201 EL CAMINO REAL

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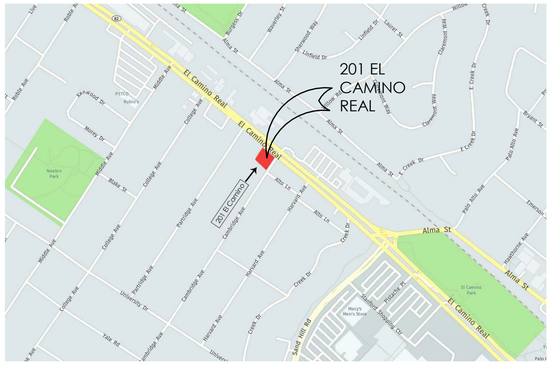
Total Sheets: 46

VICINITY MAP



PROPOSED SCOPE OF GREEN DESIGN

Green programming features will include:

- ♦ Near-zero energy net consumption
- ♦ Recycled, Re-used materials at walls, roofs, floors.
- ♦ Recycling of 85% of Construction Waste
- ♦ High Efficiency Heating and Cooling Systems
- ♦ Passive & Mechanical Ventilation for Indoor Air Quality
- ♦ Plentiful, well oriented Daylighting
- ♦ Tankless or High Efficiency Water Heaters
- ♦ On-Demand Hot Water Recirculation Pumps
- ♦ Photovoltaic and/or Hot Water Panels on Roofs
- ♦ Use of Fly Ash and Recycled Rebar in Concrete
- ♦ Heat dissipating technologies at exterior walls
- ♦ Low-E, thermally insulated Windows
- ♦ Drought Tolerant, Water Efficient Landscaping
- ♦ LID Stormwater Management
- ♦ Electrical Vehicle charging stations
- ♦ Improved Energy Performance above Title-24 Energy Compliance Requirements

The Architect will provide professional services of this under California Architect license number C-26427.

PROJECT DATA SUMMARY

MIXED USE BUILDING
COMMERCIAL
RESIDENTIAL
CONSTRUCTION TYPE V-B

PLANNING PERMIT # TBD

APN/ PARCEL ID: 071-413-200, 071-413-370, 071-413-380
JPN/ TAX MAP ID: 071-041-413-20 and 071-041-413-21A

RE: Menlo Park - 201 El Camino Real & 610 Cambridge
Development Application:

Attached here please find our current plan set proposal for 201 El Camino & 610 Cambridge.

Environmental Innovations in Design (EID) Architects, on behalf of the owners of 201 El Camino Real and 610/612 Cambridge Avenue, Menlo Park, California, are pleased to propose a new three story, sustainable, mixed-use design over a below grade parking structure. These residential and commercial condominiums are designed to create a strong sense of community with an abundance of beautifully landscaped open space. The proposed styling of the building is based in the traditional Monterey Spanish architectural forms and detailing while rendering them in a clean, bright, and modern manner with care and sensitivity to the surrounding environment.

In an effort to respect and preserve the character of the existing residential neighborhood on Cambridge Avenue, we propose a generous buffer of open space to ease the transition from the dense, urban streetscape of El Camino Real into the quite single family community beyound. 612 Cambridge will be transformed into a "pocket park" with many publicly accessible amenities, shaded seating areas, and landscaped gardens. The Residential character of the neighborhood is further enhanced by relocating the majority of the automobile parking into a below grade parking struture. A few conveniently placed drop-off and temporary parking spaces are above grade. These are subtly integrated into the new park area via pervious pavers and ecologically balanced gardens.

Existing on the project parcels are the following improvments:
201 El Camino Real: A 1-story Commercial building of approximately 5,950 sq.ft., with 8 surface parking spaces, non-conforming in size and arrangement. Zoned ECR SW
610 Cambridge Ave: An open, on-grade parking lot providing 28 parking spaces, some of which are non-conforming in arrangement. Zoned ECR SW
612 Cambridge Ave: A single story 4-unit Residential building with no on site parking. 4 of the 28 spaces located on 610 Cambridge are reserved for the use of the residents in 612. Zoned R-3. (Note that the lot area of 612 Cambridge is excluded from the Density and FAR calculations of this project.)

Tabulations for the Proposed design have been updated and enlarged on Sheet A0.1 to account for:
1.38 F.A.R. comprised of approx. 23,069 sq. ft. including:
13 Market Rate Residential Units total = approx. 15,121 sq. ft.
1st Floor Commercial/Medical area = approx. 7,948 sq. ft.

Aditinally, 2 BMR units are provided total = approx. 1,702 sq. ft.

Proposed Parking includes Total of 70 spaces:
8 surface parking/dropoff/move-in/move-out spaces;
62 parking spaces in a Drive-In Below Grade Parking Garage.

We are proposing a 3 story building (Max. 38 ft. tall to top of roof, and approx.. 34 ft. to top of upper story balcony guardrail), with upper floors setting back as they rise (Sheets A5.1-A5.6 illustrates typical cross section).
Vertical circulation is via (1) Elevator and (2) Exterior Exit Stairs appropriately located, and serving Exterior Exit Balconies. An additional stair serving the Parking Garage & exiting directly to the El Camino Real public way.

We are requesting the City abandon the short section of Alto Lane north of Cambridge. We propose to replace and relocate this right-of way approximately 65' to the West so that it runs between the new openspace and the 1st floor of the proposed new building.

While we propose to incorporate the R-3 zoned 612 Cambridge parcel into the design of the project, we are not seeking to rezone this parcel. 612 Cambridge will remain a separate parcel. The FAR and Density calculations for this project are determined based on the lot area of the SP-ECR SW parcels, including the Alto Lane area.

This project will also address the localized flooding issue at the corner of El Camino and Cambridge. This will include upgrading the stormwater management system and significantly reduce runoff from the property. The current impervious area is at 78% will be decreased by managing infiltration and increasing pervious area with bioretention, landscaping, and use of pervious pavements.

201 El Camino Real, Menlo Park, CA
Zoning Analysis

Zoning: 201 El Camino Real — ECR SW
612 Cambridge — R-3
Site Area: 16,748 sf

The lot area of R-3 zoned parcel is not included in these calculations.

PERMITTED DEVELOPMENT INTENSITY	BASE ZONING	PERMITTED WITH PUBLIC BENEFIT	PROPOSED INTENSITY: PROPOSED CONSTRUCTION:
Max FAR for all Uses:	1.1	1.5	1.38
Total floor area:	18,423 sq. ft.	25,122 sq. ft.	23,069 sq. ft.
Max Floor Area for offices, inclusive of medical offices: 50% of FAR			
Office/ Retail:	9,211 sq. ft.	12,561 sq. ft.	1,590 sq. ft.
Max Floor Area for medical offices: 33% of FAR			
Max. Medical Area:	6,135 sq. ft.	8,366 sq. ft.	6,358 sq. ft.
Permitted Density:	25 Units/acre	40 Units/acre	33 Units/acre
# Res. Units:	9 Units	15 Units	13 Units
Residential Floor Area:			15,121 sq. ft.
BMR Housing:			
BMR requiement @ 10%:	0.9	1.5	1.3 Units
BMR Units Proposed:			2 Units
BMR Floor Area:			1,702 sq. ft.
Total Floor Area including BMR units:			24,771 sq. ft.
Required Parking:			
Retail Parking @ 3.8 per 1,000 sf	1589.6 sq. ft.	6 cars	
Med. Parking: at 4.5 per 1,000 sf	6,358 sq. ft.	29 cars	
Res. Parking: at 1.85 per Unit	15 Units	28 cars	
Total Required Parking:		63 cars	
Proposed Parking:			
Garage Level 1:			22 cars
Garage Level 2			40 cars
On Grade:			8 cars
Total Parking Provided:			70 cars
Bike Parking:			
Residential, Multi Family:			
Long Term	1 per Unit		15
Short Term	1 per 10		2
Office/ Medical			
Long Term	1 per 10,000 sf	(2 Min.)	2
Short Term	1 per 20,000 sf	(2 Min.)	2
Retail			
Long Term	1 per 12,000 sf	(2 Min.)	2
Short Term	1 per 5.000 sf	(2 Min.)	2

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DATE 05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE: COVER SHEET

SHEET NUMBER: A0.0

ENVIRONMENTAL INNOVATIONS IN DESIGN
412 OLIVE AVE. PALO ALTO, CA 94306
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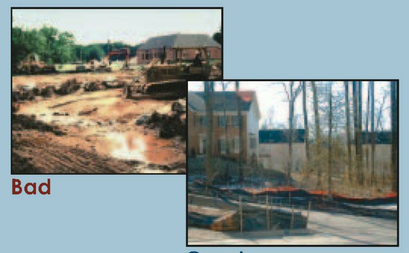
Stormwater and the Construction Industry

Protect Natural Features



Bad

Good

Minimize clearing.

Minimize the amount of exposed soil.

Identify and protect areas where existing vegetation, such as trees, will not be disturbed by construction activity.

Protect streams, stream buffers, wild woodlands, wetlands, or other sensitive areas from any disturbance or construction activity by fencing or otherwise clearly marking these areas.

Construction Phasing

Bad

Good

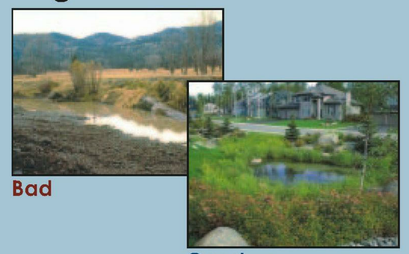
Sequence construction activities so that the soil is not exposed for long periods of time.

Schedule or limit grading to small areas.

Install key sediment control practices before site grading begins.

Schedule site stabilization activities, such as landscaping, to be completed immediately after the land has been graded to its final contour.

Vegetative Buffers



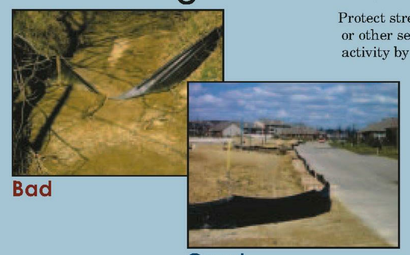
Bad

Good

Protect and install vegetative buffers along waterbodies to slow and filter stormwater runoff.

Maintain buffers by mowing or replanting periodically to ensure their effectiveness.

Silt Fencing



Bad

Good

Inspect and maintain silt fences after each rainstorm.

Make sure the bottom of the silt fence is buried in the ground.

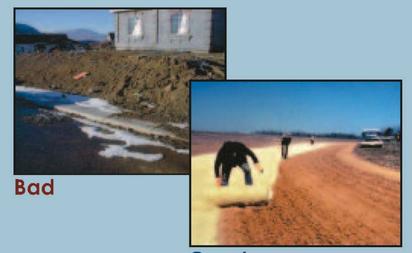
Securely attach the material to the stakes.

Don't place silt fences in the middle of a waterway or use them as a check dam.

Make sure stormwater is not flowing around the silt fence.

Maintain your BMPs!

Site Stabilization



Bad

Good

Vegetate, mulch, or otherwise stabilize all exposed areas as soon as land alterations have been completed.

ONLY RAIN IN THE STORM DRAIN

SAN MATEO COUNTYWIDE STORMWATER POLLUTION PREVENTION PROGRAM (STOPPP)
A program of C/CAG
www.flowstobay.org

Construction Entrances

Bad

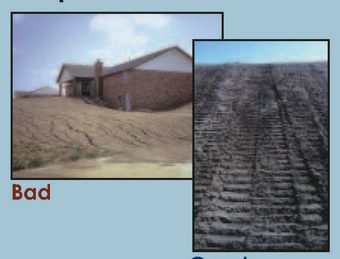
Good

Remove mud and dirt from the tires of construction vehicles before they enter a paved roadway.

Properly size entrance BMPs for all anticipated vehicles.

Make sure that the construction entrance does not become buried in soil.

Slopes



Bad

Good

Rough grade or terrace slopes.

Break up long slopes with sediment barriers, or under drain, or divert stormwater away from slopes.

Dirt Stockpiles

Bad

Good

Cover or seed all dirt stockpiles.

Storm Drain Inlet Protection

Bad

Good

Use rock or other appropriate material to cover the storm drain inlet to filter out trash and debris.

Make sure the rock size is appropriate (usually 1 to 2 inches in diameter).

If you use inlet filters, maintain them regularly.

Source: www.epa.gov/npdes/menuofbmps

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201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
BEST MANAGEMENT PRACTICES - STORMWATER

SHEET NUMBER
A0.40

ENVIRONMENTAL INNOVATIONS IN DESIGN
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Stormwater and the Construction Industry

Planning and Implementing Erosion and Sediment Control Practices

The construction industry is a critical participant in the nation's efforts to protect streams, rivers, lakes, wetlands, and oceans. Through the use of best management practices (BMPs), construction site operators are the key defense against erosion and sedimentation.

As stormwater flows over a construction site, it picks up pollutants like sediment, debris, and chemicals. High volumes of stormwater can also cause stream bank erosion, and destroy downstream aquatic habitat. Preventing soil erosion and sedimentation is an important responsibility at all construction sites.

In addition to the environmental impact, uncontrolled erosion can have a significant financial impact on a construction project. It costs money and time to repair gullies, replace vegetation, clean sediment-clogged storm drains, replace poorly installed BMPs, and mitigate damage to other people's property or to natural resources.

Best Management Practice (BMP)
A BMP is a method used to prevent or control stormwater runoff and the discharge of pollutants, including sediment, into local waterbodies. Silt fences, inlet protection, and site-stabilization techniques are typical BMPs on a construction site.

Operator
An operator is someone who has control over and the ability to modify construction plans and specifications (e.g. owner, general contractor)

or

Someone who has control over the day-to-day operations at a site (e.g., owner, general contractor) that are necessary to ensure compliance with the permit requirements. It is the responsibility of a construction site owner or operator to contain stormwater runoff and prevent erosion during **all** stages of a project.

There may be more than one person at a site who meets these definitions and must apply for permit coverage. (States may have different definitions of the term "operator.")

So what's being done about polluted runoff?

The Clean Water Act includes the National Pollutant Discharge Elimination System (NPDES) permitting program. As of January 2003, 44 states and territories are authorized to issue NPDES stormwater permits. If your state isn't authorized to operate the NPDES stormwater permit program, EPA issues the permits. Permits vary from state to state, so contact your state or EPA for specific information. Your permitting authority has specific information on your state's NPDES stormwater permit program. In general, construction permits require construction operators to do all of the following:

- Develop and implement a stormwater pollution prevention plan
- Submit a permit application or notice of intent (NOI)
- Comply with the permit, including maintaining BMPs and inspecting the site

Under the NPDES program, construction activities that disturb 1 or more acres are required to obtain stormwater permit coverage. States have different names for the plans that construction operators must develop, such as

- Stormwater pollution prevention plan
- Erosion and sediment control plan
- Erosion control and stormwater management plan
- Stormwater management plan
- Water pollution control plan
- Pollution prevention plan

This document uses the term "*Plan*."

I think I need a permit... Where do I start?

All land-disturbing activities, including clearing, grading, and excavation, that disturb **1 or more acres** are required to be covered under a state or EPA-issued NPDES construction stormwater permit **prior to land disturbance.** Permit requirements vary by state. Begin by researching the specific requirements in your state. You might already be subject to local erosion and sediment control requirements, but that doesn't release you from the requirements of the NPDES program at the state or EPA level. Although you must comply with both sets of requirements, in most cases they have been designed to be complementary. Contact your permitting authority to find out exactly what you need to do. A good place to start your search is the Construction Industry Compliance Assistance web site at http://www.envcap.org/cica.

The NPDES permit requirements include small construction activities that are part of a larger common plan of development or sale, such as a single lot within a larger subdivision. For developments with multiple operators, all operators must have permit coverage for their individual parts of the larger development, no matter how large or small each operation happens to be. When there are multiple operators at one site, they're encouraged to develop and share one comprehensive Plan and obtain permit coverage as co-permitees.

The **owner or operator** of the construction site is responsible for complying with the requirements of the permit. Responsibilities include developing a Plan, obtaining permit coverage, implementing BMPs, and stabilizing the site at the end of the construction activity.

Construction sites that discharge unpermitted stormwater are in violation of the Clean Water Act and may be subject to fines of up to $27,500 a day per violation.

Determine your eligibility
All construction activity that disturbs 1 or more acres of land, as well as activity that disturbs less than 1 acre but is part of a larger common plan of development, must obtain permit coverage.

Read and understand your stormwater permit requirements
Get a copy of the permit for construction activities and a permit application (or notice of intent form) from your state or EPA permitting authority.

Develop a Plan
Most states do not require you to submit your Plan. However, you do need to keep the Plan on site. If that's impractical, you may post a notice that tells where the Plan is kept so it can be accessed by the permitting authority and other interested parties.

You'll need to post a copy of your completed application on site. Put it in a place where the public can see it so they'll know your site is covered by an NPDES permit!

Apply for permit coverage
Once you understand your permit requirements and have developed a Plan, you can submit a stormwater permit application (or notice of intent) to your permitting authority. This must be done before beginning any land disturbance on the site. Some states require a few days of lead time, so check with your permitting authority. Once you've submitted the application, you must satisfy the conditions of the permit.

Implement the Plan
Be prepared to implement the BMPs in your Plan before construction begins. Ensure that BMPs are properly maintained, and upgrade and repair them as necessary.

Developing and Implementing a Plan

You must have a Plan that includes erosion and sediment control and pollution prevention BMPs. These Plans require

- Advance planning and training to ensure proper implementation of the BMPs
- Erosion and sediment control BMPs in place until the area is permanently stabilized
- Pollution prevention BMPs to keep the construction site "clean"
- Regular inspection of the construction site to ensure proper installation and maintenance of BMPs

Fortunately, the practices and measures that must be included in your Plan are already part of the standard operating procedures at many construction sites.

Six steps are associated with developing and implementing a stormwater Plan. There's a wealth of information available on developing pollution prevention plans. Please contact your permitting authority for help in finding additional guidance materials, or visit www.epa.gov/npdes/stormwater. A sample construction plan is available at www.epa.gov/npdes/pubs/sample_swppp.pdf.

1. Site Evaluation and Design Development

- **Collect site information**
- **Develop site plan design**
- **Prepare pollution prevention site map**

The first step in preparing a Plan is to define the characteristics of the site and the type of construction that will occur. This involves collecting site information, identifying natural features that should be protected, developing a site plan design, describing the nature of the construction activity, and preparing a pollution prevention site map.

2. Assessment

- **Measure the site area**
- **Determine the drainage areas**
- **Calculate the runoff coefficient**

The next step is assessing the impact the project will have on stormwater runoff. Determine the drainage areas and estimate the runoff amounts and velocities. For more information on calculatng the runoff coefficient, go to www.epa.gov/npdes/pubs/chap02_conguide.pdf, page 11.

3. Control Selection and Plan Design

- **Review and incorporate state or local requirements**
- **Select erosion and sediment controls**
- **Select other controls**
- **Select stormwater management controls**
- **Indicate the location of controls on the site map**
- **Prepare an inspection and maintenance plan**
- **Coordinate controls with construction activity**
- **Prepare sequence of major activities**

In the third step you'll actually document your procedures to prevent and control polluted stormwater runoff. You must delineate areas that will not be disturbed, including critical natural areas like streamside areas, floodplains, and trees. You must also identify the measures (or BMPs) you'll use to protect these areas.

Phasing your project to minimize the amount of exposed soil at any given time is a highly effective way to prevent erosion. Erosion control measures designed to prevent soil from being mobilized include diversions to route stormwater away from exposed soils and stabilization with vegetation, mulch, and geotextiles. Sedimentation control measures designed to remove sediment from stormwater or prevent it from leaving the site include silt fences, sediment traps, and diversions.

You'll need to select erosion and sediment controls—including stabilization measures for protecting disturbed areas and structural controls for diverting runoff and removing sediment—that are appropriate for your particular site. The appropriateness of the control measures will depend on several factors, but will be influenced most directly by the site characteristics. Some stabilization measures you might consider are temporary seeding, permanent seeding, and mulching. Structural control measures include earth dikes, silt fences, and sediment traps. No single BMP will meet all of the erosion and sedimentation control needs of a construction site. A combination of BMPs is necessary. For more information on the types of BMPs appropriate for your construction site, see the BMP fact sheet series available at www.epa.gov/npdes/menuofbmps.

Soil erosion control tips...

- Design the site to infiltrate stormwater into the ground and to keep it out of storm drains. Eliminate or minimize the use of stormwater collection and conveyance systems while maximizing the use of stormwater infiltration and bioretention techniques.
- Minimize the amount of exposed soil on site.
  - To the extent possible, plan the project in stages to minimize the amount of area that is bare and subject to erosion. The less soil exposed, the easier and cheaper it will be to control erosion.
  - Vegetate disturbed areas with permanent or temporary seeding immediately upon reaching final grade.
  - Vegetate or cover stockpiles that will not be used immediately.
- Reduce the velocity of stormwater both onto and away from the project area.
  - Interceptors, diversions, vegetated buffers, and check dams are a few of the BMPs that can be used to slow down stormwater as it travels across and away from the project site.
  - Diversion measures can also be used to direct flow away from exposed areas toward stable portions of the site.
  - Silt fences and other types of perimeter filters should never be used to reduce the velocity of runoff.
- Protect defined channels immediately with measures adequate to handle the storm flows expected.
  - Sod, geotextile, natural fiber, riprap, or other stabilization measures should be used to allow the channels to carry water without causing erosion. Use softer measures like geotextile or vegetation where possible to prevent downstream impacts.
- Keep sediment on site.
  - Place aggregate or stone at construction site vehicle exits to accommodate at least two tire revolutions of large construction vehicles. Much of the dirt on the tires will fall off before the vehicle gets to the street.
  - Regular street sweeping at the construction entrance will prevent dirt from entering storm drains. Do not hose paved areas.
  - Sediment traps and basins are temporary structures and should be used in conjunction with other measures to reduce the amount of erosion.
- Maintaining all BMPs is critical to ensure their effectiveness during the life of the project.
  - Regularly remove collected sediment from silt fences, berms, traps, and other BMPs.
  - Ensure that geotextiles and mulch remain in place until vegetation is well established.
  - Maintain fences that protect sensitive areas, silt fences, diversion structures, and other BMPs.

Other BMPs and Activities to Control Polluted Runoff

You'll need to select other controls to address potential pollutant sources on your site. Construction materials, debris, trash, fuel, paint, and stockpiles become pollution sources when it rains. Basic pollution prevention practices can significantly reduce the amount of pollution leaving construction sites. The following are some simple practices that should be included in the Plan and implemented on site:

- Keep potential sources of pollution out of the rain as practicable (e.g., inside a building, covered with plastic or tarps, or sealed tightly in a leak-proof container).
- Clearly identify a protected, lined area for concrete truck washouts. This area should be located away from streams, storm drain inlets, or ditches and should be cleaned out periodically.
- Park, refuel, and maintain vehicles and equipment in one area of the site to minimize the area exposed to possible spills and fuel storage. This area should be well away from streams, storm drain inlets, or ditches. Keep spill kits close by and clean up any spills or leaks immediately, including spills on pavement or earthen surfaces.
- Practice good housekeeping. Keep the construction site free of litter, construction debris, and leaking containers. Keep all waste in one area to minimize cleaning.
- Never hose down paved surfaces to clean dust, debris, or trash. This water could wash directly into storm drains or streams. Sweep up materials and dispose of them in the trash. Never bury trash or debris!
- Dispose of hazardous materials properly.

4. Certification and Notification

- **Certify the Plan**
- **Submit permit application or notice of intent**

Once the Plan has been developed, an authorized representative must sign it. Now is the time to submit the permit application or notice of intent. Your permit might require that the Plan be kept on site, so be sure to keep it available for the staff implementing the Plan.

Erosion and sedimentation control practices are only as good as their installation and maintenance.

5. Implementing and Maintaining a Plan

- **Implement controls**
- **Inspect and maintain controls**
- **Update/change the Plan**
- **Report releases of hazardous materials**

A Plan describes the practices and activities you'll use to prevent stormwater contamination and meet the NPDES permit requirements. Make sure that the Plan is implemented and that the Plan is updated as necessary to reflect changes on the site.

Erosion and sedimentation control practices are only as good as their installation and maintenance. Train the contractors that will install the BMPs and inspect immediately to ensure that the BMPs have been installed correctly.

Regularly inspect the BMPs (especially before and after rain events) and perform any necessary repairs or maintenance immediately. Many BMPs are designed to handle a limited amount of sediment. If not maintained, they'll become ineffective and a source of sediment pollution.

It's also important to keep records of BMP installation, implementation, and maintenance. Keep track of major grading activities that occur on the site, when construction activities cease (temporarily or permanently), and when a site is temporarily or permanently stabilized.

If construction plans change at any time, or if more appropriate BMPs are chosen for the site, update the Plan accordingly.

6. Completing the Project: Final Stabilization and Termination of the Permit

- **Final stabilization**
- **Notice of Termination**
- **Record retention**

Many states and EPA require a Notice of Termination (NOT) or other notification signifying that the construction activity is completed. An NOT is required when

- Final stabilization has been achieved on all portions of the site for which the permittee is responsible.
- Another operator has assumed control over all areas of the site that have not been finally stabilized. That operator would need to submit a new permit application to the permitting authority.
- For residential construction only, temporary stabilization of a lot has been completed prior to transference of ownership to the homeowner, with the homeowner being made aware of the need to perform final stabilization.

Permittees must keep a copy of their permit application and their Plan for at least 3 years following final stabilization. This period may be longer depending on state and local requirements.

