - ADHESIVE VOC LIMIT[1,2]
(Less Water and Less Exempt Compounds in Grams per Liter)

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

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.

2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

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

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

TABLE 4.504.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2,3]
GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS

COATING CATEGORY	VOC LIMIT
FLAT COATINGS	50
NON-FLAT COATINGS	100
NONFLAT-HIGH GLOSS COATINGS	150
SPECIALTY COATINGS	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS[4]	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB & TILE REFINISH COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

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

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

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

TABLE 4.504.5 - FORMALDEHYDE LIMITS[1]
MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

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

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

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

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

4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

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

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

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

4.504.4 RESILIENT FLOORING SYSTEMS. Where resilient flooring is installed , at least 80% of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

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

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

4.504.5 COMPOSITE WOOD PRODUCTS. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 4.504.5

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

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

4.505 INTERIOR MOISTURE CONTROL

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

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

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

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

4.505.3 MOISTURE CONTENT OF BUILDING MATERIALS. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:

1. Moisture content shall be determined with either a probe-type or contact-type moisture meter.Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece verified.
3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.

4.506 INDOOR AIR QUALITY AND EXHAUST

4.506.1 Bathroom exhaust fans. Each bathroom shall be mechanically ventilated and shall comply with the following:

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

Notes:

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

4.507 ENVIRONMENTAL COMFORT

4.507.2 HEATING AND AIR-CONDITIONING SYSTEM DESIGN. Heating and air conditioning systems shall be sized, designed and have their equipment selected using the following methods:

1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J - 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
2. Duct systems are sized according to ANSI/ACCA 1 Manual D - 2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S - 2014 (Residential Equipment Selection), or other equivalent design software or methods.

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

CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

702 QUALIFICATIONS

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

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

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

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

Notes:

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

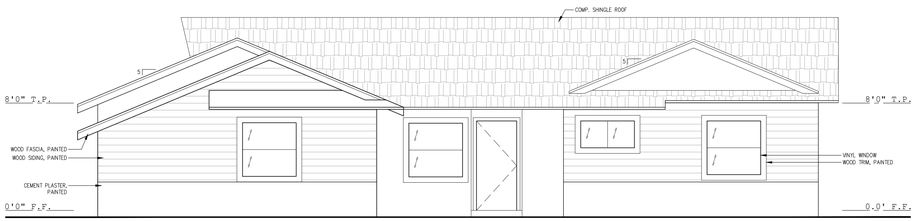
[BSC] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction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

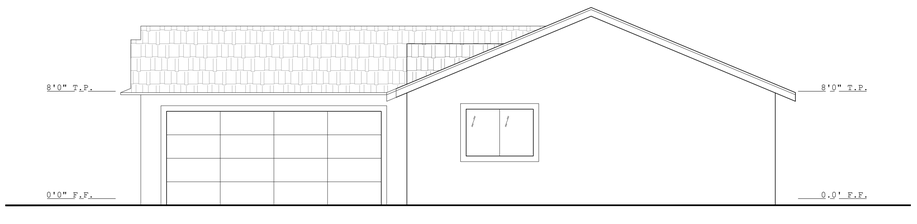
Note: Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

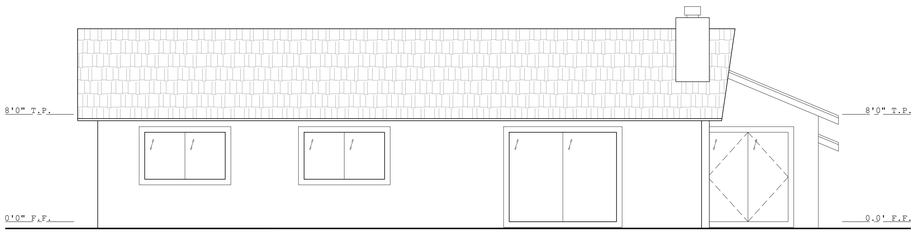
703 VERIFICATIONS

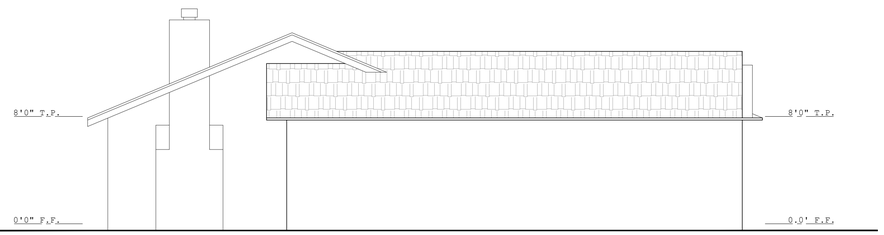
703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance.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

DISCLAIMER: *THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*



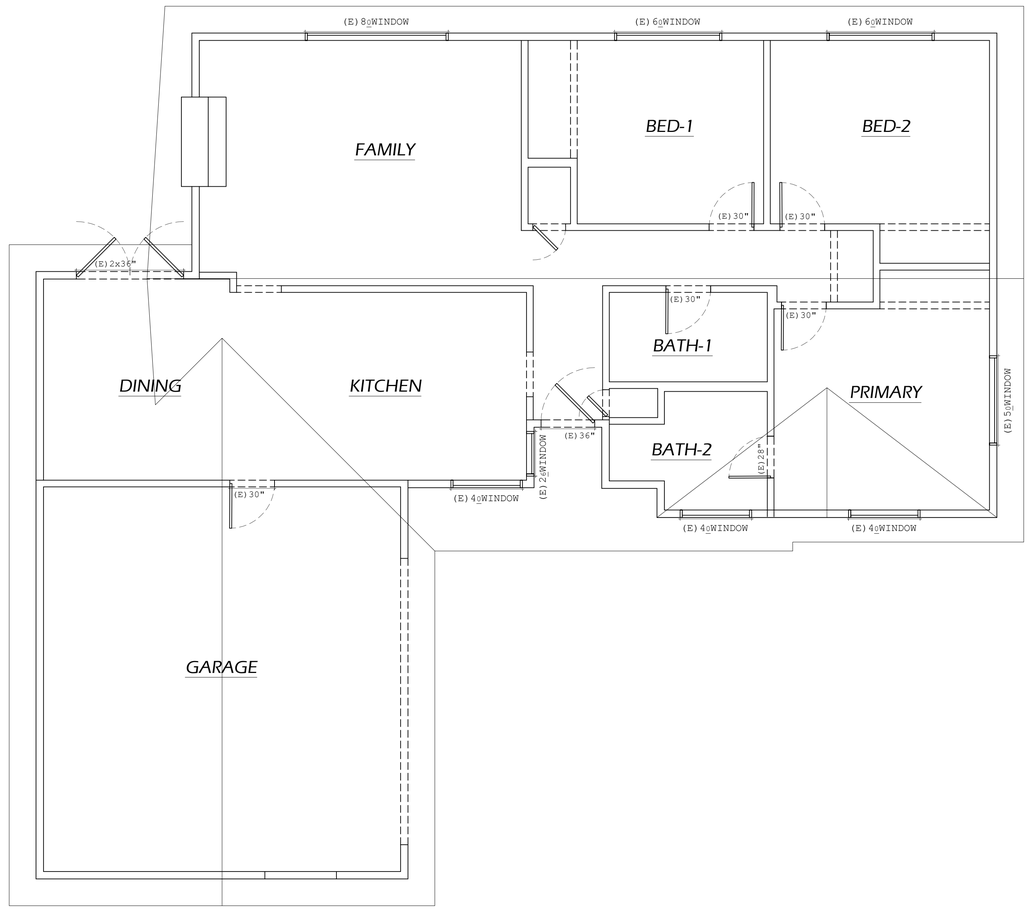






4 (E)EAST ELEVATION - LEFT

Scale: 3/16" = 1'-0"



EXISTING FLOOR PLAN

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

SVBUILD

REVISION

HUYNH RESIDENCE

1408 CRANMER DRIVE
WALNUT, CA 91789

08.09.2025

EXISTING
FLOOR PLAN
ELEVATION

A2.1

GENERAL NOTES

WORK SITE PERFORMANCE:

1. WORKING HOURS: NO WORK SHALL COMMENCE ON THE JOB SITE PRIOR TO 8:00 AM NOR CONTINUE LATER THAN 5:00 PM, MONDAY THOUGHT FRIDAY. IF WORK IS ALLOWED ON SATURDAY NO WORK SHALL COMMENCE PRIOR TO 9:00 AM NOR CONTINUE LATER THAN 4:00 PM. NO WORK SHALL BE DONE ON SUNDAY.
2. ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH GOVERNING CODES, ORDINANCES, AND REGULATIONS.
3. GENERAL CONTRACTOR SHALL BECOME FAMILIAR WITH ALL CITY CODES, ORDINANCES, AND REGULATIONS.
4. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND EXECUTION OF THE WORK SHOWN OR IMPLIED IN THE CONSTRUCTION DOCUMENTS AND IS RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, AND PROCEDURES OF THE PROJECT.
5. GENERAL CONTRACTOR SHALL COORDINATE ALL FACETS OF THE WORK AND ALL TRADES INVOLVED TO AVOID CONFLICT IN THE LOCATION, INSTALLATION, AND CONSTRUCTION OF ALL ITEMS OF WORK AS INDICATED ON THE CONSTRUCTION DOCUMENTS.
6. IF ANY WORK IS TO BE INSTALLED BY THE OWNER DIRECTLY, ALLOWANCE FOR THE OWNER'S WORK MUST BE MADE. COORDINATE WITH DESIGNER/OWNER.
7. GENERAL CONTRACTOR SHALL LEAVE THE JOB SITE "BROOM CLEAN" AT THE END OF EACH WORKING DAY. ALL MATERIALS SHALL BE STORED IN A NEAT AND SAFE PLACE TO AVOID ACCIDENTS FOR CONSTRUCTION AND FOR THE OWNER.

ON SITE VERIFICATION:

1. PRIOR TO FOUNDATION INSPECTION BY THE CITY, THE LLS OF RECORD SHALL PROVIDE A WRITTEN CERTIFICATE THAT ALL BUILDING SETBACKS ARE PER THE APPROVED PLANS.
2. IN CASE OF ANY DISCREPANCY IN THE CONSTRUCTION DOCUMENTATION THE GENERAL CONTRACTOR IS RESPONSIBLE TO CONSULT WITH THE DESIGNER BEFORE PROCEEDING WITH ANY CHANGES/UPDATES.
3. VERIFY ALL DIMENSIONS ON THE JOB SITE PRIOR TO ORDERING OR FABRICATING.
4. NO DIMENSIONS SHALL BE TAKEN BY SCALING FROM THE DRAWINGS. DETAILS TAKE PRECEDENCE OVER GENERAL SECTIONS OR FLOOR PLAN. IF DIMENSIONS MUST BE CLARIFIED, CONSULT WITH THE DESIGNER.
5. GENERAL CONTRACTOR SHALL REVIEW ALL ARCHITECTURAL DRAWINGS BEFORE FRAMING. COORDINATE RECESSED LIGHT FIXTURES LOCATIONS, IMPERATIVE THAT FRAMING MEMBER LOCATIONS DO NOT CONFLICT WITH LOCATIONS OF RECESSED LIGHT FIXTURES OR DUCTWORK. IF CONFLICT IS FOUND NOTIFY DESIGNER IMMEDIATELY.
6. GENERAL CONTRACTOR SHALL INSTALL ALL APPLIANCES SPECIFIED AND ALL NEW EQUIPMENT ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS. ALL GUARANTEES, INSTRUCTION BOOKLETS, AND INFORMATION REGARDING NEW EQUIPMENTS SHALL BE HANDED DIRECTLY TO THE OWNER IN ONE MANILA ENVELOPE AT THE TIME OF SUBSTANTIAL COMPLETION. IF EXTRA PARTS ARE PROVIDED, PARTS SHALL BE STORED IN A CARDBOARD BOX AND GIVEN TO OWNER.
7. GENERAL CONTRACTOR SHALL VERIFY THAT EVERY PIECE OF EQUIPMENT AND EVERY APPLIANCE IS IN PERFECT WORKING ORDER AND THAT INFORMATION ABOUT ALL WARRANTIES AND GUARANTEES IS MADE KNOWN TO THE OWNER.
8. THE INSTALLER OF EACH MAJOR UNIT OF WORK IS REQUIRED TO INSPECT THE SUBSTRATE AND CONDITIONS TO RECEIVE WORK AND SHALL REPORT ALL UNSATISFACTORY CONDITIONS ARE ATTAINED.

FINISHING REQUIREMENTS:

1. GENERAL CONTRACTOR TO INSTALL WEATHER STRIPS TO ALL EXTERIOR DOORS AND WINDOWS.
2. GENERAL CONTRACTOR TO ADJUST ALL WINDOWS AND DOORS TO ENSURE MANUFACTURER STANDARDS.
3. GENERAL CONTRACTOR SHALL STORE ALL WINDOW AND/OR DOOR SCREENS IN DRY AND SAFE STORAGE AND INSTALL SCREEN CLEAN AND PER REQUIREMENT.
4. CAULK OR OTHERWISE SEAL AROUND ALL OPENINGS TO LIMIT INFILTRATION, INCLUDING, BUT NOT LIMITED TO: EXTERIOR JOINTS AROUND THE WINDOW AND DOOR FRAMES, BETWEEN SOLE PLATES, FLOORS, AND BETWEEN EXTERIOR WALL PANELS AND CORNERS.
5. GENERAL CONTRACTOR SHALL VERIFY THAT ALL WORK ON THE EXTERIOR OF THE PROJECT IS WATERTIGHT, ALL JOINTS EXPOSED TO THE ELEMENTS SHALL BE TESTED FOR WATER TIGHTNESS PRIOR TO SUBSTANTIAL COMPLETION.

VOC REQUIREMENTS:

1. ADHESIVE SEALANTS AND CAULKS SHALL BE COMPLIANT WITH VOC AND OTHER TOXIC LIMITS.
2. PAINTS, STAINS, AND OTHER COATINGS SHALL BE COMPLIANT WITH VOC LIMITS.
3. AEROSOL PAINTS AND COATINGS SHALL BE COMPLIANT WITH PRODUCT WEIGHTED MIR LIMITS FOR ROC AND OTHER TOXIC COMPOUNDS.
4. GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO VERIFY THAT COMPLIANT VOC LIMIT FINISH MATERIALS HAVE BEEN USED.
5. CARPET AND CARPET SYSTEMS SHALL BE COMPLIANT WITH VOC LIMITS.
6. 80-PERCENT OF FLOOR AREA RECEIVING RESILIENT FLOORING SHALL COMPLY WITH SPECIFIED VOC CRITERIA.

BATHROOM NOTES

BATHROOM NOTES:

1. TEMPERED GLASS DOOR/ENCLOSURE SHALL BE PROVIDED AT SHOWERS. WALL COVERING SHALL BE TILED W/ CEMENT BOARD MIN. 72" ABOVE THE DRAIN. MATERIALS OTHER THAN STRUCTURAL ELEMENTS TO BE MOISTURE RESISTANT, TYPICAL.
2. MAX. HOT WATER TEMPERATURE DISCHARGED TO THE BATHTUB FILLER SHALL BE LIMITED TO 120 DEG. F.
3. SHOWER AND TUB/SHOWER COMBO IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE OR THE THERMOSTATIC MIXING VALVE, TYPICAL.
4. SHOWER PAN TO HAVE A MIN. AREA OF 1024 SQ.IN. AND MIN. FINISH DIMENSIONS OF 30-INCHES IN ANY DIRECTION.
5. SHOWER DOOR SHALL OPEN SO AS TO MAINTAIN NOT LESS THAN A 22" UNOBSTRUCTED OPENING FOR EGRESS PER C.P.C. R408.6
6. FOR INTERMITTENT LOCAL EXHAUST, THE MIN. BATHROOM INTERMITTENT VENTILATION AIRFLOW SHALL BE 50 CFM PER ASHRAE 62.2-2010 SECTION 4.6.5.
7. FOR CONTINUOUS OPERATING BATHROOM FAN (LOCAL EXHAUST), IT MUST OPERATE AT A MIN. OF 20 CFM AND CONTINUOUSLY OPERATED KITCHEN FAN MUST OPERATE AT 5 AIR CHANGES PER HOUR AS REQ'D BY ASHRAE 62.2-2010 SECTION 4.6.5.
8. PROVIDE SOUND RATED VENTILATION FANS, RATED AT LESS THAN 1-SONE FOR CONTINUOUS FANS OR 3-SONE FOR INTERMITTENT FANS; UNLESS THEIR MAX. RATED AIRFLOW EXCEEDS 400 CFM.
9. ADDITIONAL NOTES:
   A. FOR THE PURPOSES OF THIS SECTION, A BATHROOM IS A ROOM WHICH CONTAINS A BATHTUB, SHOWER, OR TUB/SHOWER COMBO.
   B. LIGHTING INTEGRAL TO THE BATHROOM EXHAUST FANS SHALL COMPLY WITH THE CALIFORNIA ENERGY CODE.

