# Key Notes

1 3/4" water main. MWSD meter

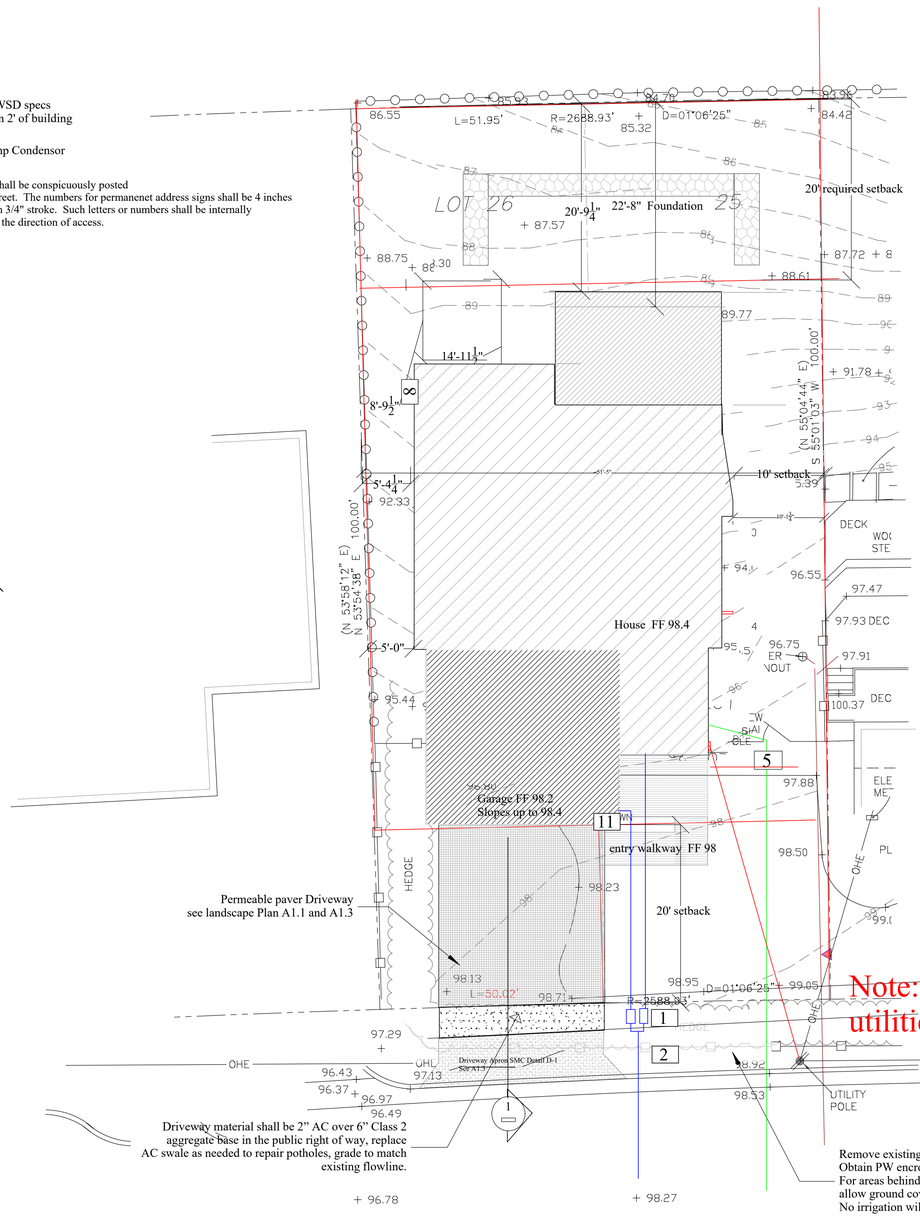
2 Fire Water

3 200 amp main panel

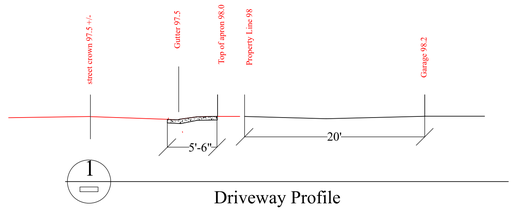
5 Sewer lateral per MWSD specs with cleanout within 2' of building and at turns

8 Proposed Heat Pump Condensor

11 building idenfication shall be conspicuously posted and visible from the street. The numbers for permanenet 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.




The geotechnical report, named/# Job No. 21-140, date May 26, 2021, by Charles Kissick, shall be retained on the construction site.
The geotechnical engineer of record is Sigma Prime Geosciences , with the contact number 650 728 359 and email of sigmaprm@gmail.com .
The contractor must shall notify the geotechnical engineer of record at least 48 hours before construction of geotechnical related work.
The geotechnical part of construction work, including but not limited to, all the earthwork and foundation constructions, shall be approved by the geotechnical engineer of record




1 Driveway Profile

## Grading

Building site with surrounding drainage features is moderately slope,
Existing grades will be maintained with new structure. cut of 125 yds for lower floor and foundaiton and rain garden construction.

## Drainage

stormwater drainage retention is proposed by the use of two rain gardens to accodate roof water. driveways and walkways will be constrcucted of permeable materials. See A1.1, Drainage and Landscape Plan

## Parking

Parking Analysis: two covered spaces will be provided in garage

**Project Data**

**Lot Coverage**

**Proposed New Lot Coverage**

| | | | |
|---|---|---|---|
| Lot Size | | 598 | sq.ft. |
| SFD and deck | | 1764 | sq ft |
| Attached Garage | | | |
| Lot Size | | 5098 | |
| Total | | 1764 | sq ft |
| **Proposed Lot Coverage** | **1764 / 5098** | **or** | **34.60180 %** |

**Floor Area Ratio (FAR)**

| | | | |
|---|---|---|---|
| Lot Size | | 5098 | sq.ft. |
| 1st Floor living | | 1117 | sq.ft. |
| garage | | 441 | sq.ft. |
| basement | | 841 | sq.ft. |
| Total | | 2399 | sq.ft. |
| Lot Size | | 5098 | sq.ft. |
| **Proposed FAR** | **2399 / 5098** | **or** | **47.1 %** |
| Total Conditioned area | | 1958 | sq.ft. |

## Project Description

Project consists of a
Single Family Dwelling
with attached garage
Occupancy R-3 and U
Zoning Residential S-17
Construction Type: V-B, wood frame two stories
Automatic Fire Sprinklers required

Square footage : total 2446
Zoning S-17 R-1

DR method of compliance:
facade articulation

Energy Requirements:
PV system 2.49 KWdc
HERS verifications
Building-level Verifications:
• Indoor air quality ventilation
• Kitchen range hood
Heating System Verifications:
• Verified heat pump rated heating capacity
HVAC Distribution System Verifications:

## 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

## Sheet Index




## Fire Protection Notes

1. Interconnected hard-wired smoke detectors required with battery back-up which shall be installed per manufacturers instrcutions and NFPA 72, California Building Code and Coastside Fire District Ordinance 2019-01 in all reconditioned or new sleeping rooms and at a point centrally llocated 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 hieght shall be 24" minimum and the net width no less than 20'. Finished sill height shalll be no more than 44" above the finished floor.

3. As per CFD ordinance 01- 2019, building idenfication shall be conspicuously posted and visible from the street. The numbers for permanenet 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 acess.

4. As per Coastside Fire District Ordinance 2019-01, 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 ad1acent to or overhanging a building free of dead or dying wood. The Coastside Fire District Ordinance 2019-01, 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 Half Moon Bay Department of Public Works, San Mateo County Department of Public Works, the Coastside Fire District Ordinance 2019-01, 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 producea 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

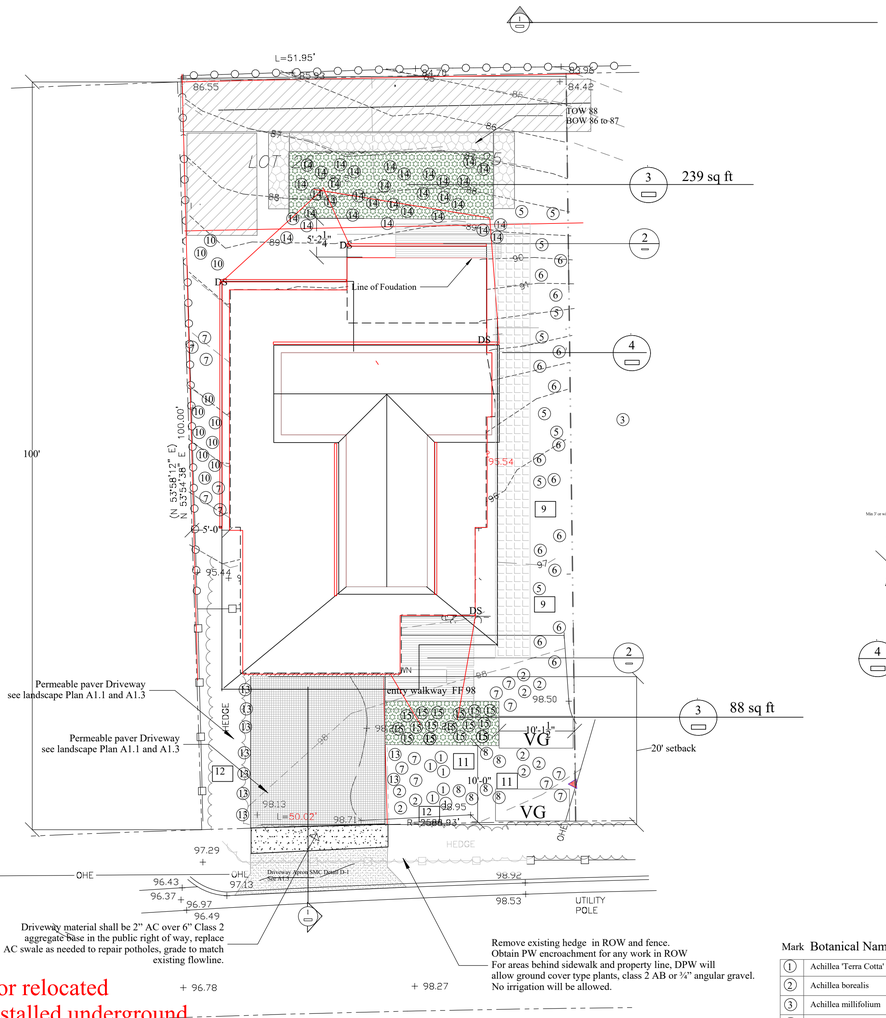

OWNER:
Kim and Andrew Dellins
PO 396 El Granada 94018
Dellinsfamily@gmail.com
650-740-4492

Site Location
AP # 037-084-240
Stetson Ave. Moss Beach Ca

Designer: Tim Pond
Tim Pond Design and Construction
Phone 650.576.7177 timcpond@gmail.com

Drawn By Tim Pond
CA Contractor's License # 931840


| | |
|---|---|
| Drawn By TP | Scale 1/4" = 1' |
| Revisions | Date |
| Building/Planning Submittal | 11.21.21 |
| Site and Title | A1.0 |




Note: All New or relocated utilities to be installed underground

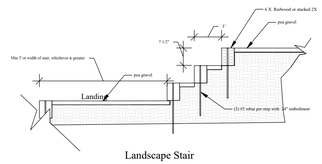
Drainage Narrative:
Stormwater from replaced or new impervious surfaces will divert to two raingardens.

Model Water Efficient Landscape Ordinance Prescriptive Compliance Option
(Required Information and Signature, and prescriptive measures)

Project Address unassigned
1007 sq ft of project landscaping. no turf on the project
Private residence
No irrigation, hand water only. Water purveyor is Montara Water and Sanitary District
Project Applicant: Tim Pond .
Owner responsible for Maintenance
Denise Pickard , owner residing on property

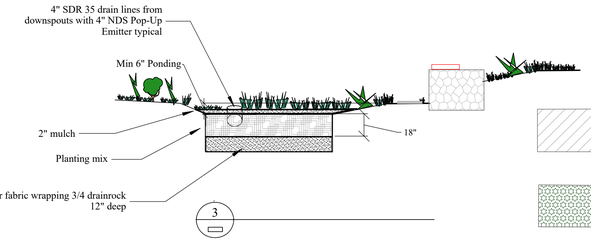
Mandatory Measures:
Incorporate compost at a rate of at least four cubic yards per 1,000 square feet to a depth of six inches into landscape area (unless contra-indicated by a soil test);
Plant material shall comply with all of the following;
For residential areas, install climate adapted plants that require occasional, little or no summer water (average WUCOLS plant factor 0.3) for 75% of the plant area excluding edibles and areas using recycled water; For non-residential areas, install climate adapted plants that require occasional, little or no summer water (average WU COLS plant factor 0.3) for 100% of the plant area excluding edibles and areas using recycled water;
(8) A minimum three inch (3") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.

