

**Governing Codes:**

- Technical Building Codes
- 2019 California Building Code (Volumes 1 and 2)
- 2019 California Residential Code
- 2019 California Green Building Standards Code (CALGreen)
- 2019 California Electrical Code
- 2019 California Mechanical Code
- 2019 California Plumbing Code
- 2019 California Fire Code
- 2019 California Administrative Code
- 2019 California Energy Code
- Reach Code San Mateo County
- Local Ordinance No 4824

**Index to Sheets**

- A1.0 Site Plan, Title, Project Data, Index Survey
- SMC BMP Sheet
- 1.0 Erosion Control Plan
- A2.1 Floor Plan
- A2.2 Existing Floor and Roof Plan
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- A3.2 Existing elevations
- A4.1 Sections
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- M2 Heating Plan
- S-1 Structural title and notes
- S-2 Foundation and Framing Plan
- S-3 Structural Details
- Title 23 CFI-R
- Title 24 Mandatory Measures
- Cal-Green Sheet 1
- Cal-Green Sheet 2

**Project Description**

Project consists of a attached ADU and addition to the lower floor of an existing two story single family residence. Work will replace and expand existing lower for a bedroom and hte ADU and provide seismic upgrade.

Construction Type: V-B, pier and grade beam  
Automatic Fire Sprinklers Required  
Zoning: R1  
Occupancy R-3

Grading: Minor grading  
80 cu yds cut for foundation  
0 cu yds fill  
Automatic fire sprinklers not required  
**Drainage**

Existing structure with No Roof Area is replaced or new Existing impermeable deck and bay window are less than 150 sf so no drainage review is warranted

Required Energy Features per REACH and T-24 code

**Fire Protection Notes**

1. Interconnected hard-wired smoke detectors required with battery back-up which shall be installed per manufacturers instructions and NFPA 72, California Building Code and North county Fire District Ordinances in all reconitioned or new sleeping rooms and at a point centrally located in the co corridor or area giving access to each separate sleeping area.
2. Escape or rescue windows shall have a minimum clear openable area of 5.7 square feet or 5.0 square feet allowed at grade level windows. The minimum net clear opening height shall be 24" minimum and the net width no less than 20". Finished sill height shall be no more than 44" above the finished floor.
3. As per North County FD ordinance , building identification shall be conspicuously posted and visible from the street. The numbers for permanent address signs shall be 4 inches in height and minimum 3/4" stroke. Such letters or numbers shall be internally illuminated and facing the direction of access.
- 4 The roof covering of every new building or structure, and materials applied as part of a roof covering assembly, shall have a minimum fire rating of Class "B" or higher as defined in the current edition of the California Building Code.
5. Hydrant shown near corner of property. Letter containing flow confirmation of 1000 gpm at 20 PSI will be submitted to the district prior to permit issuance.

- 6 The property shall be in a compliance with the vegetation management requirements prescribed in California Fire Code section 4906, including California Public Resources Code 4291 or California Government Code Section 51182 per CRCR337.1.5. Remove and clear away all flammable vegetation or combustible growth for 30' from each side of building. Remove any tree limbs within 10 feet of chimney outlet. Eliminate any dead wood from trees overhanging building. Maintain the roof to be free of leaves, needles or dead vegetation. Create a fuel break of defensible space is required around the perimeter of all structures (to a distance of not less than 30 feet and may be required to a distance of 100 feet or to the property line). This is neither a requirement nor an authorization for the removal of living trees.
- Trees located within the defensible space shall be pruned to remove dead and dying portions, and limbed up 6 feet above the ground. New trees planted in the defensible space shall be located no closer than 10' to adjacent trees when fully grown or at maturity. Remove that portion of any existing trees, which extends within 10 feet of the outlet of a chimney or stovepipe or is within 5' of any structure. Maintain any tree adjacent to or overhanging a building free of dead or dying wood per the 2019 California Fire Code 304.1.2
7. The applicant must have an asphalt surface road for ingress and egress of fire apparatus. The City of Pacifica Department of Public Works, San Mateo County Department of Public Works, the North county Fire District, and the California Fire Code shall set road standards. As per the 2019 CFC, dead-end roads exceeding 150 feet shall be provided with a turnaround in accordance with Coastside Fire District specifications. As per the 2016 CFC, Section Appendix D, road width shall not be less than 20 feet. Fire access roads shall be installed and made serviceable prior to combustibles being placed on the project site and maintained during construction. Approved signs and painted curbs or lines shall be provided and maintained to identify fire access roads and state the prohibition of their obstruction. If the road width does not allow parking on the street (20 foot road) and on-street parking is desired, an additional improved area shall be developed for that use.
8. As per 2019 CFC, Appendix B and C, a fire district approved fire hydrant (Clow 960) must be located within 500 feet of the proposed single-family dwelling unit measured by way of drivable access. As per 2019 CFC, Appendix B the hydrant must produce a minimum fire flow of 500 gallons per minute at 20 pounds per square inch residual pressure for 2 hours. Contact the local water purveyor for water flow details. residence

Project Address:  
730 El Granada Blvd.  
Half Moon Bay CA 94019  
APN 047-163-330

Owner:  
Dallas Sorings  
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phone: 916.882.6949

Designer: Tim Pond  
Tim Pond Design & Construction Inc.  
timepond@gmail.com  
Phone 650.576.7177

Drawn By TP Scale 1/8" = 1'

Planning Submittal 7.20.22

Plot and Title A1.0

Drawn By Tim Pond  
CA Contractor's License # 931840

**Sheet Key Notes**

- 1 3/4" Water Main Existing
- 2 Existing Sewer Main
- 4 Existing 200 amp service with 48 space min distribution panel
- 5 100 amp subpanel for new ADU
- 6 Residential buildings shall have internally illuminated address numbers contrasting with the background so as to be seen from the public way fronting the building. Address numbers shall be at least six feet above the finished surface of the driveway.

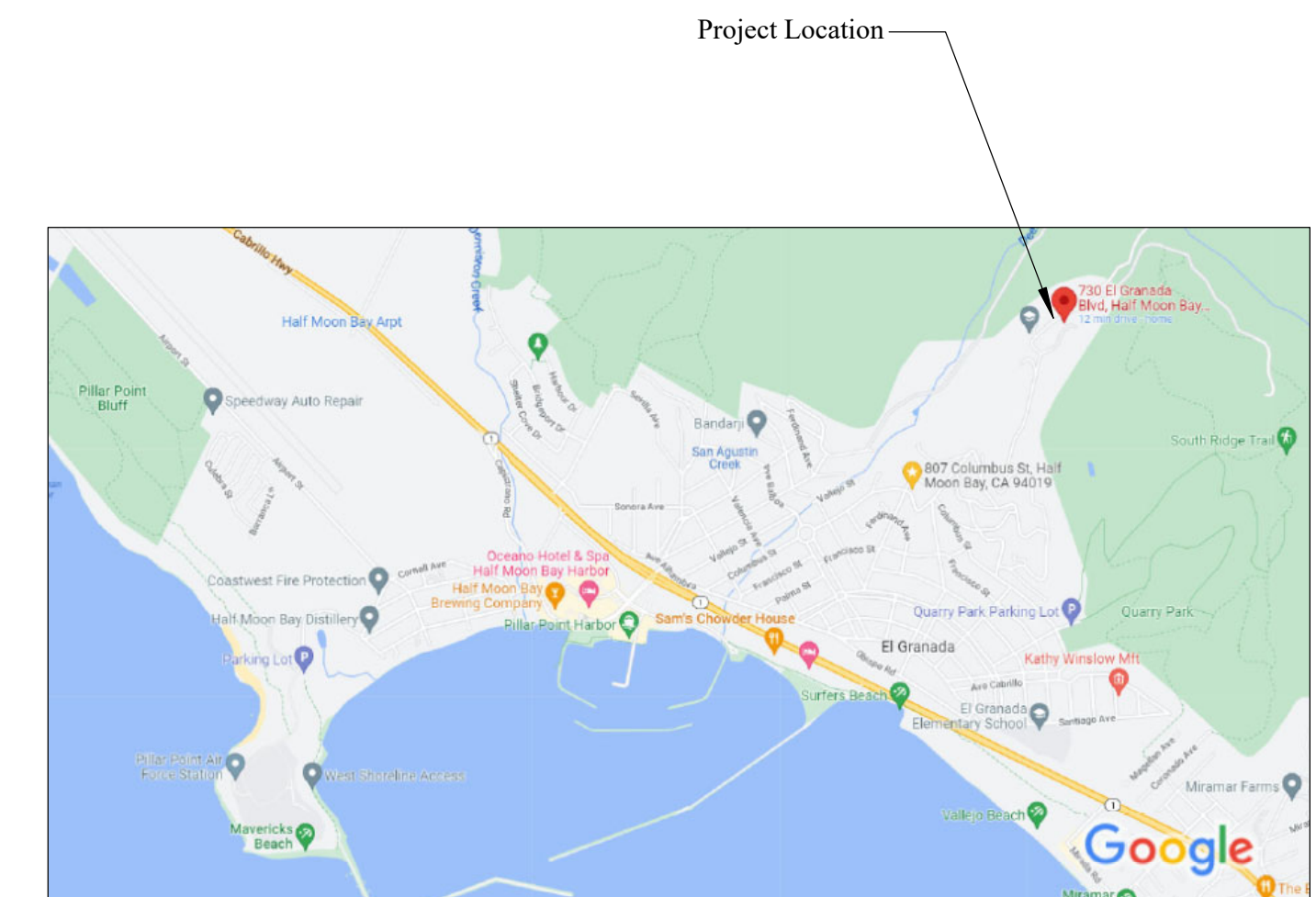
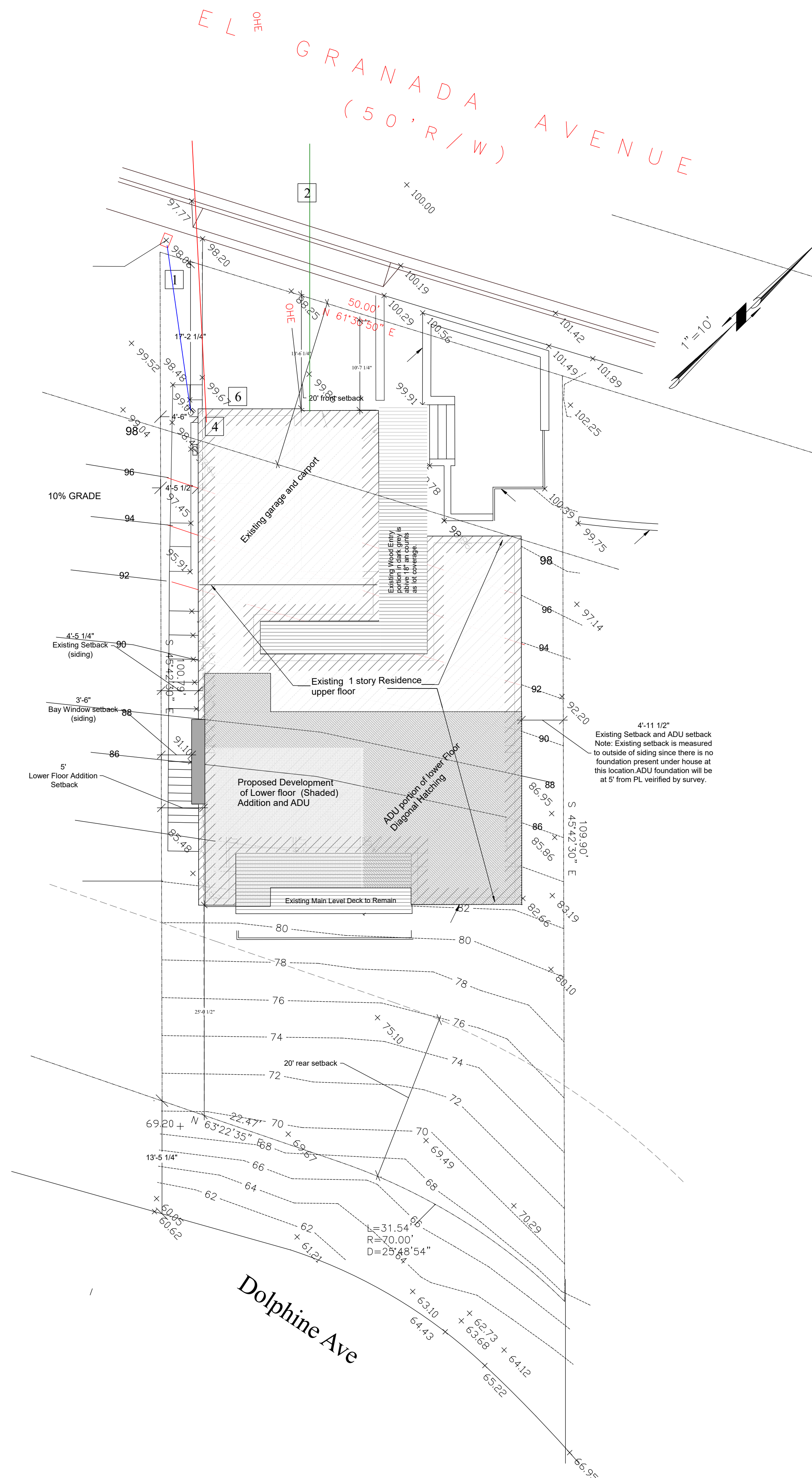
**Project Data**