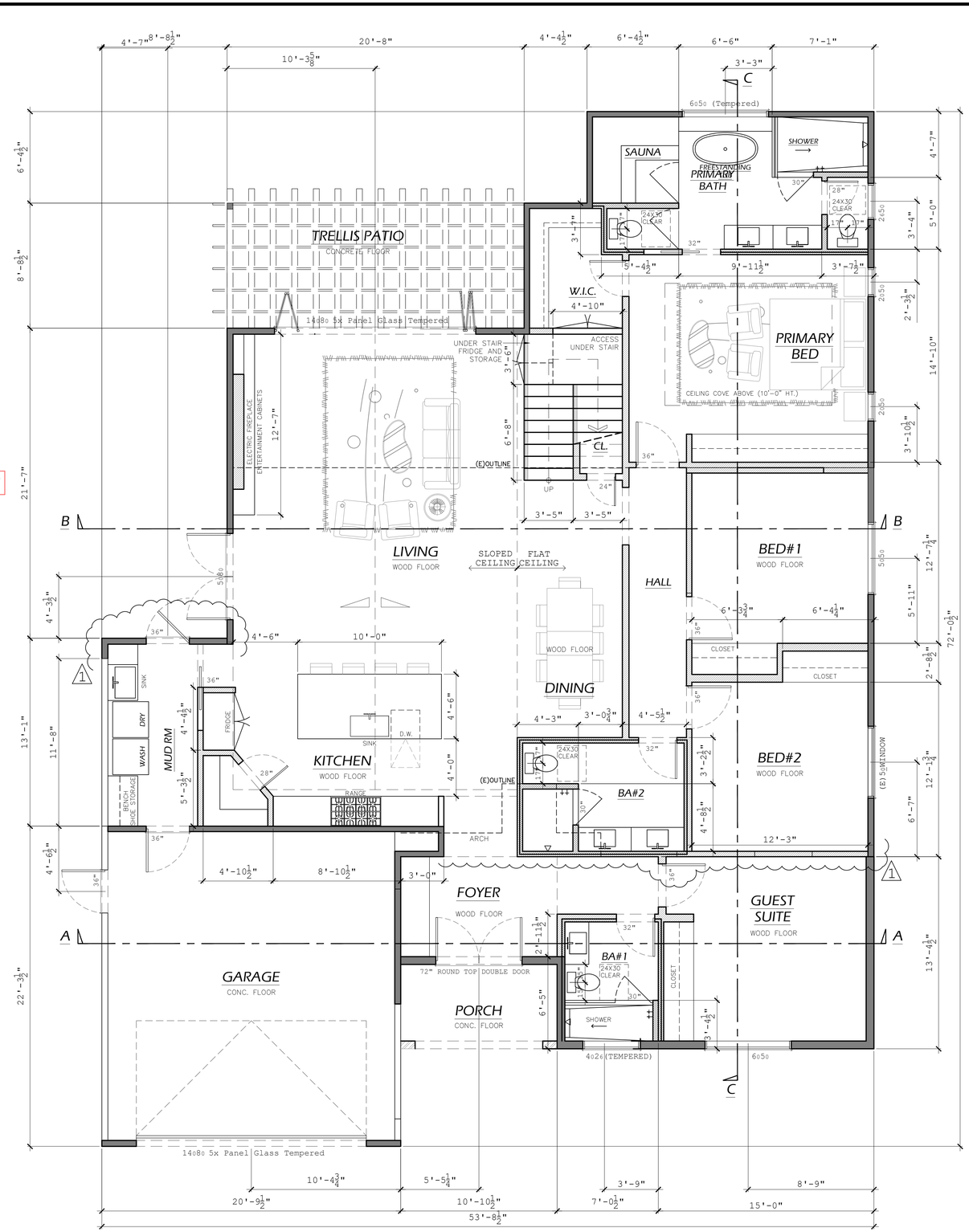
ISLAND & OUTDOOR SINK

ISLAND SINK IN THE KITCHEN AND THE OUTDOOR SINK WILL BE VENTED IN ACCORDANCE WITH THE REQUIREMENTS SET BY C.P.C. 909.0

remove references to "Outdoor Sink"

WALL SCHEDULE

- Existing Exterior Wall/Party Wall (No Change Proposed)
- Existing Interior Wall To Be Removed
- New 2x Exterior Stud Wall - Matching Sheetrock (w/ Batt Insulation per Title-24).
- New 2x Exterior Stud Wall (w/o Batt Insulation).
- New 2x Interior Wall - DensShied Sheetrock (w/ Batt Insulation as needed).
- New 2x Wet Wall - DensShied Sheetrock (w/ Batt Insulation as needed).



PROPOSED 1ST FLOOR PLAN

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

SVBUILD

REVISION

HUYNH RESIDENCE
1408 CRANMER DRIVE
WALNUT, CA 91789

08.09.2025

PROPOSED FIRST FLOOR PLAN

A2.2

FRAMING NOTES

CARPENTRY:

1. UNLESS SUPPORTED LATERALLY BY ADEQUATE FRAMING, THE MAX. ALLOWABLE HEIGHT FOR STUDS SHALL BE 14–FEET FOR 2–INCHES & 3–INCHES BY 4–INCHES. AND 20–FEET FOR 2–INCHES BY 6–INCHES.
2. REFER TO ENGINEERS CALCULATIONS FOR ANY BALLOON FRAMED BEARING WALLS MORE THAN 10–FEET IN HEIGHT.
3. STUDS SUPPORTING FLOORS AND CEILING OR RAFTERS SHALL BE SPACED NOT MORE THAN 16–INCHES.
4. PIPES IN PARTITIONS WALLS CONTAINING PLUMBING, HEATING, OR OTHER PIPES SHALL BE SO FRAMED AND THE JOISTS UNDERNEATH SO SPACED AS TO GIVE PROPER CLEARANCE FOR THE PIPING, AND WHEN NECESSITATING THE CUTTING OF THE SOLES OR PLATES, A METAL TIE NOT LESS THAN 16–GALV. GAGE AND 1–1/2 INCHES WIDE SHALL BE FASTENED TO EACH PLATE ACROSS AND TO EACH SIDE OF THE OPENING WITH NOT LESS THAN DIX 16d NAILS.
5. ROUGH WINDOWS SILLS OVER 8–FEET IN LENGTH SHALL BE DOUBLED.
6. BLOCKING TO BE PROVIDED AT ALL: BATHROOM ACCESSORIES, CABINET WALLS, HANDRAILS, SHOWER GLASS, HANDRAILS, HOT MOP SHOWER PANS, TV WALLS, WALL MIRRORS, WALL ACCENTS, AND OTHER ARCHITECTURE FEATURES REQUIRING WALL SUPPORT.

FIRBLOCKING:

1. IN COMBUSTIBLE CONSTRUCTION, FIREBLOCKING SHALL BE PROVIDED TO CUT OFF ALL CONCEALED DRAFT OPENINGS (BOTH VERTICAL AND HORIZONTAL) AND SHALL FORM AN EFFECTIVE FIRE BARRIER BETWEEN FLOORS, BETWEEN A TOP STORY AND A ROOF OR ATTIC SPACE. (C.R.C. R301.11)
2. THE INTEGRITY OF ALL FIREBLOCKS SHALL BE MAINTAINED.
3. FIRE–BLOCKING SHALL BE PROVIDED IN WOOD–FRAME CONSTRUCTION IN THE FOLLOWING LOCATION(S). (C.R.C. R302.11):
   - 3.1. IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES AND PARALLEL ROWS OF STUDS OR STAGGERED STUDS, AS FOLLOWS:
     - A. VERTICALLY AT THE CEILING AND FLOOR LEVELS.
     - B. HORIZONTALLY IN INTERNALS NOT EXCEEDING 10–FEET.
   - 3.2. ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
   - 3.3. IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP AND BOTTOM OF THE RUN. ENCLOSED SPACES UNDER STAIRS SHALL COMPLY WITH SECTION. (C.R.C. R302.11)
   - 3.4. AT OPENINGS AROUND VENTS, PIPES, DUCTS, CABLES, AND WIRES AT CEILING AND FLOOR LEVEL, WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAMES AND PRODUCTS OF COMBUSTION. THE MATERIALS FILLING THIS ANNULAR SPACE SHALL NOT BE REQUIRED TO MEET THE ASTM REQUIREMENTS.
   - 3.5. FOR FIREBLOCKING OF CHIMNEY'S AND FIREPLACES, SEE SECTION C.R.C. R1003.19.
   - 3.6. FIREBLOCKING OF CORNICES OF A TWO–FAMILY DWELLING IS REQUIRED AT THE LINE OF DWELLING UNIT SEPARATION.

PRESCRIPTIVE DUCT SIZING

Table 4-9 - Prescriptive Duct Sizing for Single Fan Exhaust Systems (from 62.2, Table 7.1)

Duct Type	Flex Duct				Smooth Duct			
Fan Rating (cfm@ 0.25 in w.c.)	50	80	100	125	50	80	100	125
Diameter Inch	Maximum Length ft.							
3	X	X	X	X	5	X	X	X
4	70	3	X	X	105	35	5	X
5	NL	70	35	20	NL	135	85	55
6	NL	NL	125	95	NL	NL	NL	145
7 and Above	NL	NL	NL	NL	NL	NL	NL	NL

This table assumes no elbows. Deduct 15 feet of allowable duct length for each elbow.
NL = no limit on duct length of this size.
X = not allowed, any length of duct of this size with assumed turns and fitting will exceed the rated pressure drop.

HVAC NOTES:

1) Duct openings and other related air-distribution component openings shall be covered during construction.
3) Size duct systems according to ANSI/ACCA 1 Manual D-2014 or equivalent.
4) Duct systems shall be sized, designed, and equipment is selected using the following methods; Establish heat loss and heat gain values according to ANSI/ACCA 2 Manual J-2011 or equivalent.
5) Select heating and cooling equipment according to ANSI/ACCA 3 Manual S-2014 or equivalent.
6) HVAC system installers are trained and certified in the proper installation of HVAC systems.

FINISH NOTES

GYPSUM WALL BOARD:

1. ALL GYPSUM WALLBOARD SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THE C.B.C., APPLICABLE EDITION, STATE, AND LOCAL CODES.
2. GYPSUM WALLBOARD SHALL NOT BE INSTALLED UNTIL WEATHER PROTECTION FOR INSTALLATION IS PROVIDED.

BASE FOR TILE:

1. CEMENT, FIBER–CEMENT, OR GLASS MAT GYPSUM BACKERS IN COMPLIANCE WITH ASTM C 1178, C 1288, OR C 1325 AND INSTALL IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS SHALL BE USED AS A BASE FOR WALL TILE IN TUB AND SHOWER AREA AND WALL/CEILING PANELS IN SHOWER AREAS.
2. WATER–RESISTANT GYPSUM BACKING BOARD SHALL BE USED AS A BASE FOR TILE IN WATER CLOSET COMPARTMENT WALLS WHEN INSTALLED IN ACCORDANCE WITH GA–216 OR ASTM C 840 AND MANUFACTURER RECOMMENDATIONS.

MECHANICAL & PLUMBING

PLUMBING FIXTURES:

1. ALL PLUMBING FIXTURES TO BE LEAD FREE COMPLIANT PER C.P.C. 604.2..

WATER PIPING:

1. COPPER TUBE FOR WATER PIPING SHALL HAVE A WEIGHT OF NOT LESS THAN THAT OF COPPER WATER TUBE TYPE–L.
2. COPPER TYPE–M TUBING MAY BE USED FOR WATER PIPING WHEN PIPING IS ABOVE GROUND, AS PER C.P.C. STANDARDS.

WATER HEATER:

1. WATER HEATERS SHALL BE STRAPPED TO RESIST HORIZONTAL DISPLACEMENT DUE TO EARTHQUAKE MOTION. STRAPPING SHALL BE AT POINTS WITHIN THE UPPER 1/3 AND LOWER 1/3 OF ITS VERTICAL DIMENSIONS. AT THE LOWER POINT, A MAX. DISTANCE OF 4" SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING.
2. WATER HEATERS TO BE PROVIDED WITH TEMPERATURE AND PRESSURE RELIEF VALVE HAVING A FULL–SIZE DRAIN OF GALVANIZED STEEL OR HARD DRAWN COPPER TO OUTSIDE OF BUILDING WITH END OF PIPE NOT MORE THAN 2–FEET AND NOT LESS THAN 6" ABOVE THE GRADE, POINTING DOWNWARD, THE TERMINAL END BEING UNTHREADED.

GAS PIPING:

1. ALL PIPE USE FOR THE INSTALLATION OF ANY GAS PIPING SHALL BE STANDARD WEIGHT WROUGHT IRON OR STEEL (GALVANIZED OR BLACK), YELLOW BRASS (CONTAINING NOT MORE THAN SEVENTY–FIVE (75) PERCENT COPPER), OR INTERNALLY TINNED OR EQUIVALENTLY TREATED COPPER OF IRON PIPE SIZE.
2. ALL FITTINGS USED IN CONNECTION WITH THE ABOVE PIPING SHALL BE OF MALLEABLE IRON OR YELLOW BRASS (CONTAINING NOT MORE THAN SEVENTY–FIVE (75) PERCENT COPPER).
3. NO GAS PIPING SHALL BE INSTALLED IN OR ON THE GROUND, UNDER ANY BUILDING OR STRUCTURE. ALL EXPOSED GAS PIPING SHALL BE KEPT AT LEAST SIX (6) INCHES ABOVE GRANDE OR STRUCTURE (PER C.P.C)

WASTE PIPING:

1. ALL WASTE PIPING WHICH PENETRATES FIRE–RESISTIVE ASSEMBLIES SHALL COMPLY WITH THE REQUIREMENTS FOR THROUGH PENETRATIONS AND/OR MEMBRANE PENETRATIONS PER CALIFORNIA BUILDING CODE, STATE, AND LOCAL CODES.
2. RAPID FIT WASTE AND OVERFLOW FITTINGS SHALL BE USED IN LIEU OF ACCESS PANEL.

GAS METERS:

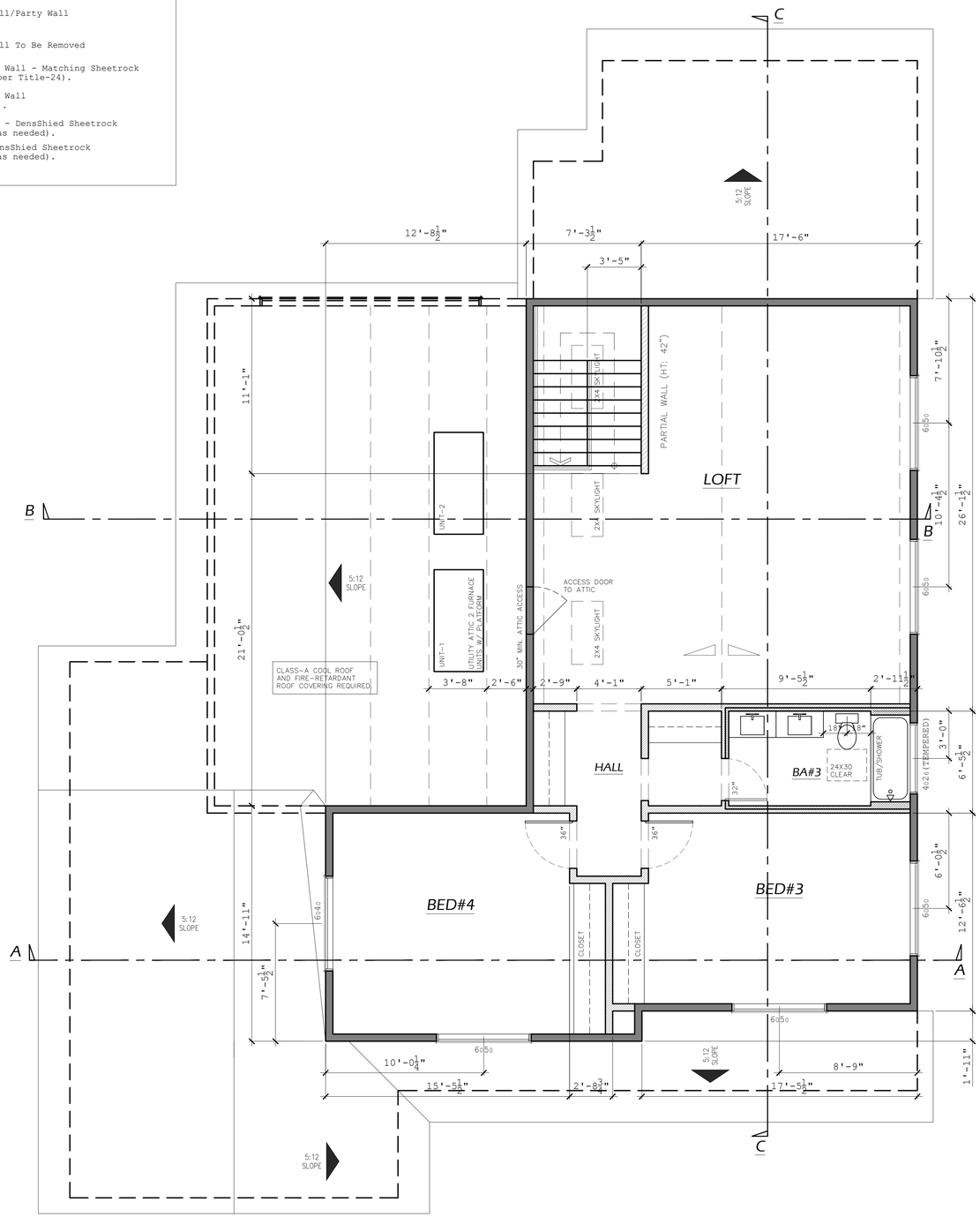
1. GAS METERS SHALL BE LOCATED IN VENTILATED SPACES READILY ACCESSIBLE FOR EXAMINATION, READING, REPLACEMENT, OR NECESSARY MAINTENANCE.
2. INSTALL EARTHQUAKE SHUT–OFF VALVE TO GAS LINE, INSTALL PER MANUFACTURER REQUIREMENT.

WATER CONSERVATION:

1. PROVIDE WATER CONSERVING PLUMBING FIXTURES & FITTINGS IN ACCORDANCE WITH CGBC SECTION 4.303:
   - SHOWERHEADS: 1.80 GPM @ 80 PSI
   - LAVATORY: 1.20 GPM @ 60 PSI
   - KITCHEN: 1.80 GPM @ 80 PSI
   - TANKED W.C. 1.28 G/FLUSH
2. CALIFORNIA CIVIL CODE ARTICLE 1101.1 AND CGBC SECTION 4.303.1, FOR ALL BUILDING ALTERATIONS OR IMPROVEMENTS TO A SFR PROPERTY, EXISTING PLUMBING FICTURES IN THE ENTIRE HOUSE THAT DO NOT MEET THE CURRENT FLOW RATES WILL NEED TO BE UPGRADED PER THE FOLLOWING:
   - WATER CLOSETS EXCESS OF 1.6 GPF REPLACE W/ MAX. 1.28 GPF
   - SHOWERHEADS W/ FLOW GREATER THAN 2.5 GPM REPLACE W/ MAX. 2.0 GPM.
   - LAVATORY AND KITCHEN FAUCET W/ FLOW FREATER THAN 2.2 GPM REPLACE W/ MAX. 1.5 GPM (OR 1.8 GPM FOR KITCHEN FAUCET)

WALL SCHEDULE

- Existing Exterior Wall/Party Wall (No Change Proposed)
- Existing Interior Wall To Be Removed
- New 2x Exterior Stud Wall - Matching Sheetrock (w/ Batt Insulation per Title-24).
- New 2x Exterior Stud Wall (w/o Batt Insulation).
- New 2x Interior Wall - DensShied Sheetrock (w/ Batt Insulation as needed).
- New 2x Wet Wall - DensShied Sheetrock (w/ Batt Insulation as needed).



PROPOSED 2ND FLOOR PLAN

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

SVBUILD

REVISION

HUYNH RESIDENCE
1408 CRANMER DRIVE
WALNUT, CA 91789

08.09.2025

PROPOSED SECOND FLOOR PLAN

A2.3

MOISTURE PROTECTION

ROOF VALLEY FLAHSING:

1. EXTERIOR OPENING EXPOSED TO THE WEATHER SHALL BE FLASHED IN SUCH A MANNER AS TO MAKE THEM WEATHERPROOF.
2. ASPHALT SHINGLES: ROOF VALLEY FLASHING SHALL BE THE SAME AS REQUIRED FOR WOOD SHINGLES OR SHALL BE OF WAVED ASPHALT SHINGLES APPLIED IN AN APPROVED MANNER WITH AN UNDERLAYMENT OF NOT LESS THAN TYPE 15 FELT EXTENDING 18–INCHES FROM THE CENTER LINE EACH WAY, OR SHALL BE OF TWO LAYERS OF 90–POUND MINERAL SURFACED CAP SHEET CEMENTED TOGETHER WITH THE BOTTOM LATER NOT LESS THAN 12–INCHES WIDE LAID FACE DOWN AND THE TOP LAYER NOT LESS THAN 24–INCHES WIDE LAID FACED UP.
3. SLATE SHINGLES, AND CLAY, AND CONCRETE TILE: ROOF VALLEY FLASHING SHALL BE PROVIDED OF NOT LESS THAN NO.26 GAL. SHEET GAUGE CORROSION–RESISTANT METAL APPLIED OVER AN UNERLAYMENT OF NOT LESS THAN 30# ASTM FELT. THE METAL SHALL EXTEND AT LEAST 12–INCHES FROM THE CENTERLINE EACH WAY AND SHALL HAVE A SPLASH DIVERTER RIB NOT LESS THAN 4–INCHES.