Preconstruction Checklist

- A site description, including
  - Nature of the activity
  - Intended sequence of major construction activities
  - Total area of the site
  - Existing soil type and rainfall runoff data
  - A site map with:
    - Drainage patterns
    - Approximate slopes after major grading
    - Area of soil disturbance
    - Outline of areas which will not be disturbed
    - Location of major structural and nonstructural soil erosion controls
    - Areas where stabilization practices are expected to occur
    - Surface waters
    - Stormwater discharge locations
  - Name of the receiving water(s)
- A description of controls:
  - Erosion and sediment controls, including
    - Stabilization practices for all areas disturbed by construction
    - Structural practices for all drainage/discharge locations
  - Stormwater management controls, including
    - Measures used to control pollutants occurring in stormwater discharges after construction activities are complete
    - Velocity dissipation devices to provide nonerosive flow conditions from the discharge point along the length of any outfall channel
  - Other controls, including
    - Waste disposal practices that prevent discharge of solid materials
    - Measures to minimize offset tracking of sediments by construction vehicles
    - Measures to ensure compliance with state or local waste disposal, sanitary sewer, or septic system regulations
  - Description of the timing during the construction when measures will be implemented
- State or local requirements incorporated into the Plan
- Inspection and maintenance procedures for control measures identified in the Plan
- Contractor certification and Plan certification

Implementation Checklist

- Maintain records of construction activities, including
  - Dates when major grading activities occur
  - Dates when construction activities temporarily cease on the site or a portion of the site
  - Dates when construction activities permanently cease on the site or a portion of the site
  - Dates when stabilization measures are completed on the site
- Prepare inspection reports summarizing
  - Name of person conducting BMP inspections
  - Qualifications of person conducting BMP inspections
  - BMPs/areas inspected
  - Observed conditions
  - Necessary changes to the Plan
- Report releases of reportable quantities of oil or hazardous materials
  - Notify the National Response Center at 800-424-8802 immediately
  - Report releases to your permitting authority immediately, or as specified in your permit. You must also provide a written report within 14 days.
  - Modify the Plan to include
    - The date of release
    - Circumstances leading to the release
    - Steps taken to prevent reoccurrence of the release
- Modify Plan as necessary
  - Incorporate requests of the permitting authority to bring the Plan into compliance
  - Address changes in design, construction operation, or maintenance that affect the potential for discharge of pollutants

An ounce of prevention is worth a pound of cure! It's far more efficient and cost-effective to prevent pollution than it is to try to correct problems later. Installing and maintaining simple BMPs and pollution prevention techniques on site can greatly reduce the potential for stormwater pollution and can also save you money!

Visit www.epa.gov/npdes/stormwater for more information.

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BEST MANAGEMENT PRACTICES - EROSION CONTROL

SHEET NUMBER A0.41

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EL CAMINO REAL AND CAMBRIDGE AVE.

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RENDER

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RENDER

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5 3D View 2

3 Rear of building with garage

4 Cambridge Ave with garage

6 3D View 3

1 ISOMETRIC VIEW

2 Street view at El Camino & Cambridge

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ISOMETRIC

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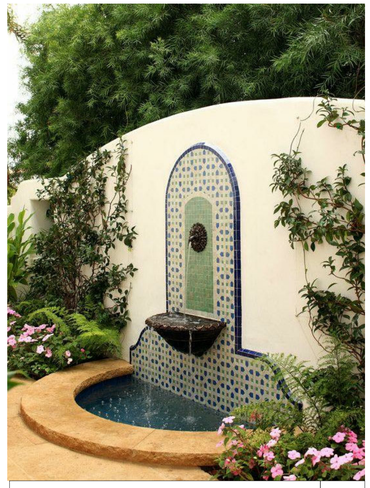
SPANISH STYLE WITH ARCHES AND CURVED WALLS | 13.

SECOND FLOOR BALCONY WITH POSTS AND THIN RAILINGS, ARCHED WINDOWS/ DOORS, CHIMNEYS | 10.

COLUMNS WITH CAP | 7.

DIVIDED WINDOWS WITH AWNINGS | 6.

GABLE TILE ROOF WITH VENTS | 2.



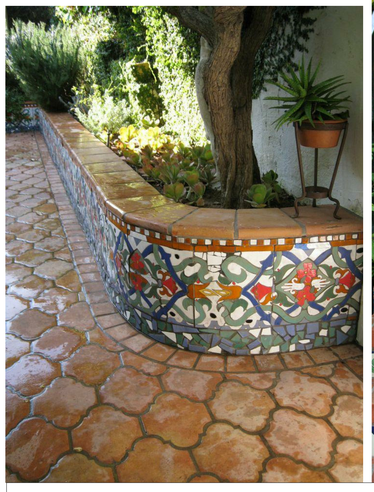
WALL FOUNTAIN | 12.

CORBELS UNDER SECOND FLOOR OVERHANG | 9.

SECOND FLOOR OVERHANG WITH CORBELS | 5.

TYPICAL TILE ROOF AT END GABLE | 1.

WHITE PLASTER/STUCCO WALLS WITH VERTICAL DARK WINDOWS AND EAVE CORBELS | 4.



SPANISH TILES AND PAVING | 11.

CORBELS UNDER BALCONY | 8.

WHITE PLASTER WALLS | 3.

EXTERIOR COLOR/ MATERIAL SCHEDULE

	MATERIALS / APPLICATION	CODE	COLOR	MANUFACTURER
ROOF (CLASS A ROOFING)	CLAY TILE	M1	CAFE ANTIGUA BLEND	REDLAND CLAY TILE, OR EQ
	TPO ROOF	M2	SLATE GREY	GAF, OR EQUAL
	SOFFIT	M3	PEARLY WHITE - KMW44	KELLY MOORE
WALL	STUCCO - 20/20 SAND FINISH	M4	PEARLY WHITE - KMW44	KELLY MOORE
	STUCCO - SMOOTH TROWELED	M5	PEARLY WHITE - KMW44	KELLY MOORE
	STUCCO - HEAVY TEXTURE	M6	PEARLY WHITE - KMW44	KELLY MOORE
	16" HORIZ. COMPOSITE SIDING	M7	WALNUT	TRESPA, OR EQUAL
MISC.	WOOD	M8	NATURAL REDWOOD OR CEDAR	
	GARAGE DOOR	M9	6" HORIZ. SIDING FLAT BOARD,	CARRIAGE DOOR, OR EQ.
	FRENCH DOOR	M10	DARK BRONZE	FLEETWOOD, OR EQUAL
	WINDOW FRAMES	M11	BREAK METAL BLACK	ALL WEATHER, OR EQ.
	DOOR/ WINDOW GLASS	M12	IoE 366	CARDINAL, OR EQUAL
	DOOR/ WINDOW GLASS	M13	ACID ETCHED, OBSCURE GLASS	CARDINAL, OR EQUAL
	DOOR/ WINDOW HARDWARE	M14	DARK BRONZE OR EQUAL	
	RAILING - GLASS	M15		
	RAILING - WOOD	M16	KMA89-5 BLACK OAK	KELLY MOORE, or EQUAL
	EXTERIOR METAL, FASCIAS, COLUMNS, TRELLIS BEAMS, GALVANIZED METAL ROUND DOWNSPOUTS, ADDRESS NUMBER, CHIMNEY CAP, MECHANICAL SCREEN	M17	Option 1: Steel sand blasted; Factory spray applied bonding of 3/32" aluminum (aluminized treatment); factory powder coated paint; fasteners are stainless steel or welds). Option 2: Steel sand blasted; Factory spray applied bonding of 3/32" aluminum (aluminized treatment); factory powder coated paint with colored rust texture (Cardinal BR47, or equal) to achieve brown colored rust patina); fasteners are stainless steel or welds). KMA89-5 BLACK OAK	LOS GATOS IRON WORKS, or EQUAL KELLY MOORE, or EQUAL

* NOTES: EXACT COLORS TO BE VERIFIED w/ OWNER & ARCHITECT

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COLORS AND MATERIALS

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The Wind Clip hooks under the preceding course tile and is adjustable for head lap.

Model 50043 Flat: Installed using two 1 1/2-inch-by-3/8-inch-diameter head by 1/8-inch-diameter shank corrosion resistant roofing nails at the top of the vent and an O'HAGIN Wind Clip installed at the bottom of the vent. The Wind Clip hooks under the preceding course tile and is adjustable for head lap.

5.3.2 Minimum 5/8-inch-thick plywood sheathing roof decking: The Primary Vent is installed on 5/8-inch-thick solid plywood roof decking using 12 – 1-inch-by-7/16-inch-diameter head by 1/8-inch-diameter shank electro galvanized roofing nails spaced 5 1/2 inches on center along the long side of the vent and 4 1/2 inches along the short side of the vent. The Secondary Vents are installed over the Primary Vents as follows:

Models 50046-S: Installed using two (2) 1-inch-by-7/16-inch-diameter head by 1/8-inch-diameter shank electro galvanized roofing nails at the top of the vent and two (2) O'Hagin Wind Clip installed at the bottom of the vent. The Wind Clip hooks under the preceding course tile and is adjustable for head lap.

Models 50044-M: Installed using four (4) 1-inch by-7/16-inch-diameter head by 1/8-inch-diameter shank electro galvanized roofing nails at the top of the vent and one (1) O'Hagin Wind Clip installed at the bottom of the vent. The Wind Clip hooks under the preceding course tile and is adjustable for head lap.

Model 50043 Flat: Installed using five (5) 1-inch-by-7/16-inch-diameter head by 1/8-inch-diameter shank electro galvanized roofing nails at the top of the vent and an O'Hagin Wind Clip installed at the bottom of the vent. The Wind Clip hooks under the preceding course tile and is adjustable for head lap.

5.4 Wind Uplift:

Wind uplift resistance is outside the scope of this evaluation report. The wind uplift shall be limited to the uplift capacity of the concrete and clay tile roof assemblies that the O'Hagin vents are installed with.

Documentation shall be submitted substantiating the wind uplift capacity of the O'Hagin vents with the concrete and clay roof tiles specified for the building under construction. The documentation shall be submitted to the building official when applying for a permit.

6.0 SUBSTANTIATING DATA

6.1 Manufacturer's descriptive literature, specifications, engineering drawings, installation instructions, and material mill order certificates.

6.2 Net area calculations for vents used with concrete tile roofs, Columbia Research & Testing, March 20, 1995, signed and sealed by Thomas M. Mannatt, R.C.E.

6.3 Test report on fastenings for wind uplift resistance under ASTM E330, RADCO, Test Report RAD-1714, Project C-6065, Lab TL-1272, May 1996, signed by Sanjay "Jay" Mishra and Michael L. Zieman, P.E.

6.4 Test report on fastenings for wind uplift under ASTM E330, National Certified Testing Laboratories, Report No. NCTL-210-2078-1,2,3, 09-30-98, signed by Michael E. Lane, signed and sealed by Barry D. Portnoy, P.E.

7.0 CODE REFERENCES

Standard Building Code® - 1999 Edition

Section 103.7	Alternate Materials and Methods
Chapter 15	Roof Assemblies and Rooftop Structures
Section 1503	Weather Protection
Section 1504	Performance Requirements
Section 1505	Fire Classification
Section 1506	Materials
Section 1507	Roof Coverings with Slopes 2:12 or Greater
Section 1508	Roof Coverings with Slopes Less Than 2:12
Section 2309.7	Ventilation of Attic Space

International One and Two Family Dwelling Code – 1998 Edition

Section 108	Alternate Materials and Systems
Section 806	Roof Ventilation
Chapter 9	Roof Coverings
Section 906	Tile, Clay or Concrete Shingles

8.0 COMMITTEE FINDINGS

The Subcommittee on Evaluation in review of the data submitted finds that, in their opinion, the O'Hagin Cloaked Vent Tiles as described in this report conform with or are suitable alternates to that specified in the *Standard Building Code*® and the International One and Two Family Dwelling Code or Supplements thereto.

9.0 LIMITATIONS

9.1 This Legacy Evaluation Report and the installation instructions, when required by the building official, shall be submitted at the time of permit application.

9.2 The vents shall be used only on wood framed roofs for buildings of Type V and VI Construction.

9.3 The vents shall not be used in fire resistance rated roof ceiling assemblies unless test reports from an approved testing laboratory are submitted to the building official.

9.4 The number of vents installed must provide the net free ventilation area required under Section 2309.7 of the *Standard Building Code*® or Section 806 of the *International One and Two Family Dwelling Code*.

9.5 The vents were not evaluated for wind uplift pressure see Section 5.4 above.

10.0 IDENTIFICATION

Each package of O'Hagin Cloaked Vent Tiles covered by this report shall be labeled with the manufacturer's name and/or trademark, the SBCCI Public Safety Testing and Evaluation Services Inc. Seal or initials (SBCCI PST & ESI), and the number of this report for field identification.

11.0 PERIOD OF ISSUANCE

SEE THE CURRENT EVALUATION REPORT INDEX FOR STATUS OF THIS LEGACY EVALUATION REPORT.

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ICC-ES Legacy Report

SBCCI-9650A

Reissued December 2016

This report is subject to renewal December 2017.

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Legacy report on the 1999 *Standard Building Code*® and the 1998 *International One and Two Family Dwelling Code*®

The Subcommittee on Evaluation has reviewed the data submitted for compliance with the *Standard Building Code*® and the International One and Two Family Dwelling Code and submits to the Building Official or other authority having jurisdiction the following report. The Subcommittee on Evaluation, ICC-ES and its staff are not responsible for any errors or omissions to any documents, calculations, drawings, specifications, tests or summaries prepared and submitted by the design professional or preparer of record that are listed in the Substantiating Data Section of this report. Portions of this report were previously included in Evaluation Reports #9650.

REPORT NO.: 9650A

EXPIRES See the current EVALUATION REPORT INDEX

CATEGORY: ROOF COVERINGS AND ROOF DECK CONSTRUCTION

SUBMITTED BY:

O'HAGIN MANUFACTURING, LLC
210 CLASSIC COURT, SUITE 100
ROHNERT PARK, CALIFORNIA 94928

1.0 PRODUCT TRADE NAME

O'Hagin Cloaked Vent Tile (Aluminum, Galvanized Steel, or Copper)

2.0 SCOPE OF EVALUATION

2.1 Ventilation Openings

2.2 Roof Covering Fire Classification

3.0 USES

O'Hagin Cloaked Vent Tiles are installed on the slope of concrete or clay tile roofs to provide attic ventilation for wood framed roof construction.

4.0 DESCRIPTION

4.1 General:

O'Hagin Cloaked Vent Tiles are manufactured from either 0.032 Aluminum, 26 Ga galvanized steel or 16 oz copper. The vent system consists of two vents - a Primary Vent sub flashing that is installed over openings cut in the roof deck and a Secondary Vent that is installed over the Primary Vent and takes the place of two field tiles. The Primary Vent is screened with galvanized #4 mesh wire insect screen. The Secondary Vent is painted to match the surrounding tiles.

4.2 Models and Net Free Area

4.2.1 Secondary Vents

Model No.: 50046-S; Net Free Area = 97.50 sq. in.

Model No.: 50044-M; Net Free Area = 88.25 sq. in.

Model No.: 50043 Flat; Net Free Area = 98.75 sq. in.

4.2.2 Primary Vent:

Primary Vent (Sub Flashing); Net Free Area = 118 sq. in.

5.0 INSTALLATION

5.1 General

O'Hagin Cloaked Vent Tiles are installed in accordance with the manufacturer's published installation instructions and this report.

The number of O'Hagin Cloaked Vent Tiles installed must provide the net free ventilation area required under Section 2309.7 of the *Standard Building Code*®.

The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the job site during installation.

The instructions within this report govern if there are any conflicts between the manufacturer's instructions and this report.

5.2 Roof Covering Fire Classification

O'Hagin Cloaked Vent Tile Systems are installed with concrete or clay tile roofs classified as Class A Roof Coverings.

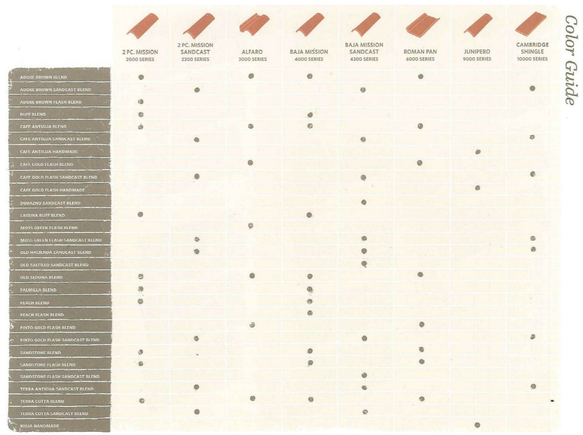
5.3 Fastening

5.3.1 Minimum ½-inch-thick plywood sheathing roof decking: The Primary Vent is installed on 1/2-inch-thick solid plywood roof decking using roofing cement and 1 1/2-inch-by-7/16-inch-diameter head by 1/8-inch-diameter shank corrosion resistant roofing nails spaced 4 inches on center around perimeter. The Secondary Vents are installed over the Primary Vents as follows:

Models 5 0044-M and 50046-S: Installed using two 1 1/2-inch-by-7/16-inch-diameter head by 1/8-inch-diameter shank corrosion resistant roofing nails at the top of the vent and an O'Hagin Wind Clip installed at the bottom of the vent.

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

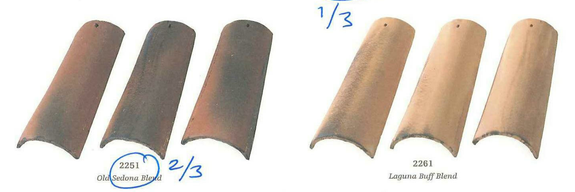
PHOTO OF (E) ROOF



Color Guide

REDLAND® CLAY TILE — *100 Percent Natural From the Ground Up*

1/3



Two-Piece Mission *2000 Series*

Type II (No. 30), underlayment must be applied over the ridge nailer board prior to installation of the hip and ridge tile. Each hip and ridge tile must be attached to the nailer board with one No. 11 gage, corrosion-resistant roofing nail with a 0.121 inch-diameter (3.07 mm) shank, a 5/16-inch-diameter head (7,9 mm), and sufficient length to penetrate a minimum of 3/4 inch (19 mm) into the nailer board. Roofer's mastic or tile adhesive, specified by Redland Clay Tile, must be applied at hip and ridge headlaps to cover the nail hole and create a bond between the tiles.

4.3 Roof Slope Limitations:

Tiles must be installed on roof slopes between 4:12 (33%) and 21:12 (173%) for the Cambridge Tiles, and between 3:12 (25%) and 21:12 (173%) for all other tiles.

4.4 Underlayment:

Underlayment must comply with, and be installed in accordance with, the applicable code.

4.5 Roof Classification:

4.5.1 2012 and 2009 IBC and IRC: The Redland Clay Tile roof tiles installed in accordance with this report are Class A roof coverings in accordance with 2012 and 2009 IBC Section 1505.2, and 2012 and 2009 IRC Section R902.1.

4.5.2 2006 IBC and IRC: The Redland Clay Tile roof tiles installed in accordance with this report are Class A roof coverings in accordance with the exception to 2006 IBC Section 1505.2 and 2006 IRC Section R902.1.

4.6 Reroofing Applications:

4.6.1 2012 and 2009 IBC and IRC: When installation is over existing roofs, the existing roof covering and underlayment must be completely removed and the tiles and new underlayment must be installed in accordance with Section 4.0 of this report. An existing self-adhered ice barrier may remain in place if covered with a new ice barrier membrane in accordance with the applicable code. The roof classification is as noted in Section 4.5.1.

4.6.2 2006 IBC and IRC: The tiles are permitted to be installed over existing roofs, provided the requirements of IBC Section 1510 or IRC Section R907, as applicable, are met. The roof classification is as noted in Section 4.5.2.

4.7 Wind Resistance:

4.7.1 2012 IBC: When installed in accordance with this report, the Redland Clay Tile roof tiles are limited to areas subject to a maximum ultimate design wind speed (V_{ult}) of 130 mph (209 km/h) in accordance with 2012 IBC Figure 1609, on structures having a maximum mean roof height of 60 feet (18.3 m).

4.7.2 2009 and 2006 IBC: When installed in accordance with this report, the Redland Clay Tile roof tiles are limited to areas subject to a maximum basic wind speed of 100 mph (161 km/h), in accordance with 2009 or 2006 IBC Figure 1609, as applicable, on structures having a maximum mean roof height of 60 feet (18.3 m)

4.7.3 IRC: When installed in accordance with this report, the Redland Clay Tile roof tiles are limited to areas subject to a maximum basic wind speed of 100 mph (161 km/h) in accordance with 2012 IRC Figure R301.2(4)A, or 2009 or 2006 IRC Figure R301.2(4), as applicable, on structures having a maximum mean roof height of 40 feet (12.2 m).

5.0 CONDITIONS OF USE

The Redland Clay Tile roof tiles described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The tiles must be manufactured, identified and installed in accordance with this report, the applicable code, and the TRI/WSRCA installation manual. The instructions within this report govern if there are any conflicts between the TRI/WSRCA installation manual and this report.

5.2 The tiles are limited to use in those areas described in Section 4.7 of this report.

5.3 The roof sheathing and roof framing system must be designed for the appropriate loads determined in accordance with the applicable code, subject to the approval of the code official.

5.4 The tiles are manufactured in Tecate, Baja California, Mexico, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Clay and Concrete Roof Tiles (AC180), dated February 2012.

7.0 IDENTIFICATION

Each tile is embossed with the words "Redland, Mexico." In addition, each pallet is identified with the evaluation report number (ESR-1489), the Redland Clay Tile name, the product name, the manufacturing location (Tecate, Mexico) and the installed weight.

8.0 OTHER CODES

8.1 Evaluation Scope:

In addition to the codes referenced in Section 1.0, the products in this report were evaluated for compliance with the requirements of the 1997 *Uniform Building Code*™ (UBC).

8.2 Uses:

The Redland Clay Tile roof tiles, when installed in accordance with this report, are noncombustible roof coverings in accordance with the UBC.

8.3 Description:

See Section 3.0.

8.4 Installation:

The tiles must be installed in accordance with UBC Section 1507.7 and Tables 15-D-1 and 15-D-2, and the TRI/WSRCA installation manual, except as noted in this report. This report and the TRI/WSRCA installation manual must be available at the jobsite at all times during installation.

Flashing must be in accordance with UBC Sections 1508.1, 1508.4, and 1509.

8.4.1 through 8.4.4: See Sections 4.1.1 (Cambridge Tile) through 4.4 (Underlayment).

8.4.5 Roof Classification: The Redland Clay Tile roof tiles installed in accordance with this report are noncombustible roof coverings in accordance with UBC Section 1504.2.

8.4.6 Reroofing Classifications: The tiles are permitted to be installed over existing roofs, provided the requirements of UBC Appendix to Chapter 15 are met. The roof classification is as noted in Section 8.4.5.

3.6 Napa "S" Tile:

The Napa "S" Tile is approximately 13 3/4 inches (349 mm) long, 10 1/2 inches (267 mm) wide and 1/2 inch (12.7 mm) to 5/8 inch (15.9 mm) thick. The barrel portion of the tile rises 2 1/16 inches (58 mm) over a span of 6.45 inches (164 mm). The tile has a flat pan section approximately 2 7/16 inches (58 mm) wide, and the edge ends in a 45-degree flared lip. Two nail holes are located on the pan section and one nail slot is located on the barrel. The installed weight of the tiles is 10.5 pounds per square foot (51.3 kg/m²) when installation is with an 8 1/2-inch (216 mm) center-to-center spacing and a 3-inch (76 mm) headlap. The tiles are Type I – high-profile, Grade 1, in accordance with ASTM C1167. See Figure 4 for details.

3.7 Cabrillo "S" Tile:

The Cabrillo "S" Tile is approximately 20 inches (508 mm) long, 12 1/2 inches (318 mm) wide and 1/2 inch (12.7 mm) thick. The barrel portion of the tile rises 3 inches (76 mm) over a span of 8.5 inches (216 mm). The tile has a flat pan section approximately 2 inches (51 mm) wide, and the edge ends in a 45-degree flared lip. Two nail holes are located on the pan section and one nail slot is located on the barrel. The installed weight of the tiles is 7.5 pounds per square foot (36.6 kg/m²) when installation is with an 11-inch (279 mm) center-to-center spacing and a 3-inch (76 mm) headlap. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 8 for details.

3.8 Roman Tile:

The tiles are 17 3/4 inches (451 mm) long, 11 inches (279 mm) wide, 5/8 inch (15.9 mm) thick and 2 5/8 inches (60 mm) in height to the outer edge of the side lip. Two nail holes are centered approximately 1 1/2 inches (38 mm) from the tile head and are spaced 5 1/4 inches (133 mm) apart. The cover tile and pan tile are similar except that the nail holes are located on opposite ends. The installed weight of the tiles is 10.1 pounds per square foot (49.3 kg/m²) when installation is with an 18-inch (457 mm) center-to-center spacing and with a headlap of 3 inches (76 mm). The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 5 for details.

3.9 Two-piece Junipero Tile:

The Junipero Pan Tile is a tapered clay tile approximately 16 3/4 inches (425 mm) long and 1/2 inch (12.7 mm) thick, and has widths at the small and large ends of approximately 5 7/8 inches (146 mm) and 7 inches (178 mm), respectively. The height of the tile is approximately 3 inches (76 mm). One nail slot is located approximately 1 inch (25.4 mm) from the head of the tile.

The Junipero Cover Tile has a finger-embossed design on the surface and is designed to be used with the Junipero Pan Tile. The cover tile is similar to the Junipero Pan Tile except that the widths at the small and large ends are approximately 6 7/8 inches (146 mm) and 7 inches (178 mm), respectively. The height of the cover tile is approximately 3 inches (64 mm). One fastener slot is located approximately 1 inch (25.4 mm) from the head of the tile.

The tiles are installed with a headlap of 3 inches (76 mm) and have an installed weight of 14 pounds per square foot (68 kg/m²) when installation is with a 9-inch (229 mm) center-to-center spacing. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 6 for details.

3.10 Alfaro Tile:

The Alfaro Tile is approximately 18 inches (457 mm) long and 10 inches (254 mm) wide, with a thickness of 1/2 inch (12.7 mm) to 9/16 inch (14.3 mm). The height of the barrel portion of the tile is approximately 1 13/16 inches (46 mm). The tile has a flat pan section approximately 3 inches (76 mm) wide, and two side lips that flare 45 degrees. Opposite corners are cut to a triangular shape. Two nail holes are located on the pan section and one nail slot is located on the barrel. Tiles are installed with a 3-inch (76 mm) headlap and have an installed weight of 8.1 pounds per square foot (39.5 kg/m²) when installation is with an 8-inch (203 mm) center-to-center spacing. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 7 for details.

3.11 Two-Piece Angulo Tile:

The top and pan tiles are curved to approximately one-third of a circle and are approximately 18 1/2 inches (470 mm) long and 1/2 inch (12.7 mm) thick. The tiles have widths at the large and small ends of approximately 7 1/4 inches (184 mm) and 6 inches (152 mm), respectively. The height of the tile is approximately 3.65 inches (93 mm). The cover and pan tiles are similar except that the nail holes are located on opposite ends, approximately 1 inch (25.4 mm) from the head of the tile.

The tiles are installed with a headlap of 3 inches (76 mm) and have an installed weight of 13 pounds per square foot (63 kg/m²) when installation is with a 9-inch (229 mm) center-to-center spacing. The tiles may be used as hip, ridge and rake tiles for all tile profiles described in this report, provided they are embedded in mortar or roofing mastic. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 9 for details.