**Lot Coverage**

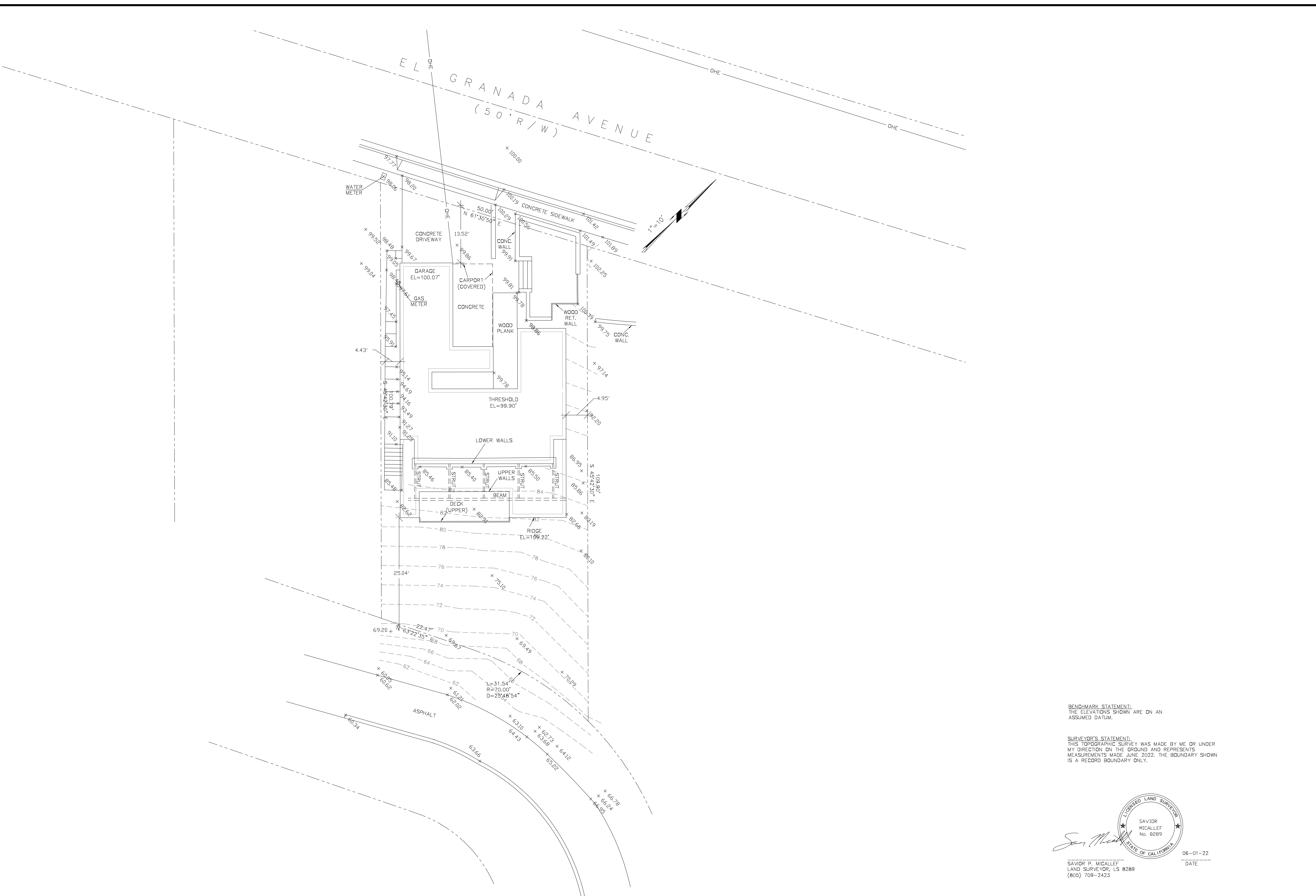
Existing Lot Coverage		
Lot Size		4916 sq.ft.
Existing Residence Coverage		1746 sq.ft.
decks above 18"		322 sq.ft.
Total Lot coverage		2068 sq.ft.
<b>Existing Lot Coverage Ratio</b>	<b>2068 / 4916</b>	<b>or 42.07 %</b>
<b>Proposed Lot Coverage</b>	<b>No Change</b>	

**Floor Area Ratio**

Existing Residence and Garage and carport		1746 sq.ft.
Existing Lower Floor	to be replaced	330 sq.ft.
Proposed ADU		534 sq.ft.
Proposed lower story addition	(exclusive of stairwell)	330 sq.ft.
<b>Total</b>		<b>2610 sq.ft.</b>
Lot Size		4916 sq.ft.
<b>Far without ADU</b>	<b>2076 / 4916</b>	<b>42.2295 %</b>
<b>Total Proposed FAR</b>	<b>2610 / 4916</b>	<b>or 53.0919 %</b>
New Conditioned Area	(ADU and Additon)	864 sq.ft.

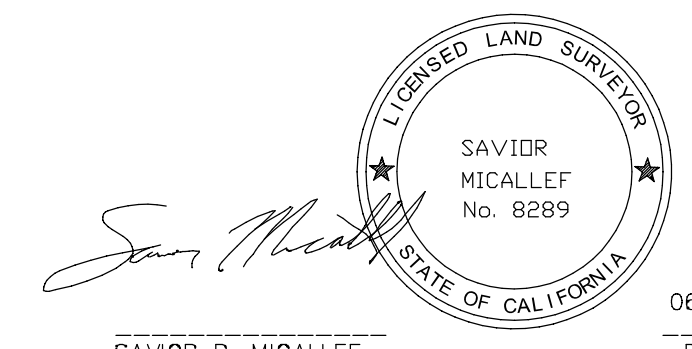


**Area map**



**BENCHMARK STATEMENT:**  
 THE ELEVATIONS SHOWN ARE ON AN ASSUMED DATUM.

**SURVEYOR'S STATEMENT:**  
 THIS TOPOGRAPHIC SURVEY WAS MADE BY ME OR UNDER MY DIRECTION ON THE GROUND AND REPRESENTS MEASUREMENTS MADE JUNE 2022. THE BOUNDARY SHOWN IS A RECORD BOUNDARY ONLY.



SAVIOR P. MICALLEF  
 LAND SURVEYOR, LS 8289  
 (805) 709-2423

06-01-22  
 DATE

SAVIOR P. MICALLEF LAND SURVEYING  
 521 WILDWOOD DRIVE  
 SOUTH SAN FRANCISCO, CA 94080  
 805/709-2423

TOPOGRAPHIC SURVEY OF  
 730 EL GRANADA AVE  
 CITY OF HALF MOON BAY SAN MATEO COUNTY CALIFORNIA

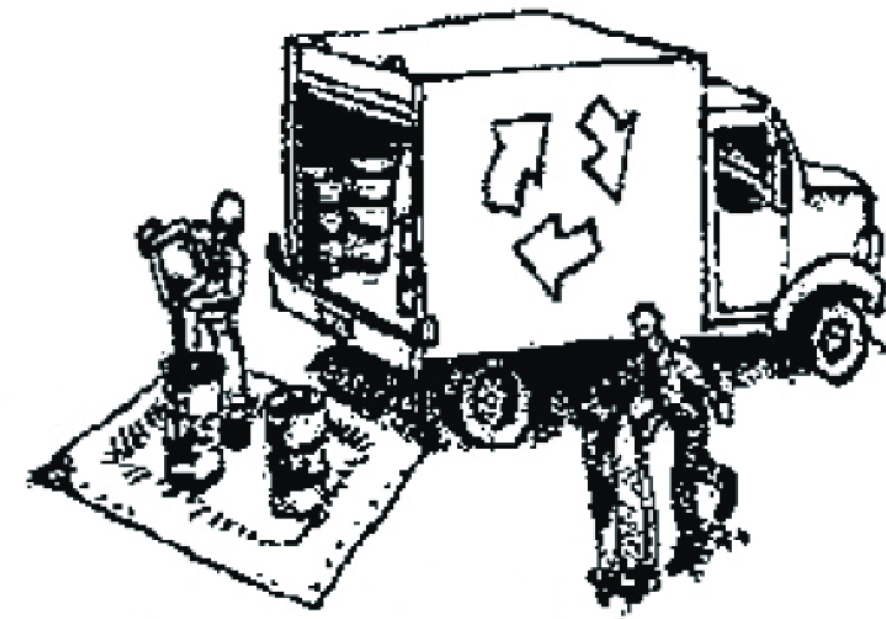
Date	Scale	Design	Drawn	Approved	Job No
06-01-22	1"=10'		SPM	SPM	



# Construction Best Management Practices (BMPs)

Construction projects are required to implement the stormwater best management practices (BMP) on this page, as they apply to your project, all year long.

## Materials & Waste Management



### Non-Hazardous Materials

- Berm and cover stockpiles of sand, dirt or other construction material with tarps when rain is forecast or if not actively being used within 14 days.
- Use (but don't overuse) reclaimed water for dust control.

### Hazardous Materials

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

### Waste Management

- Cover waste disposal containers securely with tarps at the end of every work day and during wet weather.
- Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on the construction site.
- Clean or replace portable toilets, and inspect them frequently for leaks and spills.
- Dispose of all wastes and debris properly. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, gyp board, pipe, etc.)
- Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

### Construction Entrances and Perimeter

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

## Equipment Management & Spill Control



### Maintenance and Parking

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

### Spill Prevention and Control

- Keep spill cleanup materials (e.g., rags, absorbents and cat litter) available at the construction site at all times.
- Inspect vehicles and equipment frequently for and repair leaks promptly. Use drip pans to catch leaks until repairs are made.
- Clean up spills or leaks immediately and dispose of cleanup materials properly.
- Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags).
- Sweep up spilled dry materials immediately. Do not try to wash them away with water, or bury them.
- Clean up spills on dirt areas by digging up and properly disposing of contaminated soil.
- Report significant spills immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill: 1) Dial 911 or your local emergency response number, 2) Call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours).

## Earthmoving



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

### Contaminated Soils

- If any of the following conditions are observed, test for contamination and contact the Regional Water Quality Control Board:
  - Unusual soil conditions, discoloration, or odor.
  - Abandoned underground tanks.
  - Abandoned wells
  - Buried barrels, debris, or trash.

## Paving/Asphalt Work



- Avoid paving and seal coating in wet weather or when rain is forecast, to prevent materials that have not cured from contacting stormwater runoff.
- Cover storm drain inlets and manholes when applying seal coat, tack coat, slurry seal, fog seal, etc.
- Collect and recycle or appropriately dispose of excess abrasive gravel or sand. Do NOT sweep or wash it into gutters.
- Do not use water to wash down fresh asphalt concrete pavement.

### Sawcutting & Asphalt/Concrete Removal

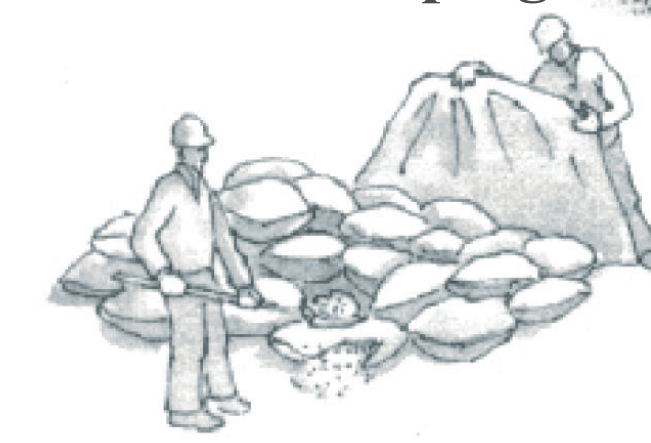
- Protect nearby storm drain inlets when saw cutting. Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system.
- Shovel, absorb, or vacuum saw-cut slurry and dispose of all waste as soon as you are finished in one location or at the end of each work day (whichever is sooner!).
- If sawcut slurry enters a catch basin, clean it up immediately.

## Concrete, Grout & Mortar Application



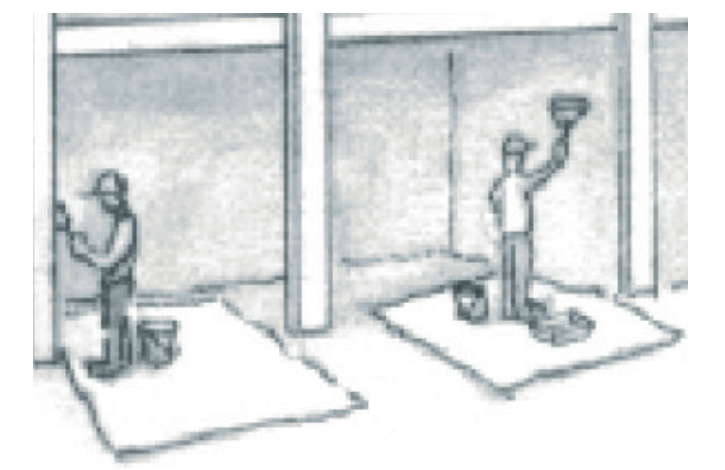
- Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage.
- When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

## Landscaping



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

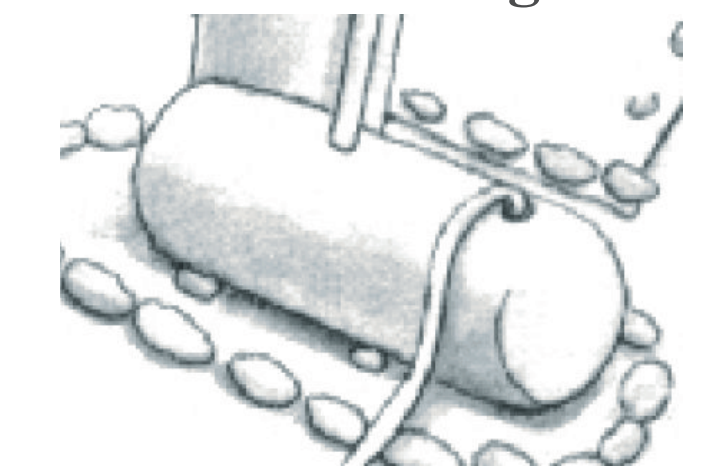
## Painting & Paint Removal



### Painting Cleanup and Removal

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

## Dewatering



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

Storm Drain Polluter May be fined up to \$10,000 per day

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phone: 916.882.6949

Designer: Tim Pond  
Tim Pond Design & Construction Inc.  
timepond@gmail.com  
Phone 650.576.7177

Drawn By TP Scale 1/8" = 1'