WEATHER–EXPOSED AREAS:

1. BALCONIES, LANDINGS, EXTERIOR STAIRWAYS, OCCUPIED ROOFS, AND SIMILAR SURFACES EXPOSED TO THE WEATHER AND SEALED UNDERNEATH SHALL BE WATERPROOFED AND SLOPED A MIN. OF 1/4 UNIT VERTICAL IN 12–UNIT HORIZONTAL (2% SLOPE) DRAINAGE.
2. ELASTOMERIC OR MEMBRANE DECK COATINGS SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.

BUILT–UP ROOFING:

1. BUILT–UP ROOFING SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS AND C.R.C. R905.9
2. BUILT–UP ROOF COVERING MATERIALS SHALL COMPLY WITH THE STANDARDS IN C.R.C. TABLE R905.9.2 OR UL 55A
3. BUILT–UP ROOFS SHALL HAVE A DESIGN SLOPE OF A MIN. OF ONE–FORTH UNIT VERTICAL IN 12–UNITS HORIZONTAL (1/4:12) FOR DRAINAGE, EXPECT FOR COAL–TAR BUILT–UP ROOFS, WHICH SHALL HAVE A DESIGN SLOPE OF A MIN. 1/8:12.
4. EACH PACKAGE OF FELTS, CEMENTS, AND BASE, PLY–COMBO OR CAP SHEETS SHALL BEAR THE LABEL OF AN APPROVED TESTING LABORATORY HAVE A SERVICE FOR THE INSPECTION OF MATERIAL AND FINISHED PRODUCTS DURING MANUFACTURER FOR SUCH BUILT–UP ROOFING MATERIAL.

WATER RESISTIVE BARRIER:

1. MEMBRANE "WATERPROOFING" SHALL BE ISNTALLED TO PREPARED SURFACES BY SKILLED AND QUALIFIED MECHANICS AND SHALL CONFORM TO THE FOLLOWING" MATERIALS:
   A. ASPHALT PRIMER: CONFORM TO ASTM D41.
   B. ASPHALT EMULSION: CONFIRM TO ASTM D1187
   C. GLASS CLOTH: CONFORM TO FS HH–C–466B
   D. PROTECTION COURSE: CONFORM TO FS HH–I–526C OR MIN. 3/8" THICK GYPSUM BOARD.

SUMMARY OF MATERIALS PER 100 SF:	
ASPHALT EMULSION PRIMER (1–1/2 GAL.)	15 LBS.
FIRST COURSE C–13–E (3 GAL.)	30 LBS.
SECOND COURSE GLASS FABRIC	1 LBS.
THIRD COURSE C–13–E	30 LBS.
FOURTH COURSE C–13–E (3 GAL.)	30 LBS.
APPROXIMATE TOTAL WEIGHT (WET)	106 LBS.

ROOF GENERAL NOTES:

1. NEW ROOF SHALL BE CLASS–A COMPOSITION SINGLE.
2. 4X 2"DIA. EAVE VENT HOLES AT EACH BLOCK, TYPICAL COVERED W/ CORROSION RESISTANT METAL MESH OPENING OF 1/4".
3. RAIN WATER LEADERS TO BE DIRECTED TO SPLASH BLOCKS OR OTHER IMPERVISOUS SURFACE THAT DEFLECTS WATER AWAY FROM THE BUILDING. 2% SLOPE TO LANDSCAPE AREA. THE FOUND IMMEDIATELY ADJACENT TO THE FOUNDATION SHALL FALL A MIN. OF 6" WITHIN THE FIRST 10–FEET (5%) MEASURED PERPENDICULAR TO THE FACE OF THE FOUNDATION WALL.
4. PROVIDE CERTIFIED RADIANT BARRIER–POLAR PLY AT THE UNDERSIDE OF THE PLYWOOD.
5. CALIFORNIA FRAMING TO BE VENTED THROUGH OPENINGS IN THE SHEATHING BELOW THE ROOF ABOVE.
6. PVC INSULATION SHIELD TO HOLD INSULATION AND KEEP A 1" MIN. SPACE FOR THREE FLOW OF AIR.

VENT DISCHARGE POINTS:

1. DISCHARGE POINT FOR EXHAUST AIR SHALL BE AT LEAST 3–FEET FROM ANY OPENING WHICH ALLOWS AIR ENTRY INTO OCCUPIED PORTIONS OF THE BUILDING.
2. COLLECT ALL PLUMBING VENT RAISERS, EXHAUST FAN VENTS TERMINATIONS AND ALL OTHER ROOF PENETRATION ON THE ROOFS FACING THE SIDE YARD.
3. ALL PLUMBING VENT RISER TO BE 10–FEET MIN. FROM ALL OPERABLE SKYLIGHTS, U.N.O.
4. BATHROOM AND LAUNDRY EXHAUST FANS MUST CONNECT DIRECTLY TO THE OUTSIDE AND MUCH TERMINATE NO CLOSER THAN 3–FEET MIN. FROM ANY OPENING INTO THE BUILDING AND BE PROVIDED WITH BACKDRAFT DAMPERS.

SKYLIGHTS:

1. ALL PROPOSED SKYLIGHT UNIT SHALL BE TESTED AND LABELED IN COMPLIANCE WITH AAMA/WDMA/CSA.

ROOF VENT CALC.

1. PROVIDE 1SF OF VENTILATION PER EVERY 150 SF OF ROOF, OR ATTIC, AREA.
2. WHERE ROOF AREAS ARE SEPARATED FROM EACH OTHER, PROVIDE THE REQUIRED VENTILATION FOR EACH ISOLATED AREA.
3. NO EAVE OPENINGS ALLOWED AT 1–HOUR RATED OVERHANGS.

TYPES OF VENTS:

1. EAVE VENTS SHALL BE AT EACH BAY JOIST, EACH ARE 24" O.C. PROVIDE FOUR 2"DIA. VENTILATION HOLES IN THE BLOCKING, TOTALING 12.5 SQ.IN.
2. 14X9 VULCAN EYEBROW LOW PROFILE VENT, EACH VENT PROVIDES 60 SQ.IN. OF NET FREE VENT AREA. FIRE AND EMBER RESISTANT VENTS ARE GALVANIZED STEEL FRAME.
3. 14X18 SURFACE MOUNT PVC GABLE VENT, EACH VENT PROVIDES 80 SQ.IN. OF NET FREE VENT AREA.

ROOF AREA			#1	
DESCRIPTION			AREA	UNIT
ROOF/ATTIC AREA			1200	SF
REQ'D VENT AREA (X/150)			8	SF
COVERTED TO SQ.IN. (X144)			1152	SQ.IN
TYPE	VENT AREA	NO. VENT	AREA	UNIT
EAVE VENT	12.5	20	250	SQ.IN
ROOF VENT	60	12	720	SQ.IN
GABLE VENT	80	2	160	SQ.IN
TOTAL VENT AREA PROVIDED			**1130**	SQ.IN
TOTAL VENT AREA REQUIRED			1152	SQ.IN

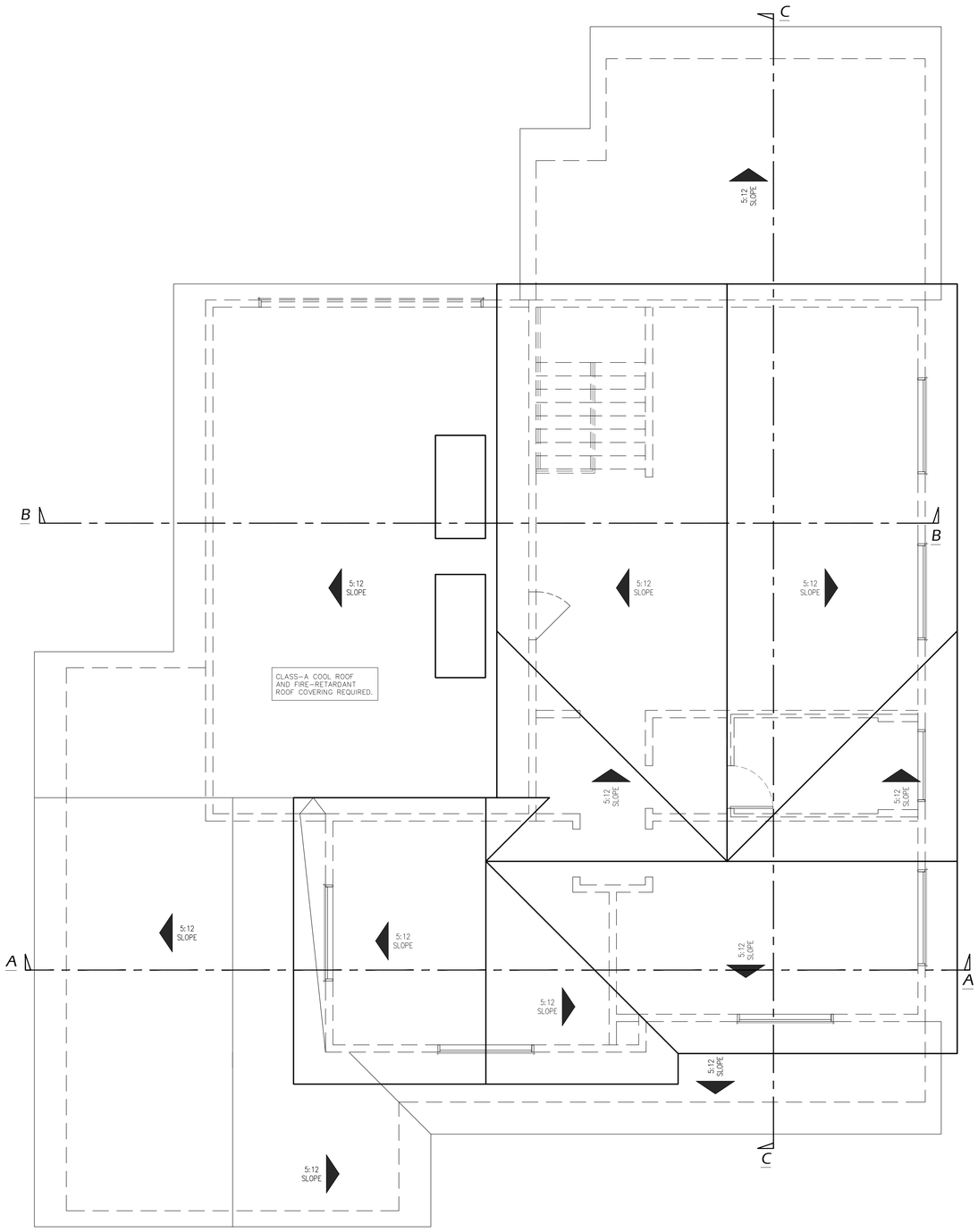
UNVENTED ATTIC

UNVENTED ATTIC ASSEMBLIES (SPACES BETWEEN THE CEILING JOISTS OF THE TOP STORY AND THE ROOF RAFTERS) SHALL BE PERMITTED IF ALL THE FOLLOWING CONDITIONS ARE MET.

1. THE UNVENTED ATTIC SPACE IS COMPLETELY CONTAINED WITHIN THE BUILDING THERMAL ENVELOPE.
2. NO INTERIOR VAPOR RETARDERS ARE INSTALLED ON THE CEILING SIDE (ATTIC FLOOR) OF THE UNVENTED ATTIC ASSEMBLY.
3. WHERE WOOD SHINGLES OR SHAKERS ARE USED, A MIN. 1/4–INCH VENTED AIR SPACE SEPARATES THE SHINGLES OR SHAKES AND THE ROOFING UNDERLAYMENT ABOVE THE STRUCTURAL SHEATHING.
4. IN CLIMATE ZONES 5, 6, 7, AND 8, ANY AIR–IMPERMEABLE INSULATION SHALL BE A VAPOR RETARDER, OR SHALL HAVE A VAPOR RETARDER COATING OR COVERING IN DIRECT CONTACT WITH THE UNDERSIDE OF THE INSULATION.
5. EITHER ITEMS, LISTED BELOW, SHALL BE MET, DEPENDING ON THE AIR PERMEABILITY OF THE INSULATION DIRECTLY UNDER THE STRUCTURAL ROOF SHEATHING:
   5.1. AIR–IMPERMEABLE INSULATION ONLY. INSULATION SHALL BE APPLIED IN DIRECT CONTACT WITH THE UNDERSIDE OF THE STRUCTURAL ROOF SHEATHING.
   5.2. AIR–PERMEABLE INSULATION ONLY. IN ADDITION TO THE AIR–PERMEABLE INSTALLED DIRECTLY BELOW THE STRUCTURAL SHEATHING , RIDGE BOARD OR SHEET INSULATION SHALL BE INSTALLED DIRECTLY ABOVE THE STRUCTURAL ROOF SHEATHING AS SPECIFIED IN TABLE R806.4 FOR CONDENSATION CONTROL.
   5.3. AIR–IMPERMEABLE AND AIR–PERMEABLE INSULATION. THE AIR–IMPERMEABLE INSULATION SHALL BE APPLIED IN DIRECT CONTACT WITH THE UNDERSIDE OF THE STRUCTURAL ROOF SHEATHING AS SPECIFIED IN TABLE R806.4 FOR CONDENSATION CONTROL. THE AIR–PERMEABLE INSULATION SHALL BE INSTALLED DIRECTLY UNDER THE AIR–IMPERMEABLE INSULATION.

TABLE R806.4
INSULATION FOR CONDENSATION CONTROL

CLIMATE ZONE	MIN. RIGID BOARD ON AIR–IMPERMEABLE INSULATION R–VALUE
2B & 3B TILE ROOF ONLY	0 (NONE REQUIRED)
1,2A,2B,3A,3B,3C	R–5
4C	R–10
4A & 4B	R–15
5	R–20
6	R–25
7	R–30
8	R–35



PROPOSED ROOF PLAN

Scale: 1/4" = 1'–0"

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PROPOSED ROOF PLAN

A2.4

ELECTRICAL NOTES

CARBON MONOXIDE ALARM:

1. FOR NEW CONSTRUCTION, AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED IN DWELLING UNITS AND IN SLEEPING UNITS WITHIN WHICH FUEL-BURNING APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES. CARBON MONOXIDE ALARMS SHALL BE LISTED AS COMPLYING WITH UL 2034 AND BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH NFPA 720 AND THE MANUFACTURER'S INSTRUCTIONS C.R.C. 315.1
2. CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHERE SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND SHALL BE EQUIPPED WITH A BATTERY BACK-UP. ALARM WIRING SHALL BE DIRECTLY CONNECTED TO THE PERMANENT BUILDING WIRING WITHOUT A DISCONNECTING SWITCH OTHER THAN AS REQUIRED FOR OVERCURRENT PROTECTION C.R.C. R315.5.
3. WHERE MORE THAN ONE CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN THE DWELLING UNIT OR WITHIN A SLEEPING UNIT, THE ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT C.R.C. R315.7.
4. REQUIRED CARBON MONOXIDE ALARMS SHALL BE INSTALLED AND MAINTAINED IN THE FOLLOWING LOCATIONS:
   - OUTSIDE OF EACH SEPARATE DWELLING UNIT SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS(S).
   - ON EVERY LEVEL OF A DWELLING UNIT INCLUDING THE BASEMENT.
5. MULTIPLE-PURPOSE ALARMS: CARBON MONOXIDE ALARMS COMBINED WITH SMOKE ALARM SHALL COMPLY WITH C.R.C. R315.6.4, ALL APPLICABLE STANDARDS, AND REQUIREMENTS FOR LISTING AND APPROVAL BY THE OFFICE OF THE STATE FIRE MARSHAL, FOR SMOKE ALARMS. C.R.C. R315.6.4.

SMOKE ALARM:

1. ALL SMOKE ALARMS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 217 AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THE CURRENT C.R.C. AND THE HOUSEHOLD FIRE WARNING EQUIPMENT PROVISIONS OF NFPA 72. SYSTEMS AND COMPONENTS SHALL BE CALIFORNIA SATE FIRE MARSHALL LISTED AND APPROVED IN ACCORDANCE WITH CALIFORNIA CODE OF REGULATIONS, TITLE 19, DIVISION 1 FOR THE PURPOSE FOR WHICH ARE INSTALLED C.R.C. R314.1.
2. SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS: C.R.C. 314.3
   - IN EACH SLEEPING ROOM.
   - OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
   - ON EACH ADDITIONAL STORY OF THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS BUT 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 LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.
3. POWER SOURCES: 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 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 OVERCURRENT PROTECTION. C.R.C. R314.6.
4. WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN THE DWELLING UNIT OR WITHIN A SLEEPING UNIT, THE ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE ALARM SHALL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT C.R.C. R315.4.
5. SMOKE ALARMS SHALL BE TESTED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. SMOKE ALARMS THAT NO LONGER FUNCTION SHALL BE REPLACED. C.R.C. R314.3.2.

MATERIAL & WORKMANSHIP:

1. ALL MATERIALS USED FOR WIRING SHALL CONFORM TO THE APPLICABLE EDITION OF THE CALIFORNIA ELECTRICAL CODE.
2. ALL WORK SHALL BE IN ACCORDANCE WITH CODES, RULES, AND REGULATIONS OF GOVERNING AGENCIES AND SHALL COMPLY WITH THE REQUIREMENTS OF THE SERVING POWER AND TELEPHONE COMPANIES.
3. ALL EQUIPMENT INSTALLED OUTDOORS AND EXPOSED TO WEATHER SHALL BE "WEATHER-PROOF".