4.0 INSTALLATION

4.1 General:

The tiles must be installed in accordance with IBC Section 1507.3 and IRC Section R905.3, as applicable, and the Concrete and Clay Roof Tile Installation Manual for Moderate Climate Regions, published by the Tile Roofing Institute and the Western States Roofing Contractors Association (hereafter referred to as the TRI/WSRCA installation manual), and recognized in ESR-2015P, except as otherwise noted in this report. This report and the TRI/WSRCA installation manual must be available at the jobsite at all times during installation.

Flashing must be in accordance with IBC Sections 1503.2 and 1507.3.9, or IRC Sections R903.2 and R905.3.8, as applicable.

4.1.1 Cambridge Tile: Because of the tile profile, the tiles must be installed in a manner similar to that of wood shakes except where otherwise noted in this report. The tiles must be installed at a maximum 6 1/2-inch (165 mm) exposure. The tiles must be placed with gaps in adjacent courses staggered a minimum of 1 1/2 inches (38 mm), and spacing between tiles in each course must be approximately 7/8 inch (9.5 mm). Each tile must be fastened using two No. 11 gage, corrosion-resistant roofing nails having a 0.121 inch-diameter (3.07 mm) shank and a 7/16-inch-diameter head (7.9 mm) and having sufficient length to penetrate the sheathing at least 3/4 inch (19 mm), or to extend through the sheathing, whichever is less. See Figure 1 for details.

4.2 Hip and Ridge Tile:

Nailer boards of sufficient height to adequately support hip or ridge tiles must be fastened to framing with two corrosion-resistant 10d nails at 24 inches (610 mm) on center, or must be secured using galvanized steel strapping or special galvanized attachment devices at 48 inches (1219 mm) on center. One layer of ASTM D226,

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ICC-ES Evaluation Report

ESR-1489

Reissued March 2015

This report is subject to renewal March 2016.

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 32 13—Clay Roof Tiles

REPORT HOLDER:

REDLAND CLAY TILE
9155 BROWN DEER ROAD, SUITE 5
SAN DIEGO, CALIFORNIA 92121
(858) 622-1935
www.redlandclaytile.com

EVALUATION SUBJECT:

REDLAND CLAY ROOF TILES: CAMBRIDGE, TWO-PIECE MISSION, TWO-PIECE BAJA MISSION, "S," NAPA "S," CABRILLO "S," ROMAN, TWO-PIECE JUNIPERO ALFARO TILES AND TWO-PIECE ANGULO

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

- Other Codes (see Section 8.0)

Properties evaluated:

- Wind uplift resistance
- Fire classification
- Durability

2.0 USES

The Redland Clay Tile roof tiles, when installed in accordance with this report, are Class A roof coverings in accordance with the IBC and the IRC.

3.0 DESCRIPTION

3.1 General:

Redland Clay Tile roof tiles are composed of vitrified clay, and kiln-fired at various temperatures for different burnt-on colors. The tiles comply with ASTM C1167.

3.2 Cambridge Tile:

The tiles are flat and are approximately 15 inches (381 mm) long, 6 1/4 inches (171 mm) wide and 5/8 inch (15.9 mm) thick, and weigh 4.75 pounds (2.14 kg) each. Two nail holes are provided in the top portion of each tile. The tiles have an installed weight of 14.7 pounds per square foot (71.8 kg/m²) when installed with a 6 1/2-inch exposure. See Figure 1 for details.

Hip and ridge tiles are curved to approximately one-third of a circle, and have widths at the large and small ends of approximately 8 1/2 and 7 inches (216 and 178 mm), respectively. One nail hole is provided in the small end of the tile. The tiles are Type III, Grade 2, in accordance with ASTM C1167.See Figure 1 for additional details.

3.3 Two-piece Mission Tile:

Top and pan tiles are curved to approximately one-third of a circle, and have widths at the large and small ends of approximately 8 1/2 and 7 inches (216 and 178 mm), respectively. One nail hole is provided in the small end of the top tile and in the large end of the pan tile. Tiles are approximately 19 1/2 inch (12.7 mm) thick and 20 inches (508 mm) long, and weigh 10.7 pounds per square foot (52.2 kg/m²) when installed with a maximum 11-inch (279 mm) center-to-center spacing, and a headlap of 3 inches (76 mm). The tiles may be used as hip, ridge and rake tiles for all tile profiles described in this report, provided they are embedded in mortar or roofing mastic. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 2 for details.

3.4 Two-piece Baja Mission Tile:

The tiles are similar to the two-piece Mission Tile, except that the widths at the large and small ends are approximately 6 7/8 and 6 inches (171 and 152 mm), respectively, Tiles are approximately 1/2 inch (12.7 mm) thick and 17 1/2 inches (445 mm) long. The installed weight of the tiles, when installation is with a 9-inch (229 mm) center-to-center spacing, and a headlap of 3 inches (76 mm), is 9.4 pounds per square foot (45.9 kg/m²). The tiles may also be used as hip, ridge and rake tiles for all tile profiles described in this report, provided they are embedded in mortar or roofing mastic. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 2 for details.

3.5 "S" Tile:

The tiles are single S-shaped tiles manufactured in a manner similar to the two-piece Mission Tiles, except they are 18 inches (457 mm) long, 13 inches (330 mm) wide and 1/2 inch (12.7 mm) thick, with two nail holes in the pan tile and one nail hole in the cover tile. The installed tile weight is 9 pounds per square foot (43.9 kg/m²) when installation is with an 11-inch (279 mm) center-to-center spacing and a 3-inch (76 mm) headlap. The tiles are Type I – high-profile, Grade 2, in accordance with ASTM C1167. See Figure 3 for details.

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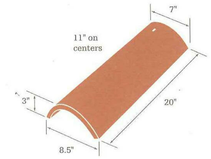
2251: Old Sedona Blend *Tuscan Estates, Rancho Santa Fe, CA*

Redland's Two-Piece Mission tile is a barrel roof tile most associated with traditional clay roofs. Popularized by the early Spanish Missions throughout the southwest, they are a standard size, smooth-finished tile with a color palette that ranges from classic terra cotta to peach and buff. And just like Redland's Baja Mission tiles, its palette also includes flashes of darker brown and sandstone to accentuate the range of colors.

Exposure: 17" maximum, 3" head lap
Weight: 1070 lbs. per square (approx.)
Quantity: 154 pcs. per square (approx.)



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SHEET TITLE: ROOFING SPECS

SHEET NUMBER: A0.61

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ECO FUNCTIONAL ARCHITECTURE

SUBMITTAL DATA: CHILLER SERIES SCM036/060

SD-CHS6-0513

Reverse Cycle Heat Pump

STANDARD FEATURES

- Dual System Programmable Compressor (Two Separate Refrigerant Circuits)
- Simple Piping & Plumbing
- Easily Zoned
- 30% Larger Condenser Coil than Traditional Units
- Self Diagnostic Control – Carel Factory Programmed – Field Adjustable
- Low Current (AMP) Requirements
- Simplified Installation & Ease of Service
- Quiet Operation – "Soft Start" Package
- Highest R-410A COP and EER
- No Refrigerant Handling
- Refrigerant Stays Outside the Building
- Low Ambient Antifreeze Protection
- 30% Less Refrigerant than Conventional Split System
- Durable Baked Enamel Finish
- Low Ambient Cooling Enabled
- Automatic Lead/Lag between Compressors
- Easy Service Access

Intertek

☐ **MODEL:** SCM036A4 Qty. _____

HEATING CAPACITY:
KW – 10.4
BTuh – 35,500

COP:
2.70

COOLING CAPACITY:
KW – 11.3
BTuh – 38,500

EER:
9.2

VOLTAGE:
230V/1Ø/60Hz

COMPRESSOR:
Rotary x 2

☐ **MODEL:** SCM060A4 Qty. _____

HEATING CAPACITY:
KW – 17.6
BTuh – 60,250

COP:
2.55

COOLING CAPACITY:
KW – 18.0
BTuh – 61,500

EER:
8.7

VOLTAGE:
230V/1Ø/60Hz

COMPRESSOR:
Rotary x 2

260 North Elm St., Westfield, MA 01085
(800) 465-8558 Fax: (413) 564-5815

7555 Tranmere Drive, Mississauga, ONT. L5S 1L4 Canada
(905) 670-5888 Fax: (905) 670-5782

www.spacepak.com

PROJECT: _____ **DATE:** _____
LOCATION: _____
CUSTOMER: _____
ENGINEER: _____
SUBMITTED BY: _____
FOR: ☐ **Reference** ☐ **Approval** ☐ **Construction**
UNIT DESIGNATION: _____
SCHEDULE NUMBER: _____

Section 2: Specifications and ratings

Figure 1 Model SCM rating data

Item	Units	SCM-036	SCM-060	Item	Units	SCM-036	SCM-060
Cooling capacity *(Note 2)*	Btuh / KW	34,000 / 10.0	46,000 / 13.5	Supply voltage	VAC	230/1/60	230/1/60
Heating capacity *(Note 3)*	Btuh / KW	44,000 / 13.0	60,000 / 17.0	Running current, cooling *(Note 1)*	Amps	17.6	26.4
Fan speed	RPM	850	850	Running current, heating *(Note 1)*	Amps	13.1	21.3
Noise level	dB(A)	56	56	MCA *(Note 1)*	Amps	19.7	30.3
Water volume	Gallons	2	2.5				
Supply connection	Inches NPT	1	1	Return connection	Inches NPT	1	1
Minimum supply temperature	°F	36	36	Maximum supply temperature	°F	125	125
Minimum flow	GPM	7	10	Maximum flow	GPM	12	15
Pressure drop at minimum flow	Feet WC	8	17	Pressure drop at maximum flow	Feet WC	21	28
Net weight	Lbs	337	386	Operating weight	Lbs	354	407
Shipping weight	Lbs	346	395	Shipping dimensions	Inches	47 x 18 x 60	47 x 18 x 60

Note 1: Electrical ratings DO NOT include water pump amp draw. This pump is supplied by the installer. Add the current draw of the pump to the values listed above. Adjust the MCA accordingly.
Note 2: Performance at 95° ambient temperature, 47° water
Note 3: Performance at 45° ambient temperature, 115° water

Figure 2 Model SCM coding

Typical model	S	C	M	0	6	0	A	4
Position	1	2	3	4	5	6	7	8
Designation	Unit Type			Capacity			Series	Refrigerant type
Values	**SCM** = SpacePak Heat Pump/Chiller Module			**036** = 3 ton nominal **060** = 5 ton nominal			**A** = Series "A"	**4** = R410A
Examples	**SCM-036-A-4** = 3 ton nominal, series A, using R410A referigerant, SpacePak Heat Pump/Chiller Module **SCM-060-A-4** = 5 ton nominal, series A, using R410A referigerant, SpacePak Heat Pump/Chiller Module							

Standard equipment

- Heat pump/chiller, including two refrigeration systems, factory-programmed controller, fans and all required internal components
- Powder-coated enclosure
- Auxiliary electric immersion heater (3 KW, 230V/1/60) — requires separate electrical power circuit, 15-amp minimum breaker

Additional components required

- Pump and piping by others
- Expansion tank, properly sized for system volume
- SpacePak Chiller Interface Module

Section 4: LOCATION & MOUNTING

WARNING Failure to comply with all of the guidelines IN THE FOLLOWING could result in death, serious injury or substantial property damage.

NOTICE The installation must comply with all applicable local codes.

Prepare the unit

- Inspect the unit for shipping damage. DO NOT use if there is a risk that the damage could affect unit operation.
- Make sure all required components are available.
- Install optional immersion heater, if used. See instructions provided with the heater.

Location

- DO NOT locate where the unit could be sprayed by sprinklers.
- DO NOT locate near swimming pools, spas or any location that could cause chlorine or other contaminant to enter the unit.
- DO NOT locate where water run-off from adjacent structures could impinge on the unit.
- Maintain the clearances shown in Figure 5.
- LOW AMBIENT conditions — Contact SpacePak Technical Support to obtain low ambient adjustment instructions if cooling operation below 55°F is required.
- CORROSIVE ENVIRONMENTS — Do not install the unit in an area subject to sea air or other potential corrosive contaminants.
- INDOOR INSTALLATION — If the unit is installed inside a building, the building must be equipped with air openings sufficient to ensure free discharge of heated (or cooled) air generated by the heat pump/chiller. All clearances must be maintained to ensure free air flow into and out of the enclosure. Make sure no other equipment located in the space will be affected by the unit's air flow.

Handling

- See Figure 4.
- Place padding at pressure points to prevent damage to the enclosure.
- Use caution when handling. The unit is heavy and could cause severe injury or damage if dropped or handled incorrectly.

Figure 4 Handling with cables

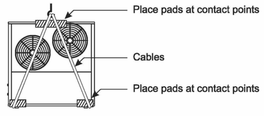
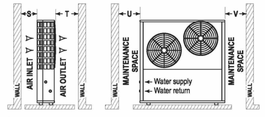


Figure 5 Maintain clearances below



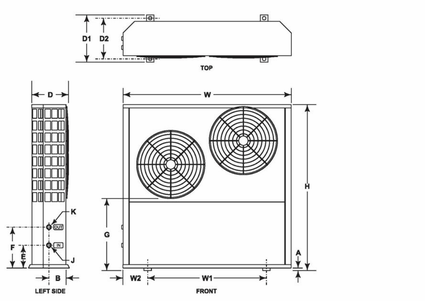
Minimum clearances (inches)			
S	**T**	**U**	**V**
20	59	40	20

Mounting pad

- The SpacePak heat pump/chiller must be mounted on a level corrosion- and weather-resistant mounting surface, preferably concrete. The structural support must be suitable for the operating weight of the unit and attached components, its mounting pad, snow loading and any other expected loads.
- The mounting pad must not be attached directly to a structure where noise transmission would be objectionable.
- Vibration isolators supplied with the chiller may be installed when desired to reduce transmitted vibration.
- The unit must be bolted securely to the pad. Where required by local jurisdiction, the mounting must also be analyzed for seismic loading capability.
- The mounting must ensure that there will be no debris accumulation which might block air flow through the enclosure openings. ***The lower edge of the lower fan opening must be above the typical snow line, including allowance for drifting.***
- There must be no accumulation of water that could reach the bottom of the unit's enclosure.

SUBMITTAL DATA: CHILLER SERIES SCM036/060

DIMENSIONS



Model	A	B	D	D1	D2	E	F	G	H	J	K	W	W1	W2
	Leg height	Front to return	Cabinet depth	Mounting lug depth	Mounting lug centers	Bottom to return	Bottom to supply	Base to bottom edge of lower fan	Overall Height	Return connection	Supply connection	Overall width	Mounting lug centers	Lug center to edge
SCM-036	1	10	17¾	17⅜	15¾	5½	15¼	25	53	1" NPT	1" NPT	43⅜	27½	7 15/16
SCM-060	1	10	17¾	17⅜	15¾	5½	15¼	25	53	1" NPT	1" NPT	43⅜	27½	7 15/16

PERFORMANCE

Cooling Operation – 47°F water

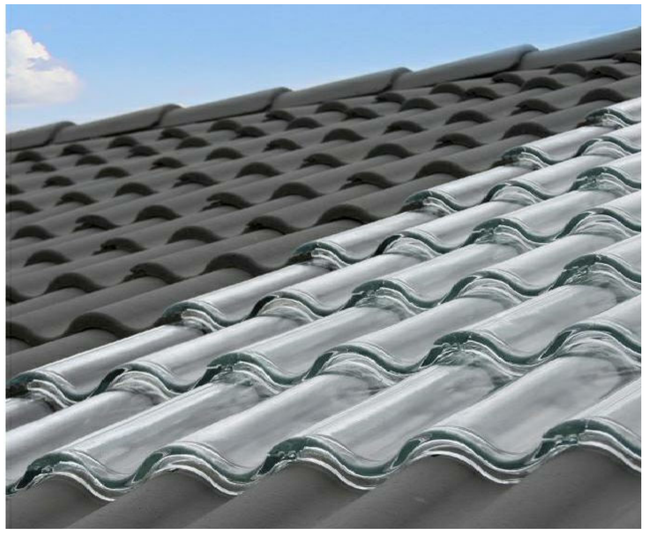
Ambient Temp °F	Capacity BTU/hr	Chiller Power Watts	Chiller COP	Chiller EER
3 Ton SpacePak Chiller				
82	38,553	2,523	4.47	15.28
95	29,694	3,873	2.25	7.67
105	22,880	4,912	1.36	4.66
5 Ton SpacePak Chiller				
82	61,626	5,150	3.50	11.95
95	54,621	5,881	2.72	9.29
105	45,668	6,643	2.01	6.87

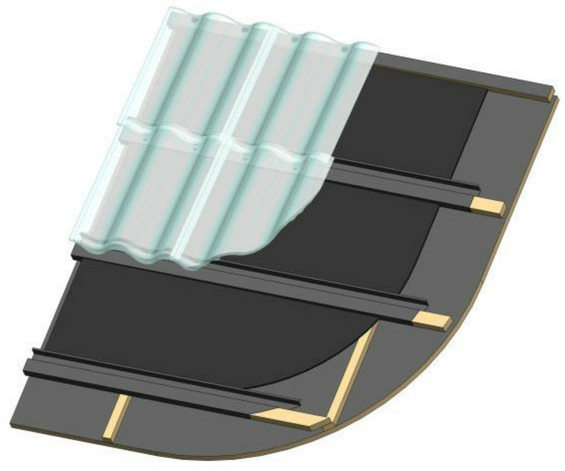
Heating Operation

Ambient Temp °F	Capacity BTU/hr	Chiller Power Watts	Chiller COP	Water Supply Temp.
3 Ton SpacePak Chiller				
45	35,536	3,855	2.70	115
32	26,296	3,472	2.22	110
20	20,245	3,103	1.91	105
5 Ton SpacePak Chiller				
45	60,256	6,919	2.55	115
32	42,770	5,927	2.11	110
20	24,769	4,125	1.76	105

3. AC CHILLER SPECS AND NOISE LEVELS

1. GLASS TILE ROOF





2. SIGNAGE

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SHEET TITLE
GLASS TILE ROOF & AC CONDENSER SPECS

SHEET NUMBER
A0.62

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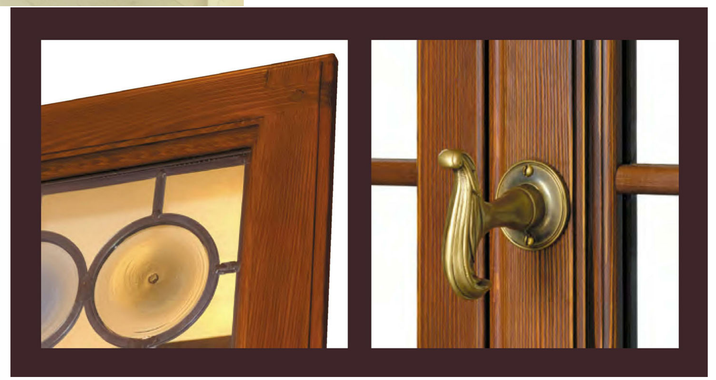
INTERIOR VIEW OF FRENCH DOOR

EXTERIOR FRENCH DOOR

DARK DIVIDED WINDOW

WOOD WINDOW BY
COORITALIA



CLOSE UP OF HANDLE
AND OBSCURE WINDOW

INTERIOR SIDE
SHOWING HARDWARE

IN SWING CASEMENT

EXTERIOR SIDE

TOP VIEW OF CASEMENT
COMING TOGETHER

DOUBLE CASEMENT WOOD WINDOW BY COORITALIA

FABBIO

Falegnameria Fabbio was founded in San Biagio di Callalta (TV) in 1957 by Gino Fabbio as an artisan wood shop with focus on manufacturing high quality windows and doors.
The business has been run since then with creativity and passion; in 1980 Luigino Fabbio enters the family business and starts developing an old world window model that is the perfect replacement in the many renovations of historical buildings in the Veneto area. The historical line is still built today as it was once by using old dove tail techniques, original architectural design, antiquing processes and natural oils and wax.
Thank to Luigino's knowledge and passion for history and details over the years Fabbio has developed various lines of product that are used in restoration of buildings from the XVII-XVIII-XIX century.

In 2005 the new Fabbio Design is born with the intent of completing the historical line with a contemporary line more suitable for today's modern architecture. The new innovative Extrema has a frameless design with a "clean" look and is a perfect match for modern design. Fabbio Design has grown over the years adding new lines like the "Fly" that maintains all the quality details of a Fabbio Design product in today's competitive market or the "Museo" which has been developed for a custom project and with its unique bronze exterior clad represent a top of the line product.
To manufacture a great window you must start with high quality wood; Fabbio Design uses only the best woods sourced from Forest Stewardship Council (FSC) sources, as well as being FSC certified themselves. The finishing oils, stains, waxes are chosen for both their high quality and eco-friendly characteristics.

In pursuing the philosophy of innovation and on-going commitment to provide a better service to the customer in 2013 Fabbio Design inaugurated the new headquarters in San Biagio di Callalta near Venice – Italy, with over 32,000 sf of manufacturing capabilities, including state of the art CNC machines, and the new Fabbio USA LLC with headquarters in San Francisco, CA

Flexibility is the essence of Fabbio Design. No project is too big or too small, weather our customers want something simple or something highly customized, something antique or something modern we are here to help and we can do it with a quality of craftsmanship that is second to none.

1. HISTORY OF COORITALIA
WINDOWS AND THEIR DESIGN

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SHEET TITLE
WINDOW & DOOR IMAGES
SIMILAR TO EXISTING

SHEET NUMBER
A0.63

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SHEET TITLE
PROPOSED STREET SCAPE ELEVATIONS

SHEET NUMBER
A0.71

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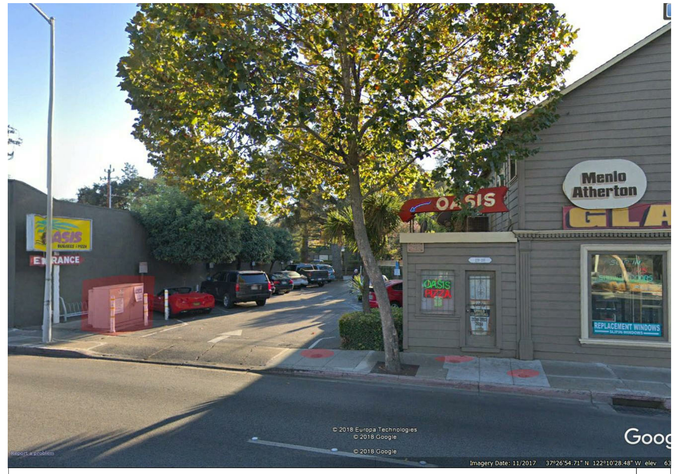
AT&T AND CABLES AT CAMBRIDGE | 7.

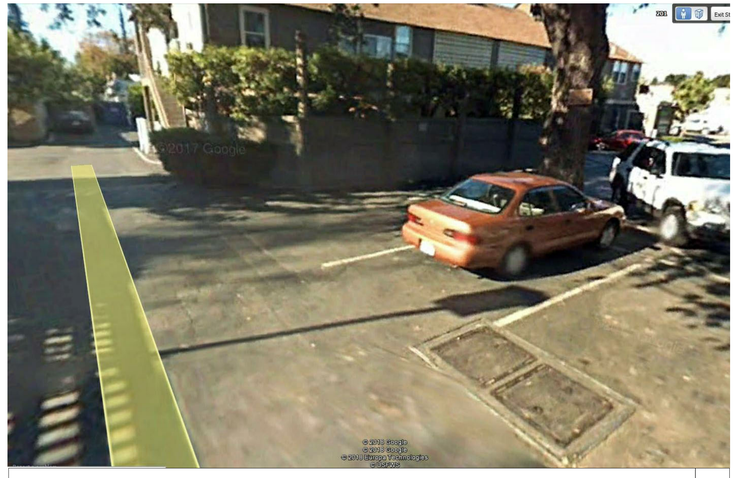
PG&E POLE MOUNTED TRANSFORMER AND AT&T CABLE POLES & GUY WIRES ON CAMBRIDGE AT 201 EL CAMINO | 6.



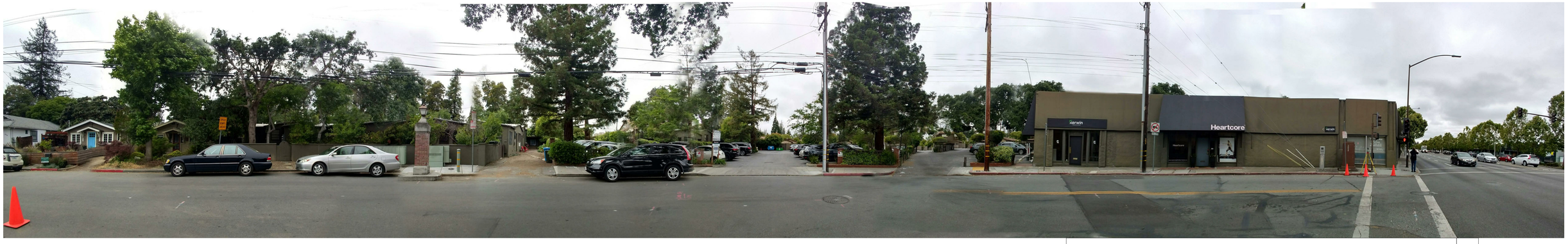
PG&E AND WATER UTILITIES AT EL CAMINO REAL EXISTING BLDGS. | 5.

PG&E PAD MOUNTED TRANSFORMER ACROSS CAMBRIDGE FROM 201 EL CAMINO | 4.

PG&E UTILITIES AND AT&T CABLE BEHIND EXISTING BUILDING | 3.



PG&E UTILITIES VIEW IN-GROUND BEHIND EXISTING 201 CAMBRIDGE | 2.



EXISTING CAMBRIDGE AVENUE STREET SCAPE | 1.