Planning Submittal 7.20.22

Erosion Control Plan A1.2

Drawn By Tim Pond  
CA Contractor's License # 931840

### Erosion Control Narrative and Responsible Person Contact Info

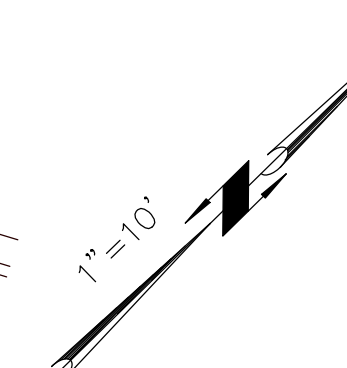
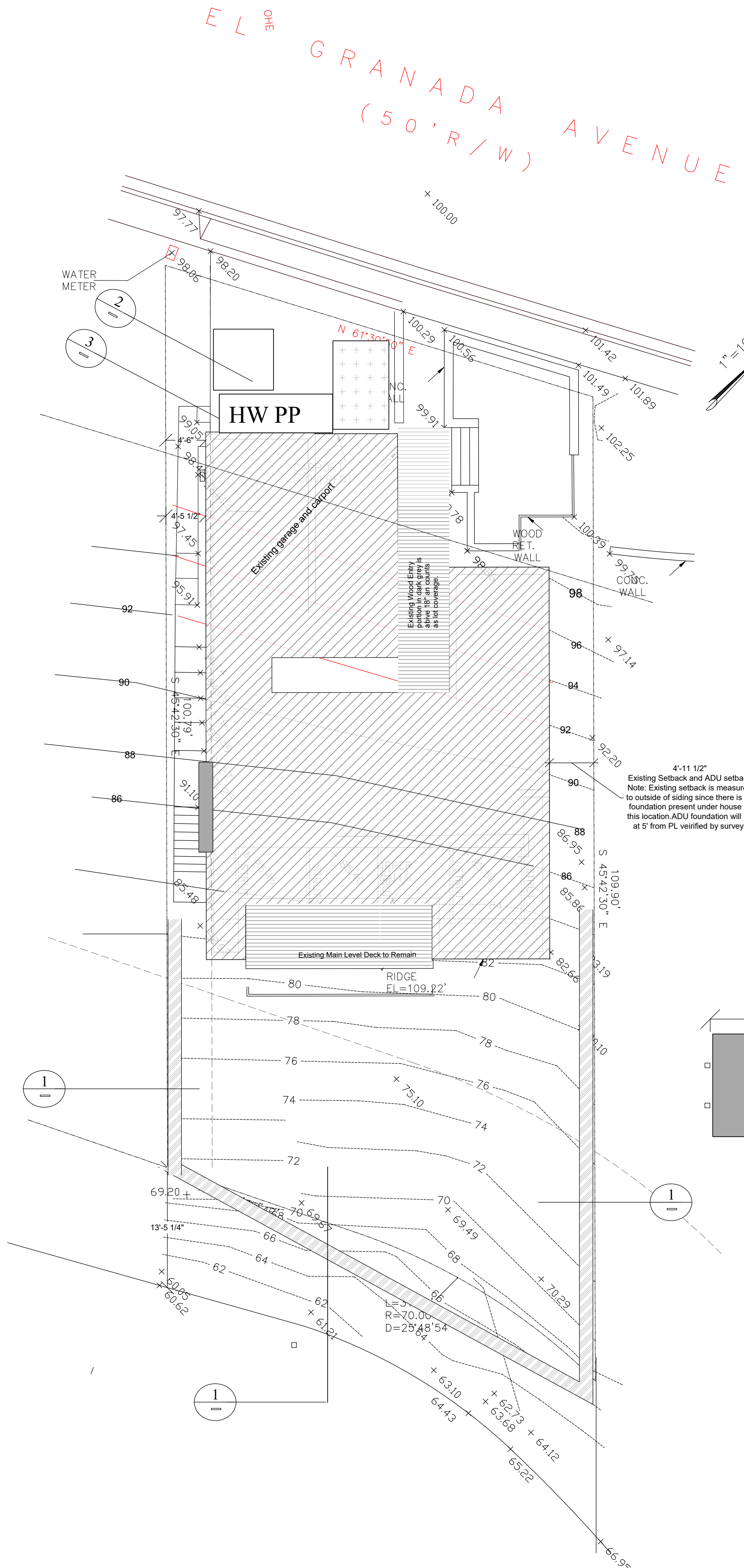
Access to the site will be stabilized construction entrance  
Mulch should be spread on exposed soils if work is proceeding during wet weather. Refer to BMP sheet and additional EC notes this page for more details on stockpiles, storage of materials etc. Erosion control should be checked weekly and before and after storms, and particular attention should be given to the front property line, where runoff naturally flows into the swale at the pavement edge.

Responsible person:

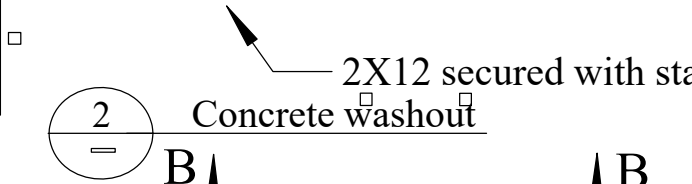
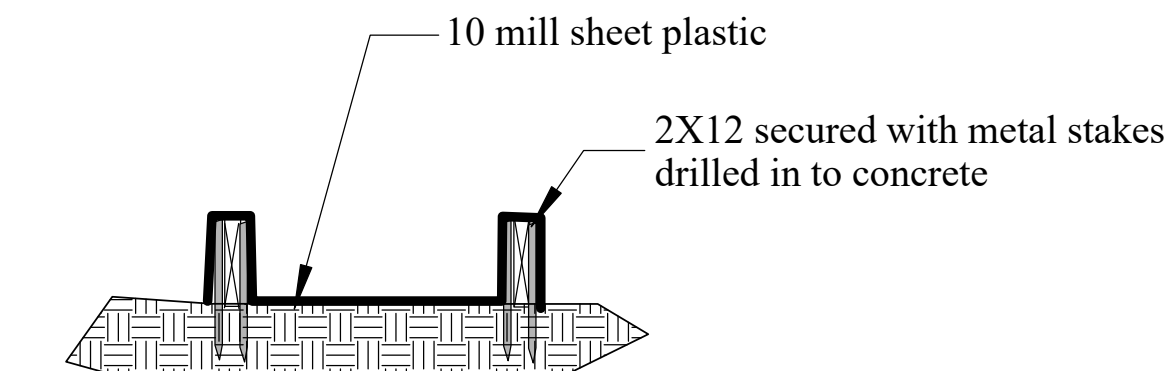
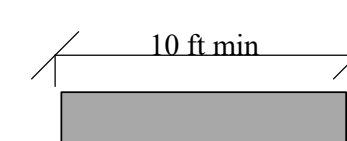
Tim Pond  
650 576-1777

### Erosion Control Notes

1. Perform clearing and earth-moving activities only during dry weather. Measures to ensure adequate erosion and sediment control shall be installed prior to earth-moving activities and construction.
2. Stabilize all denuded areas and maintain erosion control measures continuously between October 1 and April 30.
3. Store, handle, and dispose of construction materials and wastes properly, so as to prevent their contact with stormwater.
4. Control and prevent the discharge of all potential pollutants, including pavement cutting wastes, paints, concrete, petroleum products, chemicals, wash water or sediments, and non-stormwater discharges to storm drains and watercourses.
5. Limit construction access routes to stabilized, designated access points.
6. Avoid tracking dirt or other materials off-site; clean off-site paved areas and sidewalks using dry sweeping methods.
7. Train and provide instruction to all employees and subcontractors regarding the Watershed Protection Maintenance Standards and Construction Best Management Practices.
8. Store erosion materials on site as required on weekends and during rain events at the front of the property for easy access.
9. The areas delineated on the plans for parking, grubbing, storage, etc., shall not be enlarged or "run over." Construction sites are required to have erosion control materials on-site during the "off-season."
10. Dust control is required year-round.
11. Use of plastic sheeting between October 1 and April 30 is not acceptable, unless for use on stockpiles where the stockpile is also protected with fiber rolls containing the base of the stockpile. Tree protection shall be in place before any demolition, grading, excavating or grubbing is started.



4'-11 1/2" Existing Setback and ADU setback  
Note: Existing setback is measured to outside of siding since there is no foundation present under house at this location ADU foundation will be at 5' from PL, verified by survey.

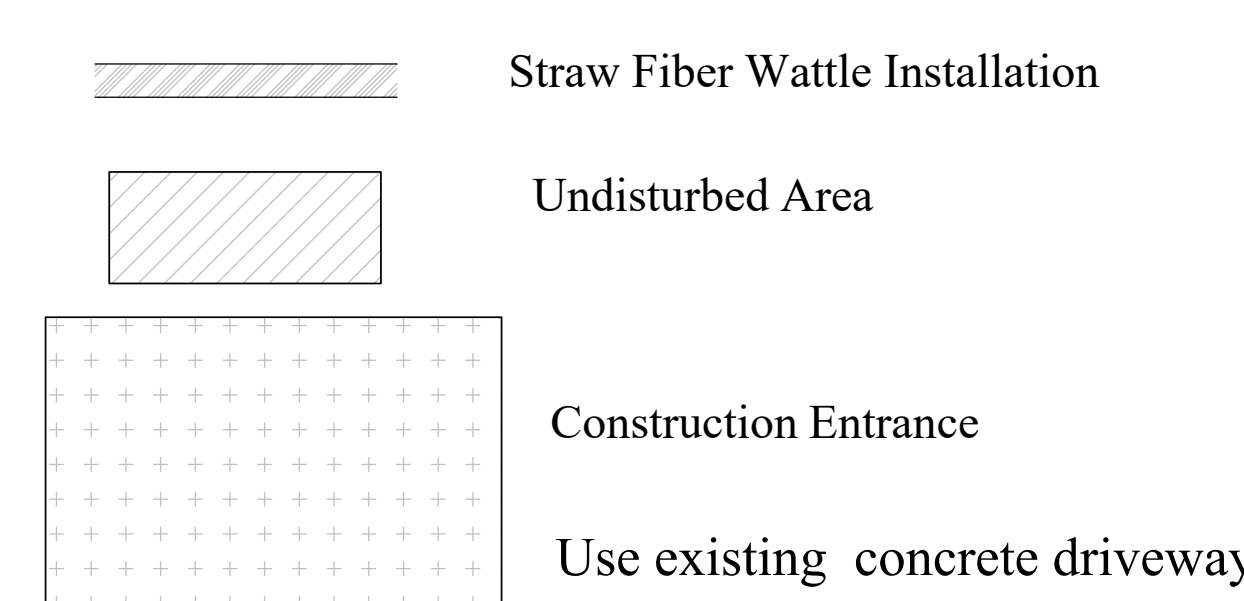
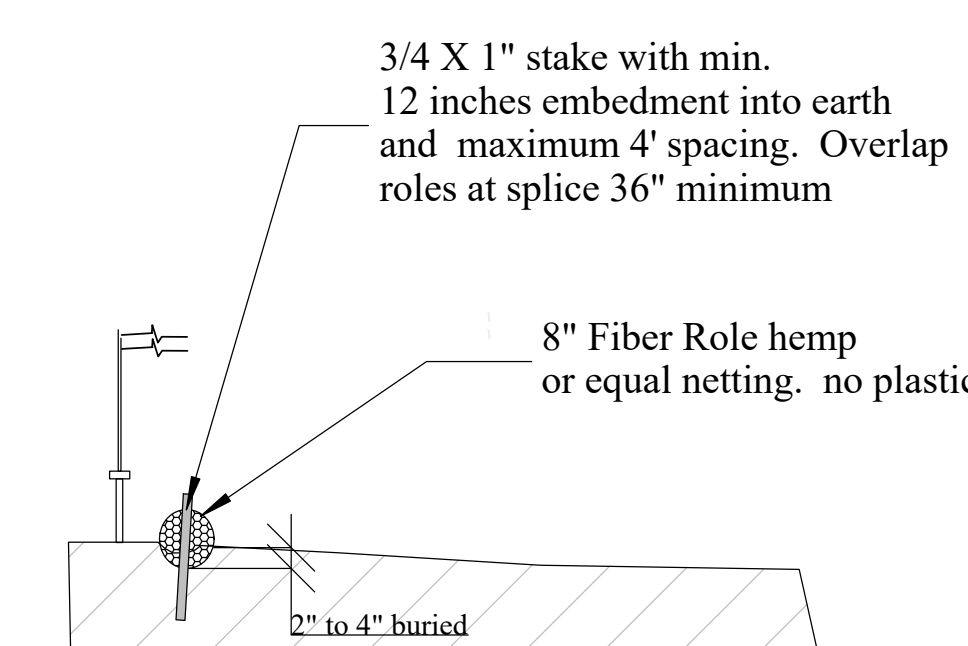


Note: Most concrete trucks will provide washout back into truck and this is preferable using this wash out