RECEPTACLES:

1. RECEPTACLES SHALL BE INSTALLED SO THAT NO POINT ALONG THE FLOOR LINE IN ANY WALL SPACE IS MORE THAN 6-FEET, MEASURED HORIZONTALLY FROM AN OUTLET IN THAT SPACE.
2. RECEPTACLE OUTLET SHALL BE INSTALLED IN ANY USABLE WALL SPACE 2-FEET OR MORE IN WIDTH.
2. RECEPTACLES IN KITCHEN AND BATHROOM SHALL BE INSTALLED ABOVE WORK TOP UNLESS OTHERWISE NOTED ON THE PLANS.
3. RECEPTACLES SHALL BE INSTALLED VERTICALLY AT 12" (APPROX.) A.F.F.
4. BATHROOM RECEPTACLES OUTLETS SHALL BE SUPPLIED BY A MIN. OF ONE 20-AMP BRANCH CIRCUIT. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS BUT MAY SERVE MORE THAN ON BATHROOM PER C.E.C. 201.11

POWER & COMMUNICATION

	OUTLET
GFCI	OUTLET W/ GFCI
WP	OUTLET W/ GFCI (WEATHERPROOF)
240	OUTLET - 240V
G	GAS LINE CONNECTION
W	WATER LINE CONNECTION
H	HOSE BIB
C	3" FIX CONDUIT (12" to 48" AFF, UNO)
SD	SMOKE DETECTOR ALARM
COD	SMOKE & CO DETECTOR ALARM

LIGHTING LEGEND

S	SWITCH
$_D$	SWITCH W/ DIMMER
$_W$	WIFI, 3-WAY/DIMMER AUTOMATED CONTROL
$_F$	FAN ONLY
$_{F/L}$	FAN & LIGHT
$_S$	OCCUPANCY SENSOR
E	LED RECESSED LIGHT
C	CEILING MOUNTED LIGHT
P	PENDANT LIGHT
F	WALL MOUNTED LIGHT - INTERIOR
E	WALL MOUNTED LIGHT - EXTERIOR
	EXHAUST FAN
M	MOTION SENSOR
	LED STRIP LIGHT
	48" LED CEILING LIGHT

ELECTRICAL NOTES

(01) CHECK LOCATION WITH OWNER REGARDING OUTLET LOCATION PER APPLIANCE SPECS.

(02) INSTALL OUTLET AT 50" O.F.F., AND 2" FLUX CONDUIT FROM CENTER TO REAR OFFICE FOR THRU WIRE CONNECTION.

(03) INSTALL NUHEAT ELEC. HEATED FLOORS W/ CONTROL PANEL.

(04) VACANCY SENSOR.

(05) FAN TO BE ENERGY STAR RATED AND CONTROLLED BY HUMIDISTAT.

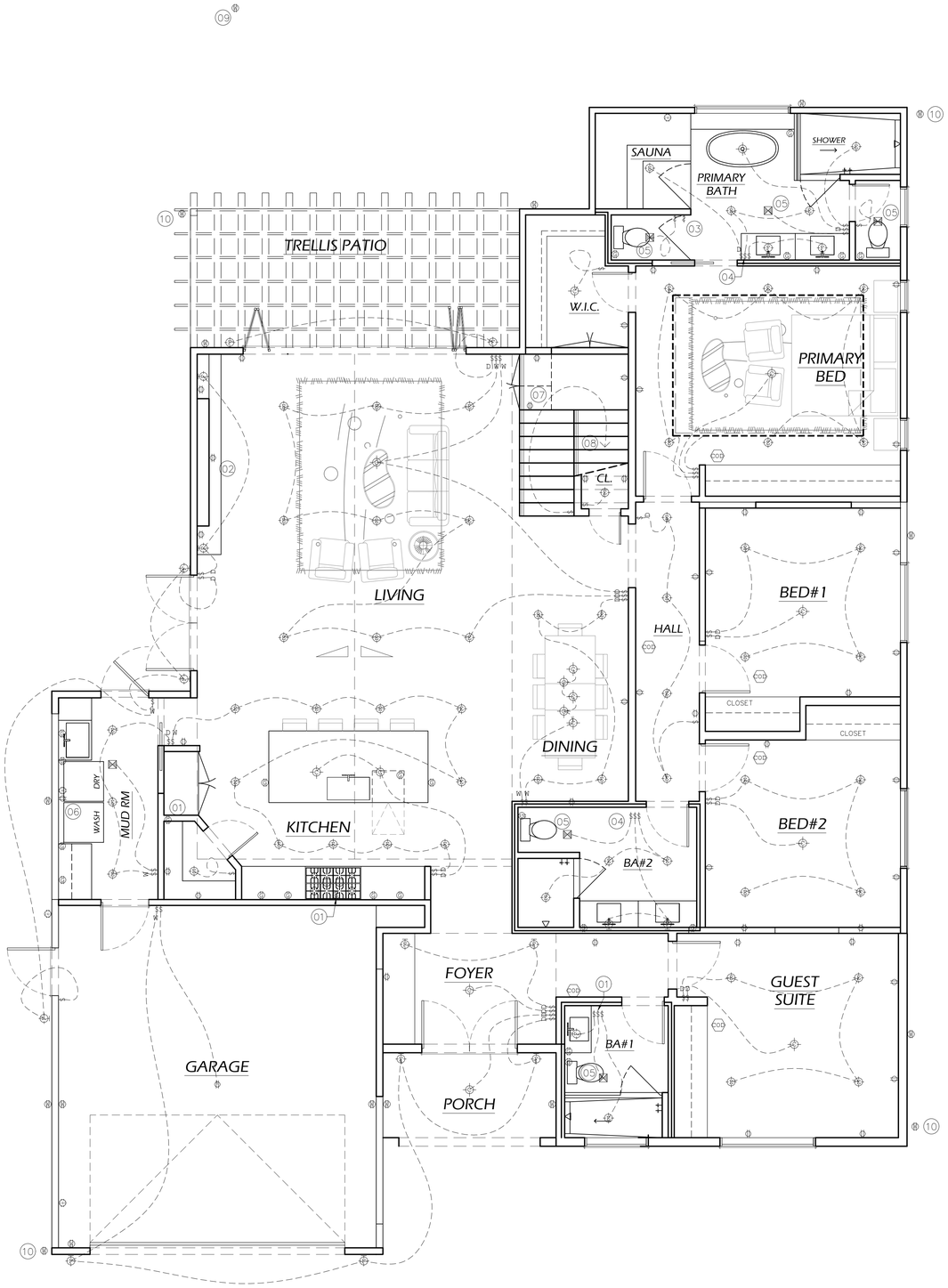
(06) 240V AND 120V WITH HOT & COLD WATER, AND DRAIN CONNECTION

(07) OUTLET BELOW LANDING

(08) TO FIXTURE ABOVE OR SWITCH BELOW

(09) EXTERIOR WEATHERPROOF OUTLET INSTALL WITH IN GROUND CONDUIT AT REAR FENCE POST, 12" A.F.G., CONFIRM LOCATION WITH OWNER

(10) EXTERIOR WEATHERPROOF OUTLET INSTALL AT ROOF/TRELLIS EAVE



1ST FLOOR ELECTRICAL PLAN

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

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1ST FLR ELECTRICAL PLAN

A2.5

VOC LIMITS

ADHESIVE VOC LIMIT (TABLE 4.504.1)
Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesives	100
Rubber flooring adhesive	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	**CURRENT VOC LIMIT**
PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesives	80
Special purpose contact adhesives	250
Structural wood memeber adhesives	140
Top and trim adhesives	250
SUBSTRATE SPECIFIC APPLICATIONS	**CURRENT VOC LIMIT**
Metal to metal	30
Plastic foams	50
Porous material (expect wood)	50
Wood	30
Fiberglass	80

1. If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content shall be allowed.
2. For additional information regarding methods to measure the VOC content specified in this table, see South Coast Air Quality Management District Rule 1168.

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

SEALANTS	CURRENT VOC LIMIT
Architectural	250
Marine deck	760
Non-membrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	450
SEALANTS PRIMERS	**CURRENT VOC LIMIT**
Architectural: Non-porous Porous	 250 775
Modified bituminous	500
Marine deck	760
Other	750

VOC CONTENT LIMITS FOR ARCH COATINGS (TABLE 4.504.2)
Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds

SEALANTS	CURRENT VOC LIMIT
Flat coating	50
Non-flat coating	100
Nonflat-high gloss coatings	150
SPECIALTY COATINGS	**CURRENT VOC LIMIT**
Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings	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	
Rush preventative coatings	250
Shellacs: Clear Opaque	 730 550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic making coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

POWER & COMMUNICATION

- OUTLET
- OUTLET W/ GFCI
- OUTLET W/ GFCI (WEATHERPROOF)
- OUTLET - 240V
- GAS LINE CONNECTION
- WATER LINE CONNECTION
- HOSE BIB
- 3" FIX CONDUIT (12" to 48" AFF, UNO)
- SMOKE DETECTOR ALARM
- SMOKE & CO DETECTOR ALARM

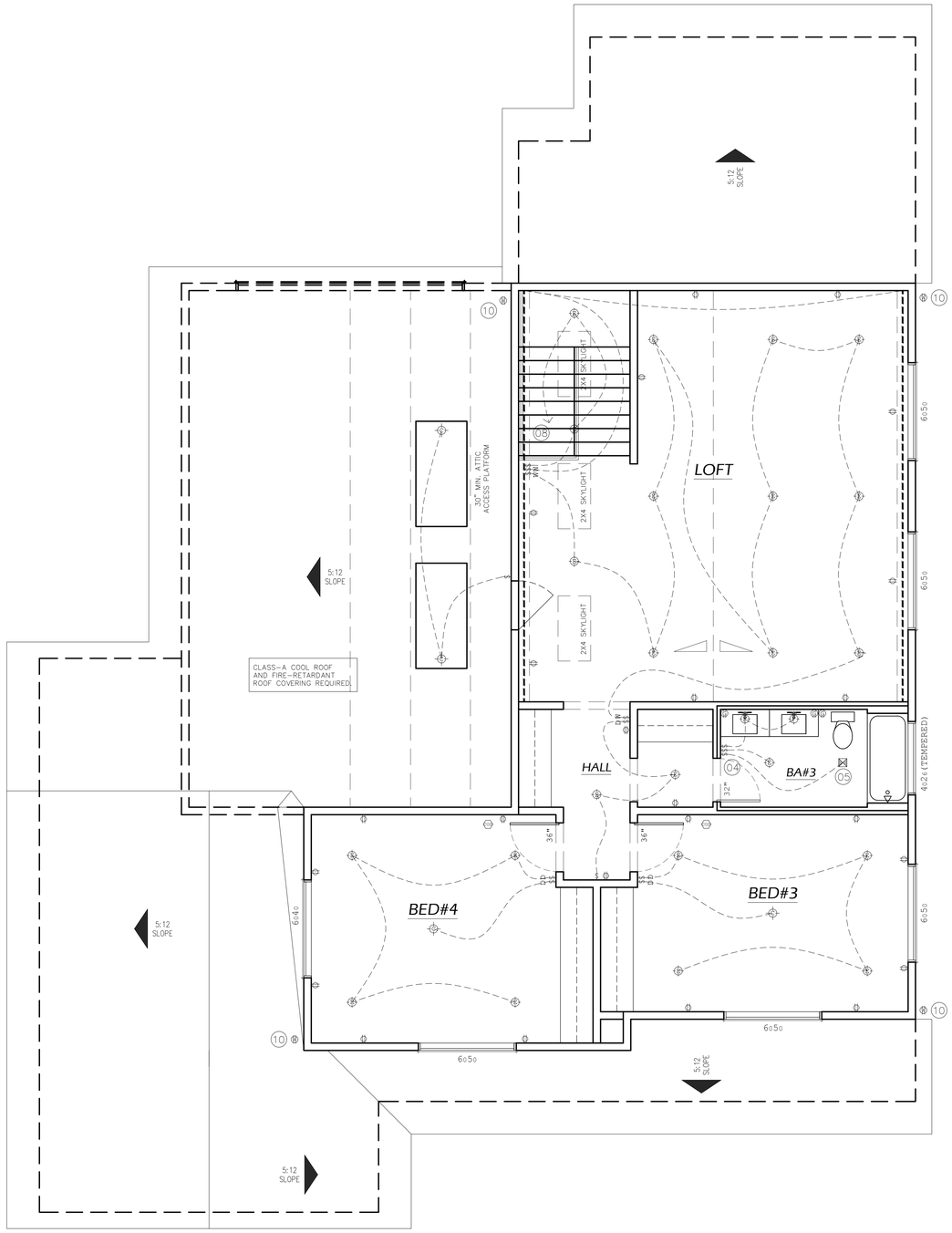
LIGHTING LEGEND

- SWITCH
- SWITCH W/ DIMMER
- WIFI, 3-WAY/DIMMER AUTOMATED CONTROL
- FAN ONLY
- FAN & LIGHT
- OCCUPANCY SENSOR
- LED RECESSED LIGHT
- CEILING MOUNTED LIGHT
- PENDANT LIGHT
- WALL MOUNTED LIGHT - INTERIOR
- WALL MOUNTED LIGHT - EXTERIOR
- EXHAUST FAN
- MOTION SENSOR
- LED STRIP LIGHT
- 48" LED CEILING LIGHT

ELECTRICAL NOTES

01. CHECK LOCATION WITH OWNER REGARDING OUTLET LOCATION PER APPLIANCE SPECS.
02. INSTALL OUTLET AT 50" O.F.F., AND 2" FLUX CONDUIT FROM CENTER TO REAR OFFICE FOR THRU WIRE CONNECTION.
03. INSTALL NUHEAT ELEC. HEATED FLOORS W/ CONTROL PANEL.
04. VACANCY SENSOR.
05. FAN TO BE ENERGY STAR RATED AND CONTROLLED BY HUMIDISTAT.
06. 240V AND 120V WITH HOT & COLD WATER, AND DRAIN CONNECTION
07. OUTLET BELOW LANDING
08. TO FIXTURE ABOVE OR SWITCH BELOW
09. EXTERIOR WEATHERPROOF OUTLET INSTALL WITH IN GROUND CONDUIT AT REAR FENCE POST, 12" A.F.G., CONFIRM LOCATION WITH OWNER
10. EXTERIOR WEATHERPROOF OUTLET INSTALL AT ROOF/TRELLIS EAVE

NOTE: EACH FURNACE UNIT SHALL BE SUPPLIED BY A MIN. OF ONE 20-AMP BRANCH CIRCUIT AND NO OTHER OUTLETS PER C.E.C.



2ND FLOOR ELECTRICAL PLAN

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

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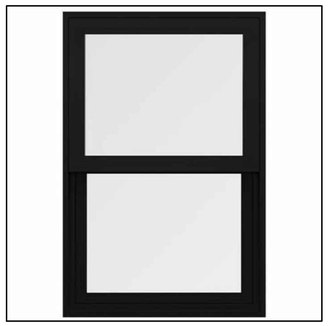
2ND FLR ELECTRICAL PLAN

A2.6



ROOF: TRUDEFINITION
COMP. SHINGLE - WILLIAMSBURG GRAY



WINDOW: MILGARD
V300 TRINSIC VINYL - BLACK



SIDING: SMOOTH CEMENT PLASTER
DUNN EDWARDS - WARM WHITE (DEW 380)



LIGHT: ANDOVER MILLS
GUNNORA STEEL WALL LIGHT



FRONT RENDERING - NORTH

Scale: N.T.S.

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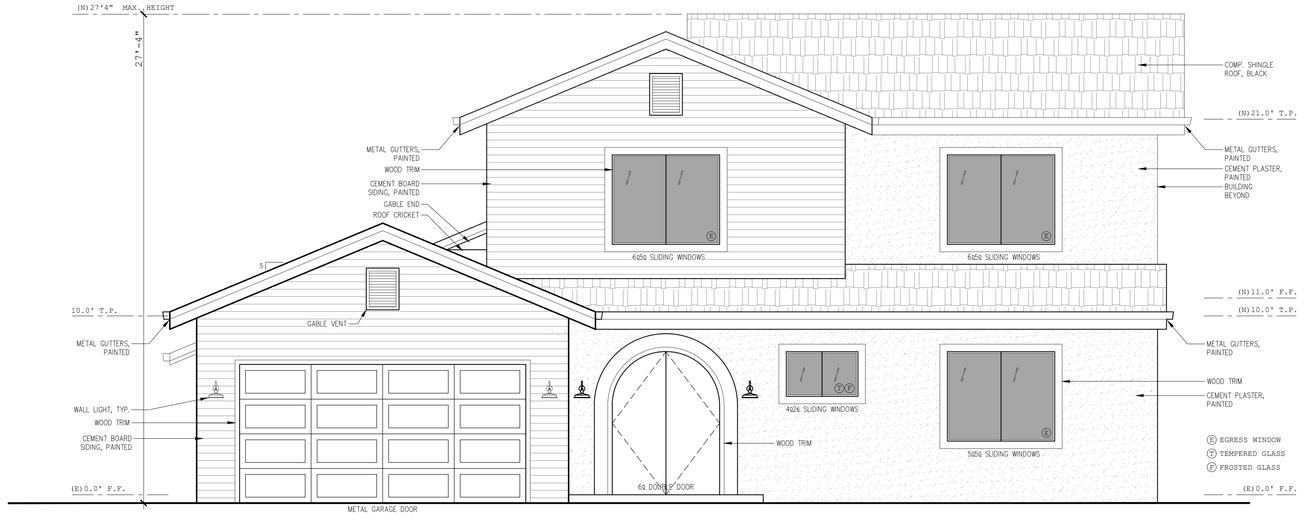
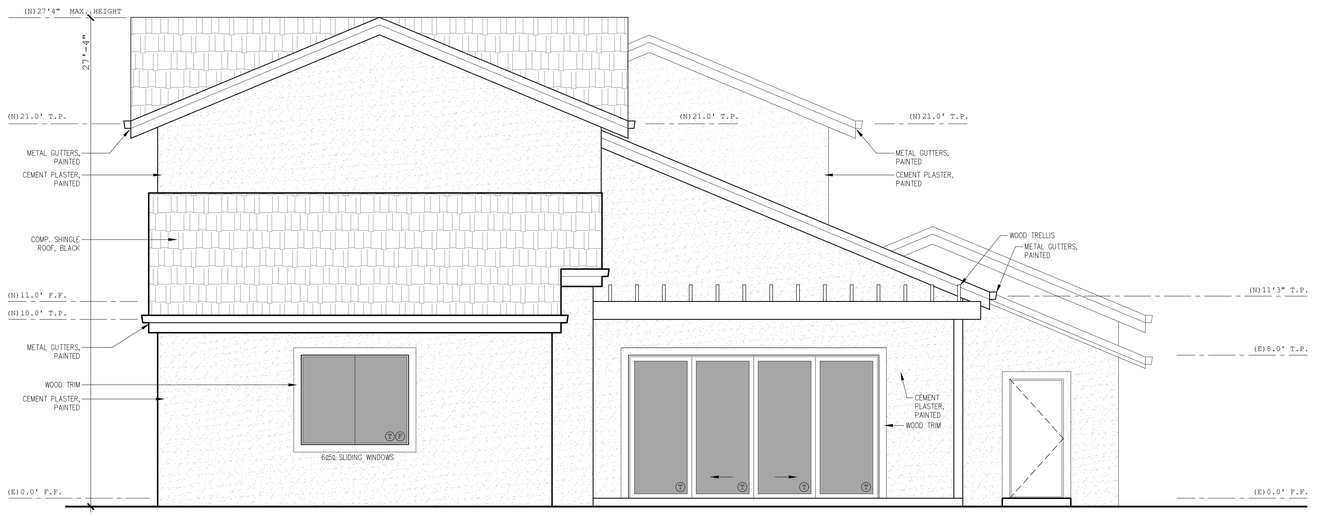
RENDERING MATERIAL BOARD