5/30/2018 6:16:06 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
EXISTING STREET VIEWS OF UTILITIES AROUND PROJECT

SHEET NUMBER
A0.72

ENVIRONMENTAL INNOVATIONS IN DESIGN
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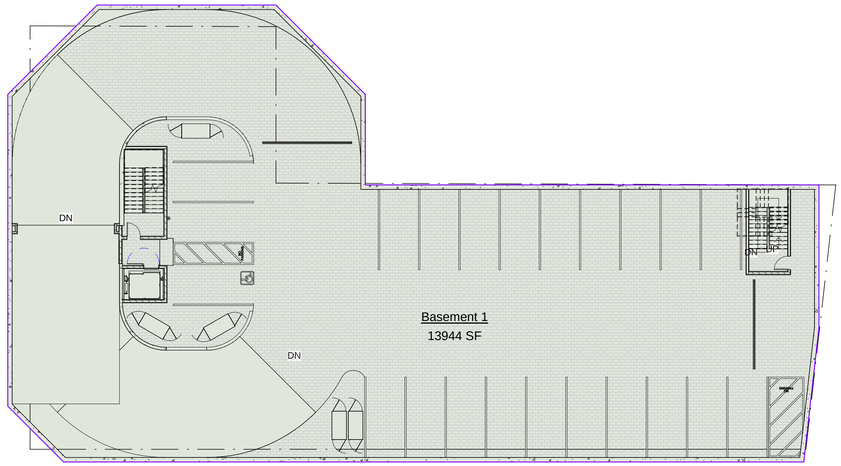
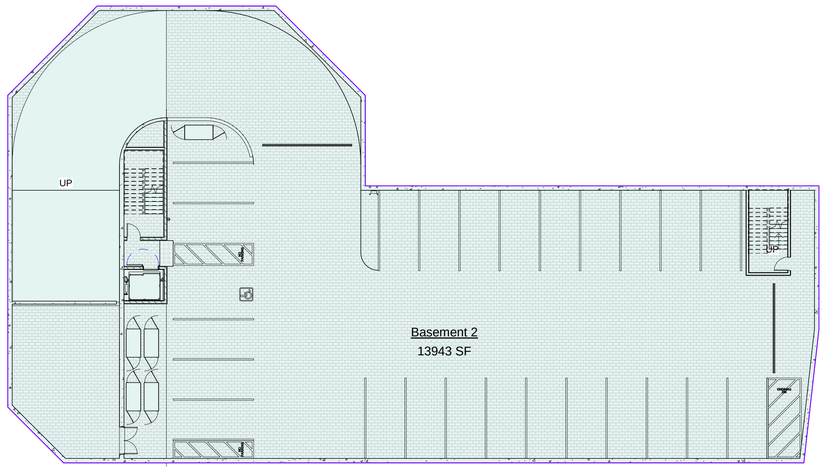


1 TOS Basement 1
1/16" = 1'-0"



2 TOS Basement 2
1/16" = 1'-0"

Area Schedule Basement	
Area	Level
13943 SF	TOS Basement 2
13943 SF	
13944 SF	TOS Basement 1
13944 SF	
27887 SF	

0' 8' 16' 32' 64'

Graphic Scale: 1 /16 inch = 1 foot

5/30/2018 6:16:08 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
AREA DIAGRAM - UNDERGROUND GARAGE

SHEET NUMBER
A1.2

ENVIRONMENTAL INNOVATIONS IN DESIGN
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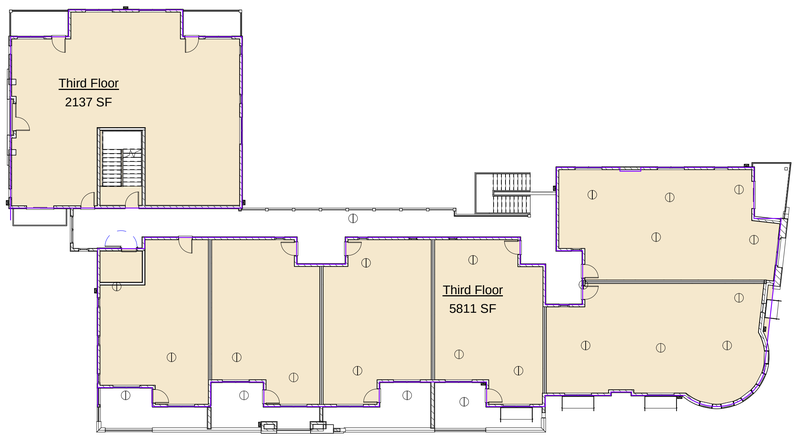
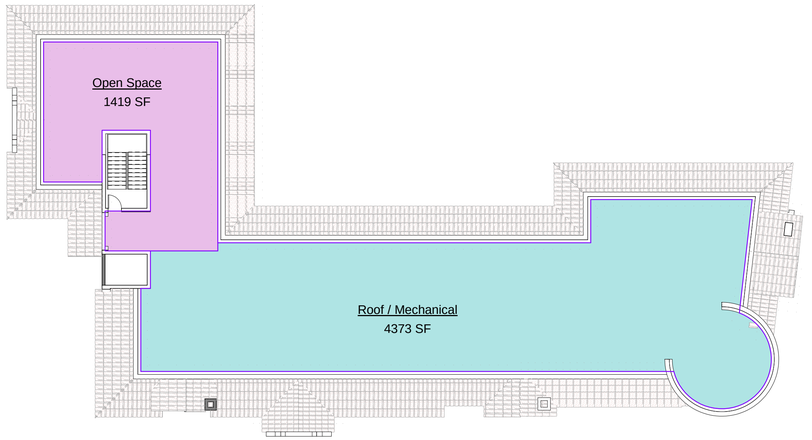


3 TOSF Level 3
1/16" = 1'-0"



4 Roof
1/16" = 1'-0"

2 TOSF Level 2
1/16" = 1'-0"

1 TOSF Level 1
1/16" = 1'-0"

Area Schedule Above Ground	
Name	Area
TOSF Level 1	
Res Lobby	642 SF
Retail/Medical "A"	2563 SF
Retail/Medical "B"	2324 SF
Retail/Medical "C"	780 SF
Retail/Medical "D"	2305 SF
	8615 SF
TOSF Level 2	
Second Floor	2146 SF
Second Floor	5832 SF
	7979 SF
TOSF Level 3	
Third Floor	5811 SF
Third Floor	2137 SF
	7948 SF
Roof	
Open Space	1419 SF
Roof / Mechanical	4373 SF
	5792 SF
Grand total	30334 SF

0' 8' 16' 32' 64'

Graphic Scale: 1 /16 inch = 1 foot

5/30/2018 6:18:26 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
AREA DIAGRAM - BUILDING

SHEET NUMBER
A1.3

ENVIRONMENTAL INNOVATIONS IN DESIGN
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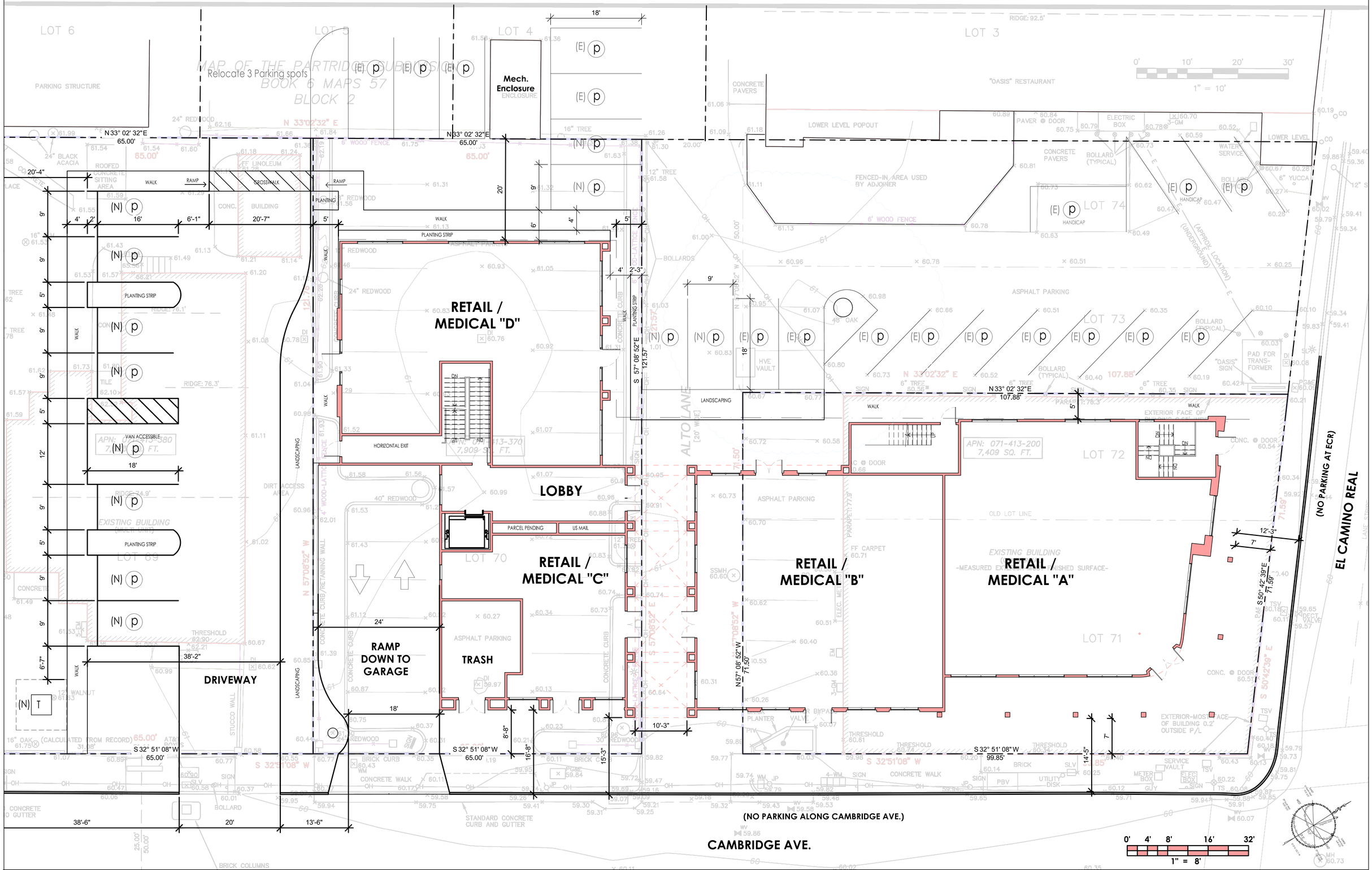

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
1st Floor

SHEET NUMBER
A3.1

ENVIRONMENTAL INNOVATIONS IN DESIGN
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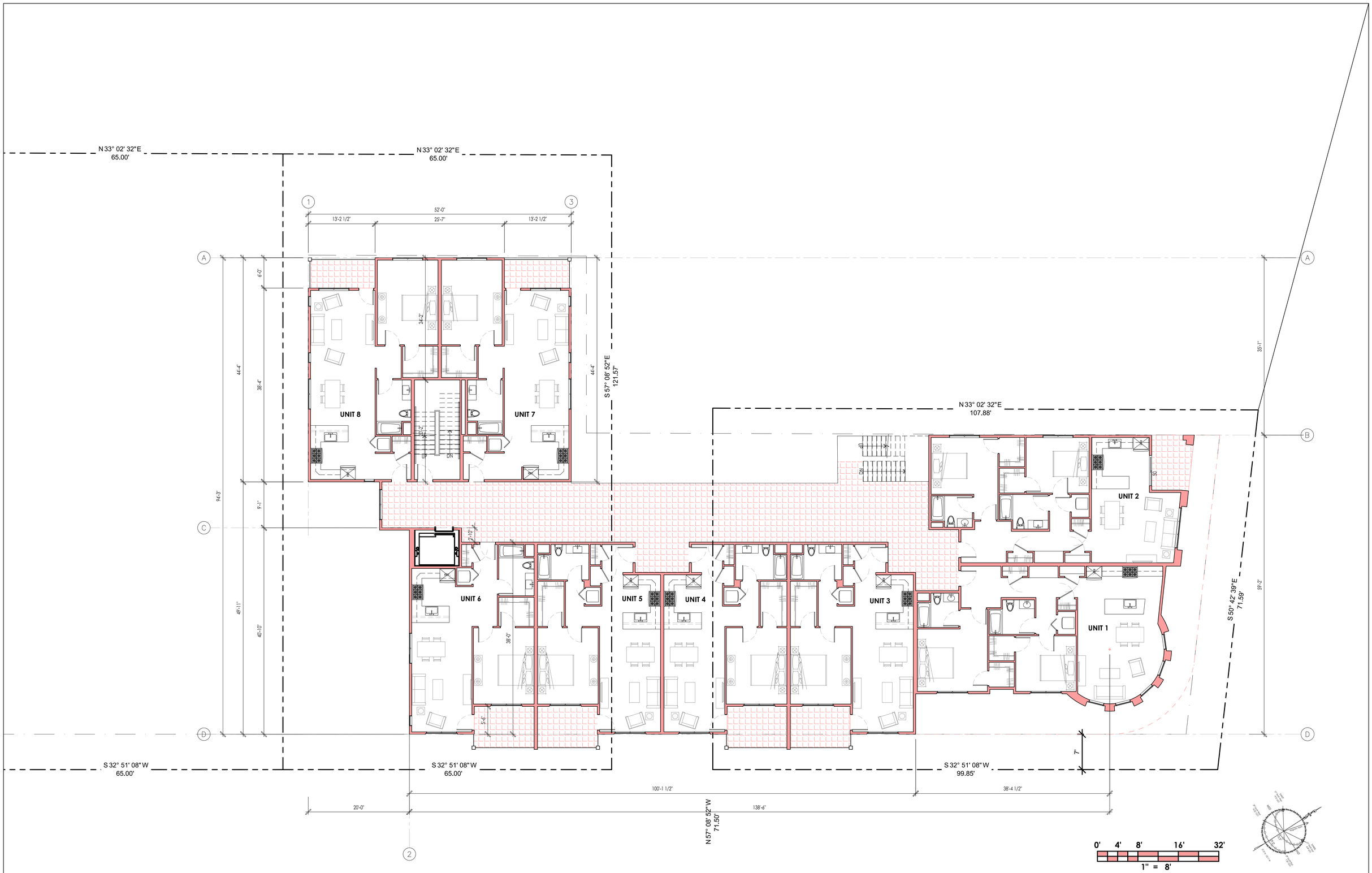
ECO FUNCTIONAL ARCHITECTURE



DATE
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201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
2nd Floor

SHEET NUMBER
A3.2

ENVIRONMENTAL INNOVATIONS IN DESIGN
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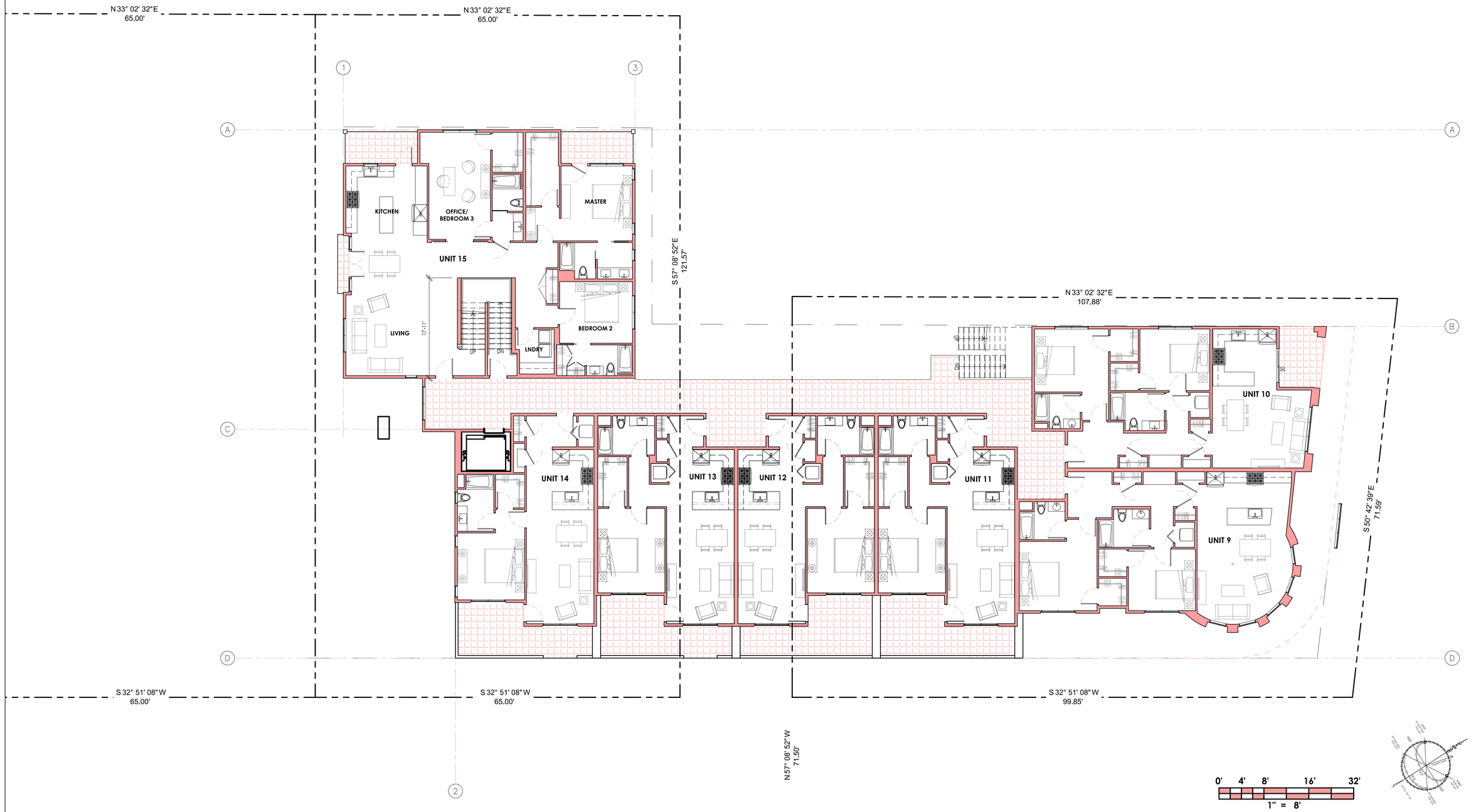
EID ARCHITECTS
ECO FUNCTIONAL ARCHITECTURE



DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
3rd Floor

SHEET NUMBER
A3.3

ENVIRONMENTAL INNOVATIONS IN DESIGN
412 OLIVE AVE. PALO ALTO, CA 94306
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EID ARCHITECTS
ECO FUNCTIONAL ARCHITECTURE

ARINGS
H 57°08' EAST, OF UNIVERSITY ROAD (FORMERLY
OWN ON THAT CERTAIN SUBDIVISION MAP
2 STANFORD PARK" WHICH WAS FILED FOR
OF MAPS PAGE 46, SAN MATEO COUNTY
D AS THE BASIS OF BEARINGS FOR THIS SURVEY.

HEREON ARE BASED UPON NGVD 1929 ("MEAN

ALTO LANE

UTILITIES SHOWN HEREON TAKEN FROM VISUAL SURFACE EVIDENCE AND SHOULD BE CONSIDERED AS APPROXIMATE ONLY. ACTUAL LOCATIONS OF UTILITIES MAY VARY. TRUE LOCATION OF UTILITIES CAN ONLY BE OBTAINED BY EXPOSING THE UTILITY.

TREE LOCATIONS SHOWN HEREON ARE SHOWN SYMBOLICALLY WITH SYMBOL SIZES BASED UPON TRUNK DIAMETER AT CHEST HEIGHT, AT THE LOCATION WHERE THE TREE ENTERS THE GROUND SURFACE. LOCATIONS AND SIZES OF TREE TRUNKS CAN ONLY BE CONSIDERED APPROXIMATE UNLESS OTHERWISE STATED ON THE MAP. TREES OF TRUNK DIAMETER SIZES OF 6 INCHES OR GREATER WERE LOCATED BY THE FIELDCREW.

SURVEY PERFORMED BY: BGT LAND SURVEYING
www.bgtsurveying.com

DATE OF FIELD SURVEY: AUGUST, 2015
JOB NUMBER: 15-119

C/L	CENTERLINE
CMP	CORRUGATED METAL PIPE
CI	CAST IRON PIPE
CO	CLEAN OUT BOX
CP	SURVEY CONTROL POINT
CTV	CABLE TELEVISION LINE
DI	DROP INLET
EM	ELECTRIC METER
EV	ELECTRIC VAULT
FF	FINISHED FLOOR
FL	FLOWLINE
FH	FIRE HYDRANT
GM	GAS METER
GRD	GROUND
GV	GAS VALVE
HCR	HANDICAP RAMP
HVE	HIGH-VOLT ELECTRIC
INV.	INVERT
IP	IRON PIPE
JP	JOINT POLE
KV	KILOVOLT

FH
WV

15'-4"

RAMP UP

DN UP

EVSE

HC

3 cars

HC VAN

RAMP DOWN

19 cars

18'-0"

62'-0"

24'-0"

18'-0"

0' 4' 8' 16' 32'
1" = 8'

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
Garage
Level 1

SHEET NUMBER
A3.4

ENVIRONMENTAL INNOVATIONS IN DESIGN
412 OLIVE AVE. PALO ALTO, CA 94306
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ECO FUNCTIONAL ARCHITECTURE

15'-4"

RAMP UP

DN

UP

EVSE

HC

HC VAN

EVSE

EVSE

6 cars

Res Stacker 2 cars

15 Stackers, 30 cars

4 cars

18'-0"

62'-0"

24'-0"

0' 4' 8' 16' 32'

1" = 8'

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
Garage Level 2

SHEET NUMBER
A3.5

ENVIRONMENTAL INNOVATIONS IN DESIGN
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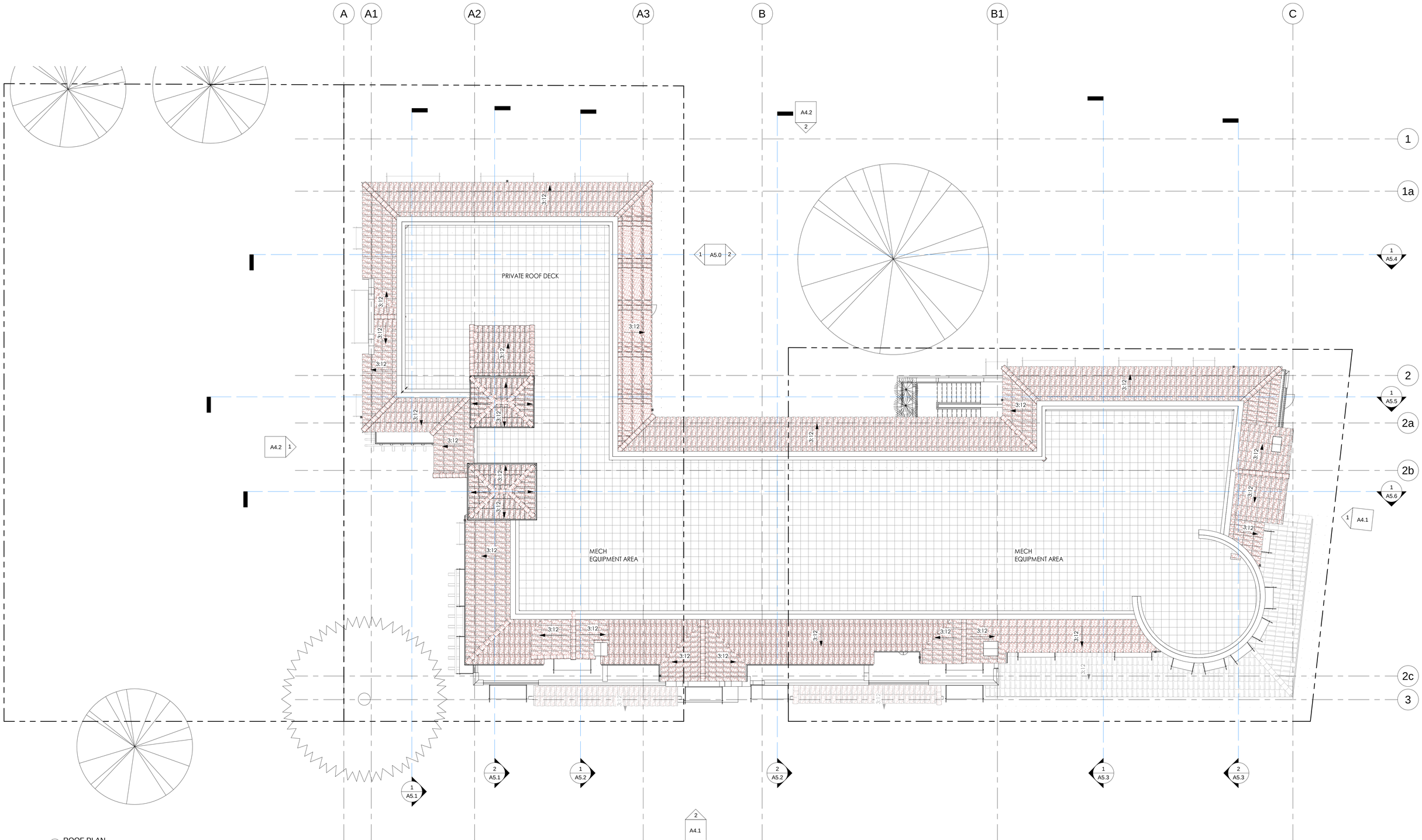
EID ARCHITECTS
ECO FUNCTIONAL ARCHITECTURE



1 ROOF PLAN
1/8" = 1'-0"

5/30/2018 6:20:01 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
ROOF PLAN

SHEET NUMBER
A3.6

ENVIRONMENTAL INNOVATIONS IN DESIGN
412 OLIVE AVE. PALO ALTO, CA 94306
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EID ARCHITECTS
ECO FUNCTIONAL ARCHITECTURE

1 ELEVATIONS - EL CAMINO
1/8" = 1'-0"

2 ELEVATIONS - CAMBRIDGE
1/8" = 1'-0"

0' 4' 8' 16' 32'
Graphic Scale: 1 /8 inch = 1 foot

5/30/2018 6:20:49 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
ELEVATIONS 1

SHEET NUMBER
A4.1

ENVIRONMENTAL INNOVATIONS IN DESIGN
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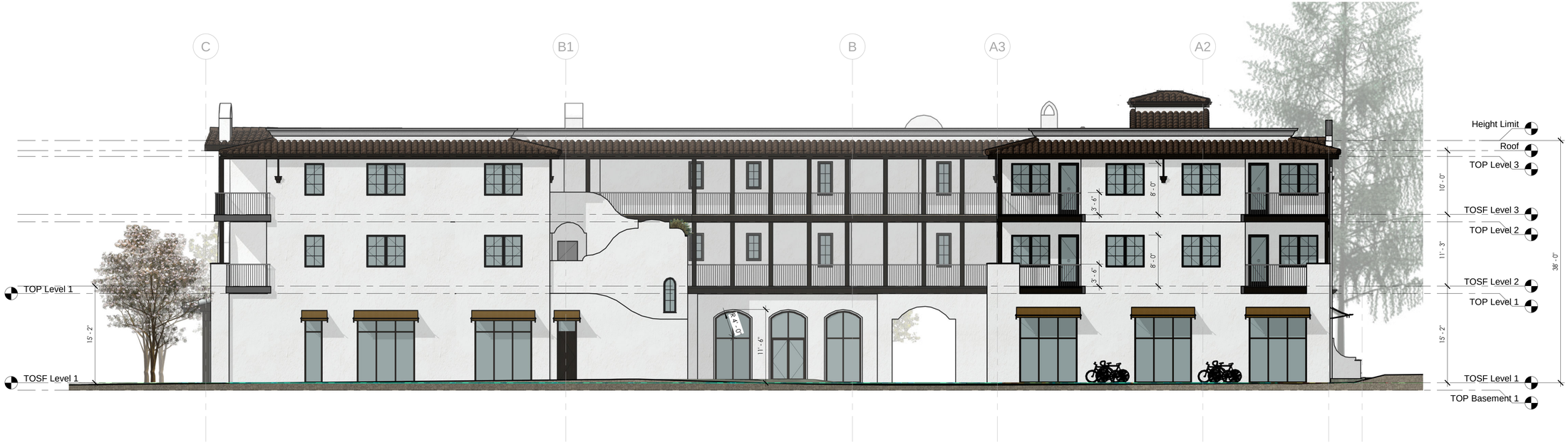
ECO FUNCTIONAL ARCHITECTURE