Provide secondary containment

HW PP

3 Handwashing Station Portable toilet  
Provide all SMC health order compliance postings



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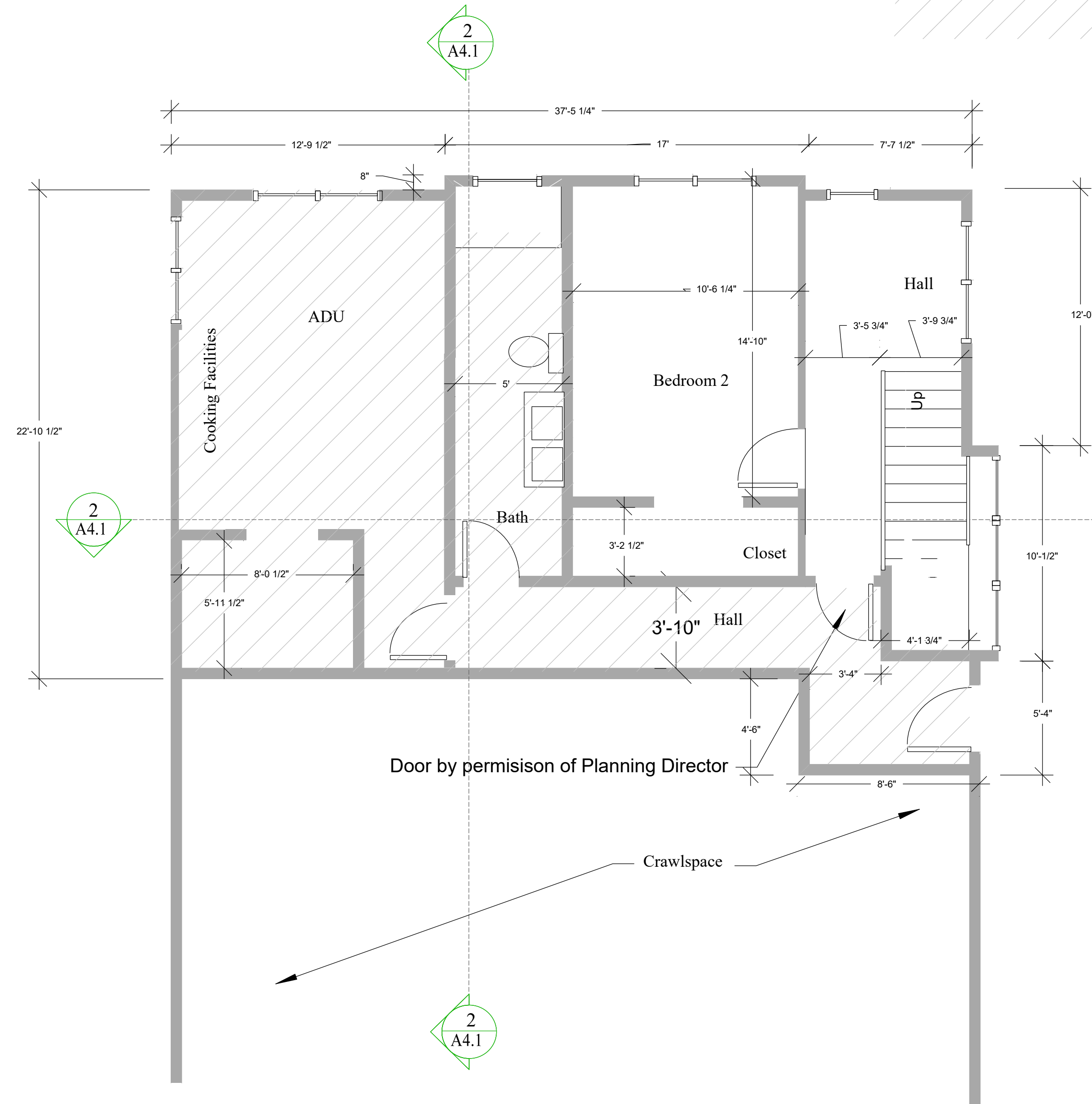
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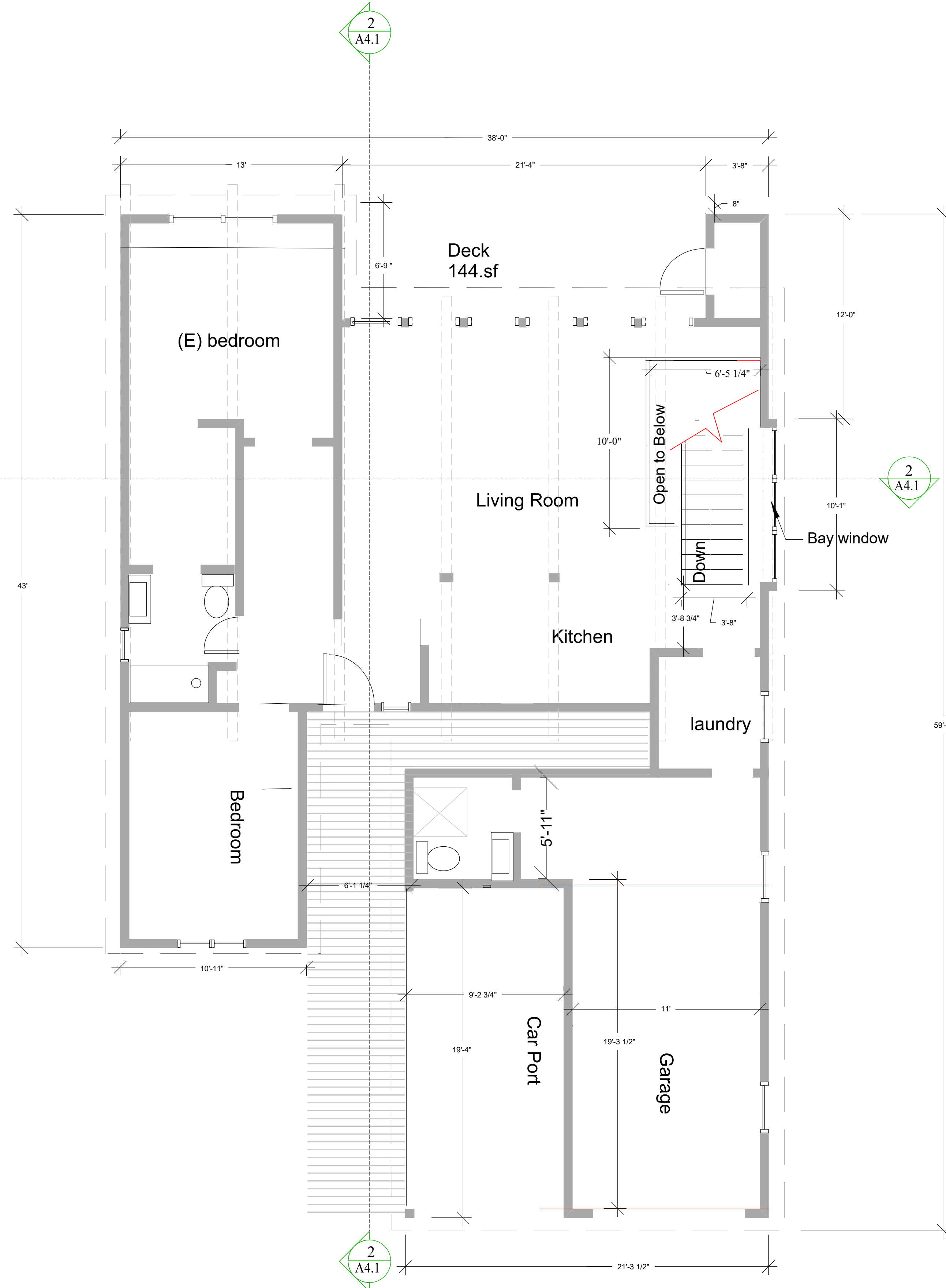
Floor Plans A2.1

Drawn By Tim Pond  
CA Contractor's License # 931840

Shaded Area = ADU



Lower Floor Plan



Main Floor Plan  
(street level)

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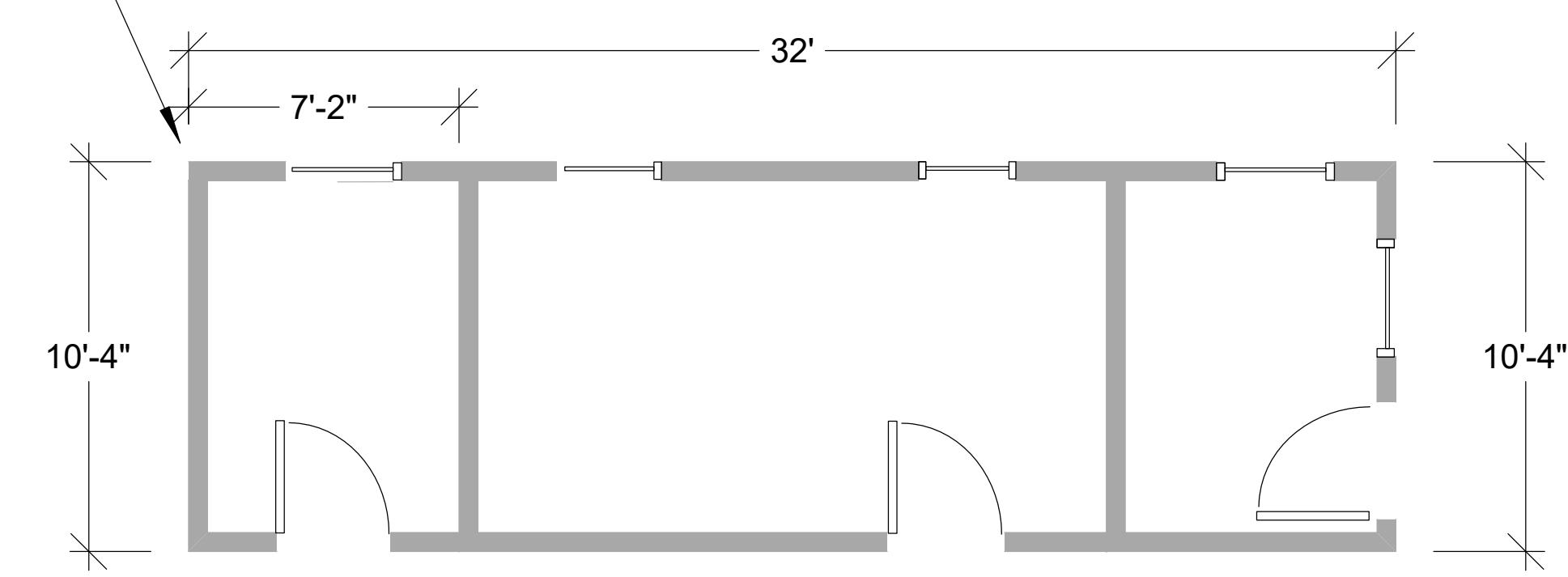
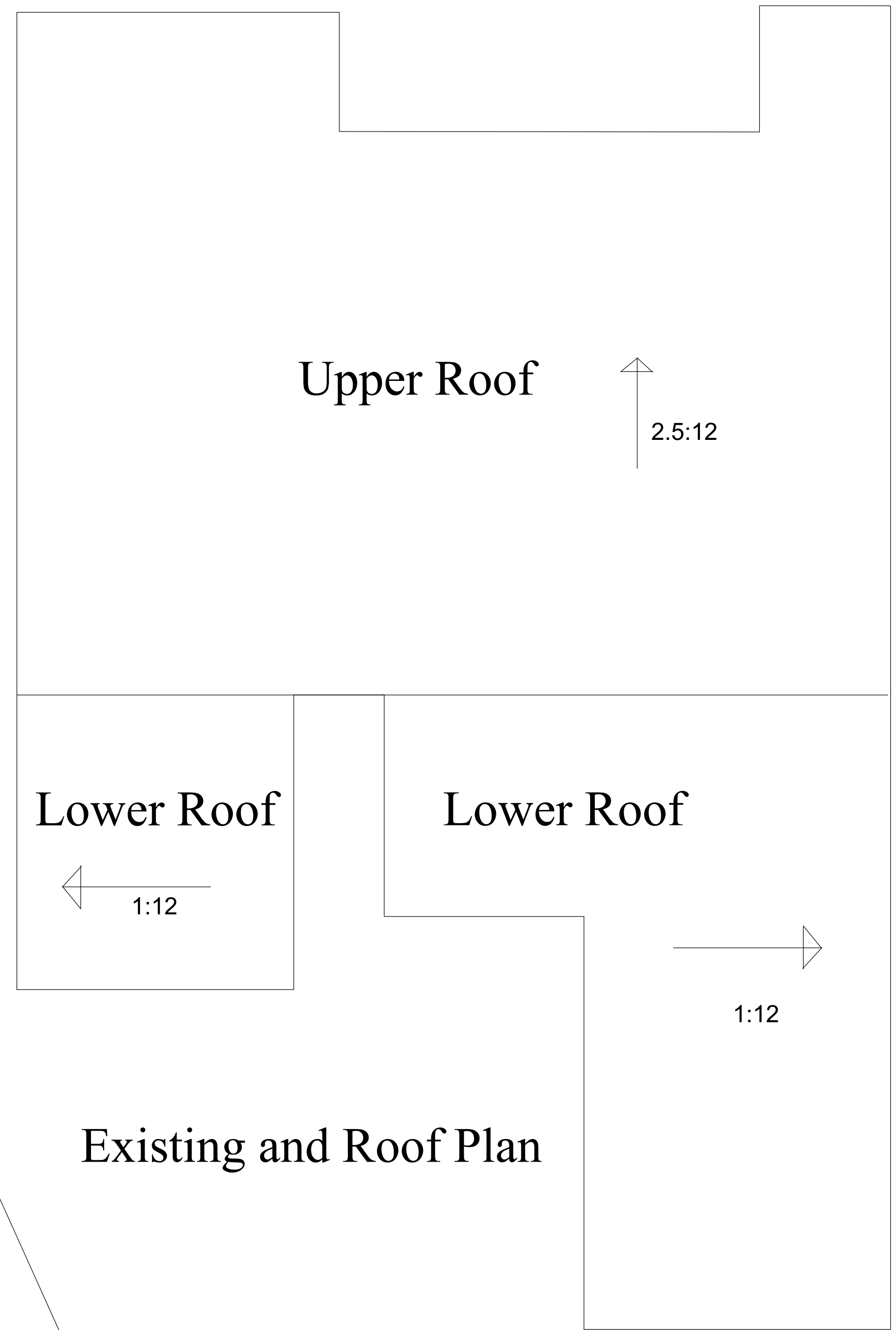
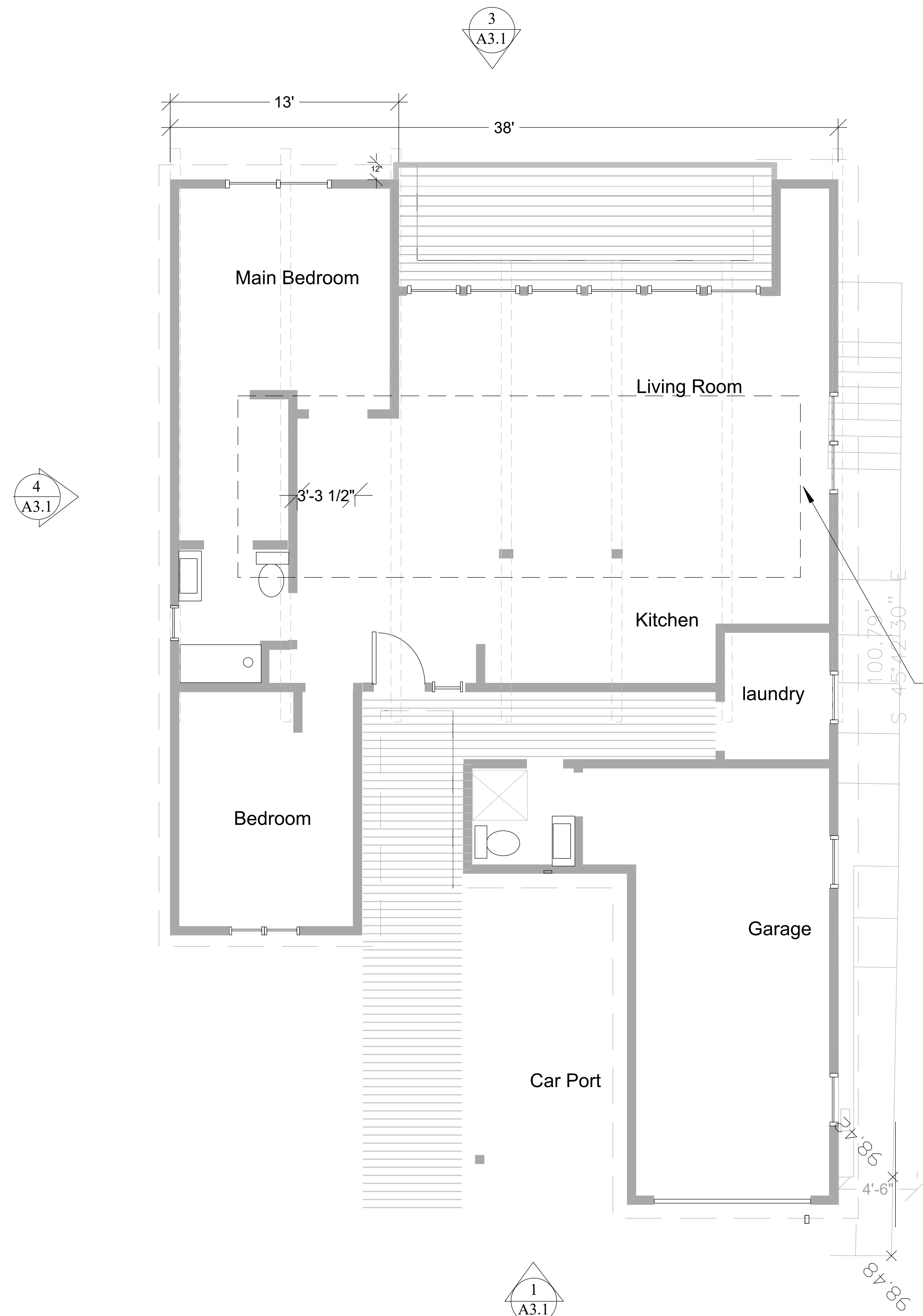
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Existing Floor and Roof Plan A2.1