A3.1



FRONT ELEVATION - NORTH

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



REAR ELEVATION - SOUTH

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

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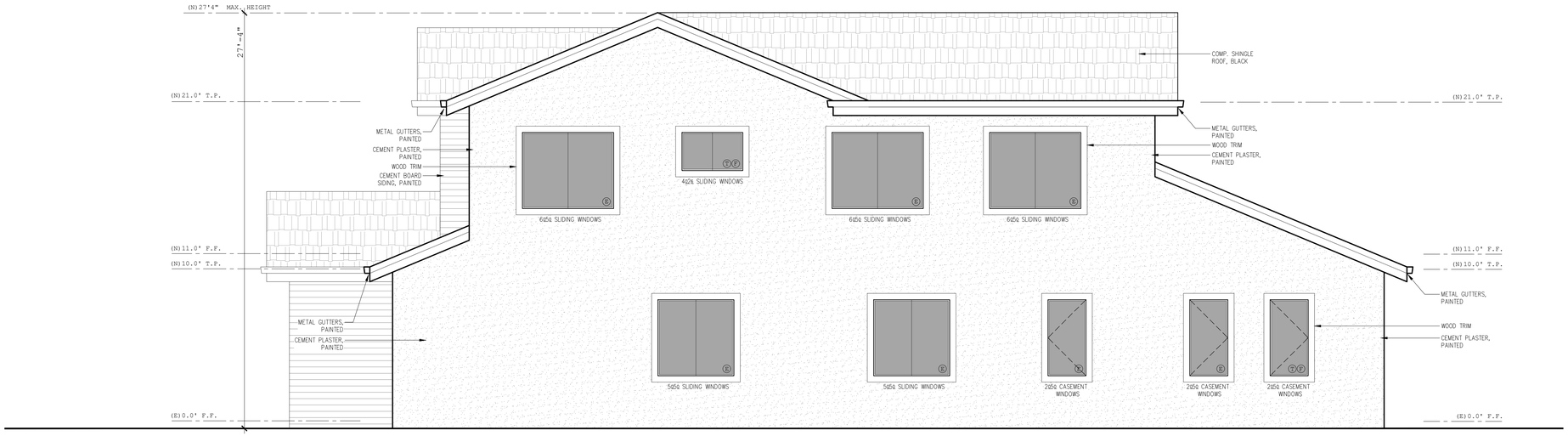
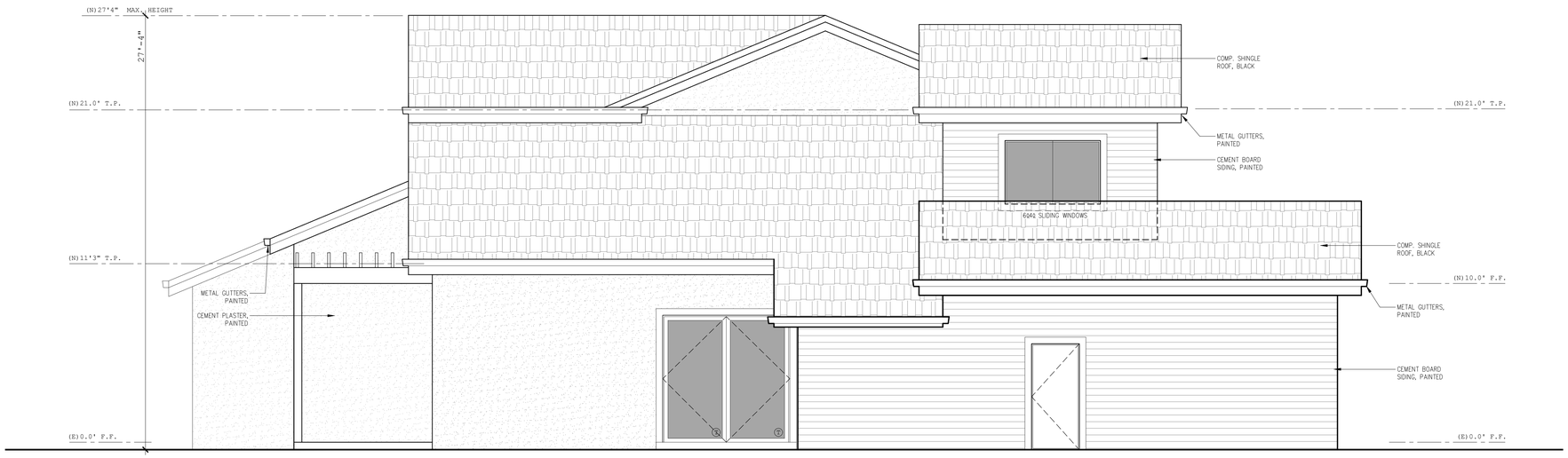
ELEVATION

A3.2



RIGHT ELEVATION - WEST

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



LEFT ELEVATION - EAST

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

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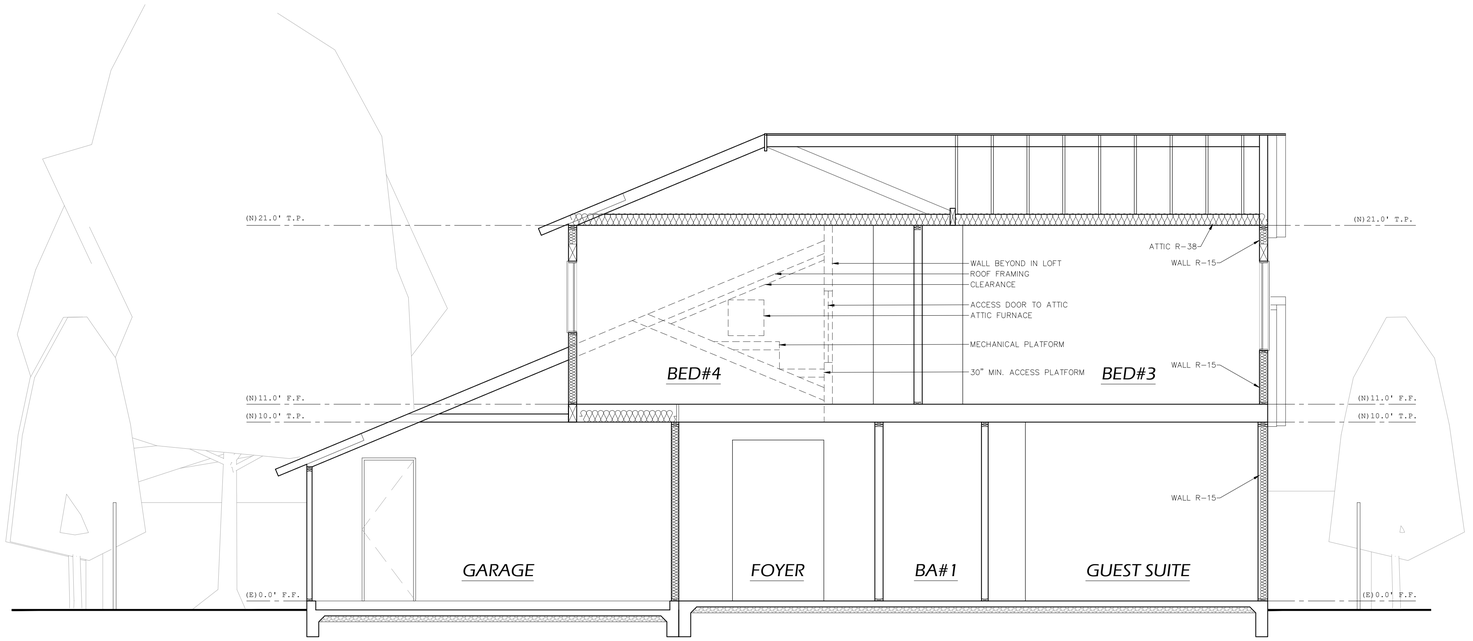
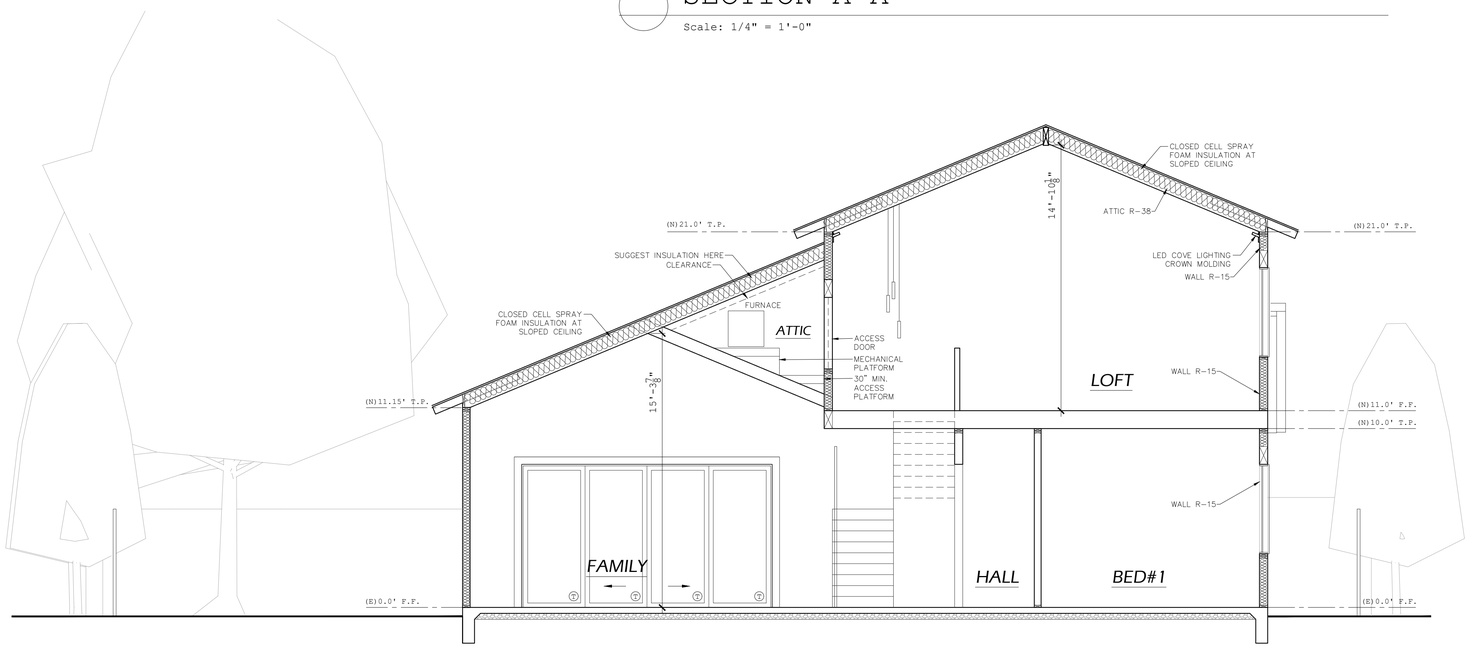
ELEVATION

A3.3



SECTION A-A

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



SECTION B-B

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

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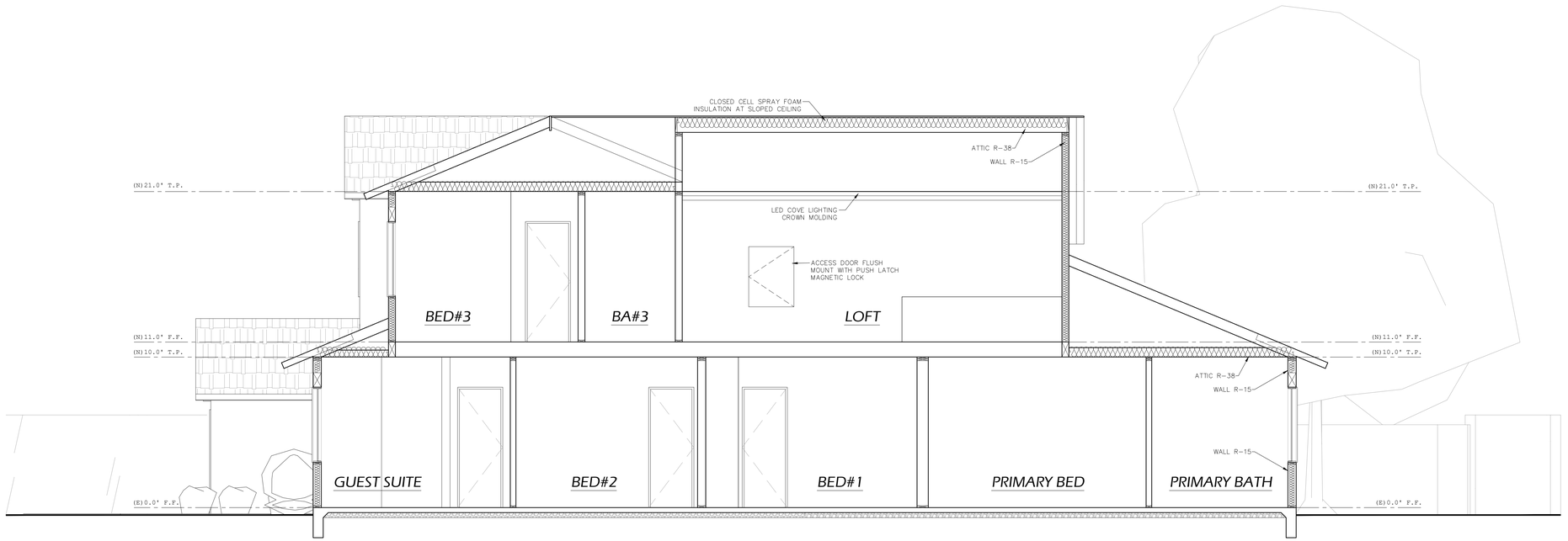
SECTIONS

A3.4



SECTION C-C

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

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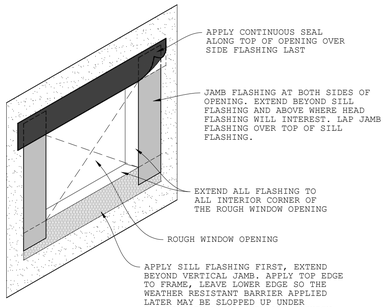
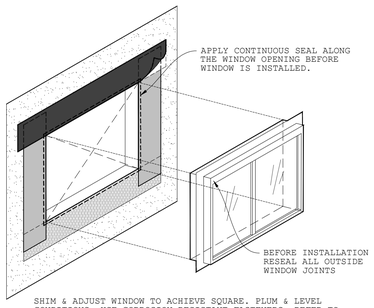
SECTIONS

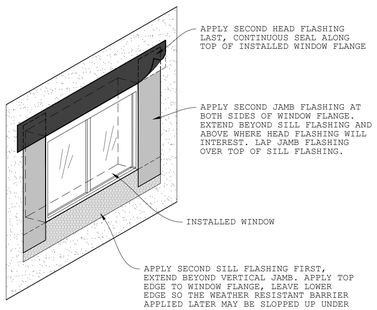
A3.5



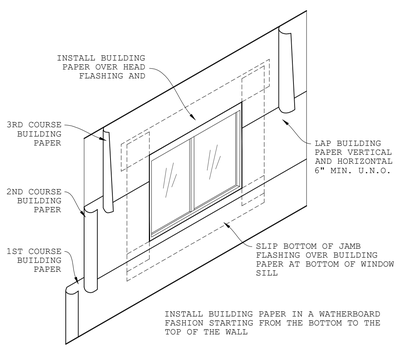
08 Window Flashing Detail-1
Scale: N.T.S.



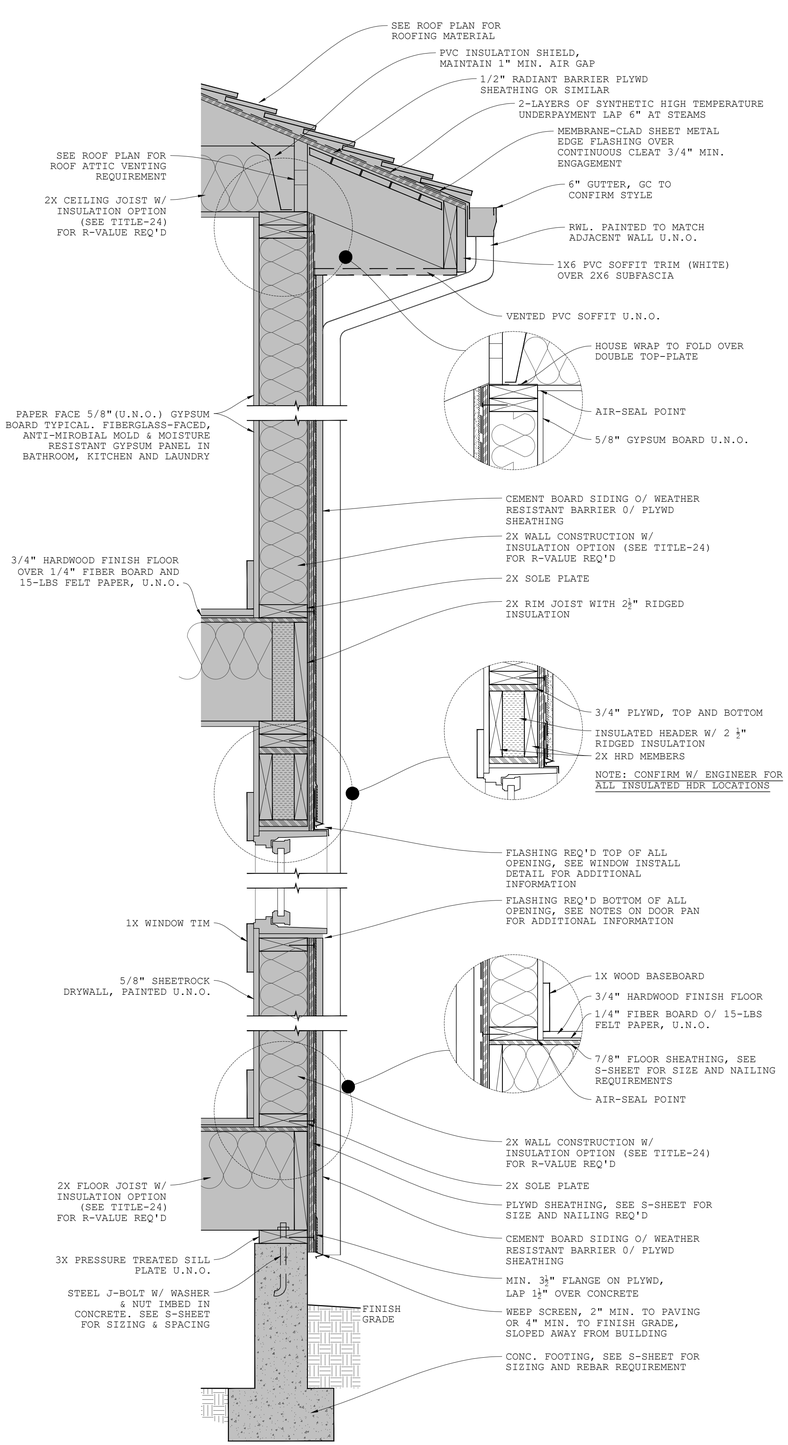
09 Window Flashing Detail-2
Scale: N.T.S.