1 ELEVATIONS - ALTO LANE
1/8" = 1'-0"



2 ELEVATIONS - OASIS
1/8" = 1'-0"

0' 4' 8' 16' 32'
Graphic Scale: 1 /8 inch = 1 foot

5/30/2018 6:21:31 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
ELEVATIONS 2

SHEET NUMBER
A4.2

ENVIRONMENTAL INNOVATIONS IN DESIGN
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ECO FUNCTIONAL ARCHITECTURE

1 ELEVATIONS - PED PASSAGE
1/8" = 1'-0"

2 ELEVATIONS - PED PASSAGE2
1/8" = 1'-0"

0' 4' 8' 16' 32'

Graphic Scale: 1 /8 inch = 1 foot

5/30/2018 6:21:53 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
ELEVATION/ SECTION

SHEET NUMBER
A5.0

ENVIRONMENTAL INNOVATIONS IN DESIGN
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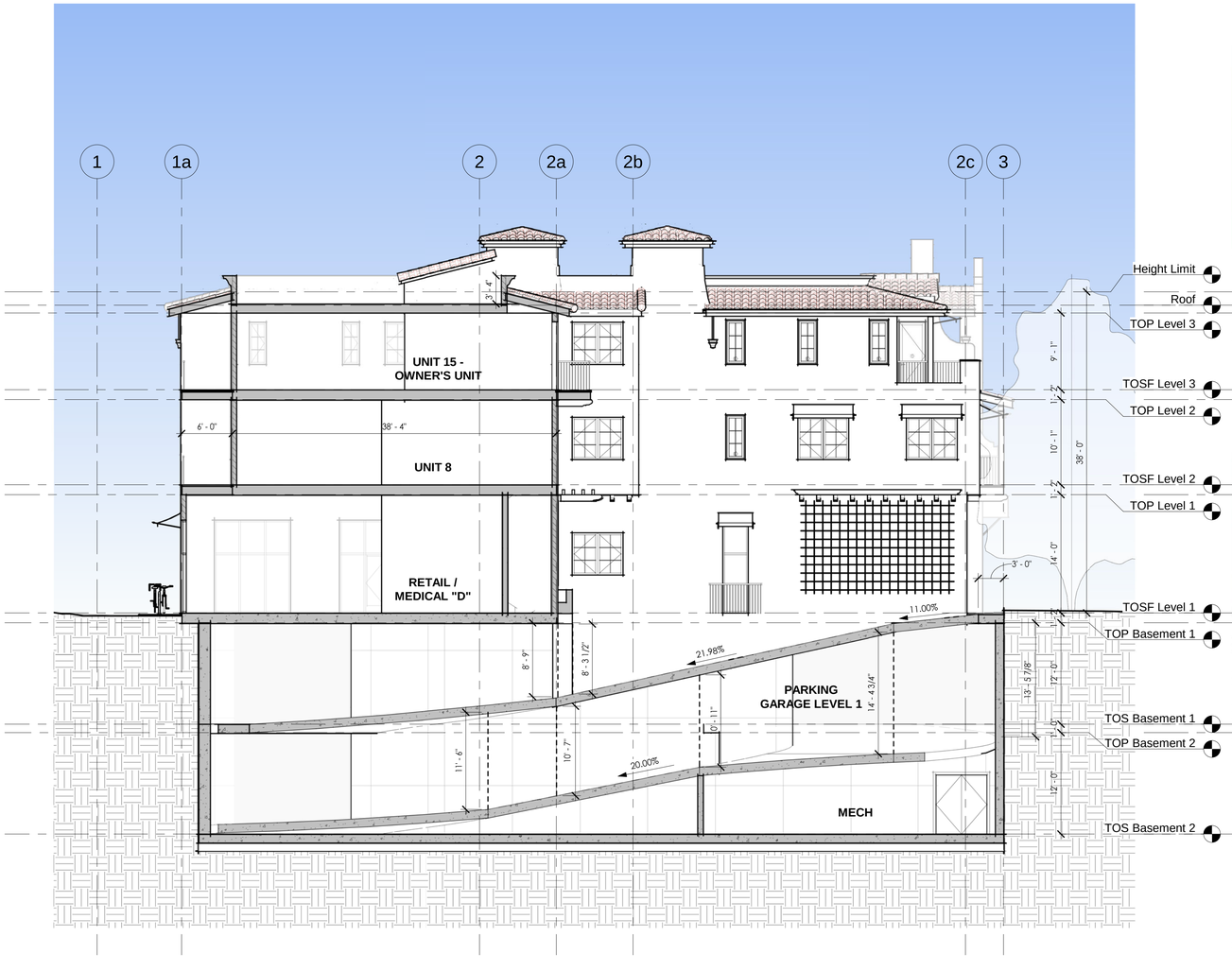
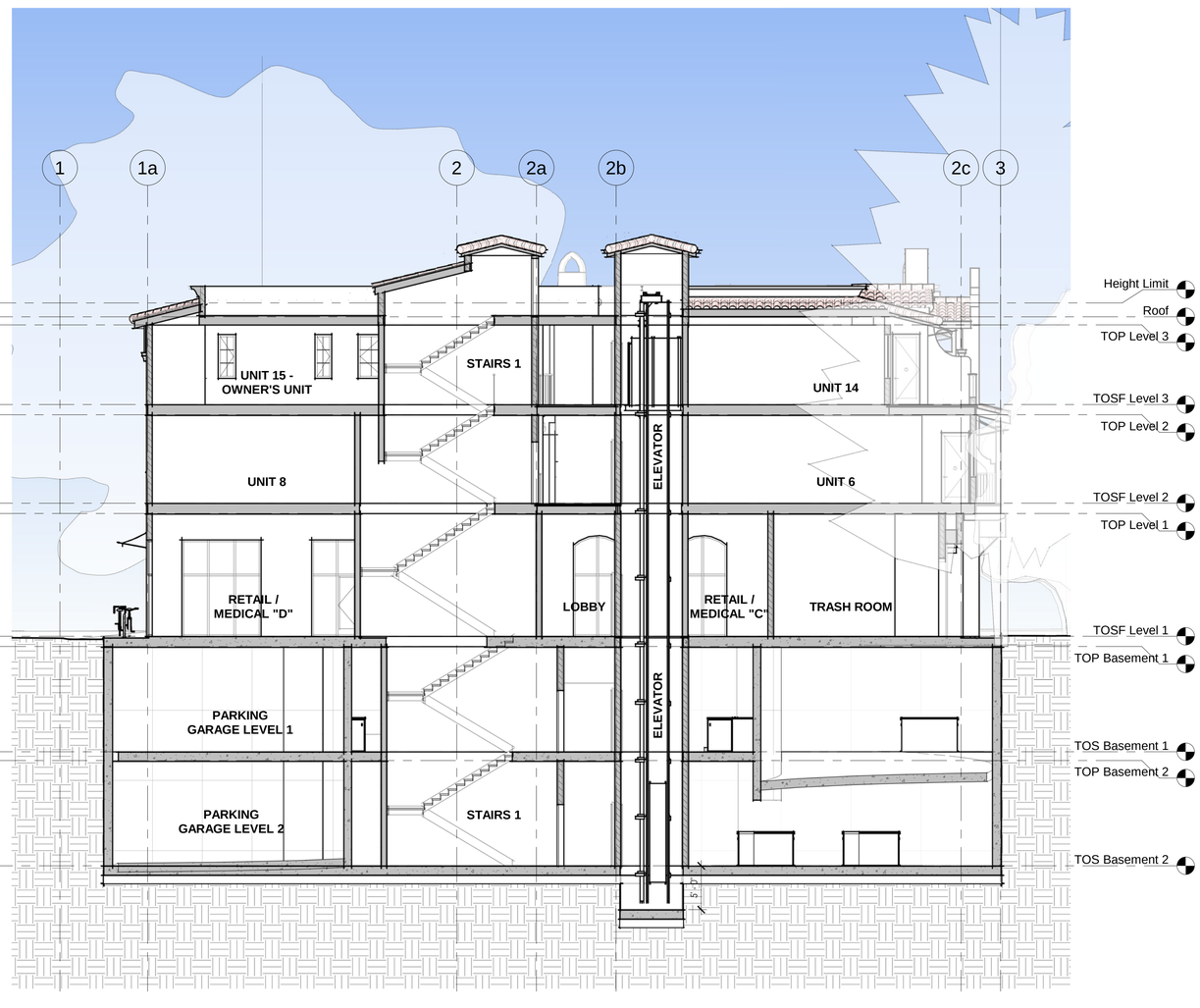
ECO FUNCTIONAL ARCHITECTURE



1 SECTION 1 - GARAGE RAMP
1/8" = 1'-0"



2 SECTION 2
1/8" = 1'-0"

5/30/2018 6:22:31 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
SECTIONS 1

SHEET NUMBER
A5.1

ENVIRONMENTAL INNOVATIONS IN DESIGN
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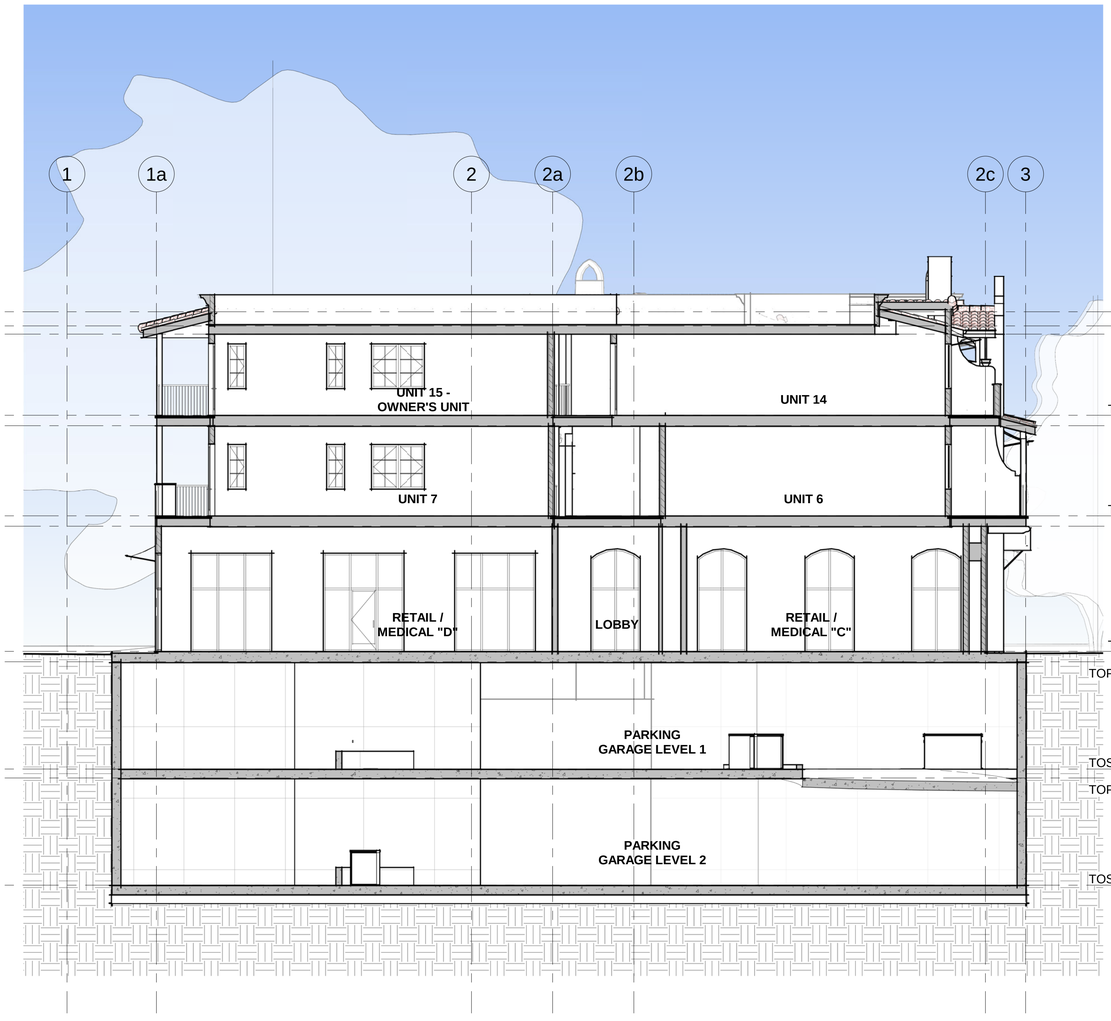
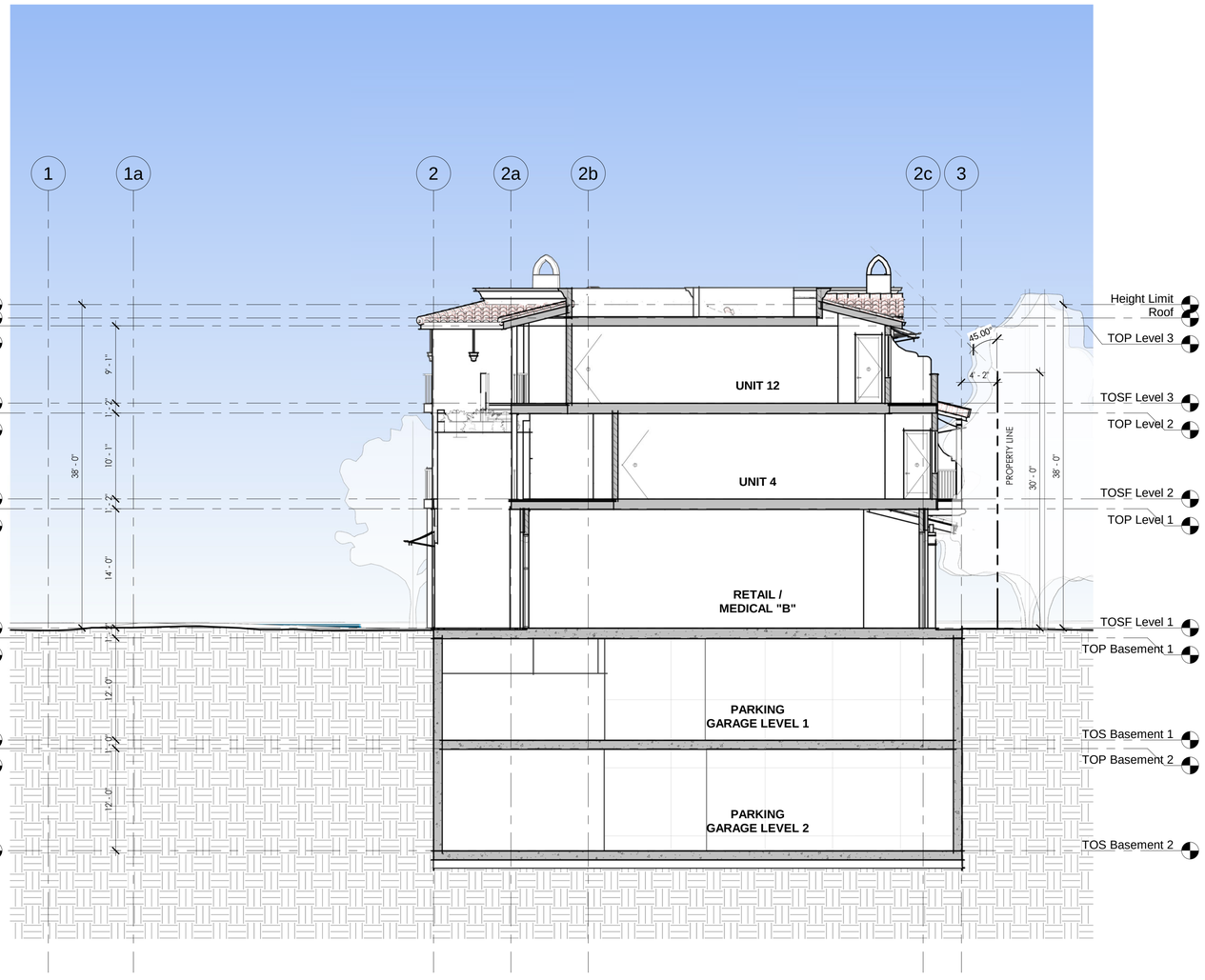
EID ARCHITECTS
ECO FUNCTIONAL ARCHITECTURE



1 SECTION 3
1/8" = 1'-0"



2 SECTION 4
1/8" = 1'-0"

5/30/2018 4:23:01 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
SECTIONS 2

SHEET NUMBER
A5.2

ENVIRONMENTAL INNOVATIONS IN DESIGN
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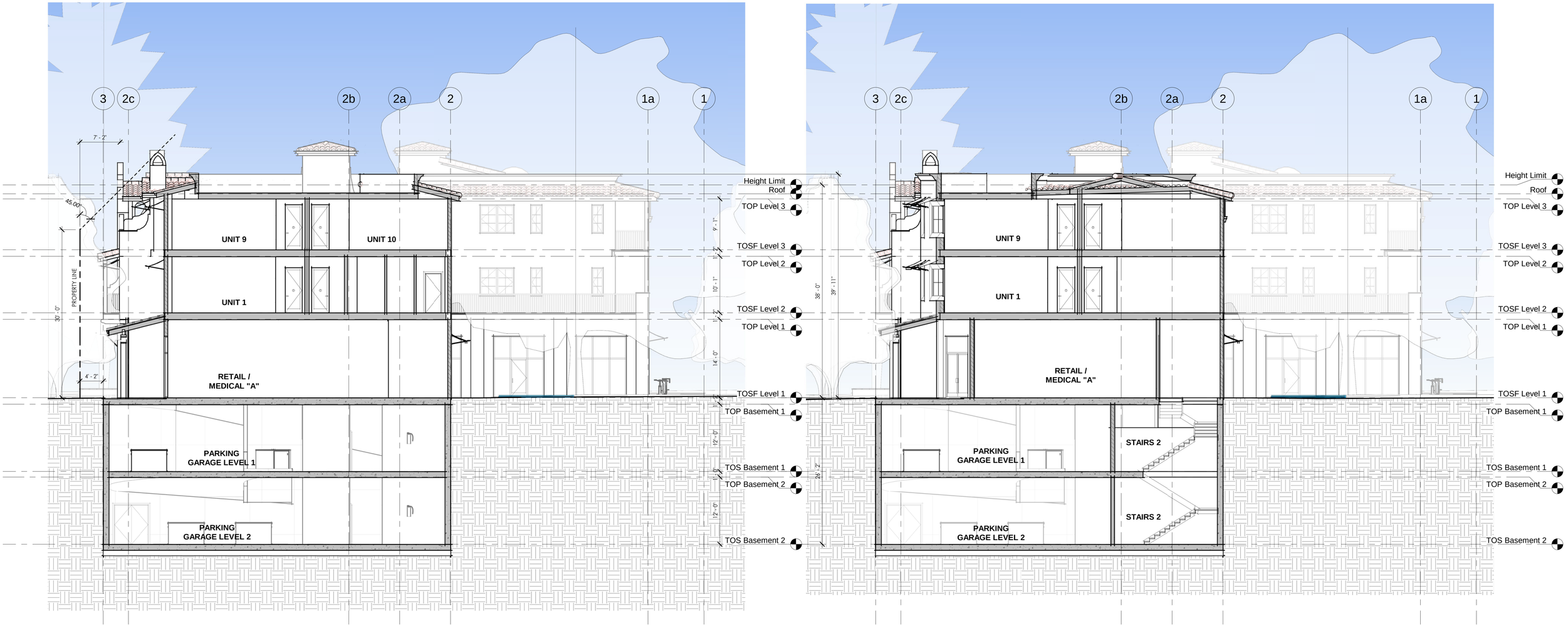

1 SECTION 5
1/8" = 1'-0"

2 SECTION 6
1/8" = 1'-0"

5/30/2018 6:23:48 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
SECTIONS 3

SHEET NUMBER
A5.3

ENVIRONMENTAL INNOVATIONS IN DESIGN
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1 SECTION 7
1/8" = 1'-0"

5/30/2018 6:24:16 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
SECTIONS 4

SHEET NUMBER
A5.4

ENVIRONMENTAL INNOVATIONS IN DESIGN
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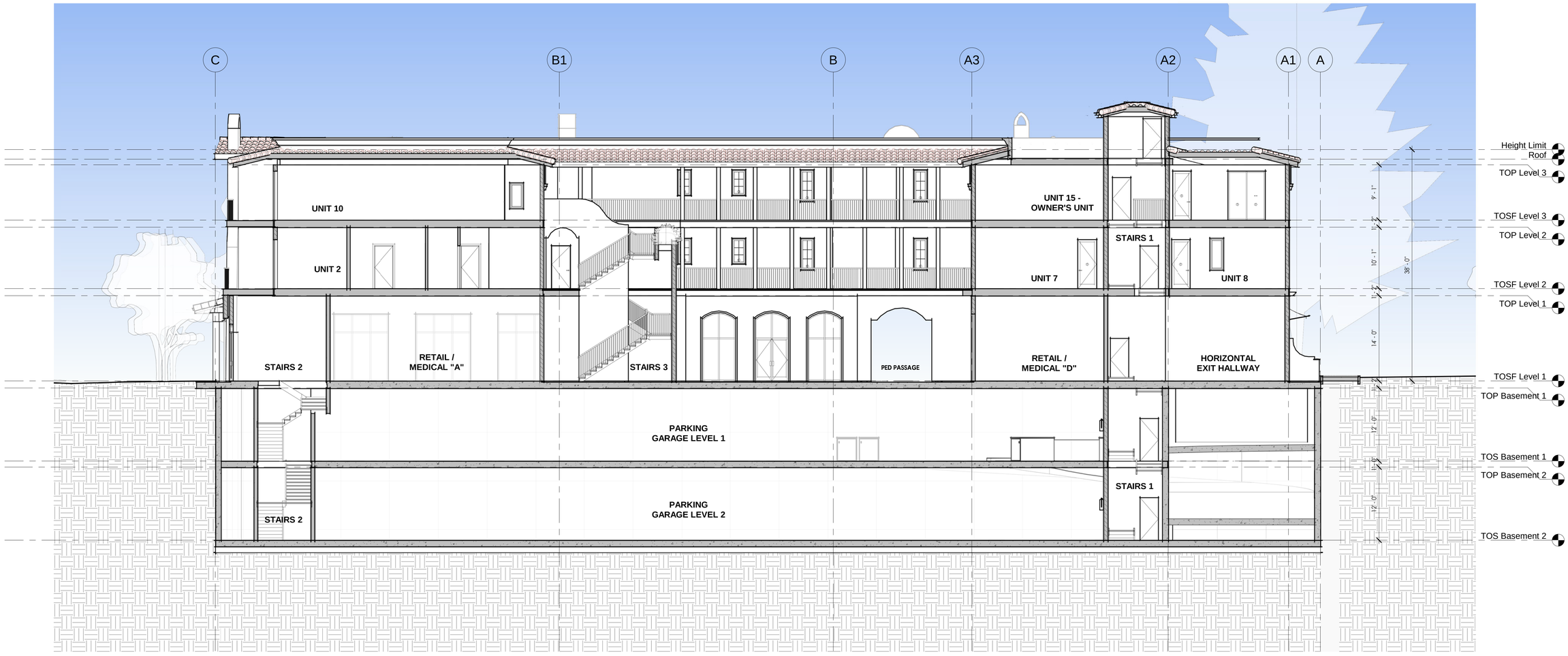
ECO FUNCTIONAL ARCHITECTURE



1 SECTION 8
1/8" = 1'-0"

5/30/2018 6:24:41 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
SECTIONS 5

SHEET NUMBER
A5.5

ENVIRONMENTAL INNOVATIONS IN DESIGN
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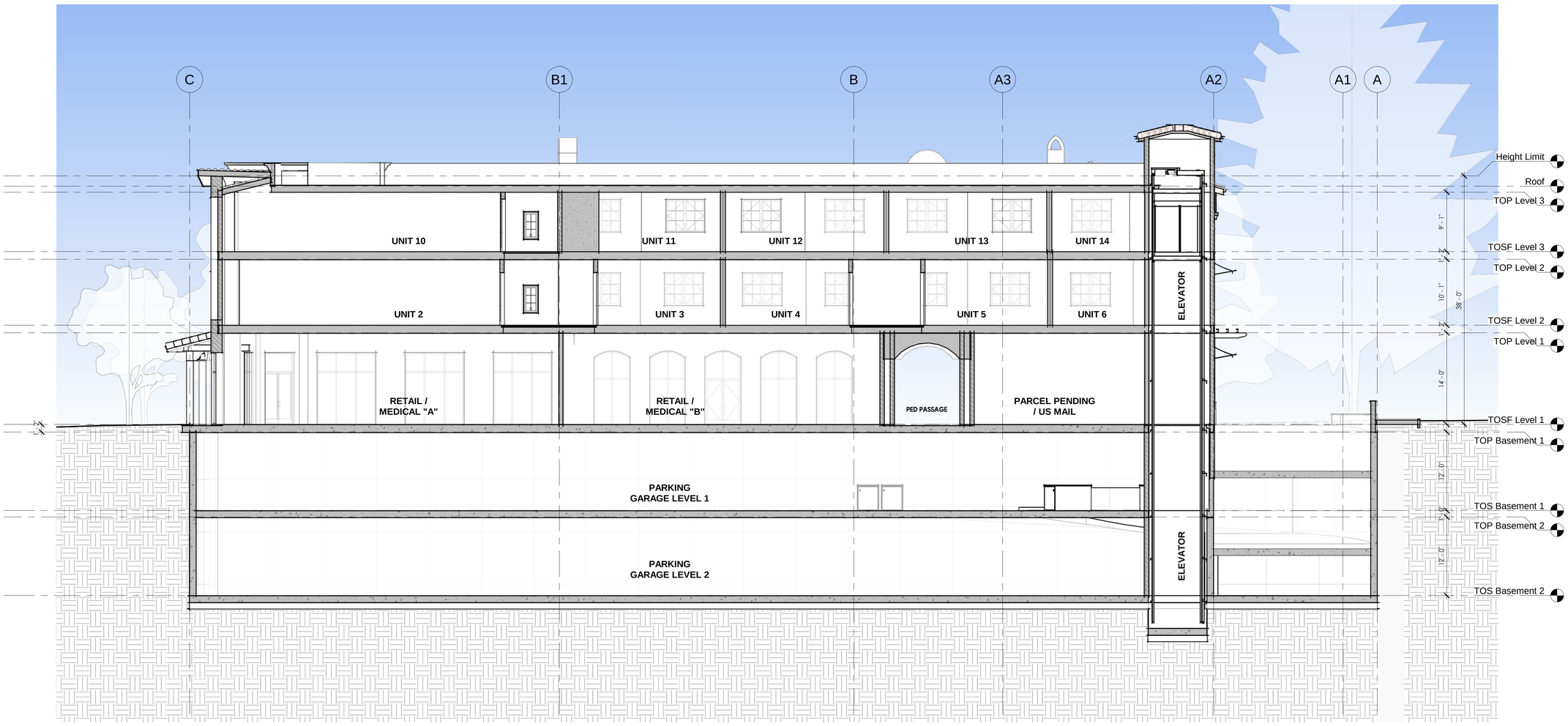

1 SECTION 9
1/8" = 1'-0"

5/30/2018 6:24:56 PM

DATE
05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
SECTIONS 6

SHEET NUMBER
A5.6

ENVIRONMENTAL INNOVATIONS IN DESIGN
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2016 CALIFORNIA GREEN BUILDING STANDARDS CODE

NONRESIDENTIAL MANDATORY MEASURES, SHEET 1 (INCLUDING JANUARY 1, 2017 ERRATA)

INSPECTOR SIGNOFF

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.