"I agree to comply with the requirements of the prescriptive compliance option to the MWELO".
Signature




Landscape Stair

4




3

## Symbol Legend

| | |
|---|---|
| ○ | 1 gallon plant |
| X | 5 Gallon Plant |
| 11 | 15 gallon plant |
| ↓ ↓ | Direction of surface flow of water (Direct water away from buildings and neighboring properties) |
| DS | Down Spout |
| VG | Vegetable Garden |
| ——— | 4" SDR 35 piping for rainwater |

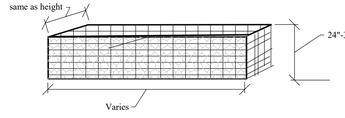
Undisturbed area

Rain Garden

Gabion Wall

VG Vegetable Garden

Gabion Wall: Angular 3"-5" rock in 3X5 15 ga welded wire mesh cage



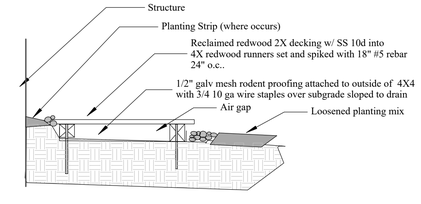

1

Gabion Wall

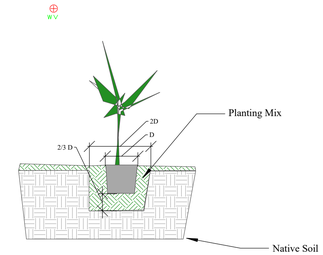
## Plant Legend

| Mark | Botanical Name | Common Name | Water Use | Type [1.] | Quantity |
|---|---|---|---|---|---|
| ① | Achillea 'Terra Cotta' | yarrow | Low .03 | Ground Cover | 18 total |
| ② | Achillea borealis | island pink yarrow | Low .03 | Ground Cover | |
| ③ | Achillea millifolium | yarrow | Low .03 | Ground Cover | |
| ④ | Cneorum tricoccon | Olive | Moderate | Tree | 3 |
| ⑤ | Arctostaphylos uva-ursi | Wood's Compact' | Low .03 | Shrub | 13 |
| ⑥ | Baccharis pilularis | coyote bush | Low .03 | Shrub | 2 |
| ⑦ | Bouteloua curtipendula | sideoats gramma | Very Low .01 | Oramental grass | 10 |
| ⑧ | Calandrinia spectabilis | rock purslane | Low .03 | Schrub | 10 |
| 9 | Aster chilensis | dwarf California aster | Moderate .05 | Small tree | |
| ⑩ | Artichoke | Artichoke | Edible NA | Flowering | 6 |
| 11 | Pear Tree | Pear Tree | Moderate .05 | Tree | |
| 12 | Prunus ilicifolia ssp. lyonii | Catalina cherry | Low .03 | Tree | |
| ⑬ | Erigeron karvinskianus | Santa Barbara Daisy | Low .03 | Ground cover | 85 |
| ⑭ | Festuca californica | California fescue | Low .03 | Oramental grass | 30 |
| ⑮ | Fragaria spp. | Strawberries | Edible | Ground cover | 30 |

Source: WULCOS IV UC California Agriculture and Natural Rescources




2 Permeable Walkway or deck at Building




Typical Planting Detail

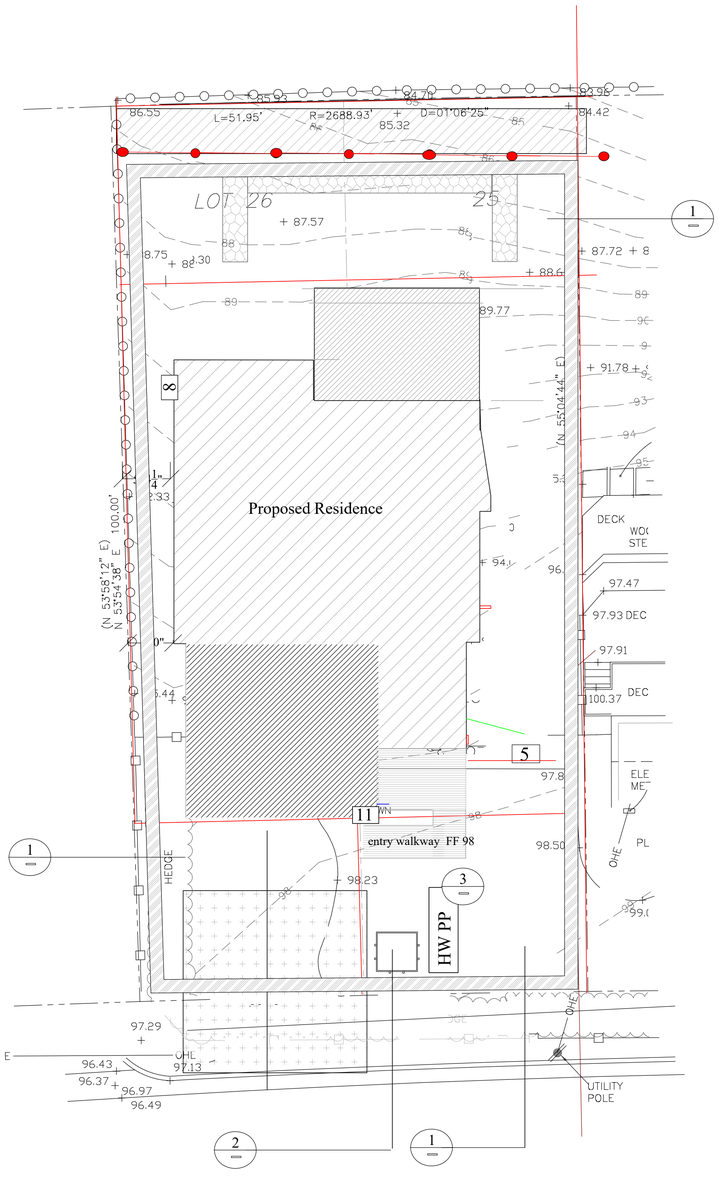
1

OWNER:
Kim and Andrew Dellins
PO 396 El Granada 94018
Dellinsfamily@gmail.com
650-740-4492

Site Location
AP # 037-084-240
Stetson Ave. Moss Beach Ca

Designer: Tim Pond
Tim Pond Design and Construction
Phone 650.576.7177 timcpond@gmail.com

| | |
|---|---|
| Drawn By TP | Scale 1/10" = 1' |
| Revisions | Date |
| Planning Submittal | 11.21.21<br>11.21.21 |
| Lanscape and Drainage Plan | A1.1 |




1

## Erosion Control Symbol Key

Area of Disturbance

Straw Fiber Wattle Installation

Undisturbed Area

Construction Entrance

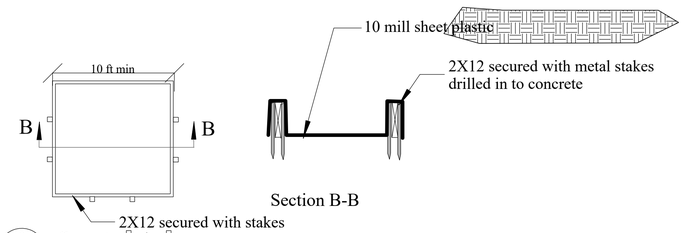
See Detail 4

Straw Fiber roll

Tree Protection 6' chainlink fence on driven 1.5" galv. poles or 2X4 < 8' oc or stands where utilities or exisitng hardscape precludes driven poles

Post signs on fence indicating "this tree protection fencing shall remain in place for the duration of the project and no work shall be undertaken within the limits of the area prescribed by this fence"

See BMP sheet for more information



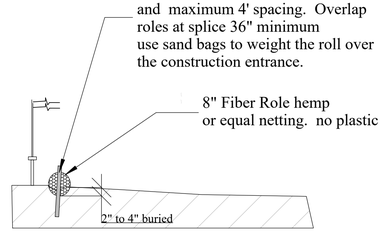

2 Concrete washout

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

HW PP

3 Handwashing Station Portable toilet

Provide secondary containment




1 Fiber Role

# Erosion Control Narrative and Responsible Person Contact Info

Access to the site will be stabilized constrcution entrance
Mulch should be spread on exposed soils if work is proceeding during wet weather. Refer to BMP sheet and additonal EC notes this page for more details on stockpiles, storage of materials etc. Erosion control should be check weekly and before and after storms, and particular attention should be given to the front property line, where runoff natually 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.

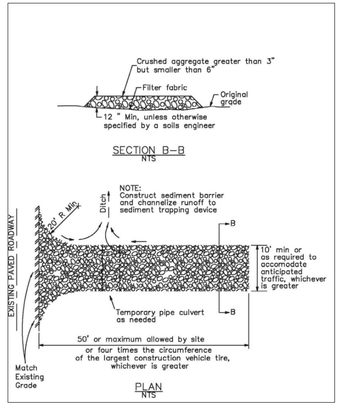
8 Store erosion materials on site as required required on weekends and during rain events at the fornt of the property for easy access.

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.

**Stabilized Construction Entrance/Exit TC-1**




4

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Site Location
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Designer: Tim Pond
Tim Pond Design and Construction
Phone 650.576.7177 timepond@gmail.com

Drawn By Tim Pond
CA Contractor's License # 931840

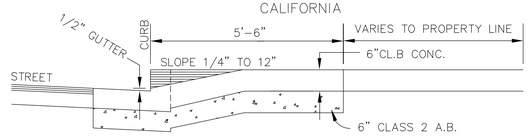
| Drawn By TP | Scale 1/4" = 1' |
|---|---|
| Revisions | Date |
| Building/Planning Submittal | 11.21.21 |
| Erosion Control | A1.2 |

SAN MATEO COUNTY DEPARTMENT
OF
PUBLIC WORKS

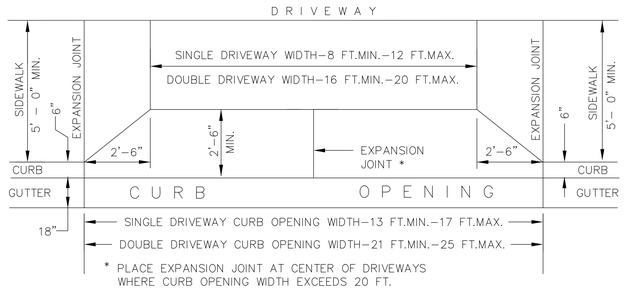
REDWOOD CITY
CALIFORNIA

DRAWN BY: D.P.
CHECK BY: J.A.L.
APPROVED BY: N.R.C.

SCALE: NONE
DATE: 6/95
REVISED: 4/97




## SECTION




## PLAN

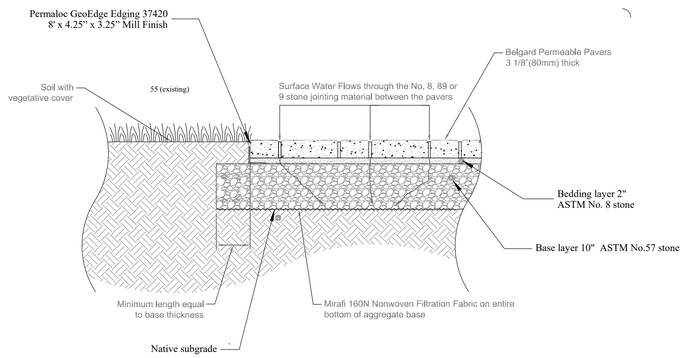

## ELEVATION

NOTE:

WHERE POSSIBLE, 22 FT. DISTANCES OR MULTIPLES OF 22 FT. DISTANCES SHOULD BE OBTAINED BETWEEN CURB OPENINGS. CONSTRUCT MONOLITHIC CURB, GUTTER, DRIVEWAY AND APRON. WHERE DRIVEWAYS OF SEPARATE RESIDENTIAL DWELLINGS ARE CONSTRUCTED ADJACENT TO ONE ANOTHER, DOUBLE THE DIMENSIONS SHOWN ABOVE. USE NO. 4 REINFORCING BAR DOWELS AS SHOWN ON STANDARD CURB, GUTTER AND SIDEWALK DETAIL.