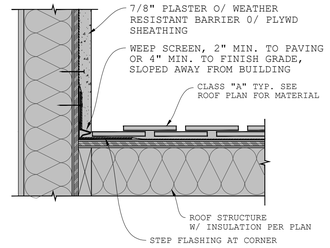
10 Window Flashing Detail-3
Scale: N.T.S.



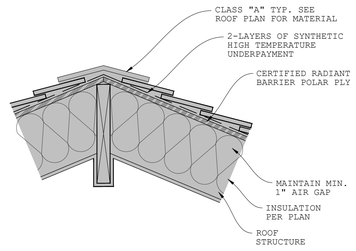
11 Window Flashing Detail-4
Scale: N.T.S.



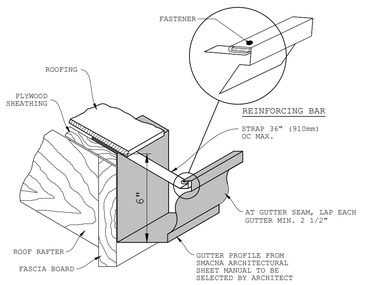
07 House Section View, Typical Detail
Scale: 1½" = 1'-0"



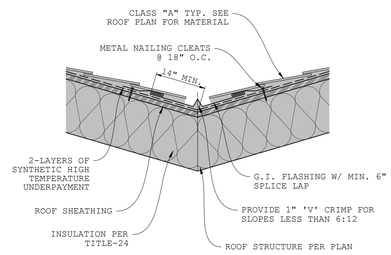
04 Roof to Wall Detail
Scale: 1½" = 1'-0"



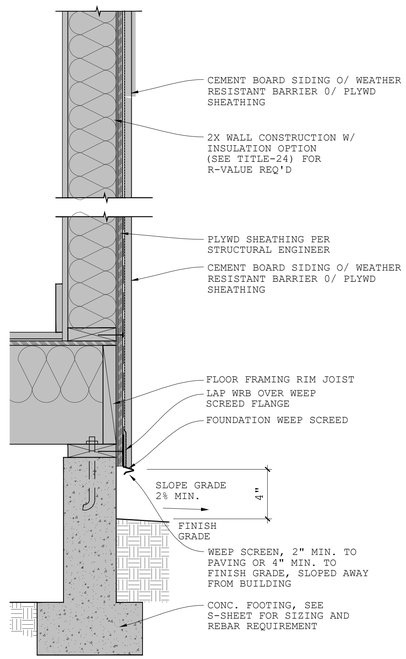
01 Roof Ridge Detail
Scale: 1½" = 1'-0"



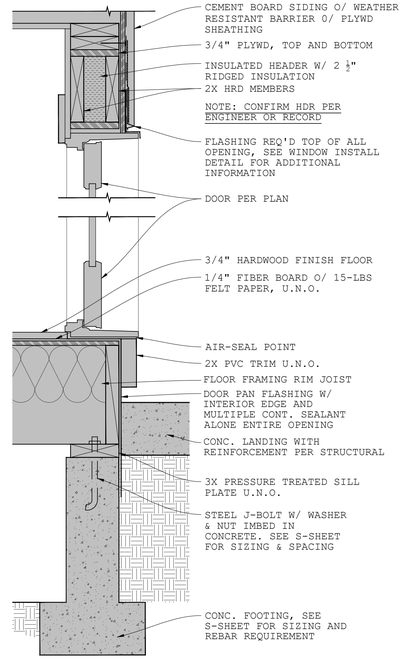
05 Gutter Fascia Detail
Scale: N.T.S.



02 Roof Valley Detail
Scale: 1½" = 1'-0"



06 Stone Veneer Stem Detail
Scale: 1½" = 1'-0"



03 Stem at Landing Detail
Scale: 1½" = 1'-0"

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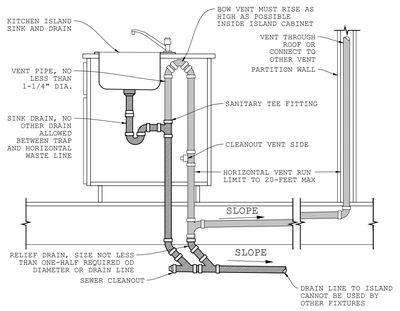
WALNUT, CA 91789

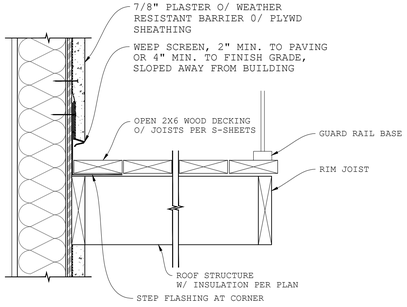
08.09.2025

DETAILS

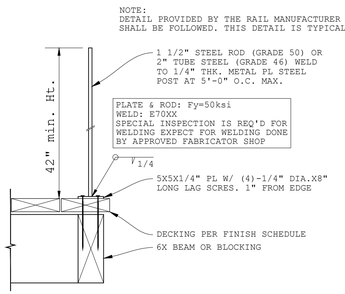
A4.1



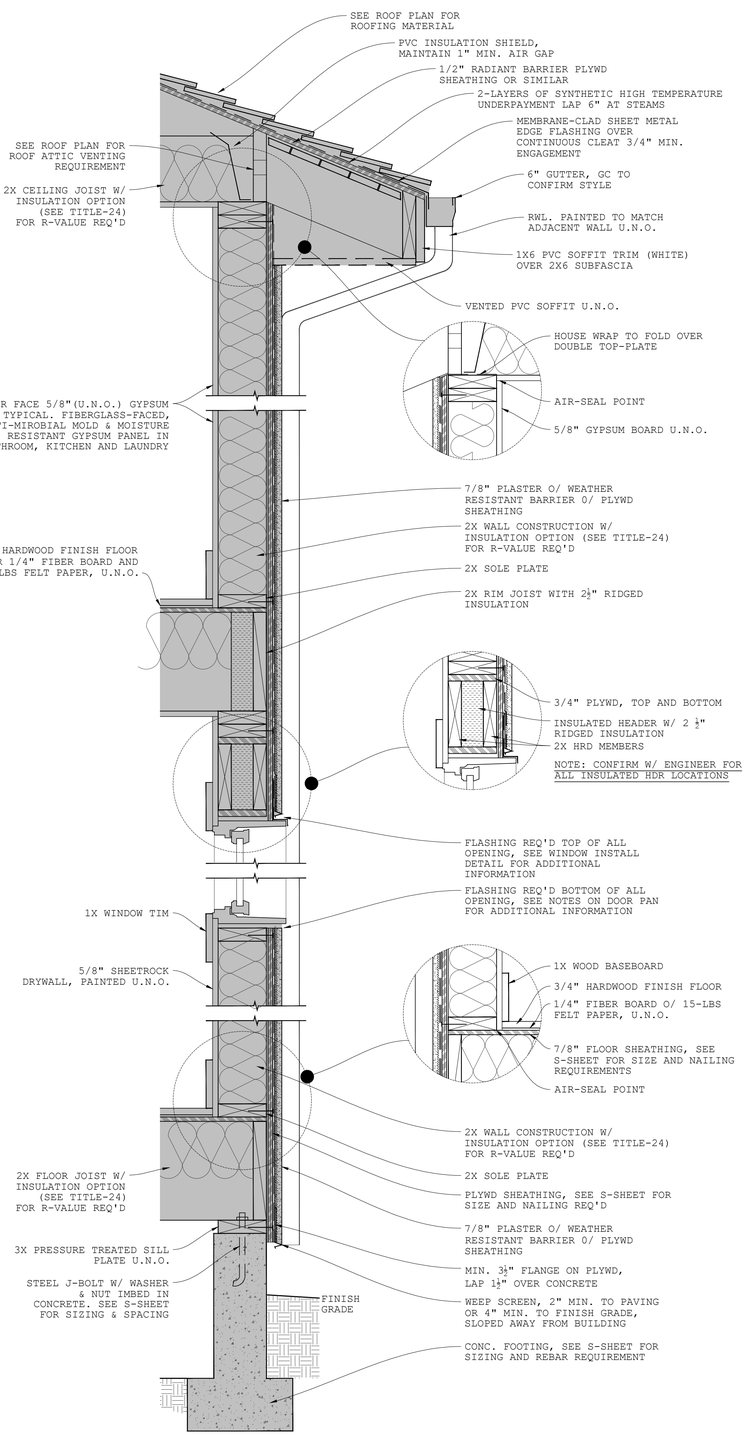
08 ISLAND VENT PIPING DETAIL
Scale: NOT TO SCALE



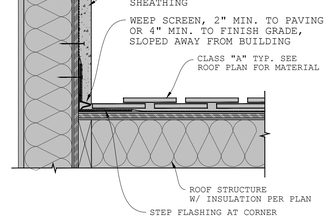
09 BALCONY DETAIL
Scale: NOT TO SCALE



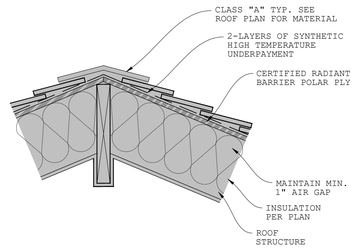
10 GUARD RAIL ATTACHMENT DETAIL
Scale: NOT TO SCALE



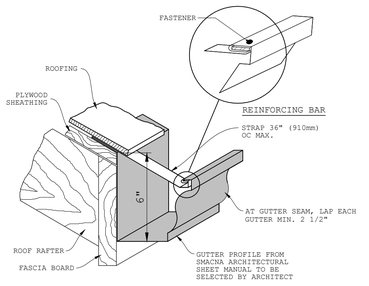
07 House Section View, Typical Detail
Scale: 1½" = 1'-0"



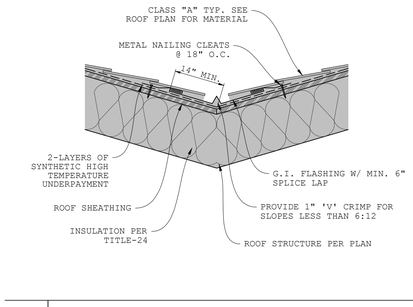
04 Roof to Wall Detail
Scale: 1½" = 1'-0"



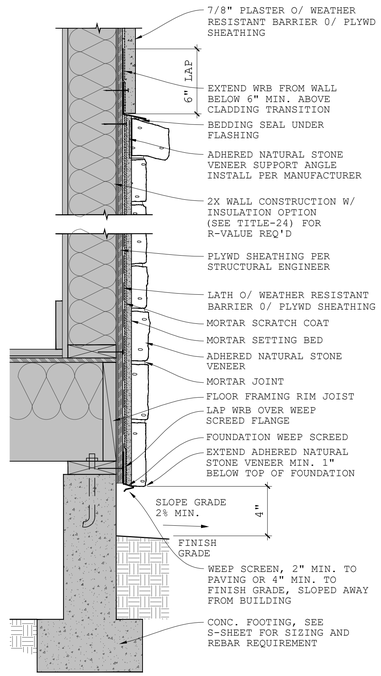
01 Roof Ridge Detail
Scale: 1½" = 1'-0"



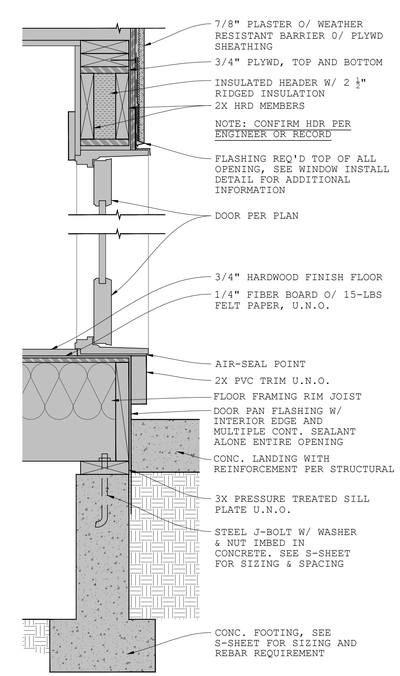
05 Gutter Fascia Detail
Scale: N.T.S.



02 Roof Valley Detail
Scale: 1½" = 1'-0"



06 Stone Veneer Stem Detail
Scale: 1½" = 1'-0"



03 Stem at Landing Detail
Scale: 1½" = 1'-0"

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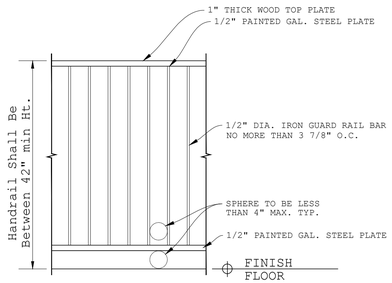
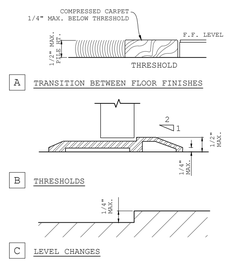
A4.2

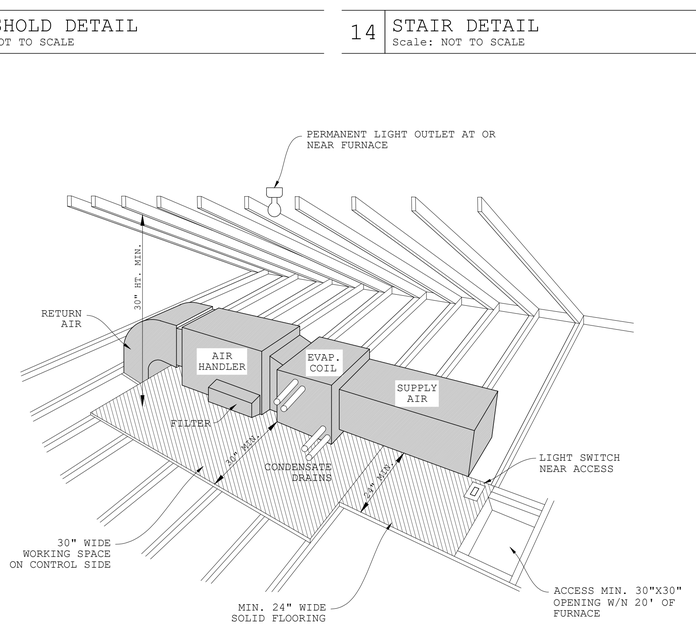


15 GUARD RAIL DETAIL
Scale: NOT TO SCALE



NOTES:
1. 1/2" MAXIMUM TOTAL HEIGHT WITH 1/4" MAXIMUM VERTICAL CHANGE AT EDGE.
2. 1:2 SLOPED BEVEL REQUIRED IF LEVEL CHANGE IS OVER 1/4" VERTICAL LEVEL CHANGE.
3. 1/4" MAXIMUM VERTICAL LEVEL CHANGE.

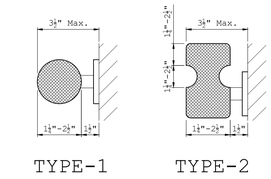
16 THRESHOLD DETAIL
Scale: NOT TO SCALE



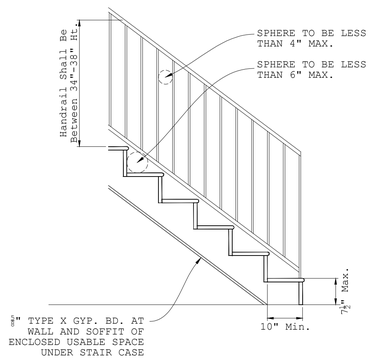
GENERAL REQUIREMENTS:
- LEAVE INSTALLATION INSTRUCTIONS ATTACHED TO THE UNIT.
- TRAP REQUIRED FOR CONDENSATE DRAINS OVER 5-FT LONG.
- TRAP AND VENT IF MORE THAN 15-FT OVERFLOW TO TERMINATE OVER DOOR OR WINDOW OPENING.

ELECTRIC REQUIREMENTS:
- FURNACE REQUIRED TO BE ON SEPARATE CIRCUIT AND HARD WIRED.
- EXISTING OR NEW "ROMEX" MUST BE PROTECTED 6-FT FROM SCUTTLE HOLE.
- VERIFY MAX. CIRCUIT AMPACITY FOR YOUR MODEL. 15 OR 20 AMP.

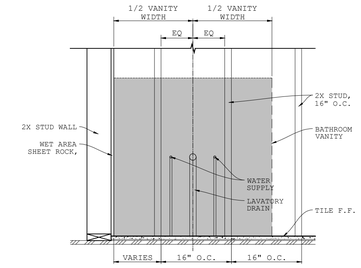
17 Air Handler Attic Access & Platform, Typical Detail
Scale: 1½" = 1'-0"



13 HAND RAIL DETAIL
Scale: NOT TO SCALE

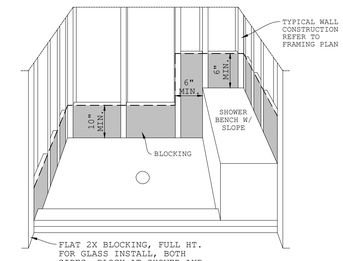


14 STAIR DETAIL
Scale: NOT TO SCALE



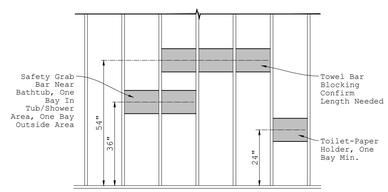
NOTE:
PROVIDE BLOCKING BETWEEN WALL STUD MIN. 10" FROM SHOWER PAN FLOOR. CONSTRUCTED OF SOLID MATERIAL W/ NO GAPS. FOR BENCHES BLOCK 6" MIN. WHERE BENCH MEETS THE WALL.

09 VANITY DRAIN (CENTER) DETAIL
Scale: NOT TO SCALE



NOTE:
PROVIDE BLOCKING BETWEEN WALL STUD MIN. 10" FROM SHOWER PAN FLOOR. CONSTRUCTED OF SOLID MATERIAL W/ NO GAPS. FOR BENCHES BLOCK 6" MIN. WHERE BENCH MEETS THE WALL.

10 SHOWER PAN BLOCKING DETAIL
Scale: NOT TO SCALE



NOTE:
Towel Bar: Center Block 54" O.F.F., Clear Wall Area Neat Tub/Shower, Confirm Towel Bar Length, Block Accordingly.

Toilet Paper Holder: Near Toilet, Center Block 24" O.F.F.. Min. One Bay Near Front of Toilet.

Safety Grab Bar: Center Block 36" O.F.F., Min One Bay Inside Tub/Shower and One Bay Outside.