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Existing Main Level Floor Plan

Existing Lower Floor Plan

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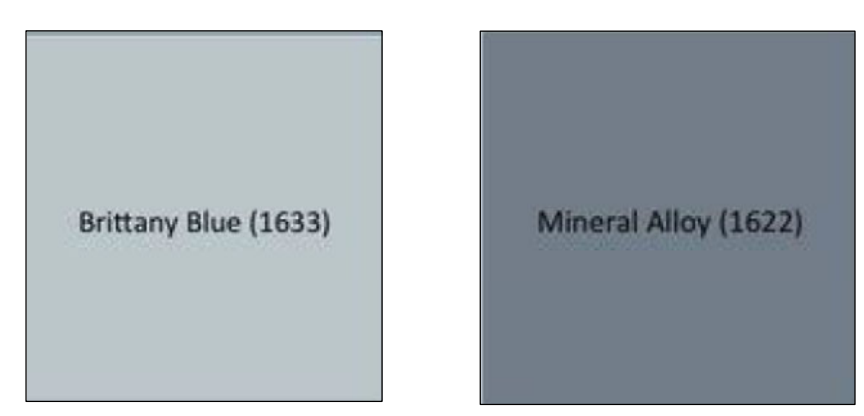
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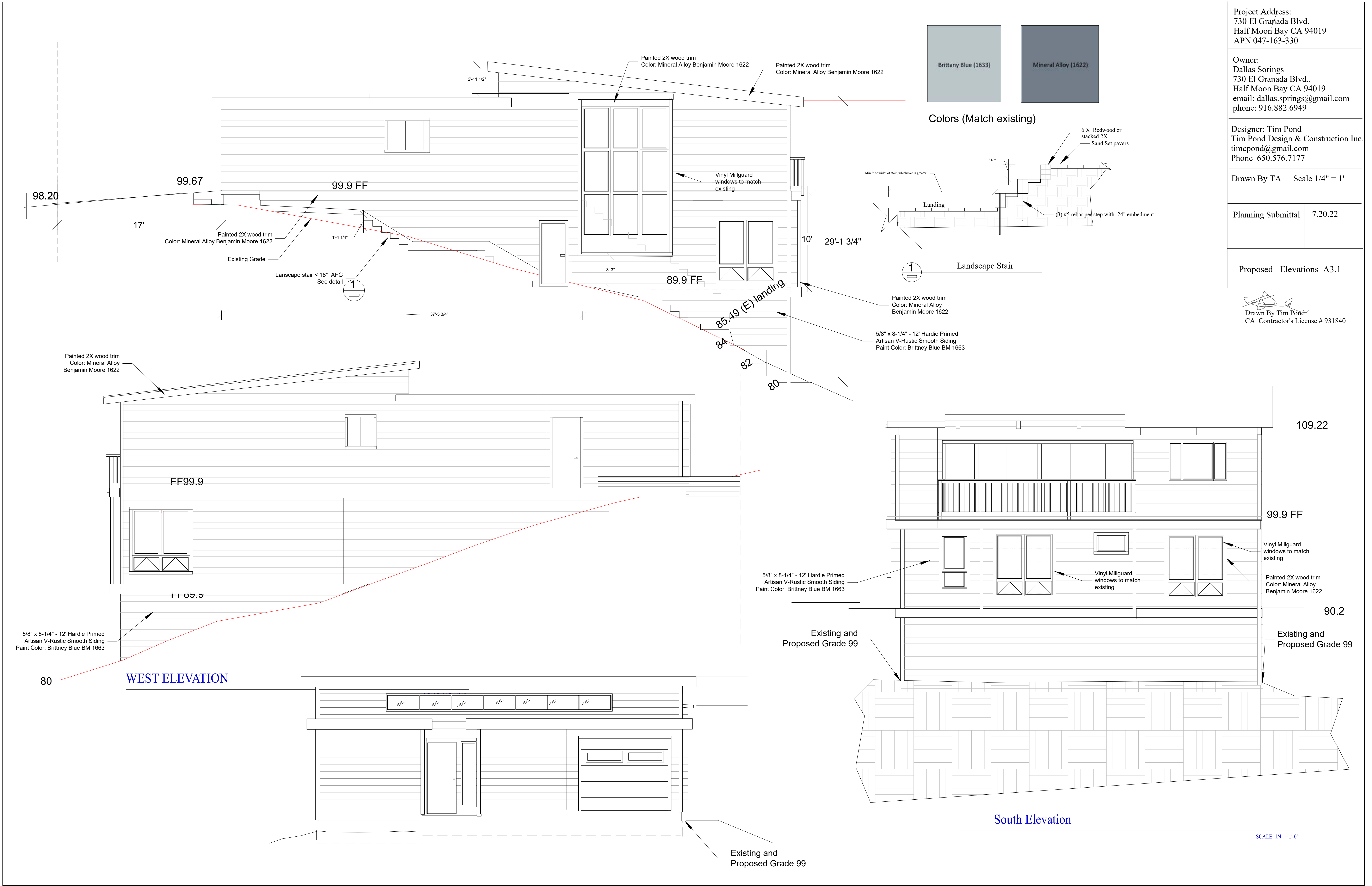
Planning Submittal 7.20.22

Proposed Elevations A3.1

Drawn By Tim Pond  
CA Contractor's License # 931840



Colors (Match existing)



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

1 Existing North Elevation (Front)

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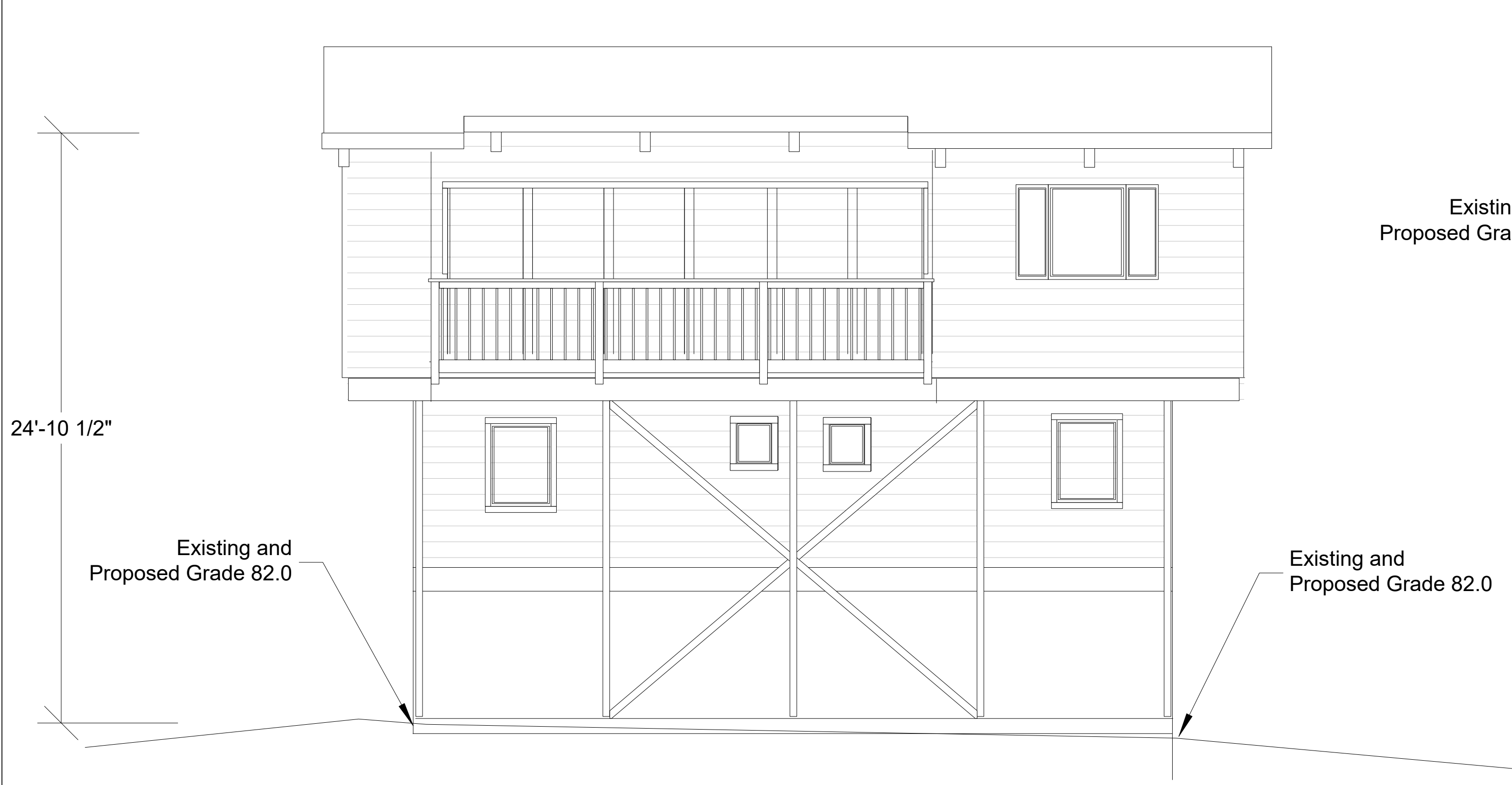
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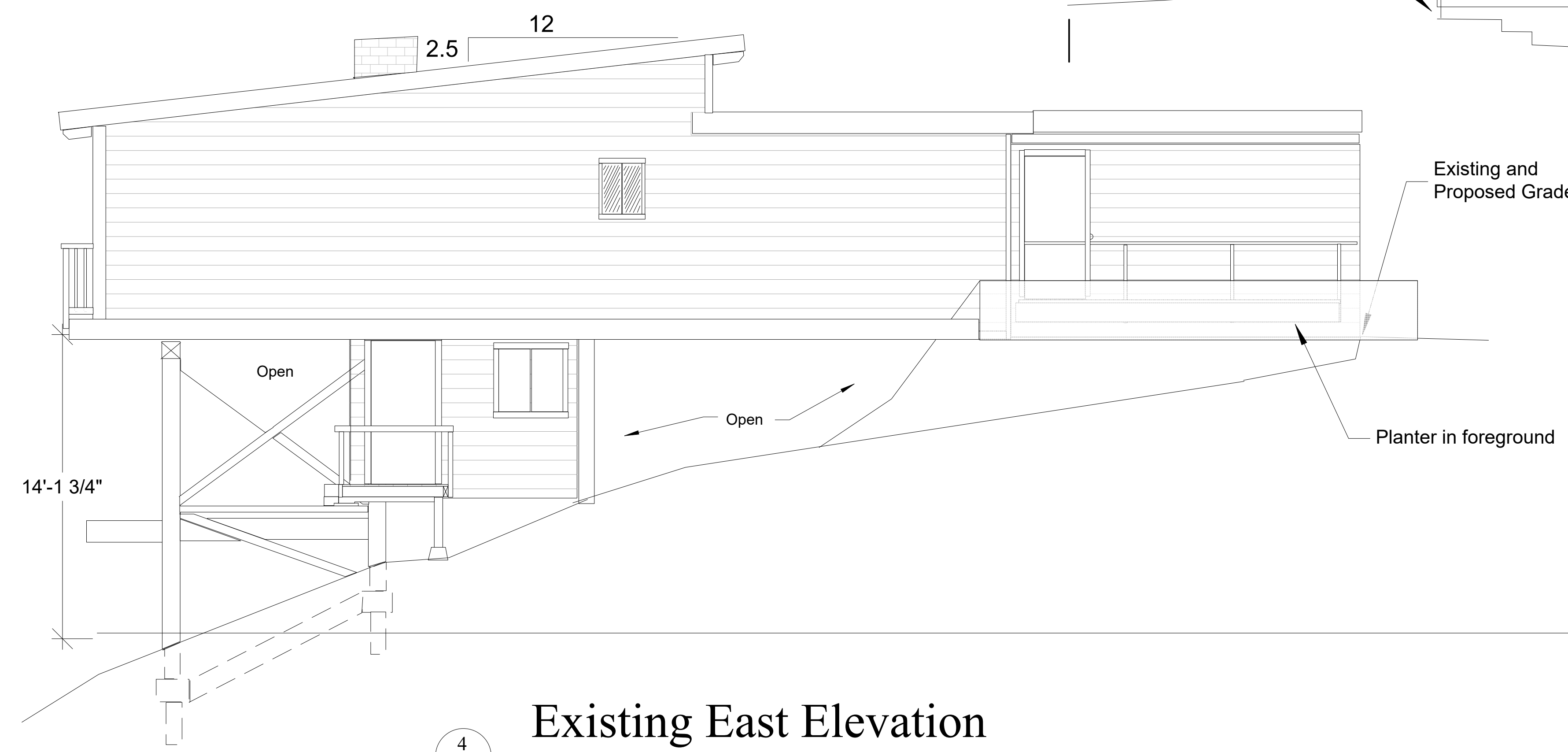
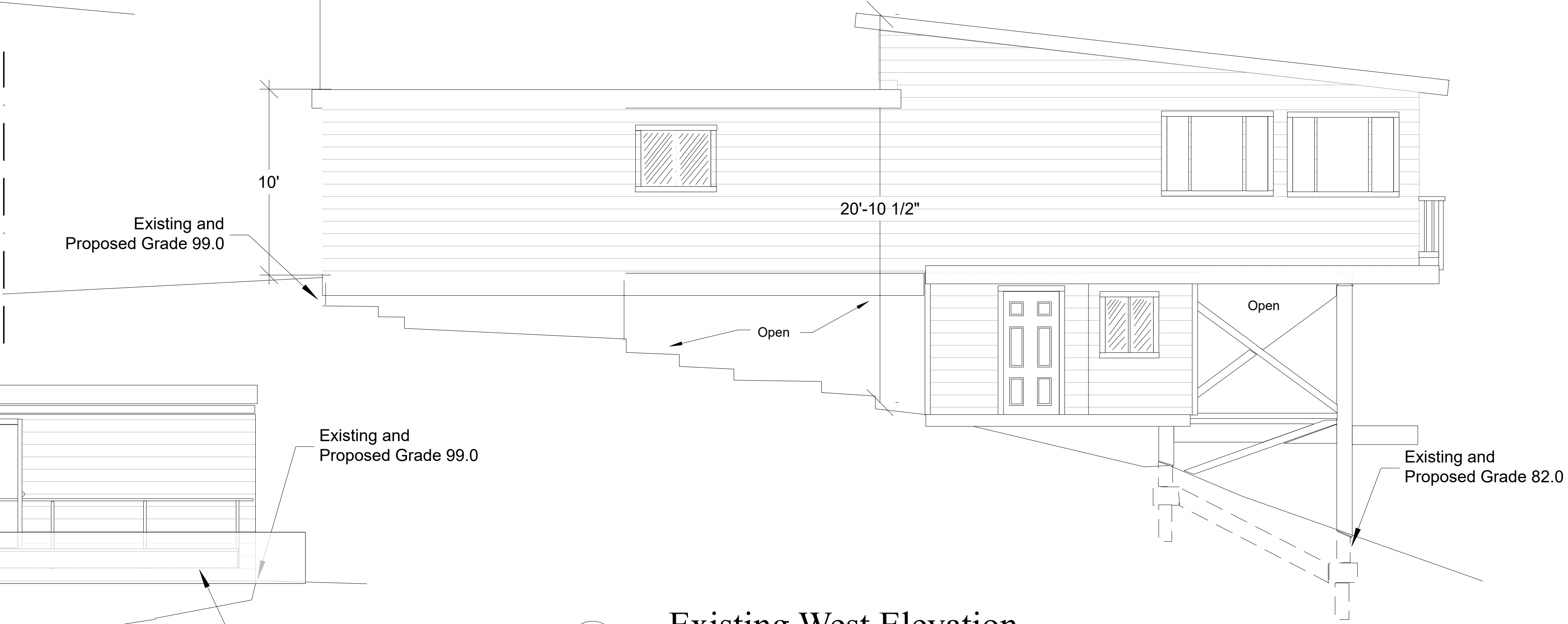
Existing Elevations A3.2