# STANDARD STRUCTURES
# DRIVEWAY WIDTHS AND CURB OPENINGS
# FOR
# SINGLE FAMILY RESIDENTIAL DWELLINGS

D-1




1
A3.1

Belgard Aqualine Victorian

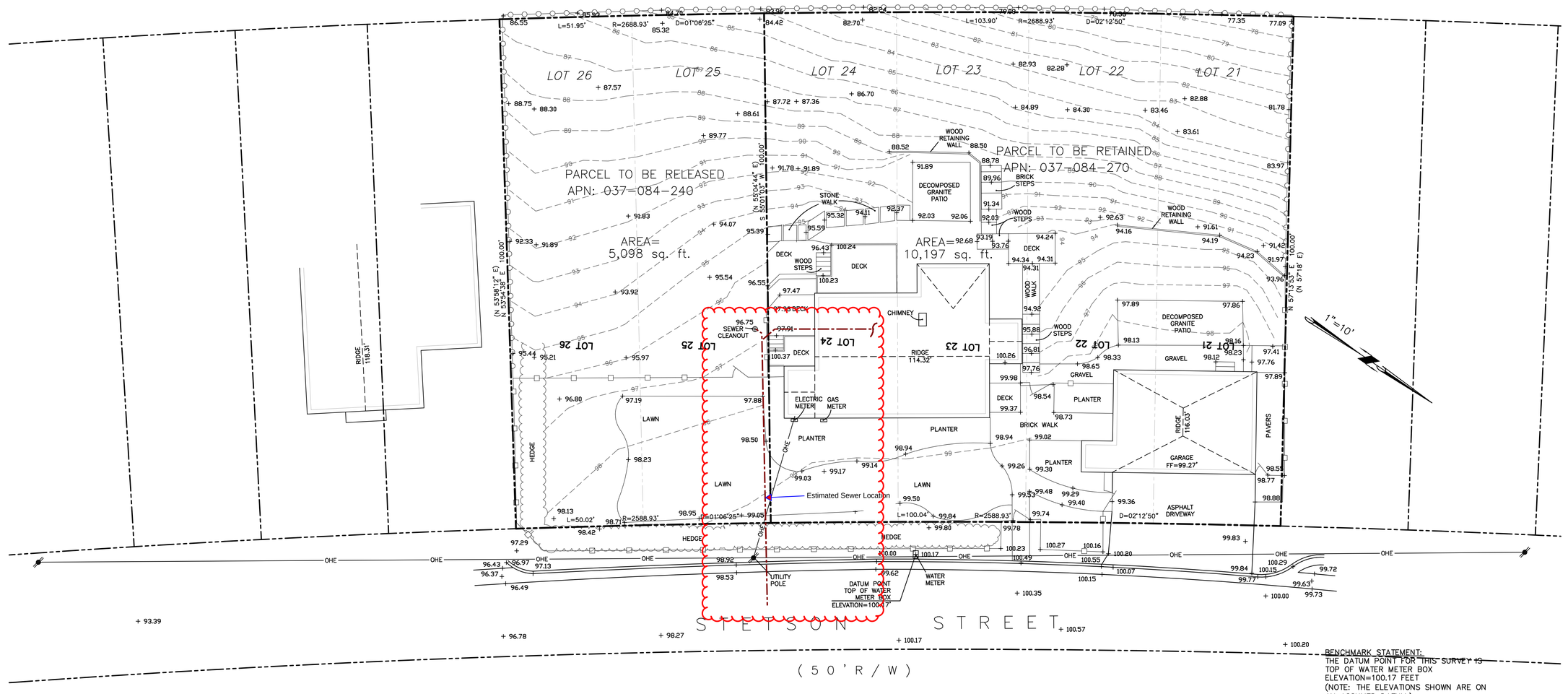

OWNER:
Kim and Andrew Dellins
PO 396 El Granada 94018
Dellinsfamily@gmail.com
650-740-4492

Site Location
AP # 037-084-240
Stetson Ave. Moss Beach Ca

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


Drawn By Tim Pond
CA Contractor's License # 931840

| Drawn By TP | Scale 1/4" = 1' |
|---|---|
| Revisions | Date |
| Building/Planning Submittal | 5.17.21 |
| Erosion Control | A1.3 |




BENCHMARK STATEMENT:
THE DATUM POINT FOR THIS SURVEY IS TOP OF WATER METER BOX ELEVATION=100.17 FEET
(NOTE: THE ELEVATIONS SHOWN ARE ON AN ASSUMED DATUM.)

SURVEYOR'S STATEMENT:
THIS BOUNDARY AND TOPOGRAPHIC SURVEY WAS MADE BY ME OR UNDER MY DIRECTION ON THE GROUND AND REPRESENTS MEASUREMENTS MADE JULY 2018. PROPERTY CORNERS WERE FOUND ON THE SUBJECT PROPERTY AND NO ENCROACHMENTS EXIST NO THE BOUNDARY SHOWN. NO EASEMENTS ARE SHOWN.

LICENSED LAND SURVEYOR
SAVIOR MICALLEF No. 8289
STATE OF CALIFORNIA

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

10-04-19
DATE

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

# BOUNDARY AND TOPOGRAPHIC SURVEY OF 550 STETSON STREET, MOSS BEACH, CA 94038

UNINCORPORATED SAN MATEO COUNTY CALIFORNIA

| No. | Revisions |
|---|---|

Date 05-11-19
Scale 1"=10'
Design
Drawn SPM
Approved SPM
Job No

Drawing Number:

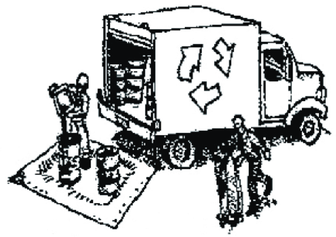
1 OF 1

SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.

# 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

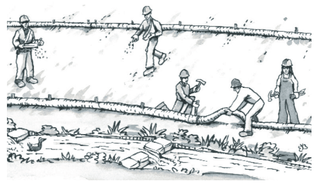
**Maintenance and Parking**

- ❑ 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.

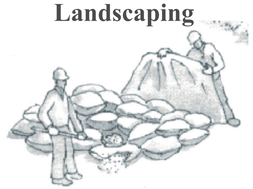
**Sawcutting & Asphalt/Concrete Removal**

- ❑ 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, abosorb, 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

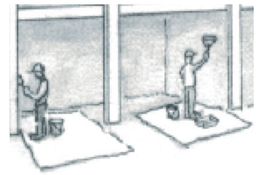
- ❑ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff, and wind.
- ❑ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that 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