11 ACCESSORY BLOCKING DETAIL
Scale: NOT TO SCALE

REINFORCEMENT FOR FUTURE GRAB BAR REQUIREMENTS:

- REINFORCEMENT SHALL BE A MIN. OF 2X8 SOLID LUMBER AND SHALL BE LOCATED BETWEEN 32" AND 39 1/4" A.F.F.
- REINFORCEMENT FOR TOILETS:

WATER CLOSET OPTION-1	WATER CLOSET OPTION-2	OPEN SPACE OPTION-3
BLOCK: BOTH SIDES	BLOCK: SIDE & BACK	BLOCK: FLOOR SURROUND

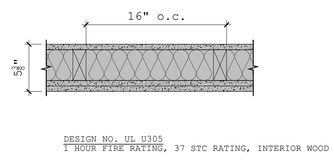
- REINFORCEMENT FOR TUB AND TUB/SHOWERS:

TUB OR TUB/SHOWER

- CONTINUOUS BLOCKING ON EACH END & THE BACK WALL.
- ADDITIONALLY BACK WALL SHALL HAVE BLOCKING ALONG THE BOTTOM EDGE NO MORE THAN 6" ABOVE TUB RIM.
- BLOCKING SHALL BE PROVIDED FOR PREFAB. WALL PANELS OR PREFAB. SYSTEM IS GRAB BAR READY.

NOTE:
INFORMATION AND/OR DRAWINGS IDENTIFYING THE LOCATION OF GRAB BAR REINFORCEMENT SHALL BE PLACED IN THE OPERATION AND MAINTENANCE MANUAL IN ACCORDANCE WITH THE CALIFORNIA GREEN BUILDING STANDARD CODE.

12 GRAB BAR BLOCKING DETAIL
Scale: NOT TO SCALE

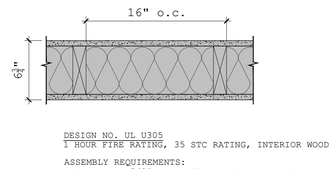


DESIGN NO. UL U305
1 HOUR FIRE RATING, 37 STC RATING, INTERIOR WOOD 2X4 STUD

ASSEMBLY REQUIREMENTS:
- ONE LAYER 5/8" SHEETROCK GYPSUM PANEL (UL TYPE SCX)
- 2X4 WOOD STUDS, 16" O.C.
- 3 1/2" FIBERGLASS INSULATION
- TWO LAYER 5/8" SHEETROCK GYPSUM PANEL (UL TYPE SCX)

NOTE:
REFER TO APPLICABLE CODES REQUIREMENTS TO ENSURE COMPLIANCE PRIOR TO CONSTRUCTION.
FOR THE MOST UP-TO-DATE DETAILS, INCLUDING CONSTRUCTION VARIATIONS, REFER TO THE PUBLISHED DESIGN.
FIRE-RATING ARE FROM BOTH SIDES UNLESS OTHERWISE NOTED.

05 2X4 1-HR FIRE WALL DETAIL
Scale: 1½" = 1'-0"

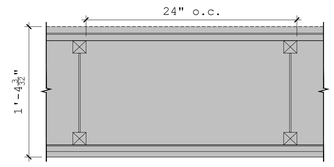


DESIGN NO. UL U305
1 HOUR FIRE RATING, 35 STC RATING, INTERIOR WOOD 2X6 STUD

ASSEMBLY REQUIREMENTS:
- ONE LAYER 5/8" SHEETROCK GYPSUM PANEL (UL TYPE SCX)
- 2X6 WOOD STUDS, 16" O.C.
- 6 1/4" FIBERGLASS INSULATION
- ONE LAYER 5/8" SHEETROCK GYPSUM PANEL (UL TYPE SCX)

NOTE:
REFER TO APPLICABLE CODES REQUIREMENTS TO ENSURE COMPLIANCE PRIOR TO CONSTRUCTION.
FOR THE MOST UP-TO-DATE DETAILS, INCLUDING CONSTRUCTION VARIATIONS, REFER TO THE PUBLISHED DESIGN.
FIRE-RATING ARE FROM BOTH SIDES UNLESS OTHERWISE NOTED.

06 2X6 1-HR FIRE WALL DETAIL
Scale: 1½" = 1'-0"

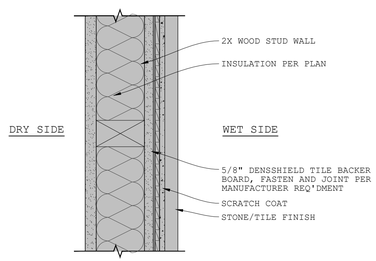


DESIGN NO. UL L570 S
1 HOUR FIRE RATING, 39 STC RATING, INTERIOR TJI

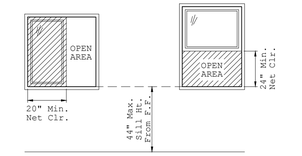
ASSEMBLY REQUIREMENTS:
- FINISH FLOOR PER OWNER
- 3/4" USG LEVELROCK BRAND 2500 SERIES UNERLAYMENT
- 1/8" USG LEVELROCK BRAND SAM-N12 SOUND ATTENUATION MAT
- 23/32" PLYWOOD PANEL
- 11-7/8" WOOD I-JOIST, SPACED 24" O/C
- 3 1/2" UNFACED GLASS FIBER INSULATION
- 25 GA. RESILIENT CHANNELS SPACED 16" O.C.
- TWO LAYER 5/8" USG SHEETROCK BRAND ECOSMART PANELS FIRECODE X (UL TYPE ULIX)

NOTE:
REFER TO APPLICABLE CODES REQUIREMENTS TO ENSURE COMPLIANCE PRIOR TO CONSTRUCTION.
FOR THE MOST UP-TO-DATE DETAILS, INCLUDING CONSTRUCTION VARIATIONS, REFER TO THE PUBLISHED DESIGN.
FIRE-RATING ARE FROM BOTH SIDES UNLESS OTHERWISE NOTED.

07 TJI 1-HR FIRE CEILING DETAIL
Scale: 1½" = 1'-0"



08 INTERIOR TILE WALL DETAIL
Scale: 1½" = 1'-0"

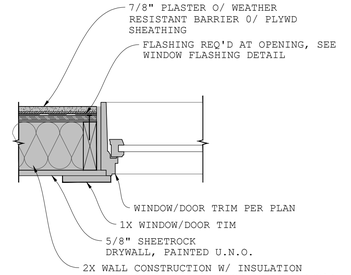


EGRESS WINDOW NOTES:

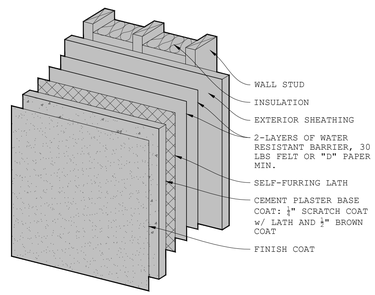
1) THE MIN. NET CLEAR OPENING AREA FOR EMERGENCY ESCAPE AND RESCUE WINDOWS IS 5.7 FEET PER CRC SECTION R310
2) EXCEPTION: THE MIN. AREA FOR GRADE FLOOR OPENINGS IS 5.0 S.F. TO QUALIFY AS GRADE FLOOR OPENING THE MAX. SILL HEIGHT CAN NOT BE MORE THAN 44" ABOVE OR BELOW THE FINISHED EXTERIOR GROUND LEVEL ADJACENT TO OPENING.
3) THE NET CLEAR OPENING DIMENSIONS SHALL BE THE RESULT OF NORMAL OPERATION OF THE OPENING.
4) THE CHART BELOW SHOWS SOME EXAMPLES OF MIN. OPENING AREA DIMENSIONS (IN INCHES).

WIDTH	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
HEIGHT	41	39.1	37.3	35.7	34.2	32.8	31.6	30.4	29.3	28.3	27.4	26.5	25.7	24.9	24

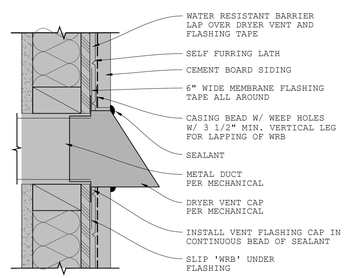
01 WINDOW EGRESS DETAIL
Scale: NOT TO SCALE



02 WINDOW/DOOR JAMB DETAIL
Scale: NOT TO SCALE



03 3-COAT STUCCO DETAIL
Scale: NOT TO SCALE



NOTE:
SURROUND OPENING WITH CASING BEAD/SEALANT

04 WALL PENETRATION DETAIL
Scale: NOT TO SCALE

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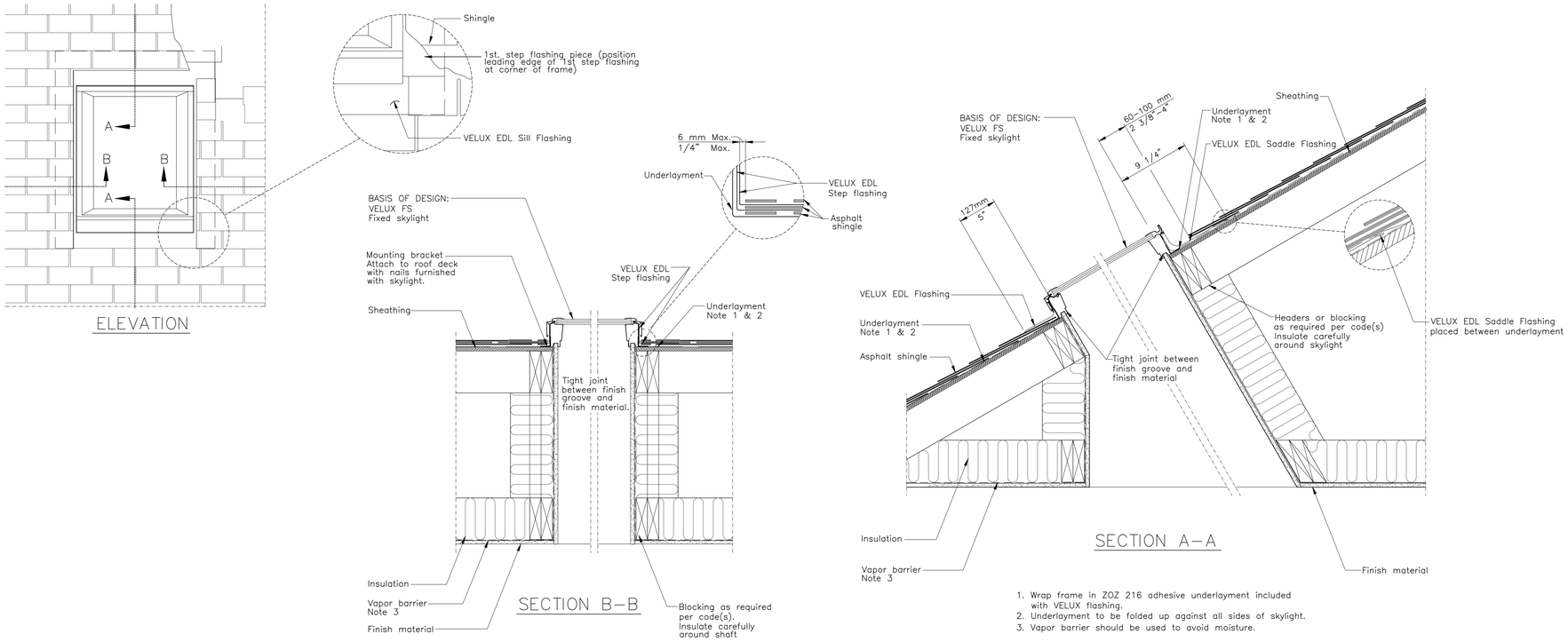
DETAILS

A4.3



1. Wrap frame in ZOZ 216 adhesive underlayment included with VELUX flashing.
2. Underlayment to be folded up against all sides of skylight.
3. Vapor barrier should be used to avoid moisture.

03 **Skylight Typical Detail**
Scale: Not to Scale

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08.09.2025

DETAILS

A4.4

GENERAL INFORMATION					
01	**Project Name**	Cranmer Drive Addition			
02	**Run Title**	Title 24 Analysis			
03	**Project Location**	1408 Cranmer Drive			
04	**City**	Walnut	05	**Standards Version**	2022
06	**Zip code**	91789	07	**Software Version**	EnergyPro 9.4
08	**Climate Zone**	9	09	**Front Orientation (deg/ Cardinal)**	0
10	**Building Type**	Single family	11	**Number of Dwelling Units**	1
12	**Project Scope**	Addition and/or Alteration	13	**Number of Bedrooms**	6
14	**Addition Cond. Floor Area (ft²)**	2386	15	**Number of Stories**	2
16	**Existing Cond. Floor Area (ft²)**	1259	17	**Fenestration Average U-factor**	0.3
18	**Total Cond. Floor Area (ft²)**	3645	19	**Glazing Percentage (%)**	14.06%
20	**ADU Bedroom Count**	n/a	21	**ADU Conditioned Floor Area**	n/a
22	**Fuel Type**	Natural gas	23	**No Dwelling Unit:**	No

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

ENERGY USE SUMMARY

Energy Use	Standard Design Source Energy (EDR1) (kBtu/ft² -yr)	Standard Design TDV Energy (EDR2) (kTDV/ft² -yr)	Proposed Design Source Energy (EDR1) (kBtu/ft² -yr)	Proposed Design TDV Energy (EDR2) (kTDV/ft² -yr)	Margin (EDR1)	Margin (EDR2)
Space Heating	0	8.24	0	7.9	0	0.34
Space Cooling	0	20.77	0	21.3	0	-0.53
IAQ Ventilation	0	3.44	0	3.44	0	0
Water Heating	0	13.13	0	11.83	0	1.3
Self Utilization/Flexibility Credit				0		0
Efficiency Compliance Total	**0**	**45.58**	**0**	**44.47**	**0**	**1.11**
Photovoltaics		0		0		
Battery				0		
Flexibility						
Indoor Lighting	0	6.33	0	6.33		
Appl. & Cooking	0	18.26	0	18.29		
Plug Loads	0	23.08	0	23.08		
Outdoor Lighting	0	1.59	0	1.59		
TOTAL COMPLIANCE	**0**	**94.84**	**0**	**93.76**		

ENERGY USE INTENSITY

	Standard Design (kBtu/ft² - yr)	Proposed Design (kBtu/ft² - yr)	Margin (kBtu/ft² - yr)	Margin Percentage
Gross EUI[1]	12.46	12.08	0.38	3.05
Net EUI[2]	12.46	12.08	0.38	3.05

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

REQUIRED SPECIAL FEATURES

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

- Insulation below roof deck

HERS FEATURE SUMMARY

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

- Indoor air quality ventilation
- Kitchen range hood
- Minimum Airflow
- Verified EER/EER2
- Verified SEER/SEER2
- Verified Refrigerant Charge
- Fan Efficacy Watts/CFM
- Verified HSPF
- Verified heat pump rated heating capacity
- Duct leakage testing

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (ft²)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Cranmer Drive Addition	3645	1	6	2	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	**Zone Type**	**HVAC System Name**	**Zone Floor Area (ft²)**	**Avg. Ceiling Height**	**Water Heating System 1**	**Status**
Existing Living Area	Conditioned	HVAC System1	1259	10	DHW Sys 1	Existing Unchanged
New Living Area	Conditioned	HVAC System1	2386	10	DHW Sys 1	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft²)**	**Window and Door Area (ft2)**	**Tilt (deg)**	**Wall Exceptions**	**Status**	**Verified Existing Condition**
Left Wall	Existing Living Area	R-15 Wall	90	Left	120	0	90	none	Altered	No
Right Wall	Existing Living Area	R-15 Wall	270	Right	270	50	90	none	Altered	No
Front Wall	New Living Area	R-15 Wall	0	Front	330	88	90	Extension	New	n/a
Left Wall 2	New Living Area	R-15 Wall	90	Left	440	40	90	Extension	New	n/a
Rear Wall	New Living Area	R-15 Wall	180	Back	540	166	90	Extension	New	n/a
Right Wall 2	New Living Area	R-15 Wall	270	Right	380	32.5	90	Extension	New	n/a
Front Wall 2	New Living Area	R-15 Wall	0	Front	380	60	90	Extension	New	n/a
Left Wall 3	New Living Area	R-15 Wall	90	Left	470	24	90	Extension	New	n/a
Rear Wall 2	New Living Area	R-15 Wall	180	Back	380	0	90	Extension	New	n/a
Right Wall 3	New Living Area	R-15 Wall	270	Right	470	100	90	Extension	New	n/a
Interior Surface	Existing Living Area>>__Garage__	R-0 Wall1	n/a	n/a	240	20	n/a		Existing	No
Interior Surface 2	New Living Area>>__Garage__	R-15 Wall1	n/a	n/a	120	0	n/a		New	n/a
Interior Surface 3	New Living Area>>Existing Living Area	R-0 Wall1	n/a	n/a	1040	0	n/a		New	n/a

OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft²)**	**Window and Door Area (ft2)**	**Tilt (deg)**	**Wall Exceptions**	**Status**	**Verified Existing Condition**
Roof 3	Existing Living Area	R-38 HP Attic	n/a	n/a	714	n/a	n/a		Altered	No
Roof 4	New Living Area	R-38 HP Attic	n/a	n/a	652	n/a	n/a		New	n/a
Roof 5	New Living Area	R-38 HP Attic	n/a	n/a	1162	n/a	n/a		New	n/a
Raised Floor	New Living Area	R-19 Floor No Crawlspace	n/a	n/a	28	n/a	n/a		New	n/a
Interior Surface 4	New Living Area	R-19 Floor No Crawlspace1	n/a	n/a	65	n/a	n/a		New	n/a
Interior Surface 5	New Living Area	R-0 Floor No Crawlspace	n/a	n/a	545	n/a	n/a		New	n/a
Interior Surface 6	New Living Area	R-0 Floor No Crawlspace	n/a	n/a	548	n/a	n/a		New	n/a
Front Wall 3	__Garage__	R-0 Wall	0	Front	240	0	90	none	Existing	No
Left Wall 4	__Garage__	R-0 Wall	90	Left	220	0	90	none	Existing	No
Rear Wall 3	__Garage__	R-0 Wall	180	Back	240	0	90	none	Existing	No
Right Wall 4	__Garage__	R-0 Wall	270	Right	220	0	90	none	Existing	No

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Area (ft²)**	**Skylight Area (ft²)**	**Roof Rise (x in 12)**	**Roof Reflectance**	**Roof Emittance**	**Cool Roof**	**Status**	**Verified Existing Condition**	**Existing Construction**
Roof	New Living Area	R-38 HP Attic1	0	Front	24.1	24	5	0.1	0.85	No	New	n/a	
Roof 2	__Garage__	R-0 Roof No Attic	0	Front	398	0	5	0.1	0.85	No	Existing	No	

ATTIC

01	02	03	04	05	06	07	08	09	10
Name	**Construction**	**Type**	**Roof Rise (x in 12)**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**	**Status**	**Verified Existing Condition**
Attic Existing Living Area	Attic RoofExisting Living Area	Ventilated	5	0.1	0.85	No	No	Existing	No
Attic New Living Area	Attic RoofNew Living Area	Ventilated	5	0.1	0.85	No	No	New	n/a