301.3 NONRESIDENTIAL ADDITIONS AND ALTERATIONS. [BSC] The provisions of individual sections of Chapter 5 apply to newly constructed buildings, building additions of 1,000 square feet or greater, and/or building alterations with a permit valuation of $200,000 or above (for occupancies within the authority of California Building Standards Commission). Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work.

A code section will be designated by a banner to indicate where the code section only applies to newly constructed building.[N] or to additions and alterations [A]. When the code section applies to both, no banner will be used.

301.3.1 Nonresidential additions and alterations that cause updates to plumbing fixtures only:

Note: On and after January 1, 2014, certain commercial real property, as defined in Civil Code Section 1101.3, shall have its noncompliant plumbing fixtures replaced with appropriate water-conserving plumbing fixtures under specific circumstances. See Civil Code Section 1101.1 *et seq.* for definitions, types of commercial real property affected, effective dates, circumstances necessitating replacement of noncompliant plumbing fixtures, and duties and responsibilities for ensuring compliance.

301.3.2 Waste Diversion. The requirements of Section 5.408 shall be required for additions and alterations whenever a permit is required for work.

301.4 PUBLIC SCHOOLS AND COMMUNITY COLLEGES. (see GBSC)
301.5 HEALTH FACILITIES. (see GBSC)

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.

SECTION 303 PHASED PROJECTS

303.1 Phased projects. For shell buildings and others constructed for future tenant improvements, only those code measures relevant to the building components and systems considered to be new construction (or newly constructed) shall apply.

303.1.1 Tenant improvements. The provisions of this code shall apply only to the initial tenant or occupant improvements to a project. Subsequent tenant improvements shall comply with the scoping provisions in Section 301.3 non-residential additions and alterations.

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 5
NONRESIDENTIAL MANDATORY MEASURES

DIVISION 5.1 PLANNING AND DESIGN

SECTION 5.101 GENERAL

5.101.1 Scope
The provisions of this chapter outline planning, design and development methods that include environmentally responsible site selection, building design, building siting and development to protect, restore and enhance the environmental quality of the site and respect the integrity of adjacent properties.

SECTION 5.102 DEFINITIONS

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

CUTOFF LUMINAIRES. Luminaires whose light distribution is such that the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above nadir, and 100 (10 percent) at a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire.

LOW-EMITTING AND FUEL EFFICIENT VEHICLES.
Eligible vehicles are limited to the following:

1. Zero emission vehicle (ZEV), including neighborhood electric vehicles (NEV), partial zero emission vehicle (PZEV), advanced technology PZEV (AT ZEV) or CNG fueled (original equipment manufacturer only) regulated under Health and Safety Code section 43800 and CCR, Title 13, Sections 1961 and 1962.
2. High-efficiency vehicles, regulated by U.S. EPA, bearing High-Occupancy Vehicle (HOV) car pool lane stickers issued by the Department of Motor Vehicles.

NEIGHBORHOOD ELECTRIC VEHICLE (NEV). A motor vehicle that meets the definition of "low-speed vehicle" either in Section 385.5 of the Vehicle Code or in 49CFR571.500 (as it existed on July 1, 2000), and is certified to zero-emission vehicle standards.

TENANT-OCCUPANTS. Building occupants who inhabit a building during its normal hours of operation as permanent occupants, such as employees, as distinguished from customers and other transient visitors.

VANPOOL VEHICLE. Eligible vehicles are limited to any motor vehicle, other than a motortruck or truck tractor, designed for carrying more than 10 but not more than 15 persons including the driver, which is maintained and used primarily for the nonprofit work-related transportation of adults for the purpose of ridesharing.

Note: Source: Vehicle Code, Division 1, Section 668

ZEV. Any vehicle certified to zero-emission standards.

SECTION 5.106 SITE DEVELOPMENT

5.106.1 STORM WATER POLLUTION PREVENTION. Newly constructed projects and additions which disturb less than one acre of land shall prevent the pollution of storm water runoff from the construction activities through one or more of the following measures:

5.106.1.1 Local ordinance. Comply with a lawfully enacted storm water management and/or erosion control ordinance.

5.106.1.2 Best Management Practices (BMP). Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMP.

1. Soil loss BMP that should be considered for each project include, but are not limited to, the following:
   a. Scheduling construction activity.
   b. Preservation of natural features, vegetation and soil.
   c. Drainage swales or lined ditches to control stormwater flow.
   d. Mulching or hydroseeding to stabilize disturbed soils.
   e. Erosion control to protect slopes.
   f. Protection of storm drain inlets (gravel bags or catch basin inserts).
   g. Perimeter sediment control (perimeter silt fence, fiber rolls).
   h. Sediment trap or sediment basin to retain sediment on site.
   i. Stabilized construction exits.
   j. Wind erosion control.
   k. Other soil loss BMP acceptable to the enforcing agency.
2. Good housekeeping BMP to manage construction equipment, materials and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
   a. Material handling and waste management.
   b. Building materials stockpile management.
   c. Management of washout areas (concrete, paints, stucco, etc.).
   d. Control of vehicle/equipment fueling to contractor's staging area.
   e. Vehicle and equipment cleaning performed off site.
   f. Spill prevention and control.
   g. Other housekeeping BMP acceptable to the enforcing agency.

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5.106.4 BICYCLE PARKING. For buildings within the authority of California Building Standards Commission as specified in Section 103, comply with Section 5.106.4.1. For buildings within the authority of the Division of the State Architect pursuant to Section 105, comply with Section 5.106.4.2

5.106.4.1 Bicycle parking. [BSC-CG] Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet the applicable local ordinance, whichever is stricter.

5.106.4.1.1 Short-term bicycle parking. If the project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.
Exception: Additions or alterations which add nine or less visitor vehicular parking spaces.

5.106.4.1.2 Long-term bicycle parking. For new buildings with 10 or more tenant-occupants or for additions or alterations that add 10 or more tenant-occupants or for additions or alterations that add 10 or more tenant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicle parking spaces being added, with a minimum of one space. Acceptable parking facilities shall be convenient from the street and shall meet one of the following.

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.

5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2

5.106.4.2.1 Student bicycle parking. Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.
5.106.4.2.2 Staff bicycle parking. Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

5.106.5.2 DESIGNATED PARKING FOR CLEAN AIR VEHICLES. In new projects or additions or alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as follows:

TABLE 5.106.5.2 - PARKING

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0-9	0
10-25	1
25-50	3
51-75	6
76-100	8
101-150	11
151-200	16
201 AND OVER	AT LEAST 8% OF TOTAL

5.106.5.2.1 - Parking stall marking. Paint, in the paint used for stall striping, the following characters such that the lower edge of the last word aligns with the end of the stall striping and is visible beneath a parked vehicle: CLEAN AIR / VAN POOL / EV

Note: Vehicles bearing Clean Air Vehicle stickers from expired HOV lane programs may be considered eligible for designated parking spaces.

5.106.5.3 Electric vehicle (EV) charging. [N] Construction shall comply with Section 5.106.5.3.1 or Section 5.106.5.3.2 to facilitate future installation of electric vehicle supply equipment (EVSE). When EVSE(s) is/are installed, it shall be in accordance with the *California Building Code*, the California Energy Commission (CEC) and as follows:

5.106.5.3.1 Single charging space requirements. [N] When only a single charging space is required per Table 5.106.5.3.3, a raceway is required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code*. Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. A listed raceway capable of accommodating a 208/240 -volt dedicated branch circuit.
3. The raceway shall not be less than trade size 1."
4. The raceway shall originate at a service panel or a subpanel serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and listed suitable cabinet, box, enclosure or equivalent.
5. The service panel or subpanel shall have sufficient capacity to accommodate a minimum 40-ampere dedicated branch circuit for the future installation of the EVSE.

5.106.5.3.2 Multiple charging space requirements. [N] When multiple charging spaces are required per Table 5.106.5.3.3 raceway(s) is/are required to be installed at the time of construction and shall be installed in accordance with the *California Electrical Code*. Construction plans and specifications shall include, but are not limited to, the following:

1. The type and location of the EVSE.
2. The raceway(s) shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the charging equipment and into listed suitable cabinet(s), box(es), enclosure(s) or equivalent.
3. Plan design shall be based upon 40-ampere minimum branch circuits.
4. Electrical calculations shall substantiate the design of the electrical system, to include the rating of equipment and any on-site distribution transformers and have sufficient capacity to simultaneously charge all required EVs at its full rated amperage.
5. The service panel or subpanel(s) shall have sufficient capacity to accommodate the required number of dedicated branch circuit(s) for the future installation of the EVSE.

5.106.5.3.3 EV charging space calculations. [N] Table 5.106.5.3.3 shall be used to determine if single or multiple charging space requirements apply for the future installation of EVSE.

Exceptions: On a case-by-case basis where the local enforcing agency has determined EV charging and infrastructure is not feasible based upon one or more of the following conditions:

1. Where there is insufficient electrical supply.
2. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.

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TABLE 5.106.5.3.3

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0-9	0
10-25	1
36-50	2
51-75	4
76-100	5
101-200	7
201 AND OVER	6% of total[1]

1. Calculation for spaces shall be rounded up to the nearest whole number.

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

5.106.5.3.5 [N] Future charging spaces qualify as designated parking as described in Section 5.106.5.2 Designated parking for clean air vehicles.
Notes:

1. The California Department of Transportation adopts and publishes the California Manual on Uniform Traffic Control Devices (California MUTCD) to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives number 13-01. www.dot.ca.gov/hq/traffops/policy/13-01.pdf.
2. See Vehicle Code Section 22511 for EV charging spaces signage in off-street parking facilities and for use of EV charging spaces.
3. The Governor's Office of Planning and Research published a Zero-Emission Vehicle Community Readiness Guidebook which provides helpful information for local governments, residents and businesses. www.opr.ca.gov/docs/ZEV_Guidebook.pdf.

5.106.8 LIGHT POLLUTION REDUCTION. [N] Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 1-4 as defined in Chapter 10 of the California Administrative Code; and
2. Backlight, Uplight and Glare (BUG) ratings as defined in IES TM-15-11; and
3. Allowable BUG ratings not exceeding those shown in Table 5.106.8, or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Exceptions: [N]

1. Luminaires that qualify as exceptions in Section 140.7 of the California Energy Code.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.

Note: [N] See also California Building Code, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways.

5.106.10 GRADING AND PAVING. Construction plans shall indicate how site grading or a 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.

TABLE 5.106.8 [N] MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS [1,2]

ALLOWABLE RATING	LIGHTING ZONE 1	LIGHTING ZONE 2	LIGHTING ZONE 3	LIGHTING ZONE 4
MAXIMUM ALLOWABLE BACKLIGHT RATING [3]				
Luminaire greater than 2 mounting heights (MH) from property line	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1-2 MH from property line	B2	B3	B4	B4
Luminaire back hemisphere is 0.5-1 MH from property line	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	B0	B0	B1	B2
MAXIMUM ALLOWABLE UPLIGHT RATING				
For area lighting [4]	U0	U0	U0	U0
For all other outdoor lighting,including decorative luminaires	U1	U2	U3	U4
MAXIMUM ALLOWABLE GLARE RATING [5]				
Luminaire greater than 2 MH from property line	G1	G2	G3	G4
Luminaire front hemisphere is 1-2 MH from property line	G0	G1	G1	G2
Luminaire front hemisphere is 0.5-1 MH from property line	G0	G0	G1	G1
Luminaire back hemisphere is less than 0.5 MH from property line	G0	G0	G0	G1

1. IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the *California Energy Code* and Chapter 10 of the *California Administrative Code*.

2. For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.

3. If the nearest property line is less than or equal to two mounting heights from the back hemisphere of the luminaire distribution, the applicable reduced Backlight rating shall be met.

4. General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaires located in these areas shall meet *U*-value limits for "all other outdoor lighting".

5. If the nearest property line is less than or equal to two mounting heights from the front hemisphere of the luminaire distribution, the applicable reduced Glare rating shall be met.

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DIVISION 5.2 ENERGY EFFICIENCY

SECTION 5.201 GENERAL

5.201.1 Scope [BSC-CG]. *California Energy Code [DSA-SS].* For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.

DIVISION 5.3 WATER EFFICIENCY AND CONSERVATION

SECTION 5.301 GENERAL

5.301.1 Scope. The provisions of this chapter shall establish the means of conserving water use indoors, outdoors and in wastewater conveyance.

SECTION 5.302 DEFINITIONS

5.302.1 Definitions. The following terms are defined in Chapter 2 *(and are included here for reference)*

EVAPOTRANSPIRATION ADJUSTMENT FACTOR (ETAF) [DSA-SS]. An adjustment factor when applied to reference evapotranspiration that adjusts for plant factors and irrigation efficiency, which ae two major influences on the amount of water that needs to be applied to the landscape.

FOOTPRINT AREA [DSA-SS]. The total area of the furthest exterior wall of the structure projected to natural grade, not including exterior areas such as stairs, covered walkways, patios and decks.

METERING FAUCET. A self-closing faucet that dispenses a specific volume of water for each actuation cycle. The volume or cycle duration can be fixed or adjustable.

GRAYWATER. Pursuant to Health and Safety Code Section 17922.12, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines and laundry tubs, but does not include waste water from kitchen sinks or dishwashers.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2500 square feet meet an irrigation water budget developed based on landscaped area and climatological parameters.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). [HCD] The California model ordinance (California Code of Regulations, Title 23, Division 2, Chapter 2.7), regulating landscape design, installation and maintenance practices. Local agencies are required to adopt the updated MWELO, or adopt a local ordinance at least as effective as the MWELO.

POTABLE WATER. Water that is drinkable and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards. See definition in the California Plumbing Code, Part 5.

POTABLE WATER. [HCD] Water that is satisfactory for drinking, culinary, and domestic purposes, and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards and the requirements of the Health Authority Having Jurisdiction.

RECYCLED WATER. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur [Water Code Section 13050 (n)]. Simply put, recycled water is water treated to remove waste matter attaining a quality that is suitable to use the water again.

SUBMETER. A meter installed subordinate to a site meter. Usually used to measure water intended for one purpose, such as landscape irrigation. For the purposes of CALGreen, a dedicated meter may be considered a submeter.

WATER BUDGET. Is the estimated total landscape irrigation water use which shall not exceed the maximum applied water allowance calculated in accordance with the Department of Water Resources Model Efficient Landscape Ordinance (MWELO).

SECTION 5.303 INDOOR WATER USE

5.303.1 METERS. Separate submeters or metering devices shall be installed for the uses described in Sections 503.1.1 and 503.1.2.

5.303.1.1 Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows:

1. For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.
2. Where separate submeters for individual building tenants are infeasible, for water supplied to the following subsystems:
   a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s).
   b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s).
   c. Steam and hot water boilers with energy input more than 500,000 Btu/h (147 kW).

5.303.1.2 Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.

5.303.3 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:

5.303.3.1 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.

5.303.3.2 Urinals. The effective flush volume of urinals shall not exceed 0.5 gallons per flush.

5.303.3.3 Showerheads.
5.303.3.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 2.0 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

5.303.3.3.2 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 2.0 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.

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

5.303.3.4 Faucets and fountains.

5.303.3.4.1 Nonresidential Lavatory faucets. Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.

5.303.3.4.2 Kitchen faucets. Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

5.303.3.4.3 Wash fountains. Wash fountains shall have a maximum flow rate of not more than1.8 gallons per minute/20 [rim space (inches) at 60 psi].

5.303.3.4.4 Metering faucets. Metering faucets shall not deliver more than 0.20 gallons per cycle.

5.303.3.4.5 Metering faucets for wash fountains. Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per minute/20 [rim space (inches) at 60 psi].

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

5.303.4 COMMERCIAL KITCHEN EQUIPMENT.

5.303.4.1 Food Waste Disposers. Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste/no-load) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water.

Note: This code section does not affect local jurisdiction authority to prohibit or require disposer installation.

5.303.5 AREAS OF ADDITION OR ALTERATION. For those occupancies within the authority of the California Building Standards Commission as specified in Section 103, the provisions of Section 5.303.3 and 5.303.4 shall apply to new fixtures in additions or areas of alteration to the building.

5.303.6 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* and in Chapter 6 of this code.

DISCLAIMER: *THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE 2016 CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*

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2016 CALIFORNIA GREEN BUILDING STANDARDS CODE
NONRESIDENTIAL MANDATORY MEASURES, SHEET 2 (INCLUDING JANUARY 1, 2017 ERRATA)

INSPECTOR SIGNOFF

SECTION 5.304 OUTDOOR WATER USE

5.304.1 SCOPE. The provisions of Section 5.304, Outdoor Water Use reference the mandatory Model Water Efficiency Landscape Ordinance (MWELO) contained within Chapter 2.7, Division 2, Title 23, California Code of Regulations.

5.304.2 OUTDOOR WATER USE IN LANDSCAPE AREAS EQUAL TO OR GREATER THAN 500 SQUARE FEET. When water is used for outdoor irrigation for new construction projects with an aggregate landscape area equal to or greater than 500 square feet requiring a building or landscape permit, plan check or design review, one of the following shall apply:

1. A local water efficient landscape ordinance that is, based on evidence in the record, at least as effective in conserving water as the updated model ordinance adopted by the Department of Water Resouces (DWR) per Government Code Section 65595(c).
2. The California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, California Code of Regulations.

5.304.3 OUTDOOR WATER USE IN REHABILITATED LANDSCAPE PROJECTS EQUAL TO OR GREATER THAN 2,500 SQUARE FEET. Rehabilitated landscape project with an aggregate landscape area equal to or greater than 2,500 square feet requiring a building or landscape permit, plan check, or design review shall comply with Section 5.304.2, Item 1 or 2.

5.304.4 OUTDOOR WATER USE IN LANDSCAPE AREAS OF 2,500 SQUARE FEET OR LESS. Any project with an aggregate area of 2,500 square feet of less may comply with the performance requirements of MWELO or conform to the prescriptive compliance measures contained in MWELO's Appendix D.

5.304.5 GRAYWATER OR RAINWATER USE IN LANDSCAPE AREAS. For projects using treated or untreated graywater or rainwater captured on site, any lot or parcet within the project that has less than 2,500 square feet of landscape and meets the lot or parcel's landscape water requirement (Estimate Total Water Use) entirely with treated or untreated graywater or through stored rainwater captured on site is subject only to Appendix D Section (5).

Notes:
1. DWR's Model Water Efficient Landscape Ordinance, definitions and supporting documents are available at the following link: http://water.ca.gov/wateruseefficiency/landscapeordinance/
2. A water budget calculator is available at the following link: http://water.ca.gov/wateruseefficiency/landscapeordinance/
3. The MWELO prescriptive compliance measure Appendix D may be found at the following link: http://water.ca.gov/wateruseefficiency/landscapeordinance/
   In addition, a copy of MWELO Appendix D may be found in Chapter 8 of this code.

5.304.6 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS [DSA-SS]. For public schools and community colleges, landscape projects as described in Sections 5.304.6.1 and 5.304.6.2 shall comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, California Code of Regulations, except that the evapotranspiration adjustment factor (ETAF) shall be 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35.

Exception: Any project with an aggregate landscape area of 2,500 square feet or less may comply with the prescriptive measures contained in Appendix D of MWELO.

5.304.6.1 New construction landscapes. [DSA-SS] New construction projects with an aggregate landscape area equal to or greater than 500 square feet.

5.304.6.2 Rehabilitated landscapes. [DSA-SS] Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 1,200 square feet.

5.304.3 IRRIGATION DESIGN. In new nonresidential construction with at least 1,000 but not more than 2,500 square feet of cumulative landscaped area (the level at which the MWELO applies), install irrigation controllers and sensors which include the following criteria, and meet manufacturer's recommendations.

5.304.3.1 Irrigation controllers. Automatic irrigation system controllers installed at the time of final inspection shall comply with the following:

1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.
2. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.

Note: More information regarding irrigation controller function and specifications is available from the Irrigation Association.

DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

SECTION 5.401 GENERAL

5.401.1 SCOPE. The provisions of this chapter shall outline means of achieving material conservation and resource efficiency through protection of buildings from exterior moisture, construction waste diversion, employment of techniques to reduce pollution through recycling of materials, and building commissioning or testing and adjusting.

SECTION 5.402 DEFINITIONS

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

ADJUST. To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.

BALANCE. To proportion flows within the distribution system, including sub-mains, branches and terminals, according to design quantities.

BUILDING COMMISSIONING. A systematic quality assurance process that spans the entire design and construction process, including verifying and documenting that building systems and components are planned, designed, installed, tested, operated and maintained to meet the owner's project requirements.

ORGANIC WASTE. Food waste, green waste, landscape and pruning wste, nonhazardous wood waste, and food soiled paper waste that is mixed in with food waste.

TEST. A procedure to determine quantitative performance of a system or equipment

SECTION 5.407 WATER RESISTANCE AND MOISTURE MANAGEMENT

5.407.1 WEATHER PROTECTION. Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1403.2 (Weather Protection) and California Energy Code Section 150, (Mandatory Features and Devices), manufacturer's installation instructions or local ordinance, whichever is more stringent.

5.407.2 MOISTURE CONTROL. Employ moisture control measures by the following methods.

5.407.2.1 Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.

5.407.2.2 Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:

5.407.2.2.1 Exterior door protection. Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:

1. An installed awning at least 4 feet in depth.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods which provide equivalent protection.

5.407.2.2.2 Flashing. Install flashings integrated with a drainage plane.

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SECTION 5.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

5.408.1 CONSTRUCTION WASTE MANAGEMENT. Recycle and/or salvage for reuse a minimum of 65% of the non-hazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3, or meet a local construction and demolition waste management ordinance, whichever is more stringent.

5.408.1.1 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan that:

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

5.408.1.2 Waste Management Company. Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.

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

Exceptions to Sections 5.408.1.1 and 5.408.1.2:

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.
3. Demolition waste meeting local ordinance or calculated in consideration of loacl recycleing facilities and markets.

5.408.1.3 Waste stream reduction alternative. The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65% minimum requirement as approved by the enforcing agency.

5.408.1.4 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 5.408.1.1, through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.

Notes:

1. Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located at www.bsc.ca.gov/Home/CALGreen.aspx may be used to assist in documenting compliance with the waste management plan.
2. Mixed construction and demolition debris processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

5.408.2 UNIVERSAL WASTE. [A] Additions and alterations to a building or tenant space that meet the scoping provisions in Section 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.

Note: Refer to the Universal Waste Rule link at: http://www.dtsc.ca.gov/LawsRegsPolicies/Regs/upload/OEAR-A_REGS_UWR_FinalText.pdf

5.408.3 EXCAVATED SOIL AND LAND CLEARING DEBRIS. 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Exception: Reuse, either on or off-site, of vegetation or soil contaminated by disease or pest infestation.

Notes:

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.
2. For a map of know pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdfa.ca.gov)

SECTION 5.410 BUILDING MAINTENANCE AND OPERATIONS

5.410.1 RECYCLING BY OCCUPANTS. Provide readily accessible areas that serve the entire building 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 waste, 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 42649.82 (a)(2)(A) et seq. shall also be exempt from the organic waste portion of this section.

5.410.1.1 Additions. All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30% or more in floor area, shall provide recycling areas on site.

Exception: Additions within a tenant space resulting in less than a 30% increase in the tenant space floor area.

5.410.1.2 Sample ordinance. Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the *Public Resources Code*. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).

Note: A sample ordinance for use by local agencies may be found in Appendix A of the document at the CalRecycle's web site.

5.410.2 COMMISSIONING. [N] For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel with experience on projects of comparable size and complexity. All occupancies other than I-occupancies and L-occupancies shall comply with the California Energy Code as prescribed in California Energy Code Section 120.8. For I-occupancies that are not regulated by OSHPD or for I-occupancies and L-occupancies that are not regulated by the California Energy Code Section 100.0 Scope, all requirements in Sections 5.410.2 through 5.410.2.6 shall apply.

Commissioning requirements shall include:

1. Owner's or Owner representative's project requirements.
2. Basis of design.
3. Commissioning measures shown in the construction documents.
4. Commissioning plan.
5. Functional performance testing.
6. Documentation and training.
7. Commissioning report.

Exceptions:

1. Unconditioned warehouses of any size.
2. Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses.
3. Tenant improvements less than 10,000 square feet as described in Section 303.1.1.
4. Open parking garages of any size, or open parking garage areas, of any size, within a structure.

Note: For the purposes of this section, unconditioned shall mean a building, area, or room which does not provide heating and or air conditioning.

Informational Notes:

1. IAS AC 476 is an accreditation criteria for organizations providing training and/or certification of commissioning personnel. AC 476 is available to the Authority Having Jurisdiction as a reference for qualifications of commissioning personnel. AC 476 des not certify individuals to conduct functional performance tests or to adjust and balance systems.
2. Functional performance testing for heating, ventilation, air conditioning systems and lighting controls must be performed in compliance with the *California Energy Code*.