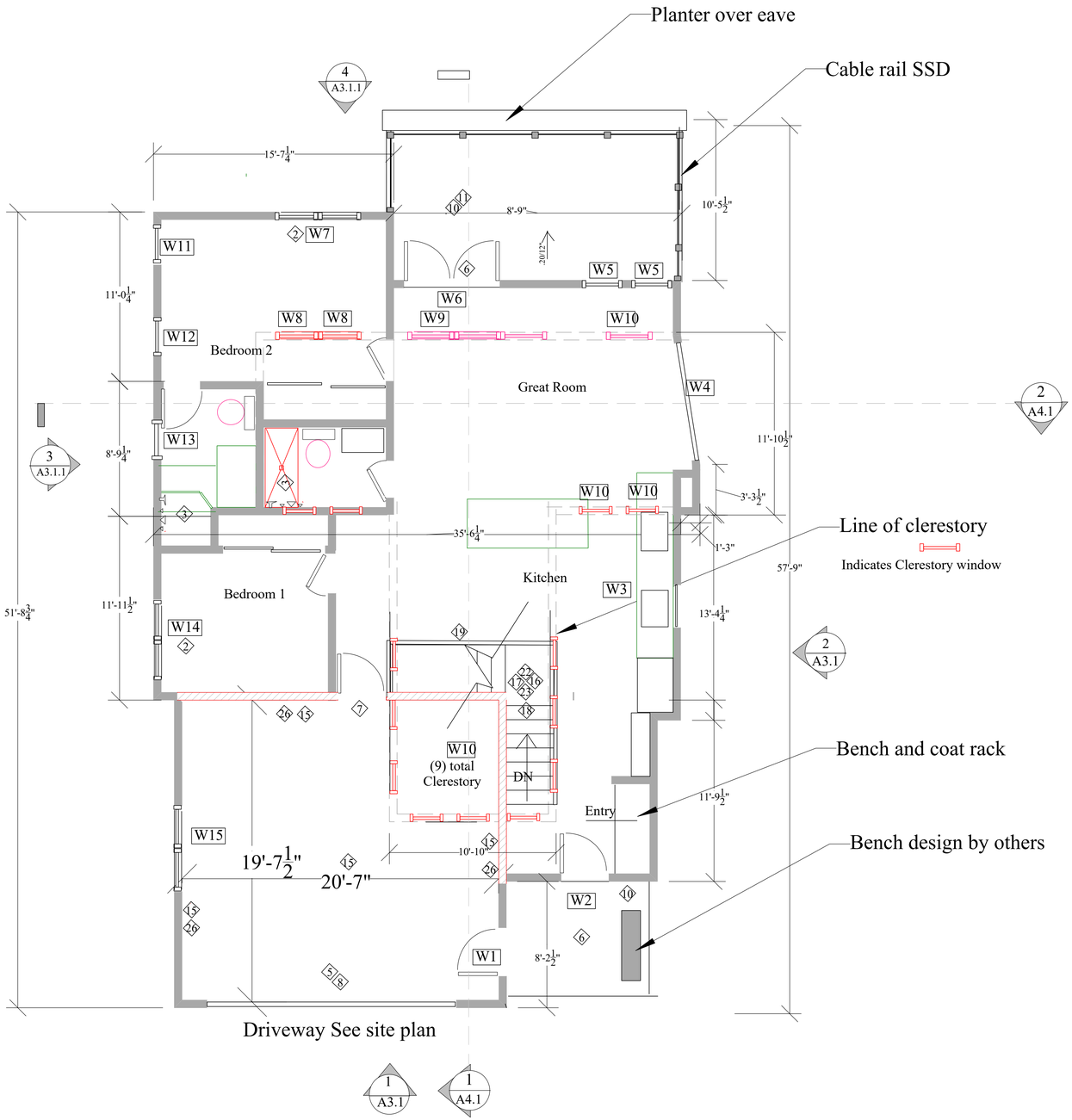
**Painting Cleanup and Removal**

- ❑ 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**




## Key Notes

1. doors and panels of shower enclosure shall be fully tempered, laminated safety glass, or approved plastic. CRC R308.4,
2. Egress Window: confirm before ordering window egress specifications:
   a) The escape opening has a minimum net clear opening of 5.7 square feet (grade-floor openings shall be minimum 5 square feet);
   b) minimum net clear opening height of 24 inches; and minimum net clear opening width of 20 inches.
   c) The bottom of the clear opening is not more than 44 inches above the floor and opens directly to street, public alley, yard, or court that opens to a public way. CRC R310.1.1
3. Tile shower enclosure to 72" AFF min over waterproof substrate. Materials used as backers for wall tile in tub and shower areas and wall panels in shower areas shall be glass mat gypsum panel, fiber-reinforced gypsum panels, non-asbestos fiber-cement backer board, or non-asbestos fiber-cement reinforced cementitious backer units installed in accordance with manufacturers' recommendations. Shower compartments.regardless of shape,shall have a minimumfinished interior of 1024 square inches (0.6606 m2) and shall also be capable of encompassing a 30 inch(762mm) circle.The minimum required area and dimensions shall be measured at a height equal to the top of1he threshold and point tangent to the centerline. The area and dimensions shall be Maintained to a point of not less than 70 inches above the shower drain outlet with no protrusions other than the fixture valve otr valves, showerheads,soap dishes,shelves and safety grab bars,or rails. Fold-down seats in accessible shower stalls shall be permitted to protrude into the 30 inch circle. doors and panels of shower enclosure shall be fully tempered, laminated safety glass, or approved plastic. CRC R308.4,
4. 22 X 36 Attic Access
5. Garage Slope to Drain 1.2% to front
6. Provide landing at door min 42" wide X 6'-0" .75" below finish floor not to exceed 2% slope in any direction.
7. Minimum 1-3/8" solid or honeycomb core steel door or 20 minute fire-rated door, tight fitting, self closing and self latching per CRC R302.5
8. Per senate bill 969, Provide battery back-up for garage door opener
9. Address numbers for the ADU. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches high with a minimum stroke width of ½ inch. Numbers shall not be spelled out. These numbers shall contrast with their background. [R319.1] New residential buildings shall have internally illuminated address numbers contrasting with the background so as to be seen from the public way fronting the building. Residential address numbers shall be at least six feet above the finished surface of the driveway
10. Maxim Lighting Civic Dark Sky LED Outdoor Wall Sconce
    Medium size Typical at all doors (dark sky compiant)
11. Metacrylics deck surface Class A roof Assembly
    at low slope roof.
    UL File No.R11260 Class A fire rating .METACRYLICS R11260
    365 OBATA CT GILROY, CA 95020-7087 USA
    Apply material over 1/4-in. thick Georgia-Pacific Gypsum over 3/4 inch plywood deck. Slope joists to drain
12. Class A Composition Shingle Roof
    Color: Storm Grey
    Manufacturer: Malarkey
    Use FELTBUSTER™ HIGH-TRACTION SYNTHETIC ROOFING FELT as underlayment Roof < 4:12 recieve 2 layers Meets or exceeds the physical requirements of ASTM D226 and D4869. Install according to manufacturing specs, incluse use fo GAF "LEAK BARRIER" at eaves and valleys.
13. Foam insulation at roof deck typical R-30 per title 24. Ceritification by installer required after installation.
    Manufacturer: Carlisle.
    Product Name: Sealtite Pro One Zero
    Description: Closed Cell spray applied polyurethane foam plastic insulation .Typical at building envelope roof and walking decks above conditioned space.
    This structure has unvented roof and code compliance to R806.5 for Climate Zone 3.
14. Sheetrock walls and ceiling of garage with 5/8" type fire X sheetrock
15. Max Riser 7.75" max net tread width 10.5, min tread wiidth 3'
16. Provide clear landing at top and bottom stair equal to width of tread (min 3' Clear)
17. Stair and rail details see A3.2 detail 8
18. 42" min height guard rail constructed so that 4" sphere cannot pass through SSD and Elevations for more information
19. R-21 Insulation batts typical
20. Fire-block concealed spaces between stair stringers at the top and bottom of the run.
21. The triangular openings at the open side of stair, formed by the riser, tread and bottom rail of a guard, shall not allow passage of a sphere 6-inches in diameter.#2. Guards on the open side of stairs shall not have openings that allow passage of a sphere 4 3/8-inches in diameter.
22. crawlspace access 18X24
23. Provide Class 1 vapor retarder material over crawlspace floor
    net area of ventilation openings shall be not less than 1 square foot for each 1,500 square feet of under-floor space area with such vapor barrier protection.
    One such ventilating opening shall be within 3 feet of each corner of the building or provide equivalent ventilation with a ducted foundation fan.
24. 1 hour fire rated wall . 5/8" fore X SR both side Provide Steel electrical boxes and do not exceed 2 boxs per stud bay. Separate boxes on opposite sides of the wall by 24" or protect with rated putty pads. Note also: Membrane (gypsum boeard) penetrations are permitted of not more than 2-hour fire-resistance-rated walls and partitionss that do not exceed 16 square inches (0.0103 m2) in area provided that the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m2) in any 100 square feet (9.29 m2) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.1 mm). Per Table R302.1 (1), Limit opening in walls 4' form property line to 25% of the gros s area of the wall
25. location of 22-inch x 30-inch minimum attic access. CRC R807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Tim Pond Design and Construction
Phone 650.576.7177 timcpond@gmail.com

Drawn By Tim Pond
CA Contractor's License # 931840


| Drawn By TP | Scale 1/4" = 1' |
|---|---|
| Revisions | Date |
| Building/Planning Submittal | 5.17.21<br>11.21.21 |
| Main Floor Plan | A2.1 |

## General Notes

W X Window Schedule See A2.2

Key note refer to A2.1

1. Blueskin® VP100 Self-Adhered Water Resistive Air Barrier Membrane and compatable Henry Brandliquid applied and window flashing applied in accordance with manufacturers recomendaitons.
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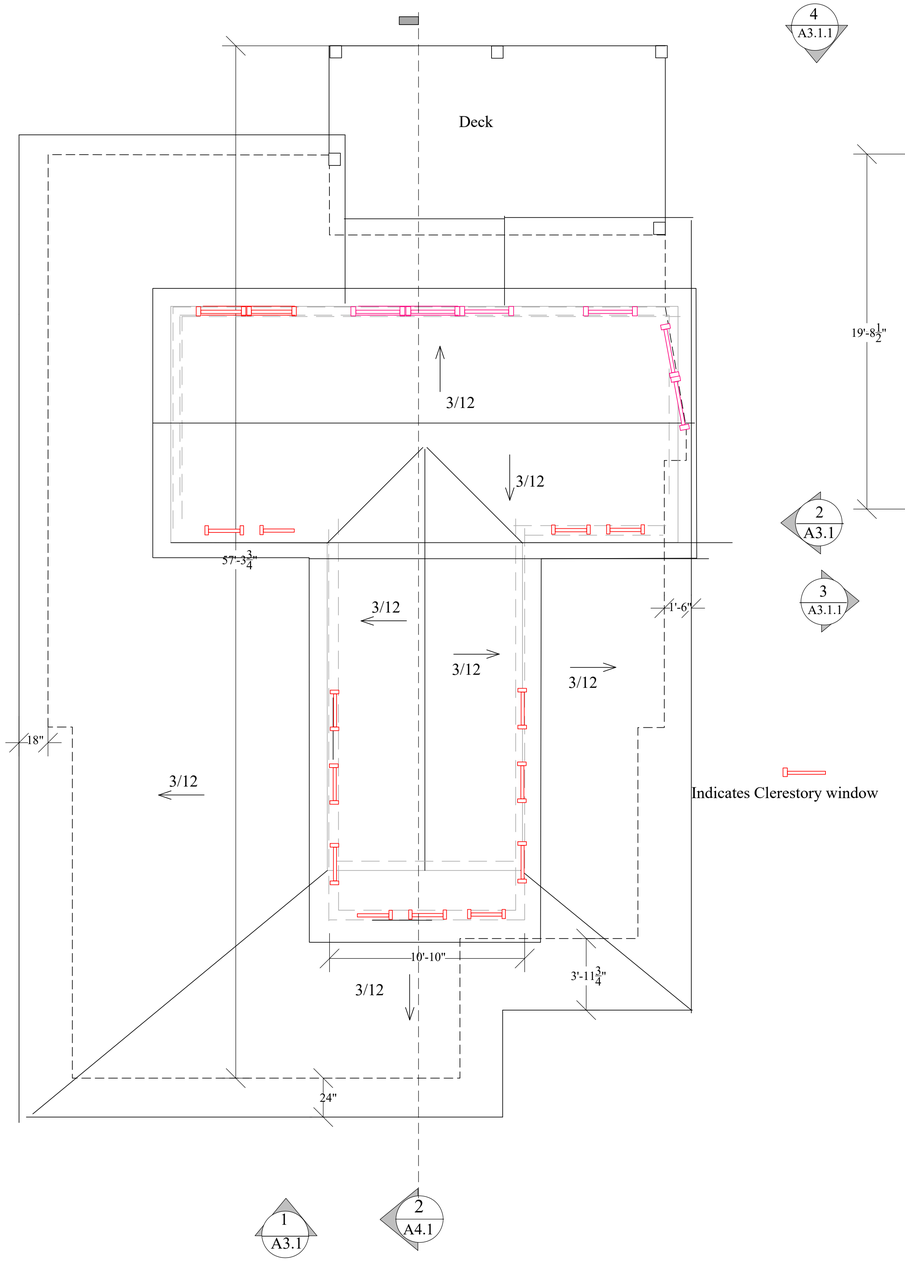
   c) At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings and cove ceilings.
   d) Fire-blocking of cornices of a two-family dwelling is required at the line of dwelling unit separation. [R302.11
4. Class A Composition Shingle Roof Color: Storm Grey
   Manufacturer: Malarkey. Use FELTBUSTER™ HIGH-TRACTION SYNTHETIC roofing felt as underlayment. Roof < 4:12 recieve 2 layers. Meets or exceeds the physical requirementsof ASTM D226and D4869. Install according to manufacturing specs, incluse use fo GAF "LEAK BARRIER" at eaves and valleys.
5. This structure has unvented roof and code compliance to R806.5 for Climate Zone 3.
6. Maintain 8-inch minimum earth-to-wood separation. CRC R317.1 (2)
7. Contact designer or EOR prior to construction for any trade conflict, dimension discrepancy or plan clarification. Designer Tim Pond 650 576 7177

## Wall Types

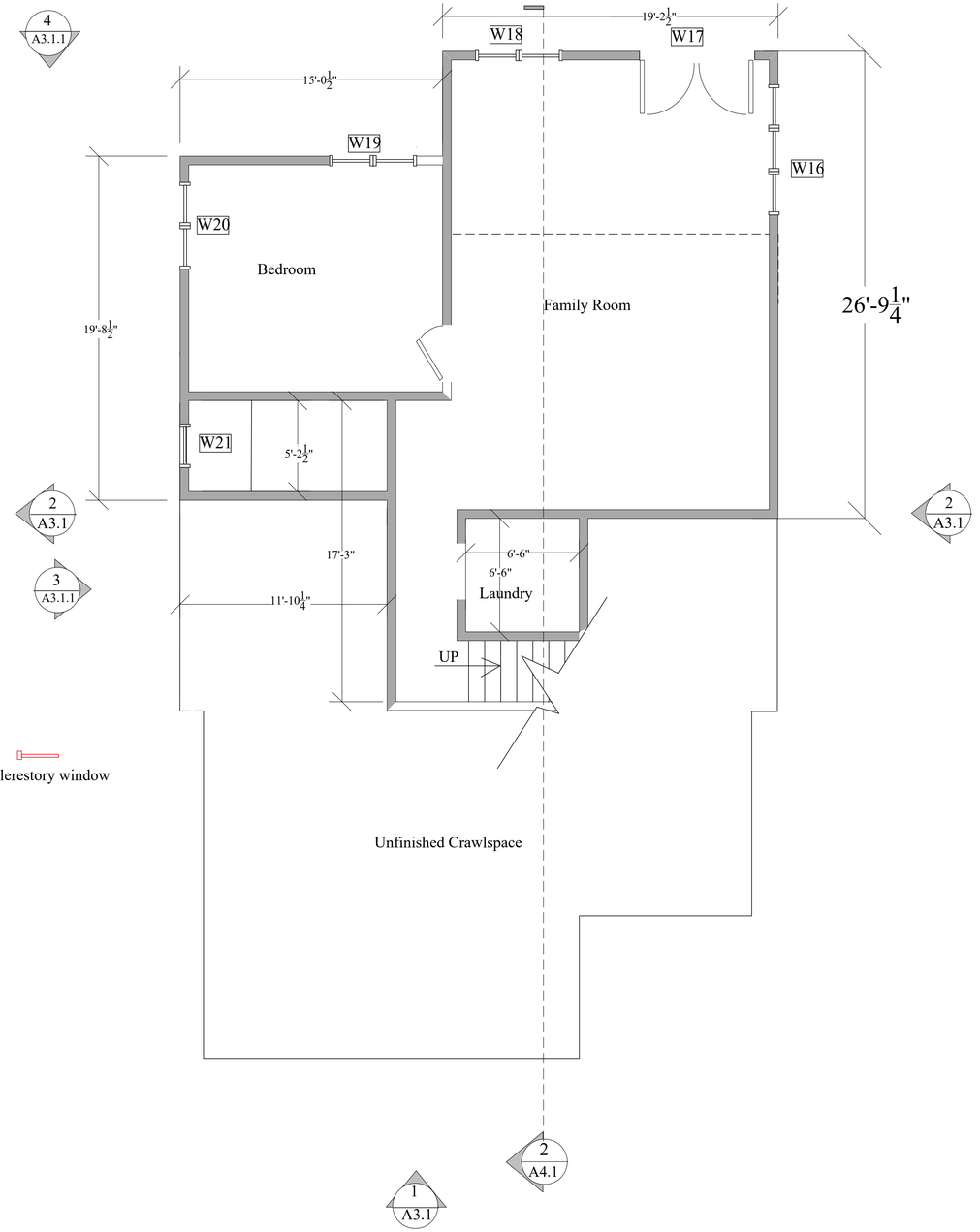
1 hour fire rated wall . See M2 for electrical and Plumbing notes and Detail 1/A3.3.Unit Separation (or garage) Wall: 2X6, R-19 bat insulation, "QuietRock 530" both sides for 1 hour fire rating Assembly PGD-02-10-090,OL-TL-11-0320 1 Hour UL U305.