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1 Existing North Elevation (Front)

3 Existing South Elevation (Rear)



4 Existing East Elevation

2 Existing West Elevation



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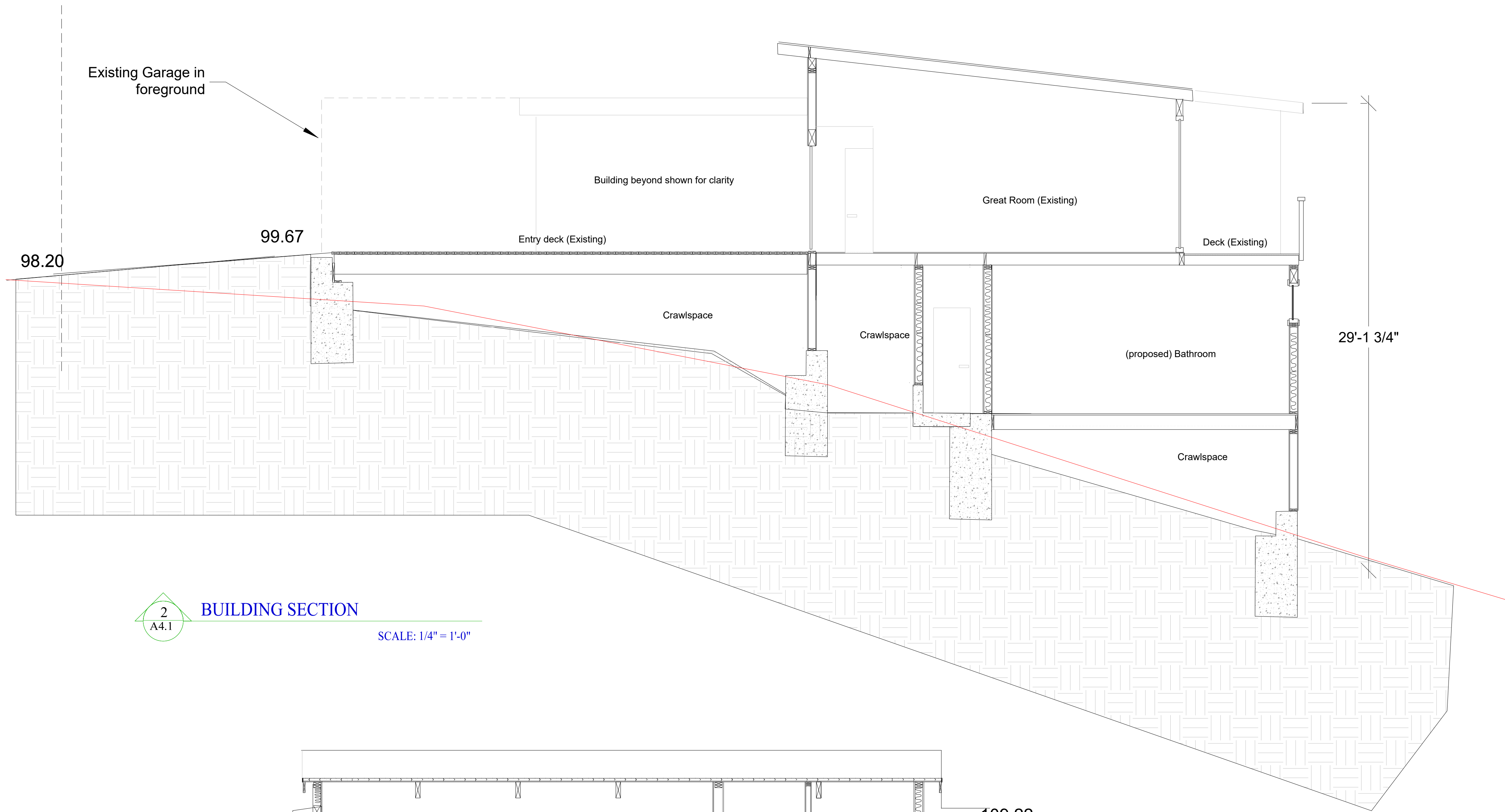
Designer: Tim Pond  
Tim Pond Design & Construction Inc.  
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Drawn By TA Scale 1/4" = 1'