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft²)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**	**Status**	**Verified Existing Condition**
Window	Window	Right Wall	Right	270			1	25	0.3	NFRC	0.23	NFRC	Bug Screen	Altered	No
Window 2	Window	Right Wall	Right	270			1	25	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 3	Window	Front Wall	Front	0			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4	Window	Front Wall	Front	0			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
French Door	Window	Left Wall 2	Left	90			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Folding French Door	Window	Rear Wall	Back	180			1	112	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 5	Window	Rear Wall	Back	180			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 6	Window	Right Wall 2	Right	270			1	12.5	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 7	Window	Right Wall 2	Right	270			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 8	Window	Right Wall 2	Right	270			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 9	Window	Front Wall 2	Front	0			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	**Type**	**Surface**	**Orientation**	**Azimuth**	**Width (ft)**	**Height (ft)**	**Mult.**	**Area (ft²)**	**U-factor**	**U-factor Source**	**SHGC**	**SHGC Source**	**Exterior Shading**	**Status**	**Verified Existing Condition**
Window 10	Window	Front Wall 2	Front	0			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 11	Window	Left Wall 3	Left	90			1	24	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 12	Window	Right Wall 3	Right	270			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 13	Window	Right Wall 3	Right	270			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 14	Window	Right Wall 3	Right	270			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 15	Window	Right Wall 3	Right	270			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Skylight	Skylight	Roof	Front	0			1	8	0.3	NFRC	0.23	NFRC		New	NA
Skylight 2	Skylight	Roof	Front	0			1	8	0.3	NFRC	0.23	NFRC		New	NA
Skylight 3	Skylight	Roof	Front	0			1	8	0.3	NFRC	0.23	NFRC		New	NA

OPAQUE DOORS

01	02	03	04	05	06
Name	**Side of Building**	**Area (ft²)**	**U-factor**	**Status**	**Verified Existing Condition**
Door 2	Front Wall	48	0.2	New	n/a
Door 3	Rear Wall	24	0.2	New	n/a
Door	Interior Surface	20	0.2	Altered	No

SLAB FLOORS

01	02	03	04	05	06	07	08	09	10
Name	**Zone**	**Area (ft²)**	**Perimeter (ft)**	**Edge Insul. R-value and Depth**	**Edge Insul. R-value and Depth**	**Carpeted Fraction**	**Heated**	**Status**	**Verified Existing Condition**
Slab	Existing Living Area	1259	39	none	0	80%	No	Existing	No
Slab 2	New Living Area	1200	169	none	0	80%	No	New	n/a
Slab 3	__Garage__	463	92	none	0	0%	No	Existing	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Interior / Exterior Continuous R-value**	**U-factor**	**Assembly Layers**
R-0 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.361	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: 3 Coat Stucco
R-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: 3 Coat Stucco
R-0 Roof No Attic	Cathedral Ceilings	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-0	None / None	0.484	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4 Inside Finish: Gypsum Board
R-38 HP Attic1	Cathedral Ceilings	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	19 / None	0.019	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-38 / 2x4 Sheathing / Insulation: R-19 Sheathing Inside Finish: Gypsum Board

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Interior / Exterior Continuous R-value**	**U-factor**	**Assembly Layers**
R-0 Wall1	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.277	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Other Side Finish: Gypsum Board
R-15 Wall1	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.086	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Other Side Finish: Gypsum Board
Attic RoofExisting Living Area	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / 0	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.
Attic RoofNew Living Area	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / 0	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.
R-38 HP Attic	Ceilings (below attic)	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
R-19 Floor No Crawlspace	Exterior Floors	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.047	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10
R-19 Floor No Crawlspace1	Interior Floors	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.045	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10 Ceiling Below Finish: Gypsum Board

OPAQUE SURFACE CONSTRUCTIONS

01 Construction Name	02 Surface Type	03 Construction Type	04 Framing	05 Total Cavity R-value	06 Interior / Exterior Continuous R-value	07 U-factor	08 Assembly Layers
R-0 Floor No Crawlspace	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O. C.	R-0	None / None	0.196	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x12 Ceiling Below Finish: Gypsum Board

BUILDING ENVELOPE - HERS VERIFICATION

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

WATER HEATING SYSTEMS

01 Name	02 System Type	03 Distribution Type	04 Water Heater Name	05 Number of Units	06 Solar Heating System	07 Compact Distribution	08 HERS Verification	09 Water Heater Name (#)	10 Status	11 Verified Existing Condition	12 Existing Water Heating System
DHW Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1	1	n/a	None	n/a	DHW Heater 1 (1)	New	NA	

WATER HEATERS

01 Name	02 Heating Element Type	03 Tank Type	04 # of Units	05 Tank Vol. (gal)	06 Heating Efficiency Type	07 Efficiency	08 Rated Input Type	09 Input Rating or Pilot	10 Tank Insulation R-value (in/Ext)	11 Standby Loss or Recovery Eff	12 1st Hr. Rating or Flow Rate	13 Tank Location	14 Status	15 Verified Existing Condition
DHW Heater 1	Gas	Consumer Instantaneous	1	0	UEF	0.93	Btu/Hr	200000	0	n/a	n/a		New	n/a

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WATER HEATING - HERS VERIFICATION

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

SPACE CONDITIONING SYSTEMS

01 Name	02 System Type	03 Heating Unit Name	04 Heating Equipment Count	05 Cooling Unit Name	06 Cooling Equipment Count	07 Fan Name	08 Distribution Name	09 Status	10 Verified Existing Condition	11 Existing HVAC System
HVAC System1	Heat pump heating cooling	Heat Pump System 1	2	Heat Pump System 1	2	HVAC Fan 1	Air Distribution System 1	New	No	

HVAC - HEAT PUMPS

01 Name	02 System Type	03 Number of Units	04 Heating	05	06	07	08 Cooling	09	10	11	12	13
			Heating Efficiency Type	HSPF/HSPF2/COP	Cap 47	Cap 17	Cooling Efficiency Type	SEER/SEER2	EER/EER2/COP	Zonally Controlled	Compressor Type	HERS Verification
Heat Pump System 1	Central split HP	2	HSPF	9.5	60000	50000	EERSEER	16	12.5	Not Zonal	Single Speed	Heat Pump System 1-hers-htpump

HVAC HEAT PUMPS - HERS VERIFICATION

01 Name	02 Verified Airflow	03 Airflow Target	04 Verified EER/EER2	05 Verified SEER/SEER2	06 Verified Refrigerant Charge	07 Verified HSPF/HSPF2	08 Verified Heating Cap 47	09 Verified Heating Cap 17
Heat Pump System 1-hers-htpump	Required	350	Required	Required	Yes	Yes	Yes	Yes

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HVAC - DISTRIBUTION SYSTEMS

01 Name	02 Type	03 Design Type	04 Duct Ins. R-value Supply	05 Duct Ins. R-value Return	06 Duct Location Supply	07 Duct Location Return	08 Surface Area Supply	09 Surface Area Return	10 Bypass Duct	11 Duct Leakage	12 HERS Verification	13 Status	14 Verified Existing Condition	15 Existing Distribution system	16 New Ducts >= 25 ft
Air Distribution System 1	Unconditioned attic	Non-Verified	R-8	R-8	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Air Distribution System 1-hers-dist	New	n/a		n/a

HVAC DISTRIBUTION - HERS VERIFICATION

01 Name	02 Duct Leakage Verification	03 Duct Leakage Target (%)	04 Verified Duct Location	05 Verified Duct Design	06 Buried Ducts	07 Deeply Buried Ducts	08 Low-leakage Air Handler	09 Low Leakage Ducts Entirely in Conditioned Space
Air Distribution System 1-hers-dist	Yes	5.0	Not Required	Not Required	Not Required	Credit not taken	Not Required	No

HVAC - FAN SYSTEMS

01 Name	02 Type	03 Fan Power (Watts/CFM)	04 Name
HVAC Fan 1	HVAC Fan	0.45	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

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

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INDOOR AIR QUALITY (IAQ) FANS

01 Dwelling Unit	02 Airflow (CFM)	03 Fan Efficacy (W/CFM)	04 IAQ Fan Type	05 Includes Heat/Energy Recovery?	06 IAQ Recovery Effectiveness - SRE/ASRE	07 Includes Fault Indicator Display?	08 HERS Verification	09 Status
SFam IAQVentRpt	154	0.35	Exhaust	No	n/a / n/a	No	Yes	

HERS RATER VERIFICATION OF EXISTING CONDITIONS

OVERHANGS AND FINS - VERIFIED AND ALTERED

This section does not apply to this project.

INDOOR AIR QUALITY (IAQ) FANS - VERIFIED AND ALTERED

01 Name	02 Airflow (CFM)	03 Fan Efficacy (W/CFM)	04 IAQ Fan Type	05 Includes Heat/Energy Recovery?	06 IAQ Recovery Effectiveness - SREIAQ Recovery Effectiveness - SRE	07 IAQ Recovery Effectiveness - ASREIAQ Recovery Effectiveness - ASRE

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Timothy Carstairs	Documentation Author Signature: *Timothy Carstairs*
Company: Carstairs Energy Inc.	Signature Date: 07/15/2025
Address: 2238 Bayview Heights Dr STE E	CEA/ HERS Certification Identification (if applicable): CEA 2022
City/State/Zip: Los Osos, CA 93402	Phone: 8059049048

CABEC California Association of Building Energy Consultants CERTIFIED ENERGY ANALYST

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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

Responsible Designer Name: Kirk Tang	Responsible Designer Signature: *Kirk Tang*
Company: Lexicon Developments	Date Signed: 07/15/2025
Address: 20289 Stevens Creek Blvd #1079	License:
City/State/Zip: Cupertino, CA 95014	Phone: 4084559920

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

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RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type	Date
Cranmer Drive Addition	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	*6/26/2025*
Project Address	**California Energy Climate Zone**	**Total Cond. Floor Area**	**Addition**	**# of Units**
1408 Cranmer Drive Walnut	*CA Climate Zone 09*	*3,645*	*2,386*	*1*

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features	Status
Wall	Wood Framed	R-15	374		New
Wall	Wood Framed	R-15	348		New
Roof	Wood Framed Attic	R-38	1,814	Addl=R-19.0	New
Slab	Unheated Slab-on-Grade	- no insulation	1,200	Perim = 169'	New
Demising	Wood Framed	R-15	720		New
Demising	Wood Framed	- no insulation	1,040		New
Floor	Wood Framed w/o Crawl Space	R-19	93		New
Wall	Wood Framed	R-15	320		New

FENESTRATION Total Area: 513 Glazing Percentage: 14.1% New/Altered Average U-Factor: 0.30

Orientation	Area(ft^2)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status
Right (W)	25.0	0.300	0.23	none	none	N/A	Altered
Right (W)	25.0	1.190	0.83	none	none	N/A	Existing
Front (N)	124.0	0.300	0.23	none	none	N/A	New
Left (E)	64.0	0.300	0.23	none	none	N/A	New
Rear (S)	142.0	0.300	0.23	none	none	N/A	New
Right (W)	132.5	0.300	0.23	none	none	N/A	New

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
2	Electric Heat Pump	9.50 HSPF	Split Heat Pump	16.0 SEER	Setback	New

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
HVAC System	Ducted	Ducted	Attic	8.0	New

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status
1	Small Instantaneous Gas	0	0.93	Standard	New

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type	Date
Cranmer Drive Addition	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	*6/26/2025*
Project Address	**California Energy Climate Zone**	**Total Cond. Floor Area**	**Addition**	**# of Units**
1408 Cranmer Drive Walnut	*CA Climate Zone 09*	*3,645*	*2,386*	*1*

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features	Status
Wall	Wood Framed	R-15	374		New
Wall	Wood Framed	R-15	348		New
Roof	Wood Framed Attic	R-38	1,814	Addl=R-19.0	New
Slab	Unheated Slab-on-Grade	- no insulation	1,200	Perim = 169'	New
Demising	Wood Framed	R-15	720		New
Demising	Wood Framed	- no insulation	1,040		New
Floor	Wood Framed w/o Crawl Space	R-19	93		New
Wall	Wood Framed	R-15	320		New

FENESTRATION Total Area: 513 Glazing Percentage: 14.1% New/Altered Average U-Factor: 0.30

Orientation	Area(ft^2)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type	Date
Cranmer Drive Addition	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	*6/26/2025*
Project Address	**California Energy Climate Zone**	**Total Cond. Floor Area**	**Addition**	**# of Units**
1408 Cranmer Drive Walnut	*CA Climate Zone 09*	*3,645*	*2,386*	*1*

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features	Status
Wall	Wood Framed	R-15	446		New
Wall	Wood Framed	R-15	380		New
Wall	Wood Framed	R-15	370		New
Demising	Wood Framed w/o Crawl Space	- no insulation	1,093		New

FENESTRATION Total Area: 513 Glazing Percentage: 14.1% New/Altered Average U-Factor: 0.30

Orientation	Area(ft^2)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.
(JA4SD2)

Building Envelope:

§ 110.6(a)1:	**Air Leakage.** Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283, or AAMA/WDMA/CSA 101/I.S.2/A440-2011. *
§ 110.6(a)5:	**Labeling.** Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	**Field fabricated exterior doors and fenestration** products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.
§ 110.7:	**Air Leakage.** All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	**Insulation Certification by Manufacturers.** Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	**Insulation Requirements for Heated Slab Floors.** Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	**Roofing Products Solar Reflectance and Thermal Emittance.** The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	**Radiant Barrier.** When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	**Roof Deck, Ceiling and Rafter Roof Insulation.** Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184, Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a roof or ceiling which is sealed to limit infiltration and exfiltration, as specified in § 110.7 including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling. *
§ 150.0(b):	**Loose-fill Insulation.** Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	**Wall Insulation.** Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.
§ 150.0(d):	**Raised-floor Insulation.** Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor. *
§ 150.0(g)1:	**Slab Edge Insulation.** Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)2:	**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)3:	**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(o):	**Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.45; or area-weighted average U-factor of all fenestration must not exceed 0.45.

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 110.5(a):	**Pilot Light.** Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	**Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	**Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tightfitting damper or combustion-air control device.
§ 150.0(e)3:	**Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control. *

Space Conditioning, Water Heating, and Plumbing System:

§ 110.0-§ 110.3:	**Certification.** Heating, ventilation, and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.
§ 110.2(a):	**HVAC Efficiency.** Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-N. *
§ 110.2(b):	**Controls for Heat Pumps with Supplementary Electric Resistance Heaters.** Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone, and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.
§ 110.2(c):	**Thermostats.** All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat. *
§ 110.3(c)3:	**Insulation.** Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 110.3(c)5:	**Isolation Valves.** Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.

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§ 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(b)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 0 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 1" available 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 testing agency that is approved by the executive director.

Ducts and Fans:

§ 110.8(d)3:	**Ducts.** Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	**CMC Compliance.** All air-distribution system ducts and plenums must meet CMC §§ 601.0-A/SCAQMD/CA-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-4.0 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 ductsealure system that meets the applicable UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼". If mastic or tape is used. Building cavities, air handler support platforms, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts; ducts installed in these spaces must not be compressed. *
§ 150.0(m)2:	**Factory-Fabricated Duct Systems.** Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	**Field-Fabricated Duct Systems.** Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	**Backdraft Damper.** Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)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+after pressure drop and labeling must meet the requirements in § 150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

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§ 150.0(o)13:	**Space Conditioning System Airflow Rate and Fan Efficacy.** Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. FMEr verification testing is required in accordance with Reference Residential Appendix RA3.3. *

Ventilation and Indoor Air Quality:

§ 150.0(o)1:	**Requirements for Ventilation and Indoor Air Quality.** All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1. *
§ 150.0(o)1B:	**Central Fan Integrated (CFI) Ventilation Systems.** Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed andcontrolled per §150.0(o)1BiiiAc. 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)1CiA6.
§ 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)1GiiLenclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1GiiiAc. Airflow must be measured by the installer per §150.0(o)1Gx, and rated for sound per §150.0(o)1GxA. *
§ 150.0(o)1H1Aii:	**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 terminalairflow per Reference Residential Appendix RA3.7, Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G

Pool and Spa Systems and Equipment:

§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDbS; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating. *
§ 110.4(b)1:	**Piping.** Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or builtin 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 offpeak electric demand periods.
§ 110.5:	**Pilot Light.** Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	**Pool Systems and Equipment Installation.** Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves. *

Lighting:

§ 110.9:	**Lighting Controls and Components.** All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9. *
§ 150.0(k)1A:	**Luminaire Efficacy.** All installed luminaires must meet the requirements in Table 150.0-A, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of atleast 40 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)1I:	**Light Sources in Drawers, Cabinets, and Linen Closets.** Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed.
§ 150.0(k)2A:	**Interior Switches and Controls.** All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	**Interior Switches and Controls.** Exhaust fans must be controlled separately from lighting systems. *
§ 150.0(k)2A:	**Accessible Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
§ 150.0(k)2B:	**Multiple Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	**Mandatory Requirements.** Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	**Energy Management Control Systems.** An energy management control system 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, kitchens, and bedrooms) must have manually 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(l)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 dock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(l)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(l)5:	**Residential Garages for Eight or More Vehicles.** Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.

Solar Readiness:

§ 110.10(a)1:	**Single-Family Residences.** Single-family residences located in subdivisions with 10 or more single-family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b)through.
§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 dimensions 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 150 square feet each for buildings with roof areas greater than 10,000 square feet. For single-family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. *
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° of true north.
§ 110.10(b)3A:	**Shading.** The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment.
§ 110.10(b)3B:	**Shading.** Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the horizontal distance of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.
§ 110.10(b)4:	**Structural Design Loads on Construction Documents.** For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.
§ 110.10(c):	**Interconnection Pathways.** The construction documents must indicate: a.location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single-family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system.
§ 110.10(d):	**Documentation.** A copy of the construction documents or a comparable document indicating the information from § 110.10(b)through (c) must be provided to the occupant.
§ 110.10(e)1:	**Main Electrical Service Panel.** The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2:	**Main Electrical Service Panel.** The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric."

Electric and Energy Storage Ready:

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

*Exceptions may apply.

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ROOM LOAD SUMMARY

Project Name	Date
Cranmer Drive Addition	*6/26/2025*
System Name	Floor Area
HVAC System	*3,645*

ROOM LOAD SUMMARY

			ROOM COOLING PEAK			COIL COOLING PEAK			COIL HTG. PEAK	
Zone Name	Room Name	Mult.	CFM	Sensible	Latent	CFM	Sensible	Latent	CFM	Sensible
Existing Living Area	*Existing 1st Floor*	*1*	*431*	*8,871*	*487*	*431*	*8,871*	*487*	*200*	*7,710*
New Living Area	*1st Floor Addition*	*1*	*561*	*11,542*	*464*	*561*	*11,542*	*464*	*458*	*17,653*
	2nd Floor Addition	*1*	*625*	*12,860*	*459*	*625*	*12,860*	*459*	*330*	*12,703*
PAGE TOTAL			*1,617*	*33,274*	*1,410*	*987*	*33,274*	*1,410*	*987*	*38,066*
TOTAL *			*1,617*	*33,274*	*1,410*	*987*	*33,274*	*1,410*	*987*	*38,066*

* Total includes ventilation load for zonal systems.