2X4 Interior wall ( Increase to 2X6 for Plumbing wall)

New Wall




Indicates Clerestory window

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| Revisions | Date |
| Building/Planning Submittal | 5.17.21<br>11.21.21 |
| Roof And Lower Level Plan | A2.2 |

# General Notes

W X Window Schedule See A2.2

X Key note refer to A2.1

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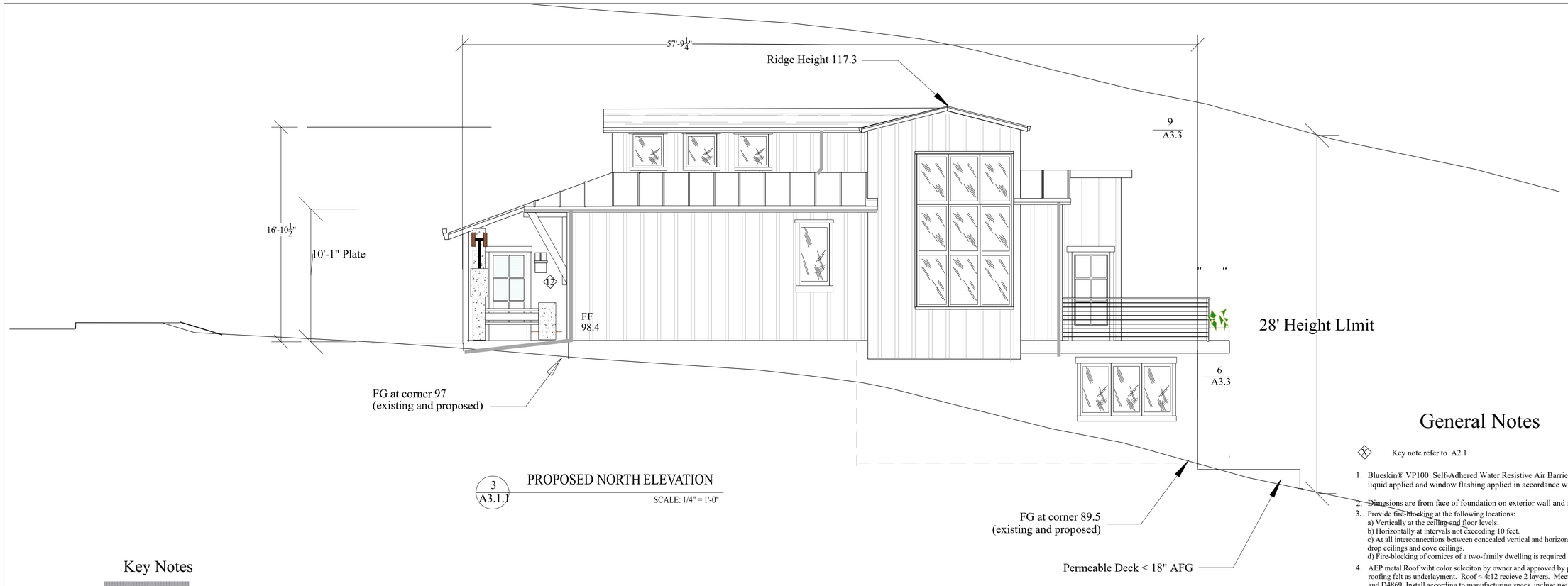
5. This structure has unvented roof and code compliance to R806.5 for Climate Zone 3.

6. Maintain 8-inch minimum earth-to-wood separation. CRC R317.1 (2)

7. Contact designer or EOR prior to construction for any trade conflict, dimension discrepancy or plan clarification. Designer Tim Pond 650 576 7177




3 A3.1.1 PROPOSED NORTH ELEVATION

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

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| East and North Elevations | A3.1 |

## General Notes

◇ Key note refer to A2.1

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4. AEP metal Roof wiht color seleciton by owner and approved by planning department roofing felt as underlayment. Roof < 4:12 recieve 2 layers. Meets or exceeds the physical requirementsof ASTM D226 and D4869. Install according to manufacturing specs, incluse use fo GAF "LEAK BARRIER" at eaves and valleys.
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X A3.2 Indicates Typpical details on all elevations EON

## Key Notes

Coal SLATE GRAY
SRI: 33 • LRV: 12 • GA: 24 & 22
AEP SPAN Standing Seam Metal Roof

Sweet Innocence
BM 2125-50
Body (siding) Color

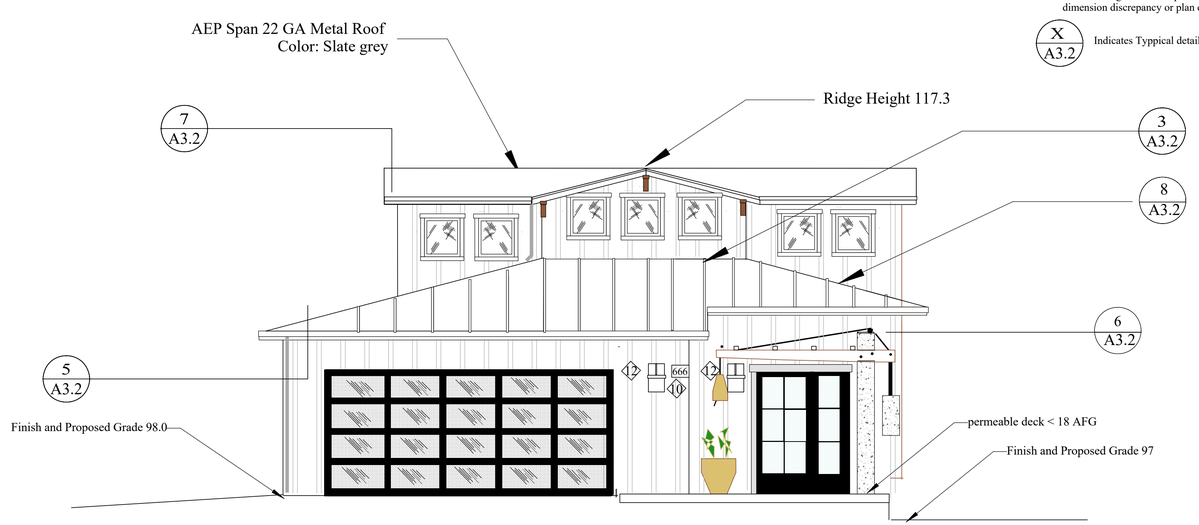
Silvery Moon
Bemjamin Moore 1604
Trim and Fascia Color

Stained Cedar (natural)

◇6 Provide landing at door min of door width X 6'-0" .75" to 6" below finish floor not to exceed 2% slope in any direction.

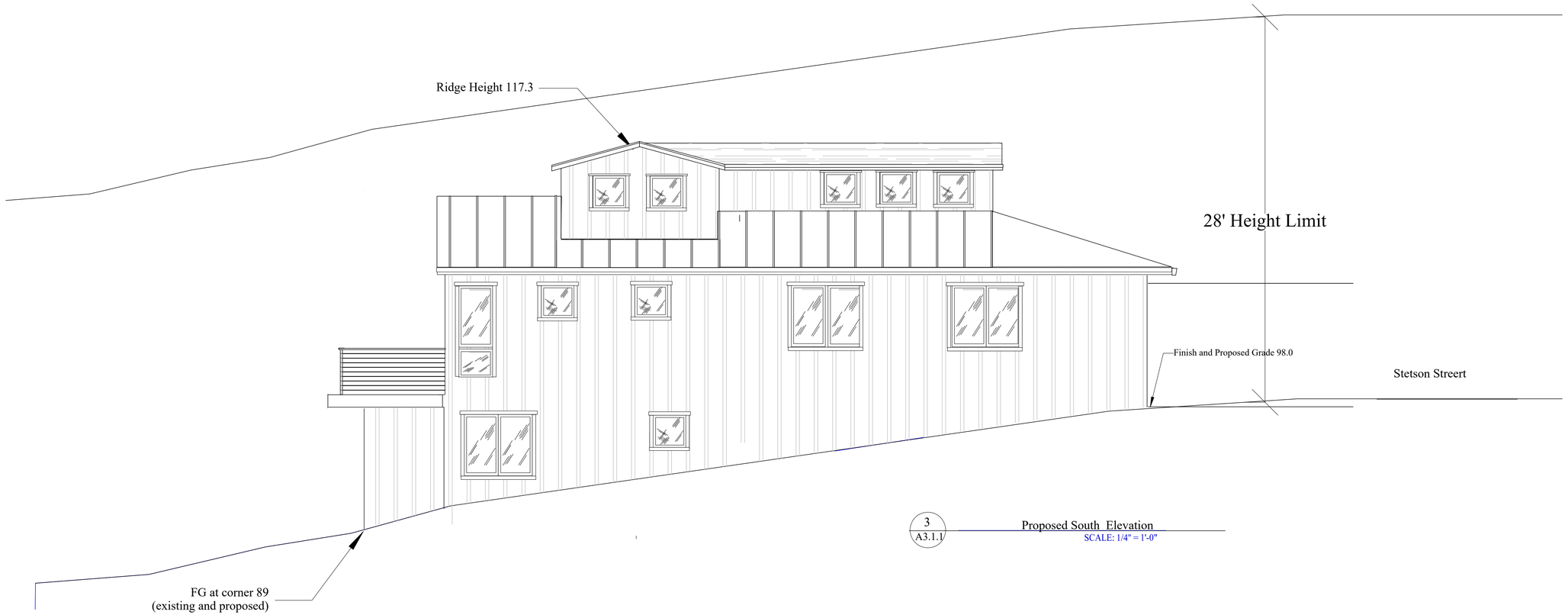
◇10 Address Numbers:
shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of 4 inches high with a minimum stroke width of ½ inch. Numbers shall not be spelled out. These numbers shall contrast with their background. [R319.1] New residential buildings shall have internally illuminated address numbers contrasting with the background so as to be seen from the public way fronting the building. Residential address numbers shall be at least six feet above the finished surface of the driveway

◇12 Maxim Lighting Civic Dark Sky LED Outdoor Wall Sconce
Medium size Typical at all doors