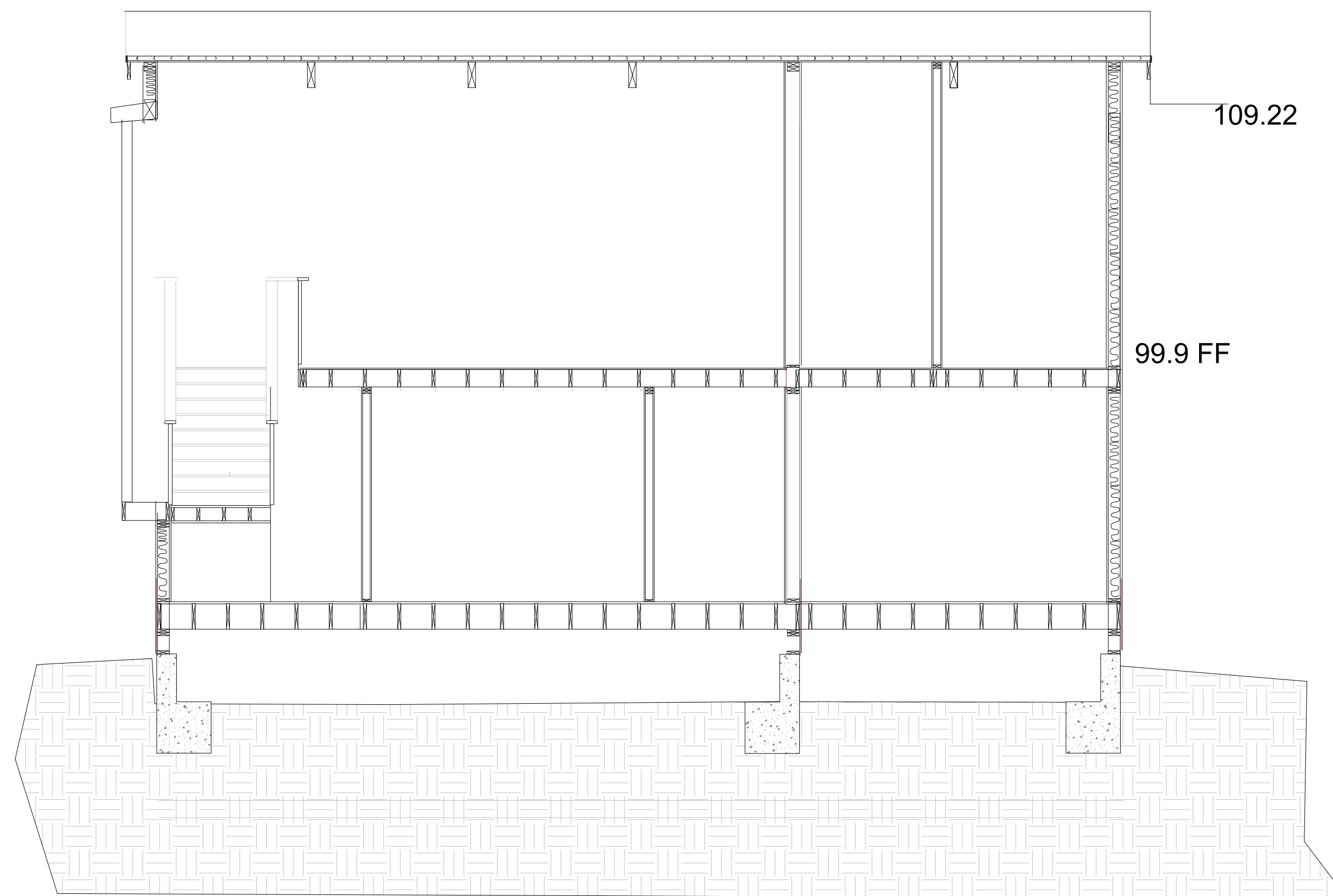
Planning Submittal 7.20.22

Sections A4.1

Drawn By Tim Pond  
CA Contractor's License # 931840



**2**  
A4.1 BUILDING SECTION  
SCALE: 1/4" = 1'-0"



**1**  
A4.1 BUILDING SECTION  
SCALE: 1/4" = 1'-0"

# 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

## RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

Y	N/A	RESPON. PARTY	CHAPTER 3 GREEN BUILDING SECTION 301 GENERAL	Y	N/A	RESPON. PARTY	CHAPTER 3 GREEN BUILDING SECTION 301 GENERAL	Y	N/A	RESPON. PARTY	DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION 4.303 INDOOR WATER USE	Y	N/A	RESPON. PARTY	DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY 4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE
			<p><b>301.1 SCOPE.</b> 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.</p> <p><b>301.1.1 Additions and alterations. [HCD]</b> 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.</p> <p><b>Note:</b> 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.</p> <p><b>301.2 LOW-RISE AND HIGH-RISE RESIDENTIAL BUILDINGS. [HCD]</b> 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.</p>				<p><b>4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS)</b> When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:</p> <ol style="list-style-type: none"> <li>The EV space shall be located adjacent to an accessible parking space meeting the requirements of the <i>California Building Code</i>, Chapter 11A, to allow use of the EV charger from the accessible parking space.</li> <li>The EV space shall be located on an accessible route, as defined in the <i>California Building Code</i>, Chapter 2, to the building.</li> </ol> <p><b>Exception:</b> Electric vehicle charging stations designed and constructed in compliance with the <i>California Building Code</i>, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.</p> <p><b>Note:</b> Electric vehicle charging stations serving public housing are required to comply with the <i>California Building Code</i>, Chapter 11B.</p> <p><b>4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.</b> The EV space shall be designed to comply with the following:</p> <ol style="list-style-type: none"> <li>The minimum length of each EV space shall be 18 feet (5486 mm).</li> <li>The minimum width of each EV space shall be 9 feet (2743 mm).</li> <li>One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).</li> </ol> <p>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.</p> <p><b>4.106.4.2.3 Single EV space required.</b> Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.</p> <p><b>4.106.4.2.4 Multiple EV spaces required.</b> Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on ampereage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated ampereage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.</p> <p><b>4.106.4.2.5 Identification.</b> 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 <i>California Electrical Code</i>.</p> <p><b>4.106.4.3 New hotels and motels.</b> All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.</li> <li>There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.</li> </ol> <p><b>4.106.4.3.1 Number of required EV spaces.</b> The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.</p>				<p><b>4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS.</b> 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 4.303.1.4.</p> <p><b>Note:</b> 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.</p> <p><b>4.303.1.1 Water Closets.</b> 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.</p> <p><b>Note:</b> The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.</p> <p><b>4.303.1.2 Urinals.</b> 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.</p> <p><b>4.303.1.3 Showerheads.</b></p> <p><b>4.303.1.3.1 Single Showerhead.</b> Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.</p> <p><b>4.303.1.3.2 Multiple showerheads serving one shower.</b> 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.</p> <p><b>Note:</b> A hand-held shower shall be considered a showerhead.</p> <p><b>4.303.1.4 Faucets.</b></p> <p><b>4.303.1.4.1 Residential Lavatory Faucets.</b> 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.</p> <p><b>4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas.</b> 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.</p> <p><b>4.303.1.4.3 Metering Faucets.</b> Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.</p> <p><b>4.303.1.4.4 Kitchen Faucets.</b> 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.</p> <p><b>Note:</b> Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.</p> <p><b>4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS.</b> Plumbing fixtures and fittings shall be installed in accordance with the <i>California Plumbing Code</i>, and shall meet the applicable standards referenced in Table 1701.1 of the <i>California Plumbing Code</i>.</p>				<p><b>4.406.1 RODENT PROOFING.</b> Annular spaces around pipes, electric cables, conduits or other openings in soffit/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.</p> <p><b>4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING</b></p> <p><b>4.408.1 CONSTRUCTION WASTE MANAGEMENT.</b> 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.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>Excavated soil and land-clearing debris.</li> <li>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.</li> <li>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.</li> </ol> <p><b>4.408.2 CONSTRUCTION WASTE MANAGEMENT PLAN.</b> 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.</p> <ol style="list-style-type: none"> <li>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.</li> <li>Specify if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).</li> <li>Identify diversion facilities where the construction and demolition waste material collected will be taken.</li> <li>Identify construction methods employed to reduce the amount of construction and demolition waste generated.</li> <li>Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.</li> </ol> <p><b>4.408.3 WASTE MANAGEMENT COMPANY.</b> 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.</p> <p><b>Note:</b> The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.</p> <p><b>4.408.4 WASTE STREAM REDUCTION ALTERNATIVE [LR].</b> 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</p> <p><b>4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE.</b> 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</p> <p><b>4.408.5 DOCUMENTATION.</b> 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.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Sample forms found in "A Guide to the California Green Building Standards Code (Residential)" located at <a href="http://www.hcd.ca.gov/CALGreen.html">www.hcd.ca.gov/CALGreen.html</a> may be used to assist in documenting compliance with this section.</li> <li>Mixed construction and demolition debris (C &amp; D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).</li> </ol>
			<p><b>ABBREVIATION DEFINITIONS:</b></p> <p>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</p>				<p><b>4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS)</b> When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:</p> <ol style="list-style-type: none"> <li>The EV space shall be located adjacent to an accessible parking space meeting the requirements of the <i>California Building Code</i>, Chapter 11A, to allow use of the EV charger from the accessible parking space.</li> <li>The EV space shall be located on an accessible route, as defined in the <i>California Building Code</i>, Chapter 2, to the building.</li> </ol> <p><b>Exception:</b> Electric vehicle charging stations designed and constructed in compliance with the <i>California Building Code</i>, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.</p> <p><b>Note:</b> Electric vehicle charging stations serving public housing are required to comply with the <i>California Building Code</i>, Chapter 11B.</p> <p><b>4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.</b> The EV space shall be designed to comply with the following:</p> <ol style="list-style-type: none"> <li>The minimum length of each EV space shall be 18 feet (5486 mm).</li> <li>The minimum width of each EV space shall be 9 feet (2743 mm).</li> <li>One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).</li> </ol> <p>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.</p> <p><b>4.106.4.2.3 Single EV space required.</b> Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.</p> <p><b>4.106.4.2.4 Multiple EV spaces required.</b> Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on ampereage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated ampereage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. 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The construction documents shall identify the location of the EV spaces.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.</li> <li>There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.</li> </ol> <p><b>4.106.4.3.1 Number of required EV spaces.</b> The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. 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Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.</p> <p><b>Note:</b> The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.</p> <p><b>4.303.1.2 Urinals.</b> 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.</p> <p><b>4.303.1.3 Showerheads.</b></p> <p><b>4.303.1.3.1 Single Showerhead.</b> Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.</p> <p><b>4.303.1.3.2 Multiple showerheads serving one shower.</b> 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.</p> <p><b>Note:</b> A hand-held shower shall be considered a showerhead.</p> <p><b>4.303.1.4 Faucets.</b></p> <p><b>4.303.1.4.1 Residential Lavatory Faucets.</b> 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.</p> <p><b>4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas.</b> 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.</p> <p><b>4.303.1.4.3 Metering Faucets.</b> Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.</p> <p><b>4.303.1.4.4 Kitchen Faucets.</b> 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.</p> <p><b>Note:</b> Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.</p> <p><b>4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS.</b> Plumbing fixtures and fittings shall be installed in accordance with the <i>California Plumbing Code</i>, and shall meet the applicable standards referenced in Table 1701.1 of the <i>California Plumbing Code</i>.</p>				<p><b>4.406.1 RODENT PROOFING.</b> Annular spaces around pipes, electric cables, conduits or other openings in soffit/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.</p> <p><b>4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING</b></p> <p><b>4.408.1 CONSTRUCTION WASTE MANAGEMENT.</b> 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.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>Excavated soil and land-clearing debris.</li> <li>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.</li> <li>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.</li> </ol> <p><b>4.408.2 CONSTRUCTION WASTE MANAGEMENT PLAN.</b> 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.</p> <ol style="list-style-type: none"> <li>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.</li> <li>Specify if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).</li> <li>Identify diversion facilities where the construction and demolition waste material collected will be taken.</li> <li>Identify construction methods employed to reduce the amount of construction and demolition waste generated.</li> <li>Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.</li> </ol> <p><b>4.408.3 WASTE MANAGEMENT COMPANY.</b> 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.</p> <p><b>Note:</b> The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.</p> <p><b>4.408.4 WASTE STREAM REDUCTION ALTERNATIVE [LR].</b> 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</p> <p><b>4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE.</b> 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</p> <p><b>4.408.5 DOCUMENTATION.</b> 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.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Sample forms found in "A Guide to the California Green Building Standards Code (Residential)" located at <a href="http://www.hcd.ca.gov/CALGreen.html">www.hcd.ca.gov/CALGreen.html</a> may be used to assist in documenting compliance with this section.</li> <li>Mixed construction and demolition debris (C &amp; D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).</li> </ol>
			<p><b>CHAPTER 4 RESIDENTIAL MANDATORY MEASURES</b></p> <p><b>DIVISION 4.1 PLANNING AND DESIGN</b></p> <p><b>SECTION 4.102 DEFINITIONS</b></p> <p><b>4.102.1 DEFINITIONS</b></p> <p>The following terms are defined in Chapter 2 (<i>and are included here for reference</i>)</p> <p><b>FRENCH DRAIN.</b> 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.</p> <p><b>WATTLES.</b> 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 downhill slope. Wattles are also used for perimeter and inlet controls.</p> <p><b>4.106 SITE DEVELOPMENT</b></p> <p><b>4.106.1 GENERAL.</b> 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.</p> <p><b>4.106.2 STORM WATER DRAINAGE AND RETENTION DURING CONSTRUCTION.</b> 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.</p> <ol style="list-style-type: none"> <li>Retention basins of sufficient size shall be utilized to retain storm water on the site.</li> <li>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.</li> <li>Compliance with a lawfully enacted storm water management ordinance.</li> </ol> <p><b>Note:</b> 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.</p> <p>(Website: <a href="https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html">https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html</a>)</p> <p><b>4.106.3 GRADING AND PAVING.</b> 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:</p> <ol style="list-style-type: none"> <li>Swales</li> <li>Water collection and disposal systems</li> <li>French drains</li> <li>Water retention gardens</li> <li>Other water measures which keep surface water away from buildings and aid in groundwater recharge.</li> </ol> <p><b>Exception:</b> Additions and alterations not altering the drainage path.</p> <p><b>4.106.4 Electric vehicle (EV) charging for new construction.</b> New construction shall comply with Sections 4.106.4.2, 4.106.4.3 or 4.106.4.4 to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the <i>California Electrical Code</i>, Article 625.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>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: <ol style="list-style-type: none"> <li>Where there is no commercial power supply.</li> <li>Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than \$400.00 per dwelling unit.</li> </ol> </li> <li>Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.</li> </ol> <p><b>4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages.</b> For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.</p> <p><b>4.106.4.1.1 Identification.</b> 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".</p> <p><b>4.106.4.2 New multifamily dwellings.</b> If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.</li> <li>There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.</li> </ol> <p><b>4.106.4.2.1 Electric vehicle charging space (EV space) locations.</b> Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.</p>				<p><b>4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS)</b> When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:</p> <ol style="list-style-type: none"> <li>The EV space shall be located adjacent to an accessible parking space meeting the requirements of the <i>California Building Code</i>, Chapter 11A, to allow use of the EV charger from the accessible parking space.</li> <li>The EV space shall be located on an accessible route, as defined in the <i>California Building Code</i>, Chapter 2, to the building.</li> </ol> <p><b>Exception:</b> Electric vehicle charging stations designed and constructed in compliance with the <i>California Building Code</i>, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.</p> <p><b>Note:</b> Electric vehicle charging stations serving public housing are required to comply with the <i>California Building Code</i>, Chapter 11B.</p> <p><b>4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.</b> The EV space shall be designed to comply with the following:</p> <ol style="list-style-type: none"> <li>The minimum length of each EV space shall be 18 feet (5486 mm).</li> <li>The minimum width of each EV space shall be 9 feet (2743 mm).</li> <li>One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).</li> </ol> <p>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.</p> <p><b>4.106.4.2.3 Single EV space required.</b> Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.</p> <p><b>4.106.4.2.4 Multiple EV spaces required.</b> Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on ampereage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated ampereage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.</p> <p><b>4.106.4.2.5 Identification.</b> 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 <i>California Electrical Code</i>.</p> <p><b>4.106.4.3 New hotels and motels.</b> All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.</li> <li>There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.</li> </ol> <p><b>4.106.4.3.1 Number of required EV spaces.</b> The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.</p>				<p><b>4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS.</b> 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 4.303.1.4.</p> <p><b>Note:</b> 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.</p> <p><b>4.303.1.1 Water Closets.</b> 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.</p> <p><b>Note:</b> The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.</p> <p><b>4.303.1.2 Urinals.</b> 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.</p> <p><b>4.303.1.3 Showerheads.</b></p> <p><b>4.303.1.3.1 Single Showerhead.</b> Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.</p> <p><b>4.303.1.3.2 Multiple showerheads serving one shower.</b> 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.</p> <p><b>Note:</b> A hand-held shower shall be considered a showerhead.</p> <p><b>4.303.1.4 Faucets.</b></p> <p><b>4.303.1.4.1 Residential Lavatory Faucets.</b> 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.</p> <p><b>4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas.</b> 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.</p> <p><b>4.303.1.4.3 Metering Faucets.</b> Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.</p> <p><b>4.303.1.4.4 Kitchen Faucets.</b> 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.</p> <p><b>Note:</b> Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.</p> <p><b>4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS.</b> Plumbing fixtures and fittings shall be installed in accordance with the <i>California Plumbing Code</i>, and shall meet the applicable standards referenced in Table 1701.1 of the <i>California Plumbing Code</i>.</p>				<p><b>4.406.1 RODENT PROOFING.</b> Annular spaces around pipes, electric cables, conduits or other openings in soffit/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.</p> <p><b>4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING</b></p> <p><b>4.408.1 CONSTRUCTION WASTE MANAGEMENT.</b> 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.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>Excavated soil and land-clearing debris.</li> <li>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.</li> <li>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.</li> </ol> <p><b>4.408.2 CONSTRUCTION WASTE MANAGEMENT PLAN.</b> 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.</p> <ol style="list-style-type: none"> <li>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.</li> <li>Specify if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).</li> <li>Identify diversion facilities where the construction and demolition waste material collected will be taken.</li> <li>Identify construction methods employed to reduce the amount of construction and demolition waste generated.</li> <li>Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.</li> </ol> <p><b>4.408.3 WASTE MANAGEMENT COMPANY.</b> 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.</p> <p><b>Note:</b> The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.</p> <p><b>4.408.4 WASTE STREAM REDUCTION ALTERNATIVE [LR].</b> 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</p> <p><b>4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE.</b> 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</p> <p><b>4.408.5 DOCUMENTATION.</b> 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.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>Sample forms found in "A Guide to the California Green Building Standards Code (Residential)" located at <a href="http://www.hcd.ca.gov/CALGreen.html">www.hcd.ca.gov/CALGreen.html</a> may be used to assist in documenting compliance with this section.</li> <li>Mixed construction and demolition debris (C &amp; D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).</li> </ol>
			<p><b>DIVISION 4.2 ENERGY EFFICIENCY</b></p> <p><b>4.201 GENERAL</b></p> <p><b>4.201.1 SCOPE.</b> For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.</p>				<p><b>4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS)</b> When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:</p> <ol style="list-style-type: none"> <li>The EV space shall be located adjacent to an accessible parking space meeting the requirements of the <i>California Building Code</i>, Chapter 11A, to allow use of the EV charger from the accessible parking space.</li> <li>The EV space shall be located on an accessible route, as defined in the <i>California Building Code</i>, Chapter 2, to the building.</li> </ol> <p><b>Exception:</b> Electric vehicle charging stations designed and constructed in compliance with the <i>California Building Code</i>, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.</p> <p><b>Note:</b> Electric vehicle charging stations serving public housing are required to comply with the <i>California Building Code</i>, Chapter 11B.</p> <p><b>4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.</b> The EV space shall be designed to comply with the following:</p> <ol style="list-style-type: none"> <li>The minimum length of each EV space shall be 18 feet (5486 mm).</li> <li>The minimum width of each EV space shall be 9 feet (2743mm).</li> </ol> <p><b>4.106.4.3</b></p>								