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5.410.2.1 Owner's or Owner Representative's Project Requirements (OPR). [N] The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. This documentation shall include the following:

1. Environmental and sustainability goals.
2. Energy efficiency goals.
3. Indoor environmental quality requirements.
4. Project program, including facility functions and hours of operation, and need for after hours operation.
5. Equipment and systems expectations.
6. Building occupant and operation and maintenance (O&M) personnel expectations.

5.410.2.2 Basis of Design (BOD). [N] A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project. The Basis of Design document shall cover the following systems:

1. Heating, ventilation, air conditioning (HVAC) systems and controls.
2. Indoor lighting system and controls.
3. Water heating system.
4. Renewable energy systems.
5. Water reuse systems.

5.410.2.3 Commissioning plan. [N] Prior to permit issuance a commissioning plan shall be completed to document how the project will be commissioned. The commissioning plan shall include the following:

1. General project information.
2. Commissioning goals.
3. Systems to be commissioned. Plans to test systems and components shall include:
   a. An explanation of the original design intent.
   b. Equipment and systems to be tested, including the extent of tests.
   c. Functions to be tested.
   d. Conditions under which the test shall be performed.
   e. Measurable criteria for acceptable performance.
4. Commissioning team information.
5. Commissioning process activities, schedules and responsibilities. Plans for the completion of commissioning shall be included.

5.410.2.4 Functional performance testing. [N] Functional performance tests shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.

5.410.2.5 Documentation and training. [N] A Systems Manual and Systems Operations Training are required, including Occupational Safety and Health Act (OSHA) requirements in *California Code of Regulations* (CCR), Title 8, Section 5142, and other related regulations.

5.410.2.5.1 Systems manual. [N] Documentation of the operational aspects of the building shall be completed within the systems manual and delivered to the building owner or representative. The systems manual shall include the following:

1. Site information, including facility description, history and current requirements.
2. Site contact information.
3. Basic operations and maintenance, including general site operating procedures, basic troubleshooting, recommended maintenance requirements, site events log.
4. Major systems.
5. Site equipment inventory and maintenance notes.
6. A copy of verifications required by the enforcing agency or this code.
7. Other resources and documentation, if applicable.

5.410.2.5.2 Systems operations training. [N] A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report and shall include the following:

1. System/equipment overview (what it is, what it does and with what other systems and/or equipment it interfaces).
2. Review and demonstration of servicing/preventive maintenance.
3. Review of the information in the Systems Manual.
4. Review of the record drawings on the system/equipment.

5.410.2.6 Commissioning report. [N] A report of commissioning process activities undertaken through the design and construction phases of the building project shall be completed and provided to the owner or representative.

5.410.4 TESTING AND ADJUSTING. Testing and adjusting of systems shall be required for buildings less than 10,000 square feet or new systems to serve an addition or alteration subject to Section 303.1.

5.410.4.2 Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include at a minimum, as applicable to the project:

1. HVAC systems and controls.
2. Indoor and outdoor lighting and controls.
3. Water heating systems.
4. Renewable energy systems.
5. Landscape irrigation systems.
6. Water reuse systems.

5.410.4.3 Procedures. Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system.

5.410.4.3.1 HVAC balancing. In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, the system shall be balanced in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural Standards; Associated Air Balance Council National Standards or as approved by the enforcing agency.

5.410.4.4 Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.

5.410.4.5 Operation and maintenance (O & M) manual. Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system. O & M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142, and other related regulations.

5.410.4.5.1 Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.

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DIVISION 5.5 ENVIRONMENTAL QUALITY

SECTION 5.501 GENERAL

5.501.1 SCOPE. The provisions of this chapter shall outline means of reducing the quantity 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 5.502 DEFINITIONS

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

ARTERIAL HIGHWAY. A general term denoting a highway primarily for through traffic usually on a continuous route.

A-WEIGHTED SOUND LEVEL (dBA). The sound pressure level in decibels as measured on a sound level meter using the internationally standardized A-weighting filter or as computed from sound spectral data to which A-weighting adjustments have been made.

1 BTU/HOUR. British thermal units per hour, also referred to as Btu. The amount of heat required to raise one pound of water one degree Fahrenheit per hour, a common measure of heat transfer rate. A ton of refrigeration is 12,000 Btu, the amount of heat required to melt a ton (2,000 pounds) of ice at 32^{0} Fahrenheit.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). A metric similar to the day-night average sound level (Ldn), except that a 5 decibel adjustment is added to the equivalent continuous sound exposure level for evening hours (7pm to 10pm) in addition to the 10 dB nighttime adjustment used in the Ldn.

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, timber, prefabricated wood I–joists or finger–jointed lumber, all as specified in California Code of Regulations (CCR), Title 17, Section 93120.1(a).

Note: See CCR, Title 17, Section 93120.1.

DAY-NIGHT AVERAGE SOUND LEVEL (Ldn). The A-weighted equivalent continuous sound exposure level for a 24-hour period with a 10 dB adjustment added to sound levels occurring during nighttime hours (10p.m. to 7 a.m.).

DECIBEL (db). A measure on a logarithmic scale of the magnitude of a particular quantity (such as sound pressure, sound power, sound intensity) with respect to a reference quantity.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are considered electric vehicles. For purposes of the *California Electrical Code*, off-road, self-propelled electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats, and the like, are not included.

ELECTRIC VEHICLE CHARGING STATION(S) (EVCSJ). One or more spaces intended for charging electric vehicles.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

ENERGY EQUIVALENT (NOISE) LEVEL (Leq). The level of a steady noise which would have the same energy as the fluctuating noise level integrated over the time of period of interest.

EXPRESSWAY. An arterial highway for through traffic which may have partial control of access, but which may or may not be divided or have grade separations at intersections.

FREEWAY. A divided arterial highway with full control of access and with grade separations at intersections.

GLOBAL WARMING POTENTIAL (GWP). The radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of carbon dioxide over a given period of time. Carbon dioxide is the reference compound with a GWP of one.

GLOBAL WARMING POTENTIAL VALUE (GWP VALUE). A 100-year GWP value published by the Intergovernmental Panel on Climate Change (IPCC) in either its Second Assessment Report (SAR) (IPCC, 1995); or its Fourth Assessment A-3 Report (AR4) (IPCC, 2007). The SAR GWP values are found in column "SAR (100-yr)" of Table 2.14; the AR4 GWP values are found in column "100 yr" of Table 2.14.

HIGH-GWP REFRIGERANT. A compound used as a heat transfer fluid or gas that is: (a) a chlorofluorocarbon, a hdrochlorofluorocarbon, a hydrofluorocarbon, a perfluorocarbon, or any compound or blend of compounds, with a GWP value equal to or greater than 150, or (B) any ozone depleting substance as defined in Title 40 of the Code of Federal Regulations, Part 82, sec.82.3 (as amended March 10, 2009).

LONG RADIUS ELBOW. Pipe fitting installed between two lengths of pipe or tubing to allow a change of direction, with a radius 1.5 times the pipe diameter.

LOW-GWP REFRIGERANT. A compound used as a heat transfer fluid or gas that: (A) has a GWP value less than 150, and (B) is not an ozone depleting substance as defined in Title 40 of the Code of Federal Regulations, Part 82, sec.82.3 (as amended March 10, 2009).

MERV. Filter minimum efficiency reporting value, based on ASHRAE 52.2–1999.

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 hundreths of a gram (g O^{3}g ROC).

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).

PSIG. Pounds per square inch, guage.

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

SCHRADER ACCESS VALVES. Access fittings with a valve core installed.

SHORT RADIUS ELBOW. Pipe fitting installed between two lengths of pipe or tubing to allow a change of direction, with a radius 1.0 times the pipe diameter.

SUPERMARKET. For the purposes of Section 5.508.2, a supermarket is any retail food facility with 8,000 square feet or more conditioned area, and that utilizes either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units.

VOC. A volatile organic compound 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)

Note: Where specific regulations are cited from different agencies such as SCAQMD, ARB, etc., the VOC definition included in that specific regulation is the one that prevails for the specific measure in question.

SECTION 5.503 FIREPLACES

5.503.1 FIREPLACES. Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed woodstove or pellet stove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150. Woodstoves, pellet stoves and fireplaces shall comply with applicable local ordinances.

5.503.1.1 Woodstoves. Woodstoves and pellet stoves 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.

SECTION 5.504 POLLUTANT CONTROL

5.504.1 TEMPORARY VENTILATION. The permanent HVAC system shall only be used during construction if necessary to condition the building or areas of addition or alteration within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992 Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction.

5.504.3 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation, or during storage on the construction site and until final startup of the heating, 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 dust, water and debris which may collect in the system.

DISCLAIMER: *THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE 2016 CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*

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DATE 05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE
GREEN BUILDING COMM. MM2

SHEET NUMBER
GB-2.12

ENVIRONMENTAL INNOVATIONS IN DESIGN
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2016 CALIFORNIA GREEN BUILDING STANDARDS CODE
NONRESIDENTIAL MANDATORY MEASURES, SHEET 3 (INCLUDING JANUARY 1, 2017 ERRATA)

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5.504.4 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:

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 Tables 5.504.4.1 and 5.504.4.2. 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 one 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.

TABLE 5.504.4.1 - ADHESIVE VOC LIMIT[1,2]

Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER 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 ADHESIVES	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT SPECIFICALLY LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP & 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, www.arb.ca.gov/DRDB/SC/CURHTML/R1168.PDF

TABLE 5.504.4.2 - SEALANT VOC LIMIT

Less Water and Less Exempt Compounds in Grams per Liter

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

NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, 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 5.504.4.3 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 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) 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.

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TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS[2,3]

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

COATING CATEGORY	CURRENT VOC LIMIT
FLAT COATINGS	50
NONFLAT 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.

5.504.4.3.2 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

5.504.4.4 Carpet Systems. All carpet installed in the building interior shall meet at least one of the testing and product requirements:

1. Carpet and Rug Institute's Green Label Plus Program.
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 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 CDPH Standard Method V1.1 or Specification 01350).
3. NSF/ANSI 140 at the Gold level or higher;
4. Scientific Certifications Systems Sustainable Choice; or
5. Compliant with the Collaborative for High Performance Schools California (CA-CHPS) Criteria Interpretation for EQ 7.0 and EQ 7.1 (formerly EQ 2.2) dated July 2012 and listed in the CHPS High Performance Product Database.

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

5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.

5.504.4.5 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.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.

5.504.4.5.3 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 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.

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TABLE 5.504.4.5 - 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 CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.

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

5.504.4.6 Resilient flooring systems. For 80 percent of floor area receiving resilient flooring, installed resilient flooring shall meet at least one of the following:

1. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
2. Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
3. Compliant with the Collaborative for High Performance Schools California (CA-CHPS) Criteria Interpretation for EQ 7. and EQ 7.1 (formerly EQ 2.2) dated July 2012 and listed in the CHPS High Performance Product DataBase; or
4. Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

5.504.4.6.1 Verification of compliance. Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits.

5.504.5.3 Filters. In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 8. MERV 8 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

Exceptions:

1. An ASHRAE 10% to 15% efficiency filter shall be permitted for an HVAC unit meeting the 2013 California Energy Code having 60,000 Btu/h or less capacity per fan coil, if the energy use of the air delivery system is 0.4 W/cfm or less at design air flow.
2. Existing mechanical equipment.

5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL. Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions.

SECTION 5.505 INDOOR MOISTURE CONTROL

5.505.1 INDOOR MOISTURE CONTROL. Buildings shall meet or exceed the provisions of *California Building Code*, CCR, Title 24, Part 2, Sections 1203 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures not applicable to low-rise residential occupancies, see Section 5.407.2 of this code.

SECTION 5.506 INDOOR AIR QUALITY

5.506.1 OUTSIDE AIR DELIVERY. For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the *California Energy Code*, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

5.506.2 CARBON DIOXIDE (CO_2) MONITORING. For buildings or additions equipped with demand control ventilation, CO_2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120(c)(4).

SECTION 5.507 ENVIRONMENTAL COMFORT

5.507.4 ACOUSTICAL CONTROL. Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

Exception: Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings.

Exception: [DSA-SS] For public schools and community colleges, the requirements of this section and all subsections apply only to new construction.

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations:

1. Within the 65 CNEL noise contour of an airport.

   Exceptions:

   a. L_{dn} or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan.
   b. L_{dn} or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

2. Within the 65 CNEL or L_{dn} noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

5.507.4.1.1. Noise exposure where noise contours are not readily available. Buildings exposed to a noise level of 65 dB L_{dn} - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30).

5.507.4.2 Performance Method. For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation.

5.507.4.2.1 Site Features. Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior.

5.507.4.2.2 Documentation of Compliance. An acoustical analysis documenting complying interior sound levels shall be prepared by personnel approved by the architect or engineer of record.

5.507.4.3 Interior sound transmission. Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40.

Note: Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf.

SECTION 5.508 OUTDOOR AIR QUALITY

5.508.1 Ozone depletion and greenhouse gas reductions. Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

5.508.1.1 Chlorofluorocarbons (CFCs). Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs.

5.508.1.2 Halons. Install HVAC, refrigeration and fire suppression equipment that do not contain Halons.

5.508.2 Supermarket refrigerant leak reduction. New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

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Exception: Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO_2), and potentially other refrigerants.

5.508.2.1 Refrigerant piping. Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below.

5.508.2.1.1 Threaded pipe. Threaded connections are permitted at the compressor rack.

5.508.2.1.2 Copper pipe. Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less.

5.508.2.1.2.1 Anchorage. One-fouth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils.

5.508.2.1.3 Flared tubing connections. Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil.

Exception: Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations.

5.508.2.1.4 Elbows. Short radius elbows are only permitted where space limitations prohibit use of long radius elbows.

5.508.2.2 Valves. Valves Valves and fittings shall comply with the *California Mechanical Code* and as follows.

5.508.2.2.1 Pressure relief valves. For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve.

5.508.2.2.1.1 Pressure detection. A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve.

5.508.2.2.2 Access valves. Only Schrader access valves with a brass or steel body are permitted for use.

5.508.2.2.2.1 Valve caps. For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic.

5.508.2.2.2.2 Seal caps. If designed for it, the cap shall have a neoprene O-ring in place.

5.508.2.2.2.2.1 Chain tethers. Chain tethers to fit over the stem are required for valves designed to have seal caps.

Exception: Valves with seal caps that are not removed from the valve during stem operation.

5.508.2.3 Refrigerated service cases. Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-reistant material, such as stainless steel, or be coated to prevent corrosion from these substances.

5.508.2.3.1 Coil coating. Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency.

5.508.2.4 Refrigerant receivers. Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device tha indicates the level of refrigerant in the receiver.

5.508.2.5 Pressure testing. The system shall be pressure tested during installation prior to evacuation and charging.

5.508.2.5.1 Minimum pressure. The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum.

5.508.2.5.2 Leaks. Check the system for leaks, repair any leaks, and retest for pressure using the same gauge.

5.508.2.5.3 Allowable pressure change. The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge.

5.508.2.6 Evacuation. The system shall be evacuated after pressure testing and prior to charging.

5.508.2.6.1 First vacuum. Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold for 30 minutes.

5.508.2.6.2 Second vacuum. Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes.

5.508.2.6.3 Third vacuum. Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period.

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

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

703 VERIFICATIONS

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

DISCLAIMER: *THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE 2016 CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.*

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DATE 05/29/2018

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SHEET TITLE
GREEN BUILDING COMM.
MM3

SHEET NUMBER
GB-2.13

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2016 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 1 (INCLUDING JANUARY 1, 2017 ERRATA)

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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.

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 and 4.106.4.2 to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the *California Electrical Code, Article 625.*

Exceptions: 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. Where there is no commercial power supply.
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 developer by more than $400.00 per unit.

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. Where 17 or more multifamily dwelling units are constructed on a building site, 3 percent of the total number of parking spaces provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging stations (EV spaces) capable of supporting future EVSE. Calculations for the number of EV spaces shall be rounded up to the nearest whole number.

Note: Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging. 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. At least one EV space shall be located in common use areas and available for use by all residents.

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.

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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 spaces. 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. 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 Indentification. 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.*

Notes:

1. The California Department of Transportation adopts and publishes the "California Manual on Uniform Traffic Control Devices (California MUTCD)" to provide uniform standards and specifications for all official traffic control devices in California. Zero Emission Vehicle Signs and Pavement Markings can be found in the New Policies & Directives Number 13-01. Website: www.dot.ca.gov/hq/traffops/policy/13-01.pdf
2. See Vehicle Code Section 22511 for EV charging space signage in off-street parking facilities and for use of EV charging spaces.
3. The Governor's Office of Planning and Research (OPR) published a "Zero-Emission Vehicle Community Readiness Guidebook" which provides helpful information for local governments, residents and businesses.
   Website: http://opr.ca.gov/docs/ZEV_Guidebook.pdf.

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 following:

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 2.0 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 2.0 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 0.25 gallons per cycle.

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

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

4.303.2 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)	2.0 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	0.25 GAL/CYCLE
WATER CLOSET	1.28 GAL/FLUSH
URINALS	0.125 GAL/FLUSH

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4.304 OUTDOOR WATER USE

4.304.1 IRRIGATION CONTROLLERS. Automatic irrigation system controllers for landscaping provided by the builder and installed at the time of final inspection shall comply with the following:

1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.
2. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.

Note: More information regarding irrigation controller function and specifications is available from the Irrigation Association.

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 jobsite 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 lbs./sq.ft. 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 [*California Green Building Standards*] 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 is 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.

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.

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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 indication 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	CURRENT 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.

5/30/2018 6:25:49 PM

DATE 05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE: GREEN BUILDING RES. MM1

SHEET NUMBER: GB-2.14

ENVIRONMENTAL INNOVATIONS IN DESIGN
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EID ARCHITECTS
ECO FUNCTIONAL ARCHITECTURE

2016 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 2 (INCLUDING JANUARY 1, 2017 ERRATA)

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

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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 edaceptable.

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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.

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DATE 05/29/2018

201 EL CAMINO REAL
MENLO PARK, CALIFORNIA 94025

SHEET TITLE: GREEN BUILDING RES. MM2

SHEET NUMBER: GB-2.15

ENVIRONMENTAL INNOVATIONS IN DESIGN
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LEGEND

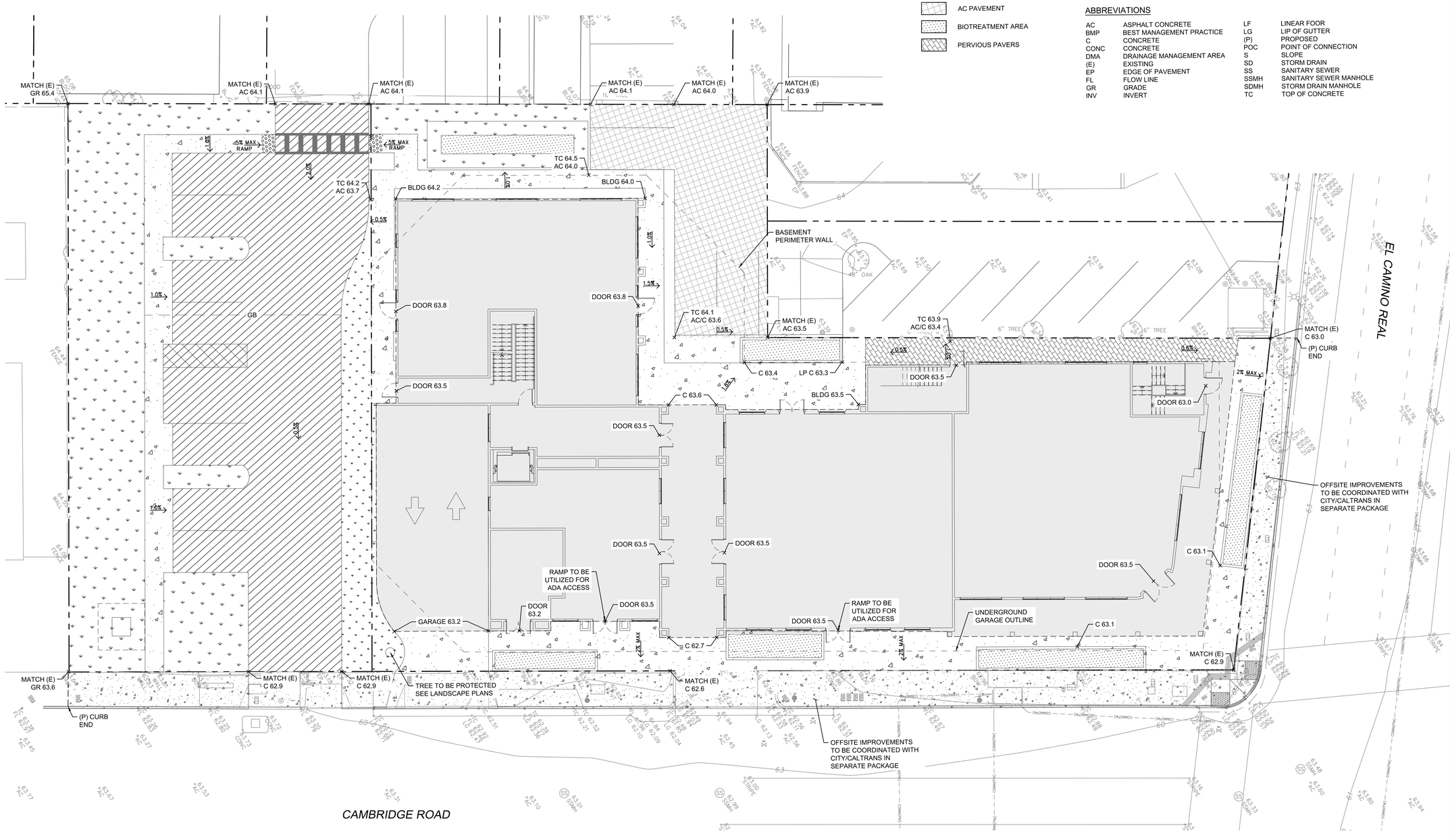
- BUILDING ROOF AREA
- CONCRETE
- PERVIOUS PAVEMENT
- LANDSCAPING
- AC PAVEMENT
- BIOTREATMENT AREA
- PERVIOUS PAVERS

NOTES

1. TOPOGRAPHIC SURVEY PERFORMED BY BGT LAND SURVEYING DATED AUGUST 2015 WITH SUPPLEMENTAL SURVEY PERFORMED BY MARK THOMAS ON APRIL 23, 2018.
2. OFFSITE IMPROVEMENTS ON ADJACENT PRIVATE PROPERTIES ARE FOR ILLUSTRATIVE PURPOSES ONLY.
3. OFFSITE IMRPOVEMENTS ON PUBLIC PROPERTY ARE TO BE COORDINATED WITH CALTRANS AND CITY THROUGH SEPARATE SUBMITTAL PACKAGES.

ABBREVIATIONS

AC	ASPHALT CONCRETE	LF	LINEAR FOOR
BMP	BEST MANAGEMENT PRACTICE	LG	LIP OF GUTTER
C	CONCRETE	(P)	PROPOSED
CONC	CONCRETE	POC	POINT OF CONNECTION
DMA	DRAINAGE MANAGEMENT AREA	S	SLOPE
(E)	EXISTING	SD	STORM DRAIN
EP	EDGE OF PAVEMENT	SS	SANITARY SEWER
FL	FLOW LINE	SSMH	SANITARY SEWER MANHOLE
GR	GRADE	SDMH	STORM DRAIN MANHOLE
INV	INVERT	TC	TOP OF CONCRETE



NOT FOR CONSTRUCTION

0 5' 10' 20'

SHERWOOD DESIGN ENGINEERS
58 Maiden Lane
Suite 300
San Francisco, CA 94108
www.sherwoodengineers.com

201 EL CAMINO REAL at CAMBRIDGE AVE

MENLO PARK, CALIFORNIA 94025

SHEET TITLE

CONCEPT SITE AND GRADING PLAN

REVISIONS:

1 PLANNING SUBMITTAL 05/30/18

CHECKED: _____

PLOT DATE: _____

PROJ. NO. 17-1007
ISSUED: 05/31/2018
DWG. SCALE: 1" = 10'
DRAWN BY: CB

SHEET NO.

C2.0

P:\2017\17-214_201_Camino\04_Design\01_CAD\01_SD\C-200 GR.dwg,5/30/2018 5:54:29 PM

LEGEND

- BUILDING ROOF AREA
- PROPOSED 30" RCP SD MAIN
- DEMOLISH EXISTING UTILITY LINE
- PROPOSED 48" SDMH
- PROPOSED CATCH BASIN
- EXISTING 30" SD MAIN
- JU — DRY JOINT UTILITY TRENCH. SEE JOINT TRENCH CONSULTANT PLANS
- SS — SANITARY SEWER LINE
- W — WATER LINE
- FW — FIREWATER LINE
- PROPOSED EASEMENT
- EXISTING EASEMENT (ASSUMED)

NOTES

1. DEMOLITION AND CONSTRUCTION OF EXISTING WATER SERVICE TO BE COORDINATED WITH CALWATER. SEWER DEMOLITION AND CONSTRUCTION TO BE COORDINATED WITH WEST BAY SANITARY DISTRICT. STORM DRAIN DEMOLITION AND CONSTRUCTION TO BE COORDINATED WITH CITY.