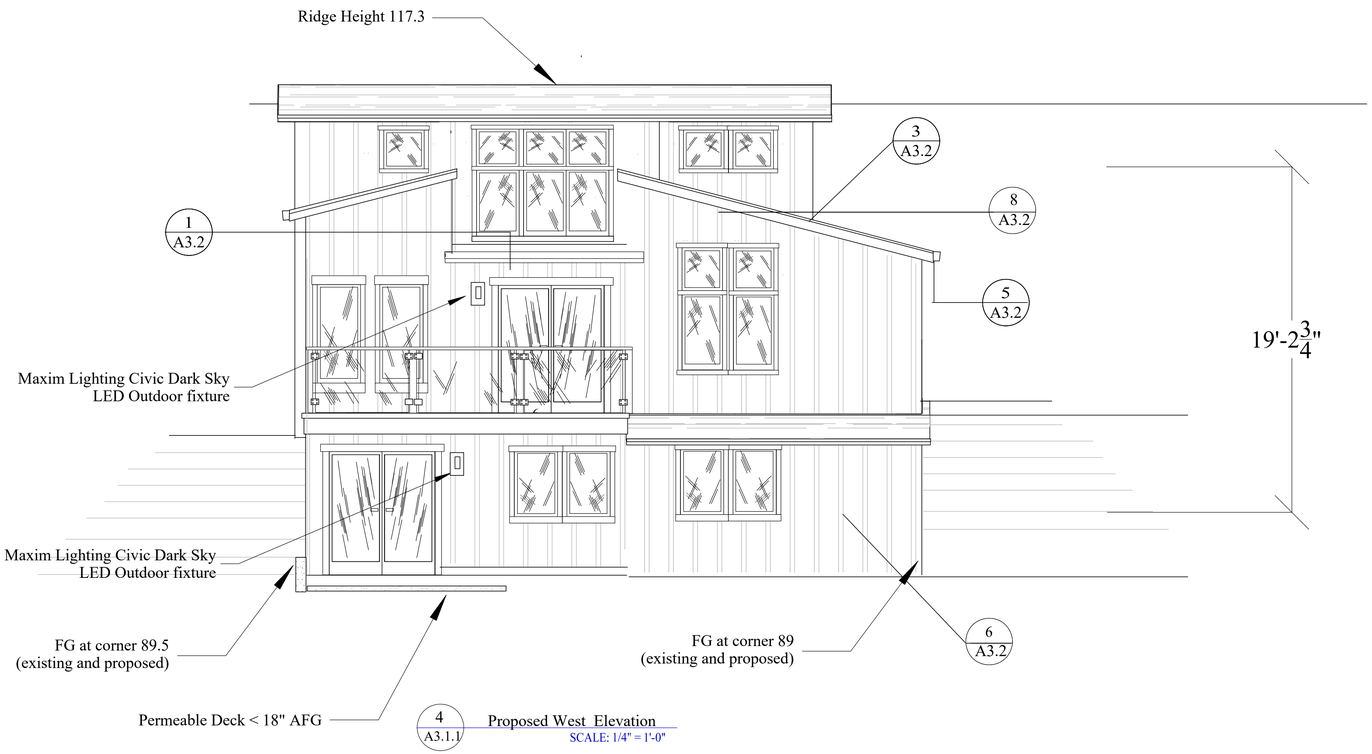

1 A3.1 PROPOSED EAST ELEVATION

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




3 A3.1.1 Proposed South Elevation
SCALE: 1/4" = 1'-0"

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




4 A3.1.1 Proposed West Elevation
SCALE: 1/4" = 1'-0"

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| South and West Elevations | A3.1.1 |

# General Notes

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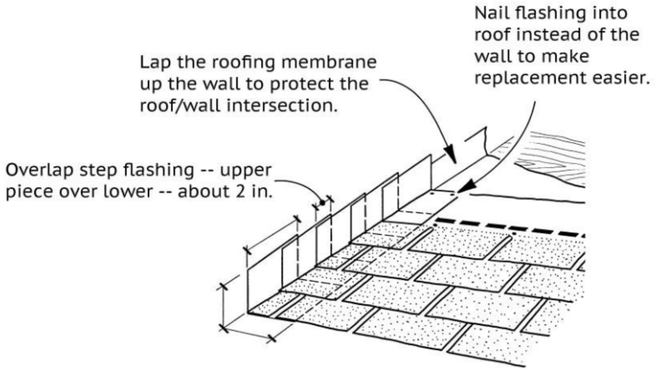
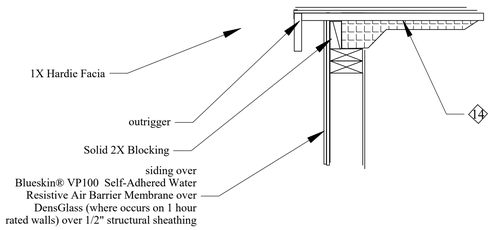
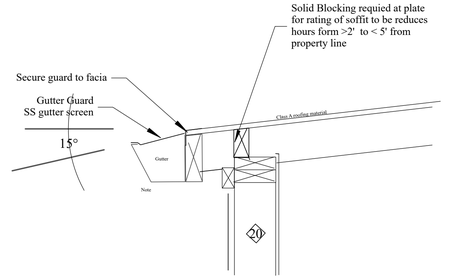



Step Flashing 8 A3.2




Eave Detail 7 A3.2




5 A3.2 Gutter Screen and eave detail

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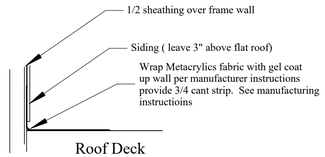
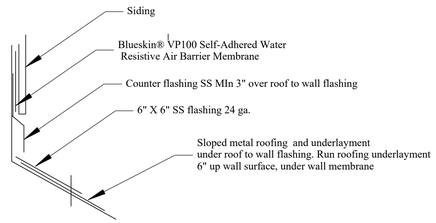
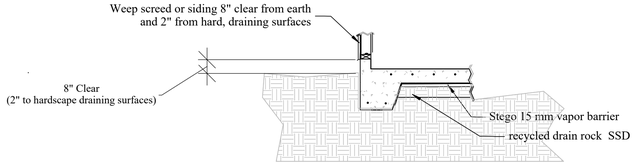
| Details | A3.2 |




1 A3.2




Roof/Wall Flashing 3 A3.2




6 A3.2 Typical stemwall and weep-screed or earth clearance

6.

# General Notes

W X Window Schedule See A2.2

Key note refer to A2.1

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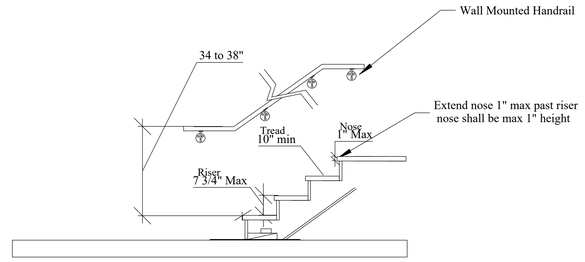
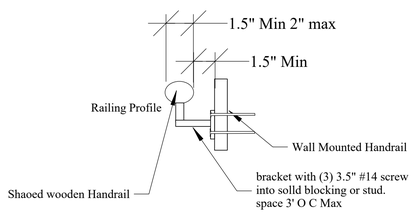
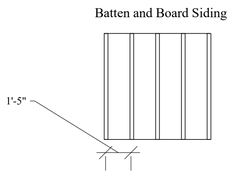
7. Contact designer or EOR prior to construction for any trade conflict, dimension discrepancy or plan clarification. Designer Tim Pond 650 576 7177

2



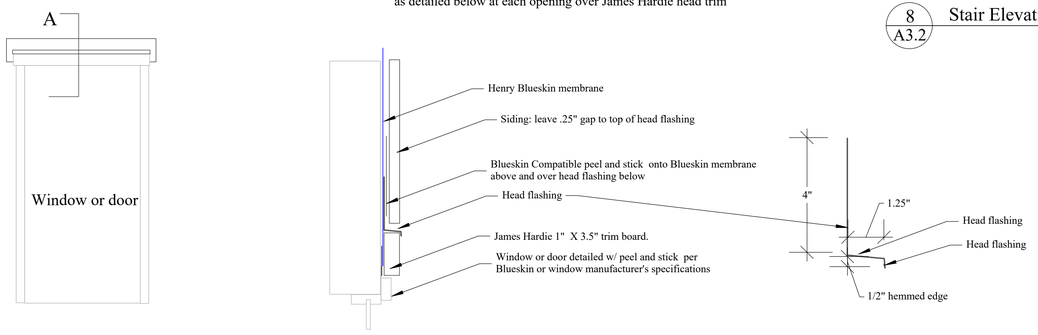

8 A3.2 Stair Elevation/ Rail Detail



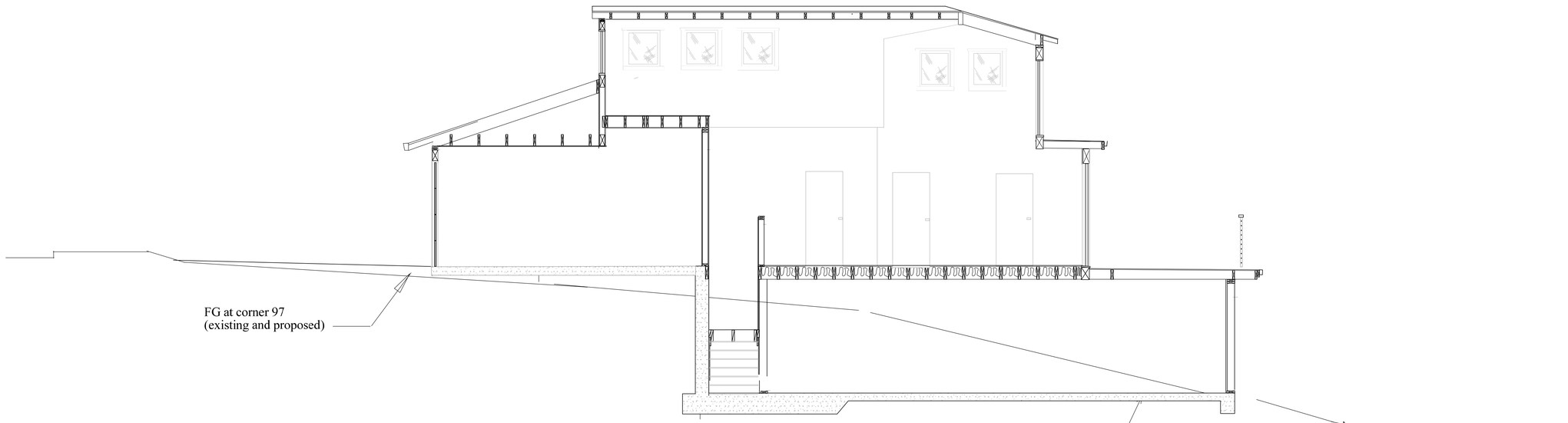

Battens: .7575 X 2.5" James Hardie smooth battens 16" OC
Board: 4' X 8' X .25" James Hardie vertical siding

Hardie sheet siding nailed with #8 SS nails 8" edge and 12" field into studs. Batten boards 10" OC w/ SS # 10. Gap sheeting min 1/8" per manu recomendations.
https://www.jameshardie.com/blog/guide-to-board-and-batten-siding

Window and door flashing: follow Blueskin membrane and window manufacturer details for windod and door detailing. Install head flashing as detailed below at each opening over James Hardie head trim




6 A3.2 Siding, head flashing and Exterior Finish Details




1 A4.1 BUILDING SECTION

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

OWNER:
Kim and Andrew Dellins
PO 396 El Granada 94018
Dellinsfamily@gmail.com
650-740-4492