### 2019 Low-Rise Residential Mandatory Measures Summary

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

Building Envelope Measures:	
§ 110.0(a)1	<b>Air Leakage.</b> 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 F283 or ASTM W780, or ASHRAE 101.1's (2)A4Q, 2(1)
§ 110.0(a)5	<b>Labeling.</b> Fenestration products and exterior doors must have a label meeting the requirements of § 110.11(a)
§ 110.0(b)	<b>Field fabricated exterior doors and fenestration products</b> must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or J4.5 for exterior doors. They must be caulked and/or weather-stripped.*
§ 110.7	<b>Air Leakage.</b> All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather-stripped.
§ 110.0(a)	<b>Insulation Certification by Manufacturers.</b> Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.0(g)	<b>Insulation Requirements for Heated Slab Floors.</b> Heated slab floors must be insulated per the requirements of § 110.0(b)
§ 110.0(h)	<b>Roofing Products Solar Reflectance and Thermal Emittance.</b> The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.0(i) and be labeled per §10.113 when the installation of a cool roof is specified on the CFR.
§ 110.0(i)	<b>Radiant Barrier.</b> When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 110.0(j)	<b>Ceiling and Rafter Roof Insulation.</b> Minimum R-22 insulation in wood frame ceiling, or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. All access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to sealing insulation either above or below the roof deck or on top of a gravel ceiling.*
§ 150.0(a)	<b>Loose-fill Insulation.</b> Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c)	<b>Wall Insulation.</b> 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)	<b>Raised-floor Insulation.</b> Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0(f)	<b>Slab Edge Insulation.</b> Slab edge insulation must meet all of the following: have a water absorption rate; for the insulation material alone without facings, no greater than 1.0 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 § 110.0(i).
§ 150.0(g)1	<b>Vapor Retarder.</b> In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d)
§ 150.0(g)2	<b>Vapor Retarder.</b> In climate zones 14 and 15, 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(h)	<b>Fenestration Products.</b> Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.39, or the weighted average U-factor of all fenestration must not exceed 0.59.*
Fireplaces, Decorative Gas Appliances, and Gas Log Measures:	
§ 110.0(e)	<b>Pilot Light.</b> Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1	<b>Closable Doors.</b> Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2	<b>Combustion Intake.</b> 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 gas-tight damper or combustion air control device.*
§ 150.0(e)3	<b>Flue Damper.</b> Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
Space Conditioning, Water Heating, and Plumbing System Measures:	
§ 110.0(h) 110.3	<b>Certification.</b> 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)	<b>HVAC Efficiency.</b> Equipment must meet the applicable efficiency requirements in Table 110.2A through Table 110.2K.*
§ 110.2(b)	<b>Controls for Heat Pumps with Supplementary Electric Resistance Heaters.</b> 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)	<b>Thermostats.</b> All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.3(a)4	<b>Water Heating Recirculation Loops Serving Multiple Dwelling Units.</b> Water heating recirculation loops serving multiple dwelling units must meet the air leakage valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(a)4.
§ 110.3(a)6	<b>Isolation Valves.</b> Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.
§ 110.5	<b>Pilot Lights.</b> Continuously burning pilot lights are prohibited for natural gas fan-type central furnaces, household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour), and pool and spa heaters.*
§ 150.0(h)1	<b>Building Cooling and Heating Loads.</b> Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.



### 2019 Low-Rise Residential Mandatory Measures Summary

Requirements for Ventilation and Indoor Air Quality:	
§ 150.0(a)1	<b>Requirements for Ventilation and Indoor Air Quality.</b> 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(a)1.
§ 150.0(a)1C	<b>Single Family Detached Dwelling Units.</b> Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1 and 4.2 and as specified in § 150.0(a)1C.
§ 150.0(a)1E	<b>Multifamily Attached Dwelling Units.</b> Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 mch wtd) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix 04B19.
§ 150.0(a)1F	<b>Multifamily Building Central Ventilation Systems.</b> Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.
§ 150.0(a)1G	<b>Kitchen Range Hoods.</b> Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0(a)2	<b>Field Verification and Diagnostic Testing.</b> Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix 04B17. A kitchen range hood must be verified in accordance with Reference Residential Appendix 04B17.4.3 to confirm it is rated by IMV to comply with the airflow rate and sound requirements as specified in Sections 5 and 7.2 of ASHRAE 62.2.
Pool and Spa Systems and Equipment Measures:	
§ 110.4(a)	<b>Certification by Manufacturers.</b> Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.*
§ 110.4(b)1	<b>Piping.</b> Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or de-aeration and return lines, or bulkhead or bulkhead connections to allow for future solar heating.
§ 110.4(b)2	<b>Covers.</b> Outdoor pools or spas that have a heat pump or gas heater must have a cover.*
§ 110.4(b)3	<b>Directional Inlets and Time Switches for Pools.</b> Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5	<b>Pilot Light.</b> Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(j)	<b>Pool Systems and Equipment Installation.</b> Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.*
Lighting Measures:	
§ 110.9	<b>Lighting Controls and Components.</b> All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.*
§ 150.0(h)1A	<b>Luminaire Efficacy.</b> All installed luminaires must meet the requirements in Table 150.0-A.
§ 150.0(h)1B	<b>Blank Electrical Boxes.</b> The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(h)1C	<b>Recessed Downlight Luminaires in Ceilings.</b> Luminaires recessed into ceilings must meet all of the requirements for installation control (C) labeling, air leakage, sealing, maintenance, and socket and light source as described in § 150.0(h)1C.
§ 150.0(h)1D	<b>Electronic Ballasts for Fluorescent Lamps.</b> Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.*
§ 150.0(h)1E	<b>Night Lights, Step Lights, and Path Lights.</b> Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.
§ 150.0(h)1F	<b>Lighting Integral to Exhaust Fans.</b> Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(h)1.*
§ 150.0(h)1G	<b>Screw based Luminaires.</b> Screw based luminaires must contain lamps that comply with Reference Joint Appendix J4B.*
§ 150.0(h)1H	<b>Light Sources in Enclosed or Recessed Luminaires.</b> Lamps and other separable light sources that are not compliant with the J4B elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.*
§ 150.0(h)1	<b>Light Sources in Drawers, Cabinets, and Linen Closets.</b> 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(h)2A	<b>Interior Switches and Controls.</b> All forward phase-out dimmers used with LED light sources must comply with NEMA S3L-7A.
§ 150.0(h)2B	<b>Interior Switches and Controls.</b> Exhaust fans must be controlled separately from lighting systems.*
§ 150.0(h)2C	<b>Interior Switches and Controls.</b> Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*
§ 150.0(h)2D	<b>Interior Switches and Controls.</b> Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0(h)2E	<b>Interior Switches and Controls.</b> Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(h)2.
§ 150.0(h)2F	<b>Interior Switches and Controls.</b> Lighting controls must comply with the applicable requirements of § 110.9.



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§ 150.0(h)3A	<b>Cleanances.</b> Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer.
§ 150.0(h)3B	<b>Liquid Line Drier.</b> Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(i)1	<b>Storage Tank Insulation.</b> Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum R-17 external insulation or R-16 internal insulation when the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(i)2A	<b>Water Piping, Solar Water-heating System Piping, and Space Conditioning System Insulation.</b> All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank, all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch, all hot water piping with a nominal diameter less than 3/4 inch that is associated with a domestic hot water recirculation system, from the heating source to piping tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(i)3	<b>Insulation Protection.</b> Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(i)1	<b>Gas or Propane Water Heating Systems.</b> Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 1.25 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within five feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Load", a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed, a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance, and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0(i)2	<b>Recirculating Loops.</b> Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(a)5.
§ 150.0(i)3	<b>Solar Water-heating Systems.</b> Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.
Ducts and Fans Measures:	
§ 110.0(h)3	<b>Ducts.</b> Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.*
§ 150.0(m)2	<b>CMC Compliance.</b> All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and 606.0 (CMC) and 110.200, HVAC Duct Construction Standards Metal and Flexible, 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1, 4, 3B). Portions of the duct system completely exposed and surrounded by directly conditioned space shall not be insulated. Connections to ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*
§ 150.0(m)3	<b>Factory-Fabricated Duct Systems.</b> 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 glue bands.
§ 150.0(m)3	<b>Field-Fabricated Duct Systems.</b> 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	<b>Backdraft Damper.</b> Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8	<b>Gravity Ventilation Dampers.</b> 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	<b>Protection of Insulation.</b> Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, steel metal, painted coatings, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10	<b>Porous Inner Core Flex Duct.</b> Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11	<b>Duct System Sealing and Leakage Test.</b> When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.
§ 150.0(m)12	<b>Air Filtration.</b> 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 1500-A Pressure drops and labeling must meet the requirements in § 150.0(m)12. Filters must be accessible for regular service.*
§ 150.0(m)13	<b>Space Conditioning System Airflow Rate and Fan Efficiency.</b> Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency ≤ 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 efficiency ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.*



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§ 150.0(h)23	<b>Interior Switches and Controls.</b> An energy management control system (EMCS) may be used to comply with control requirements if it provides functionality of the specified control according to § 110.9, meets the insulation Certificate requirements of § 150.4, meets the EMCS requirements of § 130.0(C), and meets all other requirements in § 150.0(h)2.
§ 150.0(h)24	<b>Interior Switches and Controls.</b> A multi-sense programmable controller may be used to comply with dimmer requirements of § 150.0(h)1 if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(h)2.
§ 150.0(h)2	<b>Interior Switches and Controls.</b> In all bedrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic off functionality. If an occupant sensor is installed, it must be initially configured to manual control using the manual control required under Section 150.0(h)2C.
§ 150.0(h)21	<b>Interior Switches and Controls.</b> Luminaires that are or contain light sources that meet Reference Joint Appendix J4B requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.*
§ 150.0(h)2K	<b>Interior Switches and Controls.</b> Under cabinet lighting must be controlled separately from ceiling installed lighting systems.
§ 150.0(h)3A	<b>Residential Outdoor Lighting.</b> For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirement in Item § 150.0(h)3A (ON and OFF switch) and the requirements in either § 150.0(h)3A (photocell) and either a motion sensor or automatic time switch control, or § 150.0(h)3A (astronomical time clock), or an EMCS.
§ 150.0(h)3B	<b>Residential Outdoor Lighting.</b> For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches, and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.0(h)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(h)3C	<b>Residential Outdoor Lighting.</b> For low-rise residential buildings with four or more dwelling units, any outdoor lighting for private parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(h)3B or § 150.0(h)3D must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
§ 150.0(h)4	<b>Internally Illuminated address signs.</b> Internally illuminated address signs must comply with § 140.8, or must consume no more than 5 watts of power as determined according to § 130.0(a).
§ 150.0(h)5	<b>Residential Garages for Eight or More Vehicles.</b> Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
§ 150.0(h)6A	<b>Interior Common Areas of Low-rise Multifamily Residential Buildings.</b> In a low-rise multifamily residential building where the total interior common areas in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be controlled by Table 150.0-A and be controlled by an occupant sensor.
§ 150.0(h)6B	<b>Interior Common Areas of Low-rise Multifamily Residential Buildings.</b> In a low-rise multifamily residential building where the total interior common areas in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must: <ul style="list-style-type: none"> <li>Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and</li> <li>Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designated paths of ingress and egress.</li> </ul>
Solar Ready Buildings:	
§ 110.10(a)1	<b>Single Family Residences.</b> 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(d).
§ 110.10(a)2	<b>Low-rise Multifamily Buildings.</b> Low-rise multifamily buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d).
§ 110.10(b)1	<b>Minimum Solar Zone Area.</b> The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and piping requirements as specified in Title 24, Part 9 or any other parts of Title 24 or any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 90 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single-family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. For low-rise multifamily buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed within the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.
§ 110.10(b)2	<b>Azimuth.</b> All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north.
§ 110.10(b)3A	<b>Shading.</b> The solar zone must not contain any obstructions, including but not limited to vents, chimneys, architectural features, and roof mounted equipment.*
§ 110.10(b)3B	<b>Shading.</b> Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the lowest point of this solar zone, measured in the vertical plane.
§ 110.10(b)4	<b>Structural Design Loads on Construction Documents.</b> 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)	<b>Interconnection Pathways.</b> The construction documents must include a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system.
§ 110.10(d)	<b>Documentation.</b> A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant.
§ 110.10(e)1	<b>Main Electrical Service Panel.</b> The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2	<b>Main Electrical Service Panel.</b> 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".