Site Location
AP # 037-084-240
Stetson Ave. Moss Beach Ca

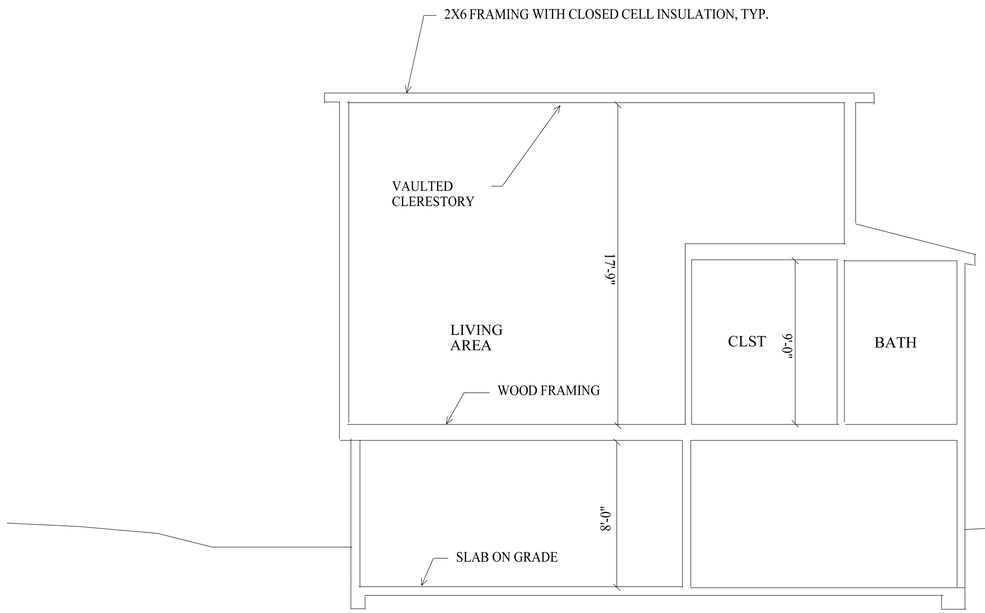
Designer: Tim Pond
Tim Pond Design and Construction
Phone 650.576.7177 timcpond@gmail.com

Drawn By Tim Pond
CA Contractor's License # 931840

| | |
|---|---|
| Drawn By TP | Scale 1/4" = 1' |
| Revisions | Date |
| Building/Planning Submittal | 11.21.21 |
| Sections | A4.1 |

## General Notes

Building shall incorporate Blueskin" VP100 Self-Adhered Water Resistive Air Barrier Membrane
and compatable Henry Brand liquid applied and window flashing applied in accordance with
manufacturers recomendaitons for waterproofing of exterior surfaces. Inpsection required before cover by designer.
Dimesions are from face of foundation on exterior wall and face of frame on interior walls
Bring any discrepancy in dimension to the attention of the designer before construction.
Provide fire-blocking at the following locations:
a) Vertically at the ceiling and floor levels.
b) Horizontally at intervals not exceeding 10 feet.
c) At all interconnections between concealed vertical and horizontal spaces such as occur at soffits,
drop ceilings and cove ceilings.
d) Fire-blocking of cornices of a two-family dwelling is required at the line of dwelling unit separation. [R302.11
This structure has unvented roof and code compliance to R806.5 for
Climate Zone 3.
Maintain 8-inch minimum earth-to-wood separation at framing sill and install concrete curb where necessary to accomplish said separation. CRC R317.1 (2)




2 A4.1 BUILDING SECTION

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

INSULATION:
5.5" TOUCH 'N FOAM CLOSED CELL POLYURETHANE APPLIED TO UNDERSIDE OF ROOF LINE OF ATTIC THROUGHOUT CONDITIONED CEILING AREAS. 5.5 " TOUCH 'N FOAM SPRAY FOAM APPLICATION TO GABLE/ATTIC WALLS TO SEAL AND ENCLOSE ATTIC AREA AS VAPOR BARRIER.

R-21 UNFACED FIBERGLASS BATT INSULATION INSTALLED TO ALL EXTERIOR WALLS. FOAM CAULKING FOR AIR INFILTRATIONS PER TITLE 24.

CONDITIONED CRAWLSPACE:
INSTALL 10 MIL SHEET PLASTIC OVER COMPACTED EARTH.
INSTALL 2" CONCRETE SLAB ON GRADE.. INSTALL R-19 IN 2X6 STEM WALL EXTERIOR TO MUDSILL. INSTALL R-13 RIGID ON FOOTING WALLS. SEE DETAIL 10/A5. 1.
FLOOR AREAS ARE CONDITIONED WITH 18" MIN. CLEARANCE CRAWLSPACE .
PROVIDE 1 CFM PER 50FT OF CRAWLSPACE: 2274SF /50 = 46 CFM

## SECTION NOTES

1. Energy compliance: Note envelope requirements, See Energy documentation for more information.

2. Hot dip galvanized iron or corrosion resistant fasteners at exterior siding and trim.

3. Provide fire blocks in wood framed walls and furred spaces at 10' o.c. max. both vertically and horizontally, with solid 2x blocking, 5/8" type-x gypsum board, or other approved materials per CBC sec. 708.2.2. At double-stud wall assemblies tightly packed and stapled mineral wool fiber batts may be used between framing in gaps less than 2" wide . Provide fire-blocking in walls at ceiling and floor levels. Provide 5/8" type-x gypsum board at walls and ceilings of enclosed usable areas below stairs.

4. Roof valleys, edges , joints to walls and chimneys, parapets, and all roof penetrations shall be flashed in accordance with UBC Chapter 15. Sheet metal flashing, galvanized sheet metal ("G.S.M.) or copper per plans. shall be .019" minimum thickness. Gutters and downspouts shall be sized and manufactured in accordance with UPC and "SMACNA" standards of construction and workmanship. See roof plan for downspout location and size. Downspouts shall connect to storm drain as noted on civil engineering drawings.

5. Strap ties per structural notes at all top plates cut for pipes or flues. No cuts permitted through plates of bearing walls supporting floors. See structural drawings for more information.

6. For fabrications not delineated in plans. See Deferred Approval Notes sheet A1.1

7. Exposed lumber DF #1 select for appearance, including Rafter tails, U.N.O.. See railing and trim details and specification. Refer to drawings for all other framing minimum requirements, U.N.O.

8. Doors and windows shall be flashed with 15 MIL minimum rubberized self adhesive flexible flashing all sides ("bituthene", "Vycor," or "Fortiflash,") lapped 6" min., shingle fashion with building paper, or per detail. Apply paintable sealant to frame /trim at jambs and sill.

9. See Structural Drawings (S.S.D.) for all framing, foundations, and structural design. Notify Architect of any discrepancy with architectural design.

AIA California

# 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

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

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

C=Contractor

# CHAPTER 3
# GREEN BUILDING
## SECTION 301 GENERAL

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

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

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

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

## SECTION 302 MIXED OCCUPANCY BUILDINGS

**302.1 MIXED OCCUPANCY BUILDINGS.** In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

### ABBREVIATION DEFINITIONS:

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

# CHAPTER 4
# RESIDENTIAL MANDATORY MEASURES
## DIVISION 4.1 PLANNING AND DESIGN
### SECTION 4.102 DEFINITIONS

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

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

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

### 4.106 SITE DEVELOPMENT

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

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

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

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

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

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

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

**Exception**: Additions and alterations not altering the drainage path.

**4.106.4 Electric vehicle (EV) charging for new construction.** New construction shall comply with Sections 4.106.4.1, 4.106.4.2, or 4.106.4.3 to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code*, Article 625.

**Exceptions:**
1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   1.1 Where there is no commercial power supply.
   1.2 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.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

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

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

**4.106.4.2 New multifamily dwellings.** 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.

**Notes:**
1. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

**4.106.4.2.1 Electric vehicle charging space (EV space) locations.** 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.

**4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS)** 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:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the *California Building Code,* Chapter 11A, to allow use of the EV charger from the accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the *California Building Code,* Chapter 2, to the building.

**Exception:** Electric vehicle charging stations designed and constructed in compliance with the *California Building Code*, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

**Note:** Electric Vehicle charging stations serving public housing are required to comply with the *California Building Code*, Chapter 11B.

**4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.** The EV space shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 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).
   a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

**4.106.4.2.3 Single EV space required.** Install a listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the 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.

**4.106.4.2.4 Multiple EV spaces required.** 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 amperage 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 amperage 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.

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

**4.106.4.3 New hotels and motels.** 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.

**Notes:**

1. Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

**4.106.4.3.1 Number of required EV spaces.** 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.

TABLE 4.106.4.3.1

| TOTAL NUMBER OF PARKING SPACES | NUMBER OF REQUIRED EV SPACES |
|---|---|
| 0-9 | 0 |
| 10-25 | 1 |
| 26-50 | 2 |
| 51-75 | 4 |
| 76-100 | 5 |
| 101-150 | 7 |
| 151-200 | 10 |
| 201 and over | 6 percent of total |

**4.106.4.3.2 Electric vehicle charging space (EV space) dimensions.** The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486mm).
2. The minimum width of each EV space shall be 9 feet (2743mm)

**4.106.4.3.3 Single EV space required.** When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.

**4.106.4.3.4 Multiple EV spaces required.** When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.

**4.106.4.3.5 Identification.** The service panels or sub-panels shall be identified in accordance with Section 4.106.4.2.5.

**4.106.4.3.6 Accessible EV spaces.** In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions for the EV charging stations in the *California Building Code*, Chapter 11B.

## DIVISION 4.2 ENERGY EFFICIENCY
### 4.201 GENERAL

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

## DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION
### 4.303 INDOOR WATER USE

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

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

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

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

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

**4.303.1.3 Showerheads.**

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

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

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

**4.303.1.4 Faucets.**

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

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

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

**4.303.1.4.4 Kitchen Faucets.** The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 80 psi.

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

**4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS.** Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code*.

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

TABLE - MAXIMUM FIXTURE WATER USE

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

### 4.304 OUTDOOR WATER USE

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

**NOTES:**

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

## DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY
### 4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE

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

### 4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

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

**Exceptions:**

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

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

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

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

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

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

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

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

**Notes**:

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

### 4.410 BUILDING MAINTENANCE AND OPERATION

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

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

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

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

## DIVISION 4.5 ENVIRONMENTAL QUALITY
### SECTION 4.501 GENERAL

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

### SECTION 4.502 DEFINITIONS

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

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

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

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

# 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE
## RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

AIA California

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

**MAXIMUM INCREMENTAL REACTIVITY (MIR).** The maximum change in weight of ozone formed by adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g O³/g ROC).
Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

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

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

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

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

### 4.503 FIREPLACES

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

### 4.504 POLLUTANT CONTROL

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

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

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

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable or SCAQMD Rule 1168 VOC limits, as shown in Table 4.504.1 or 4.504.2, as applicable. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products, as specified in Subsection 2 below.

2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with section 94507.

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

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

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

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

TABLE 4.504.1 - ADHESIVE VOC LIMIT[1,2]

(Less Water and Less Exempt Compounds in Grams per Liter)

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

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

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

TABLE 4.504.2 - SEALANT VOC LIMIT

(Less Water and Less Exempt Compounds in Grams per Liter)

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

TABLE 4.504.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2,3]

GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS

| COATING CATEGORY | VOC LIMIT |
|---|---|
| FLAT COATINGS | 50 |
| NON-FLAT COATINGS | 100 |
| NONFLAT-HIGH GLOSS COATINGS | 150 |
| **SPECIALTY COATINGS** | |
| ALUMINUM ROOF COATINGS | 400 |
| BASEMENT SPECIALTY COATINGS | 400 |
| BITUMINOUS ROOF COATINGS | 50 |
| BITUMINOUS ROOF PRIMERS | 350 |
| BOND BREAKERS | 350 |
| CONCRETE CURING COMPOUNDS | 350 |
| CONCRETE/MASONRY SEALERS | 100 |
| DRIVEWAY SEALERS | 50 |
| DRY FOG COATINGS | 150 |
| FAUX FINISHING COATINGS | 350 |
| FIRE RESISTIVE COATINGS | 350 |
| FLOOR COATINGS | 100 |
| FORM-RELEASE COMPOUNDS | 250 |
| GRAPHIC ARTS COATINGS (SIGN PAINTS) | 500 |
| HIGH TEMPERATURE COATINGS | 420 |
| INDUSTRIAL MAINTENANCE COATINGS | 250 |
| LOW SOLIDS COATINGS[1] | 120 |
| MAGNESITE CEMENT COATINGS | 450 |
| MASTIC TEXTURE COATINGS | 100 |
| METALLIC PIGMENTED COATINGS | 500 |
| MULTICOLOR COATINGS | 250 |
| PRETREATMENT WASH PRIMERS | 420 |
| PRIMERS, SEALERS, & UNDERCOATERS | 100 |
| REACTIVE PENETRATING SEALERS | 350 |
| RECYCLED COATINGS | 250 |
| ROOF COATINGS | 50 |
| RUST PREVENTATIVE COATINGS | 250 |
| SHELLACS | |
| CLEAR | 730 |
| OPAQUE | 550 |
| SPECIALTY PRIMERS, SEALERS & UNDERCOATERS | 100 |
| STAINS | 250 |
| STONE CONSOLIDANTS | 450 |
| SWIMMING POOL COATINGS | 340 |
| TRAFFIC MARKING COATINGS | 100 |
| TUB & TILE REFINISH COATINGS | 420 |
| WATERPROOFING MEMBRANES | 250 |
| WOOD COATINGS | 275 |
| WOOD PRESERVATIVES | 350 |
| ZINC-RICH PRIMERS | 340 |

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

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

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

TABLE 4.504.5 - FORMALDEHYDE LIMITS[1]

MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

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

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

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

## DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

**4.504.3 CARPET SYSTEMS.** All carpet installed in the building interior shall meet the testing and product requirements of at least one of the following:

1. Carpet and Rug Institute's Green Label Plus Program.
2. California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers" Version 1.1, February 2010 (also known as Specification 01350).
3. NSF/ANSI 140 at the Gold level.
4. Scientific Certifications Systems Indoor Advantage™ Gold.

**4.504.3.1 Carpet cushion.** All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.

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

**4.504.4 RESILIENT FLOORING SYSTEMS.** Where resilient flooring is installed , at least 80% of floor area receiving resilient flooring shall comply with one or more of the following:

1. Products compliant with the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database.
2. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children & Schools program).
3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
4. Meet the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers", Version 1.1, February 2010 (also known as Specification 01350).

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

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

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

### 4.505 INTERIOR MOISTURE CONTROL

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

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

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

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

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

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

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

### 4.506 INDOOR AIR QUALITY AND EXHAUST

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

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

**Notes:**

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

### 4.507 ENVIRONMENTAL COMFORT

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

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

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

## CHAPTER 7
## INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

### 702 QUALIFICATIONS

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

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

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

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

**Notes:**

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

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

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

### 703 VERIFICATIONS

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

## 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 section for more information. *Exceptions may apply. (01/2020)*

| | |
|---|---|
| **Building Envelope Measures:** | |
| § 110.6(a)1: | **Air Leakage.** Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283 or AAMA/WDMA/CSA 101/I.S.2/A440-2011.* |
| § 110.6(a)5: | **Labeling.** Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a). |
| § 110.6(b): | **Field fabricated exterior doors and fenestration** products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.* |
| § 110.7: | **Air Leakage.** All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped. |
| § 110.8(a): | **Insulation Certification by Manufacturers.** Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS). |
| § 110.8(g): | **Insulation Requirements for Heated Slab Floors.** Heated slab floors must be insulated per the requirements of § 110.8(g). |
| § 110.8(i): | **Roofing Products Solar Reflectance and Thermal Emittance.** The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R. |
| § 110.8(j): | **Radiant Barrier.** When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs. |
| § 150.0(a): | **Ceiling and Rafter Roof Insulation.** Minimum R-22 insulation in wood-frame ceiling, or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.* |
| § 150.0(b): | **Loose-fill Insulation.** Loose fill insulation must meet the manufacturer's required density for the labeled R-value. |
| § 150.0(c): | **Wall Insulation.** Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less: Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.* |
| § 150.0(d): | **Raised-floor Insulation.** Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.* |
| § 150.0(f): | **Slab Edge Insulation.** Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g). |
| § 150.0(g)1: | **Vapor Retarder.** In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d). |
| § 150.0(g)2: | **Vapor Retarder.** In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation. |
| § 150.0(q): | **Fenestration Products.** Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58, or the weighted average U-factor of all fenestration must not exceed 0.58.* |
| **Fireplaces, Decorative Gas Appliances, and Gas Log Measures:** | |
| § 110.5(e): | **Pilot Light.** Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces. |
| § 150.0(e)1: | **Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox. |
| § 150.0(e)2: | **Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.* |
| § 150.0(e)3: | **Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.* |
| **Space Conditioning, Water Heating, and Plumbing System Measures:** | |
| § 110.0-§ 110.3: | **Certification.** Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission.* |
| § 110.2(a): | **HVAC Efficiency.** Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K.* |
| § 110.2(b): | **Controls for Heat Pumps with Supplementary Electric Resistance Heaters.** Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.* |
| § 110.2(c): | **Thermostats.** All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.* |
| § 110.3(c)4: | **Water Heating Recirculation Loops Serving Multiple Dwelling Units.** Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop requirements of § 110.3(c)4. |
| § 110.3(c)6: | **Isolation Valves.** Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed. |
| § 110.5: | **Pilot Lights.** Continuously burning pilot lights are prohibited for natural gas fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour), and pool and spa heaters.* |
| § 150.0(h)1: | **Building Cooling and Heating Loads.** Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2. |

## 2019 Low-Rise Residential Mandatory Measures Summary

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| **Requirements for Ventilation and Indoor Air Quality:** | |
| § 150.0(o)1: | **Requirements for Ventilation and Indoor Air Quality.** All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1. |
| § 150.0(o)1C: | **Single Family Detached Dwelling Units.** Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2, and as specified in § 150.0(o)1C. |
| § 150.0(o)1E: | **Multifamily Attached Dwelling Units.** Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix: RA3.8. |
| § 150.0(o)1F: | **Multifamily Building Central Ventilation Systems.** Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance. |
| § 150.0(o)1G: | **Kitchen Range Hoods.** Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2. |
| § 150.0(o)2: | **Field Verification and Diagnostic Testing.** Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix: RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix: RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2. |
| **Pool and Spa Systems and Equipment Measures:** | |
| § 110.4(a): | **Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.* |
| § 110.4(b)1: | **Piping.** Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating. |
| § 110.4(b)2: | **Covers.** Outdoor pools or spas that have a heat pump or gas heater must have a cover. |
| § 110.4(b)3: | **Directional Inlets and Time Switches for Pools.** Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods. |
| § 110.5: | **Pilot Light.** Natural gas pool and spa heaters must not have a continuously burning pilot light. |
| § 150.0(p): | **Pool Systems and Equipment Installation.** Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.* |
| **Lighting Measures:** | |
| § 110.9: | **Lighting Controls and Components.** All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.* |
| § 150.0(k)1A: | **Luminaire Efficacy.** All installed luminaires must meet the requirements in Table 150.0-A. |
| § 150.0(k)1B: | **Blank Electrical Boxes.** The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control. |
| § 150.0(k)1C: | **Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C. |
| § 150.0(k)1D: | **Electronic Ballasts for Fluorescent Lamps.** Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz. |
| § 150.0(k)1E: | **Night Lights, Step Lights, and Path Lights.** Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens. |
| § 150.0(k)1F: | **Lighting Integral to Exhaust Fans.** Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).* |
| § 150.0(k)1G: | **Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix: JA8.* |
| § 150.0(k)1H: | **Light Sources in Enclosed or Recessed Luminaires.** Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires. |
| § 150.0(k)1I: | **Light Sources in Drawers, Cabinets, and Linen Closets.** Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed. |
| § 150.0(k)2A: | **Interior Switches and Controls.** All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A. |
| § 150.0(k)2B: | **Interior Switches and Controls.** Exhaust fans must be controlled separately from lighting systems.* |
| § 150.0(k)2C: | **Interior Switches and Controls.** Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.* |
| § 150.0(k)2D: | **Interior Switches and Controls.** Controls and equipment must be installed in accordance with manufacturer's instructions. |
| § 150.0(k)2E: | **Interior Switches and Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k). |
| § 150.0(k)2F: | **Interior Switches and Controls.** Lighting controls must comply with the applicable requirements of § 110.9. |

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| § 150.0(n)3A: | **Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer. |
| § 150.0(n)3B: | **Liquid Line Drier.** Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions. |
| § 150.0(q)1: | **Storage Tank Insulation.** Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank. |
| § 150.0(j)2A: | **Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks; buried below grade, and from the heating source to kitchen fixtures.* |
| § 150.0(j)3: | **Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve. |
| § 150.0(n)1: | **Gas or Propane Water Heating Systems.** Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use", a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed, a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour. |
| § 150.0(n)2: | **Recirculating Loops.** Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5. |
| § 150.0(n)3: | **Solar Water-heating Systems.** Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials; Research and Testing ((IAPMO R&T), or by a listing agency that is approved by the Executive Director. |
| **Ducts and Fans Measures:** | |
| § 110.8(d)3: | **Ducts.** Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement. |
| § 150.0(m)1: | **CMC Compliance.** All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.9). Portions of the duct system completely enclosed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.* |
| § 150.0(m)2: | **Factory-Fabricated Duct Systems.** Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures, joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands. |
| § 150.0(m)3: | **Field-Fabricated Duct Systems.** Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction. |
| § 150.0(m)7: | **Backdraft Damper.** Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers. |
| § 150.0(m)8: | **Gravity Ventilation Dampers.** Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents. |
| § 150.0(m)9: | **Protection of Insulation.** Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation. |
| § 150.0(m)10: | **Porous Inner Core Flex Duct.** Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier. |
| § 150.0(m)11: | **Duct System Sealing and Leakage Test.** When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3. |
| § 150.0(m)12: | **Air Filtration.** Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in § 150.0(m)12. Filters must be accessible for regular service.* |
| § 150.0(m)13: | **Space Conditioning System Airflow Rate and Fan Efficacy.** Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.* |

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| § 150.0(k)2G: | **Interior Switches and Controls.** An energy management control system (EMCS) may be used to comply with control requirements if it: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the EMCS requirements of § 130.0(a); and meets all other requirements in § 150.0(k)2. |
| § 150.0(k)2H: | **Interior Switches and Controls.** A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)2. |
| § 150.0(k)2I: | **Interior Switches and Controls.** In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be initially configured to manual-on operation using the manual control required under Section 150.0(k)2C. |
| § 150.0(k)2J: | **Interior Switches and Controls.** Luminaires that are or contain light sources that meet Reference Joint Appendix: JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.* |
| § 150.0(k)2K: | **Interior Switches and Controls.** Under cabinet lighting must be controlled separately from ceiling-installed lighting systems. |
| § 150.0(k)3A: | **Residential Outdoor Lighting.** For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirement in item § 150.0(k)3A1 (ON and OFF switch) and the requirements in either § 150.0(k)3A2 (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3A3 (astronomical time clock), or an EMCS. |
| § 150.0(k)3B: | **Residential Outdoor Lighting.** For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches, and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0. |
| § 150.0(k)3C: | **Residential Outdoor Lighting.** For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(k)3B or § 150.0(k)3D must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0. |
| § 150.0(k)4: | **Internally illuminated address signs.** Internally illuminated address signs must comply with § 140.8, or must consume no more than 5 watts of power as determined according to § 130.0(c). |
| § 150.0(k)5: | **Residential Garages for Eight or More Vehicles.** Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0. |
| § 150.0(k)6A: | **Interior Common Areas of Low-rise Multifamily Residential Buildings.** In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be comply with Table 150.0-A and be controlled by an occupant sensor. |
| § 150.0(k)6B: | **Interior Common Areas of Low-rise Multifamily Residential Buildings.** In a low-rise multifamily residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must:<br>i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0, and<br>ii. Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress. |
| **Solar Ready Buildings:** | |
| § 110.10(a)1: | **Single Family Residences.** Single family residences located in subdivisions with 10 or more single family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b) through § 110.10(e). |
| § 110.10(a)2: | **Low-rise Multifamily Buildings.** Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d). |
| § 110.10(b)1: | **Minimum Solar Zone Area.** The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof or overhang of the building, and have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.* |
| § 110.10(b)2: | **Azimuth.** All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north. |
| § 110.10(b)3A: | **Shading.** The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment.* |
| § 110.10(b)3B: | **Shading.** Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.* |
| § 110.10(b)4: | **Structural Design Loads on Construction Documents.** For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents. |
| § 110.10(c): | **Interconnection Pathways.** The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems; a pathway reserved for routing plumbing from the solar zone to the water-heating system. |
| § 110.10(d): | **Documentation.** A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant. |
| § 110.10(e)1: | **Main Electrical Service Panel.** The main electrical service panel must have a minimum busbar rating of 200 amps.* |
| § 110.10(e)2: | **Main Electrical Service Panel.** The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric". |

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