(P) 30" STORM DRAIN
(P) SDMH #2
RIM 63.9±
INV 56.31
87 LF S=0.27%
(P) SDMH #1
RIM 64.0
INV 56.55
20.0' (E) PUBLIC UTILITY EASEMENT
15.0' (P) PUBLIC UTILITY EASEMENT
20.0' (P) PUBLIC ACCESS EASEMENT
7.5
(P) 30" STORM DRAIN
121 LF S=0.27%
20.0' (P) PUBLIC ACCESS EASEMENT
15.0' (P) PUBLIC UTILITY EASEMENT
(P) JOINT TRENCH FOR RELOCATED DRY UTILITIES. SEE JOINT TRENCH CONSULTANT PLANS
(P) BLDG. PERIMETER
DEMOLISH 90LF (E) ELEC CONDUIT. SEE JOINT TRENCH CONSULTANT PLAN FOR RELOCATION
DEMOLISH 125LF (E) GAS MAIN. SEE JOINT TRENCH CONSULTANT PLAN FOR RELOCATION
DEMOLISH 136LF (E) 30" SD MAIN
(E) SSMH 8016
RIM 63.4±
INV 60.55 (4"IN, N)
INV 60.35 (4"IN, NE)
INV 60.28 (6"OUT, SE)
DEMOLISH 62LF (E) ELEC LINE ONLY SERVING SITE
DEMOLISH 62LF (E) 6" SEWER LINE ONLY SERVING SITE
DEMOLISH (E) WATER LINE AND ASSOCIATED STRUCTURES ONLY SERVING SITE
(P) WATER AND FW POC PENDING MEP COORDINATION
(E) OVERHEAD POWER AND STREET LIGHTING LINES TO BE UNDERGROUNDED PER JOINT TRENCH DWGS
DEMOLISH 32LF (E) 12" SD LINE AND INLET
(P) SEWER POC PENDING MEP COORDINATION
DEMOLISH 24LF (E) 12" SD LINE AND INLET
(P) SDMH #3
RIM 62.8±
INV 55.99
64 LF S=0.27%
CB TO REMAIN
(P) 12" STORM DRAIN 112 LF S=0.5% MIN
(P) SD CB TO RELIEVE FLOODING AT CORNER
DEMOLISH 60LF (E) GAS LINE ONLY SERVING SITE
CONNECT TO (E) SSMH
(E) SDCB 8007
RIM 61.8±
INV 55.93 (30"IN, NE)
INV 58.74 (12"IN, W)
INV 55.83 (30"OUT, S)
(E) SSMH 8000
RIM 63.0±
INV 60.03 (8"IN, SW)
INV 60.14 (6"IN, SE)
INV 59.90 (8"OUT, NE)
(E) SSMH 8004
RIM 63.0±
INV 59.28 (8"IN, SW)
INV 59.59 (6"IN, NW)
INV 59.18 (8"OUT, NE)
(E) SSMH 8008
RIM 63.3±
INV 58.63 (8"IN, SW)
INV 58.13 (8"IN, SE)
INV 58.13 (12"IN, INW)
INV 58.13 (12"OUT, N)
(E) SSMH 8007
RIM 63.3±
INV 58.63 (8"IN, SW)
INV 58.13 (8"IN, SE)
INV 58.13 (12"IN, NW)
INV 58.13 (12"OUT, N)
CONNECT TO (E) SDMH
(E) SDMH 8006
RIM 62.6±
INV 55.93 (IN, N)
(P) INV 55.81 (IN, W)
INV 55.81 (OUT, SE)
CAMBRIDGE ROAD
EL CAMINO REAL
(E) ALTO LANE
ALTO LANE

NOT FOR CONSTRUCTION

0 5' 10' 20'

SHERWOOD DESIGN ENGINEERS
58 Maiden Lane
San Francisco, CA 94108
www.sherwoodengineers.com

201 EL CAMINO REAL at CAMBRIDGE AVE

MENLO PARK, CALIFORNIA 94025

SHEET TITLE:
CONCEPT UTILITY AND RELOCATION PLAN

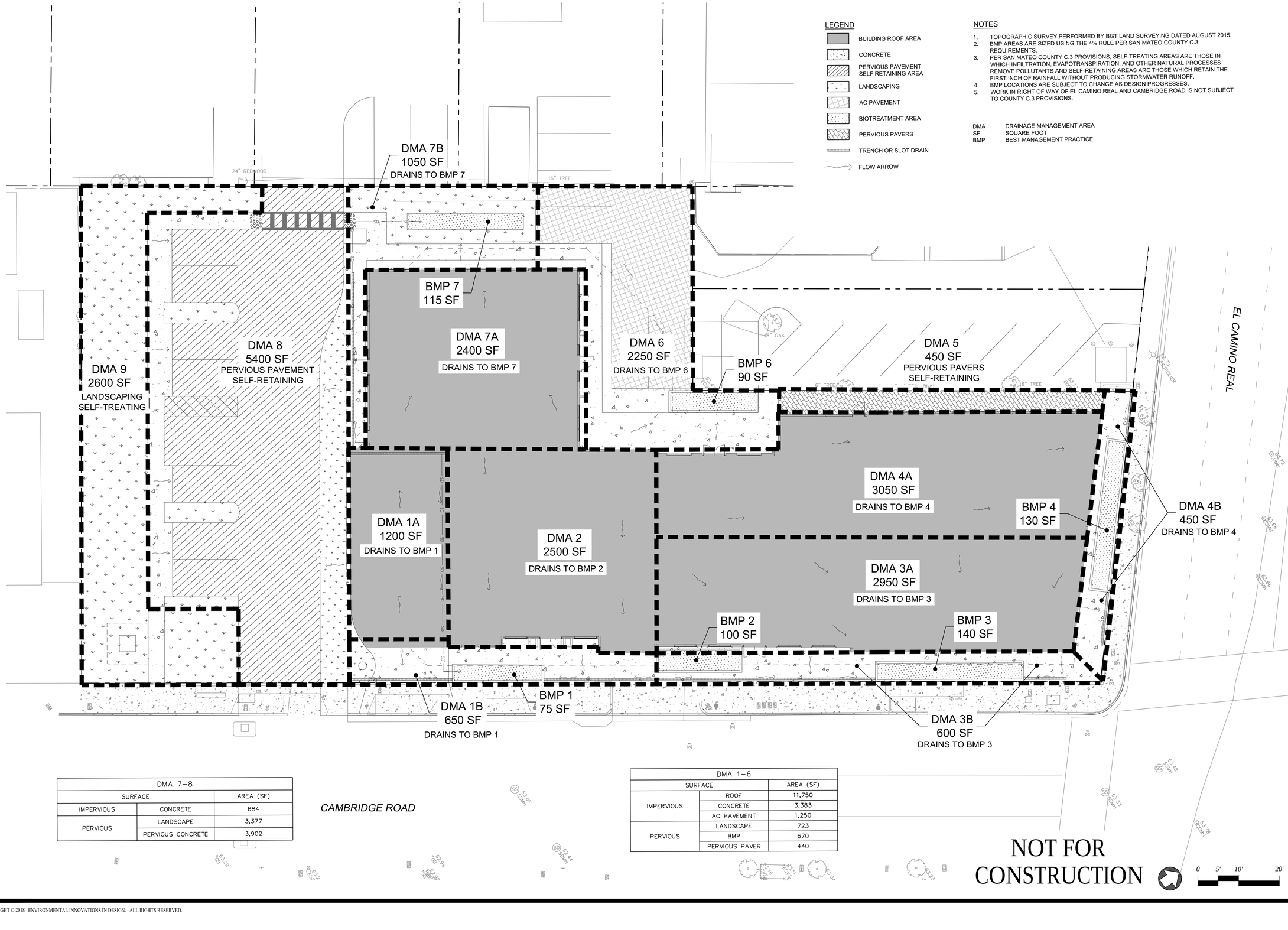
REVISIONS:
1 PLANNING SUBMITTAL 05/30/18

CHECKED:
PLOT DATE:

PROJ. NO. 17-1007
ISSUED: 05/31/2018
DWG. SCALE: 1" = 10'
DRAWN BY: CB

SHEET NO.
C3.0

P:\2017\17-214_201_Camino\04_Design\01_CAD\01_SD\C-300 UT.dwg,5/30/2018 5:54:39 PM



DMA 7–8		
SURFACE		AREA (SF)
IMPERVIOUS	CONCRETE	684
PERVIOUS	LANDSCAPE	3,377
	PERVIOUS CONCRETE	3,902

DMA 1–6		
SURFACE		AREA (SF)
IMPERVIOUS	ROOF	11,750
	CONCRETE	3,383
	AC PAVEMENT	1,250
PERVIOUS	LANDSCAPE	723
	BMP	670
	PERVIOUS PAVER	440

NOT FOR CONSTRUCTION

0 5' 10' 20'

SHERWOOD DESIGN ENGINEERS
58 Maiden Lane
San Francisco, CA 94108
www.sherwoodengineers.com

201 EL CAMINO REAL
at CAMBRIDGE AVE
MENLO PARK, CALIFORNIA 94025

SHEET TITLE:
CONCEPT
STORMWATER MANAGMENT PLAN

REVISIONS:
1 PLANNING SUBMITTAL 05/30/18

CHECKED:
PLOT DATE:

PROJ. NO. 17-1007
ISSUED: 05/31/2018
DWG. SCALE: 1" = 10'
DRAWN BY: CB

SHEET NO.
C4.0

P:\2017\17-214_201_Camino\04_Design\01_CAD\01_SD\C-400 SWM.dwg,5/30/2018 5:54:49 PM

NOTES

1. TOPOGRAPHIC SURVEY PERFORMED BY BGT LAND SURVEYING DATED AUGUST 2015 WITH SUPPLEMENTAL SURVEY PERFORMED BY MARK THOMAS ON APRIL 23, 2018.

MAP OF THE PARTRIDGE SUBDIVISION
BOOK 6 MAPS 57
BLOCK 2

PARKING STRUCTURE

ENCLOSURE

PAVER @ DOOR

LOWER LEVEL

WATER SERVICE

BOLLARD (TYPICAL)

12" SYCAMORE

24" REDWOOD

N 33°02'32" E

65.00'

20.00'

16" TREE

6' WOOD FENCE

24" BLACK ACACIA

CONCRETE

FF LINOLEUM

FIREPLACE

BUILDING

CONC.

12" TREE

18" REDWOOD

12" REDWOOD

14" REDWOOD

16" ELM

ASPHALT PARKING

BOLLARDS

N 57°08'52" W

50.00'

121.78'

121.57'

122.00'

12" TREE

24" TREE

RIDGE: 78.9'

RIDGE: 79.1'

RIDGE: 77.7'

WOOD FENCE

TILE

APN: 071-413-380
7,923 SQ. FT.

APN: 071-413-370
7,909 SQ. FT.

APN: 071-413-200
7,409 SQ. FT.

ALTO LANE
[20' WIDE]

48" OAK

LOT 73

LOT 72

LOT 70

LOT 69

LOT 71

N 33°02'32" E

107.88'

6" TREE

PARAPET: 70.5

EXTERIOR FACE OF BUILDING 0.65' INSIDE P/L

EL CAMINO REAL

71.50'

71.59'

OLD LOT LINE

EXISTING BUILDING
–MEASURED EXTERIOR–MOST FINISHED SURFACE–

PARAPET: 77.9'

EXISTING BUILDING
(MULTI–UNIT)

CONCRETE

THRESHOLD

5'–EM

12" WALNUT

16" OAK

STUCCO WALL

AT&T BOXES

65.00'

S 32°51'08" W

99.85'

PLANTER

WATER BYPASS VALVE

EXTERIOR–MOST FACE OF BUILDING 0.2' OUTSIDE P/L

PG&E

SIGN

STANDARD CONCRETE CURB – NO GUTTER

BRICK COLUMNS

S 32°51'08" W 1419.92'
(STREET CENTERLINE)

50.00'
25.00'

ROW

CAMBRIDGE ROAD
(50' WIDE)

S 57°08'52" E

BASIS OF BEARINGS
S 57°08'00" E

FOUND 6" DIA. PLASTIC MONUMENT, BRASS TAG AND CONCRETE 5478", FOUND PER 18 PM 47

DOUBLE YELLOW STRIPE

LANE STRIPE

CROSSWALK

LEGEND

EXISTING PARCEL LINES

BASIS OF BEARINGS

THE BEARING, SOUTH 57°08' EAST, OF UNIVERSITY ROAD (FORMERLY YALE ROAD), AS SHOWN ON THAT CERTAIN SUBDIVISION MAP ENTITLED, "MAP NO. 2 STANFORD PARK" WHICH WAS FILED FOR RECORD IN BOOK 8 OF MAPS PAGE 46, SAN MATEO COUNTY RECORDS, WAS USED AS THE BASIS OF BEARINGS FOR THIS SURVEY.

BENCHMARK

NOTES:

BGT RELIED UPON A CHICAGO TITLE COMPANY PRELIMINARY TITLE REPORT, ORDER NO. 2982140140, AS TITLE REFERENCE. NO EASEMENTS WERE REFERENCED WITHIN SAID REPORT.

0 5' 10' 20'

SHERWOOD DESIGN ENGINEERS
58 Maiden Lane, Suite 300
San Francisco, CA 94108
www.sherwoodengineers.com

201 EL CAMINO REAL at CAMBRIDGE AVE

MENLO PARK, CALIFORNIA 94025

SHEET TITLE:

EXISTING PARCEL EXHIBIT

REVISIONS:

CHECKED: _____

PLOT DATE: _____

PROJ. NO. 17-1007
ISSUED: 05/30/2018
DWG. SCALE: 1" = 10'
DRAWN BY: CB

SHEET NO.

EX-1

PROPOSED PARCEL LINE

PROPOSED PUBLIC UTILITIES EASEMENT

PROPOSED PUBLIC ACCESS EASEMENT

NOTES

1. PROPOSED PARCEL LINES SHOWN ARE APPROXIMATE
2. TOPOGRAPHIC SURVEY PERFORMED BY BGT LAND SURVEYING DATED AUGUST 2015 WITH SUPPLEMENTAL SURVEY PERFORMED BY MARK THOMAS ON APRIL 23, 2018.

LOT 69
ZONE R-3

LOT 70+
ZONE SP-ECR/D

NEW PROPERTY LINE

15' (P) PUBLIC UTILITY EASEMENT

20' (P) PUBLIC ACCESS EASEMENT

APN: 071-413-380
7,923 SQ. FT.

APN: 071-413-370
7,909 SQ. FT.

APN: 071-413-200
7,409 SQ. FT.

EXISTING BUILDING (MULTI-UNIT)

EXISTING BUILDING (COMMERCIAL) –MEASURED EXTERIOR–MOST FINISHED SURFACE–

LOT 69

LOT 70

LOT 71

LOT 72

LOT 73

LOT 74

LOT 4

LOT 5

LOT 6

MAP OF THE PARTRIDGE SUBDIVISION
BOOK 6 MAPS 57

PARKING STRUCTURE

ASPHALT PARKING

TRASH ENCLOSURE

CONCRETE PAVERS

"OASIS" RESTAURANT

LOWER LEVEL POPOUT

LOWER LEVEL

PAVER @ DOOR

ELECTRIC BOX

WATER SERVICE

BOLLARD (TYPICAL)

FENCED-IN AREA USED BY ADJOINER

6' WOOD FENCE

ROOFED CONCRETE SITTING AREA

BRICK FIREPLACE

24" BLACK ACACIA

16" ELM

12" TREE

24" TREE

40" REDWOOD

30" REDWOOD

48" OAK

16" OAK

12" WALNUT

12" SYCAMORE

40" YUCCA

"OASIS" SIGN

PAD FOR TRANS-FORMER

EXTERIOR FACE OF BUILDING 0.65' INSIDE P/L

EXTERIOR-MOST FACE OF BUILDING 0.2' OUTSIDE P/L

OLD LOT LINE

FF CARPET

ELEC. METERS

DECT. VALVE

BRICK PLANTER

WATER BYPASS VALVE

THRESHOLD

CONCRETE WALK

BRICK CURB

CONCRETE CURB

CONCRETE CURB/RETAINING WALL

4' WOOD-LATTICE FENCE

STUCCO WALL

CONCRETE

TILE

5'-0" BLDG

RIDGE: 78.9

RIDGE: 77.7'

RIDGE: 73.9

STANDARD CONCRETE CURB – NO GUTTER

STANDARD CONCRETE CURB AND GUTTER

BRICK COLUMNS ATOP CONCRETE BASE

DRIPLINE

DOUBLE YELLOW STRIPE

LANE STRIPE

CROSSWALK

BRICK

CONCRETE

SLV

PBV

UTILITY BOX

METER BOX

SERVICE VAULT

ELEC BOX

SIGN

S 32°51'08" W 1419.92' (STREET CENTERLINE)

BASIS OF BEARINGS

S 57°08'52" W

N 57°08'52" W

N 33°02'32" E

S 32°51'08" W

65.00'

122.00'

121.78'

107.88'

99.85'

71.50'

50.00'

25.00'

(50' WIDE)

FOUND 1" PLASTIC PLUG, BRASS TAG AND PUNCH "RCE 5478", FOUND PER 18 PM 47

0 5' 10' 20'

SHERWOOD
DESIGN ENGINEERS
58 Maiden Lane, Floor
San Francisco, CA 94108
www.sherwoodengineers.com

201 EL CAMINO REAL at CAMBRIDGE AVE

MENLO PARK, CALIFORNIA 94025

SHEET TITLE:

PROPOSED PARCEL EXHIBIT

REVISIONS:

CHECKED: _____

PLOT DATE: _____

PROJ. NO. 17-1007
ISSUED: 05/30/2018
DWG. SCALE: 1" = 10'
DRAWN BY: CB

SHEET NO.

EX-2

NOTE:
PLEASE VERIFY THE SERVICE POINTS ON THIS PLAN MATCH YOUR CURRENT DESIGN. IF THERE ARE DISCREPANCIES, PLEASE CONTACT THE PROJECT MANAGER IN OUR OFFICE @ 925-820-8502

NOTE:
-PRELIMINARY PLANS-
NOT FOR CONSTRUCTION

NORTH

10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

106"x 90" PAD FOR PAD MOUNT TRANSFORMER

PG&E PRIMARY ELECTRIC, PG&E GAS, AT&T AND COMCAST TO TIE–IN TO EXISTING

RISER UP EX COMM POLE WITH AT&T AND COMCAST

TIE–IN TO EX GAS

EXISTING GAS SERVICE TO BE RELOCATED WITHIN NEW ROADWAY

TIE–IN TO EXISTING ELECTRIC VAULT

EXISTING O/H COMM LINES TO BE RELOCATED WITHIN NEW ROADWAY

EXISTING UNDERGROUND ELECTRIC TO BE RELOCATED WITHIN NEW ROADWAY

EXISTING GAS SERVICE TO BE RELOCATED WITHIN NEW ROADWAY

CONVERT EXISTING OVERHEAD ELECTRIC, TELEPHONE, AND CATV TO UNDERGROUND

4'x 66'x 5' PRI

EL CAMINO REAL

ALTO LANE

CAMBRIDGE AVE

UNIVERSITY DRIVE

PARKING STRUCTURE

Mech. Entrance ENCLOSURE

"OASIS" RESTAURANT

LOWER LEVEL POPOUT

PAVER @ DOOR

ELECTRIC BOX

3–GM

WATER SERVICE

CONCRETE PAVERS

BOLLARD (TYPICAL)

6" YUCCA

12" SYCAMORE

24" REDWOOD

16" TREE

6" TREE

48" OAK

LOT 3

LOT 4

LOT 6

LOT 73

LOT 74

ELECTRIC ROOM & MPOE

HVE VAULT

PAD FOR TRANS–FORMER

"OASIS" SIGN

RETAIL / MEDICAL "D"

LOBBY

RETAIL / MEDICAL "C"

RETAIL / MEDICAL "A"

RETAIL / MEDICAL "B"

ELEC. METERS

3–GM

RAMP DOWN TO GARAGE

TRASH

DRIVEWAY

AT&T BOXES

PG&E

PBV

UTILITY BOX

METER BOX

SERVICE VAULT

ELEC. BOX

GUY

SIGN

CONCRETE WALK

POWER POLE

(NO PARKING ALONG CAMBRIDGE AVE.)

(NO PARKING AT ECR) EL CAMINO REAL

DET. VALVE

(STREET CENTERLINE)

(50' WIDE)

6

MILLENNIUM
DESIGN & CONSULTING, INC.
UTILITY DESIGN & CONSULTING - APPLICANT DESIGN - STREET LIGHTING
P.O. BOX 737
ALAMO, CA 94507
PHONE: 925-820-8502 - FAX: 925-820-8407

MDCI JOB#:	18-779
MDCI PM:	AG
DESIGNED BY:	NK
CHECKED BY:	AG
SCALE:	1"= 10'
LAST MODIFIED:	05-30-2018

REV	DATE	DESCRIPTION

HUHANTWO, LLC.

JOINT TRENCH INTENT

201 EL CAMINO REAL

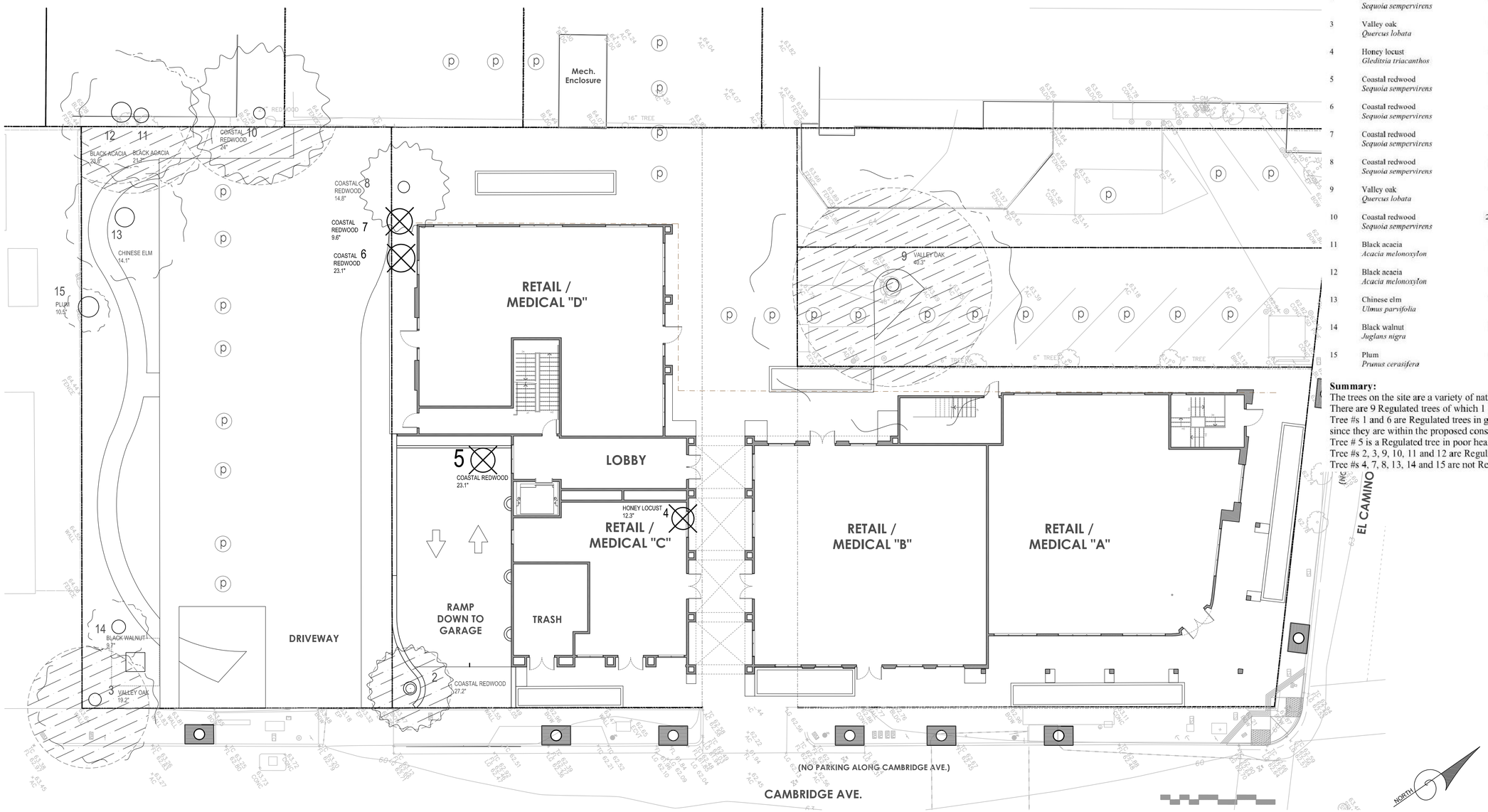
MENLO PARK CALIFORNIA

SHEET NO.
INT1

SHEET 1 OF 1

REVISION NUMBER: 0

PLOT DATE: 05-30-2018



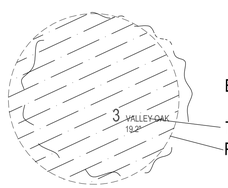
Tree Survey

Tree#	Species	DBH	Ht/Sp	Con Rating	Comments
1	Coastal redwood *Sequoia sempervirens*	29.6"	50/25	65	Good health and condition, pruned for PGE, **Regulated**
2	Coastal redwood *Sequoia sempervirens*	27.2"	45/20	65	Good health and condition, pruned for PGE, **Regulated**
3	Valley oak *Quercus lobata*	19.2"	30/25	40	Poor health and condition, pruned for PGE, one sided, **Regulated**
4	Honey locust *Gleditsia triacanthos*	12.3"	30/30	50	Fair health and condition, drought stress **Not Regulated**
5	Coastal redwood *Sequoia sempervirens*	33.7"	45/25	40	Poor health and condition, thin canopy, codominant, **Regulated**
6	Coastal redwood *Sequoia sempervirens*	23.1"	40/20	65	Good health and condition **Regulated**
7	Coastal redwood *Sequoia sempervirens*	9.6"	30/10	65	Good health and condition **Not Regulated**
8	Coastal redwood *Sequoia sempervirens*	14.8"	30/15	65	Good health and condition **Not Regulated**
9	Valley oak *Quercus lobata*	40.3"	40/50	80	Good health and condition, well maintained, **Regulated**
10	Coastal redwood *Sequoia sempervirens*	24"est	60/25	60	Good health and condition, neighbors **Regulated**
11	Black acacia *Acacia melonoxylon*	21.7"	60/30	50	Fair health and condition, leaning, one sided, poor species, **Regulated**
12	Black acacia *Acacia melonoxylon*	23.8"	60/30	50	Fair health and condition, leaning, one sided, poor species, **Regulated**
13	Chinese elm *Ulmus parvifolia*	14.1"	30/25	40	Poor health and condition, cankers, **decay** poor form, **Not Regulated**
14	Black walnut *Juglans nigra*	9.7"	15/10	30	Poor health and condition, suppressed by #3, **Not Regulated**
15	Plum *Prunus cerasifera*	10.5"	18/5	30	Poor health and condition **Not Regulated**

Summary:
The trees on the site are a variety of natives and non-natives.
There are 9 Regulated trees of which 1 is on a neighbor's property.
Tree #s 1 and 6 are Regulated trees in good health and condition and have been requested for removal since they are within the proposed construction.
Tree # 5 is a Regulated tree in poor health and condition and should be removed.
Tree #s 2, 3, 9, 10, 11 and 12 are Regulated trees that should be protected during construction.
Tree #s 4, 7, 8, 13, 14 and 15 are not Regulated trees and can be removed if desired.

SCALE: 3/32"=1'-0" 0' 4' 8' 16'

LEGEND



EXISTING TREE REMAIN

TREE NUMBER AND CALIPER SIZE
PROTECITON FENCING

COASTAL REDWOOD 23.1" 6

EXISTING TREE TO BE REMOVED

TREE NUMBER AND CALIPER SIZE
PROTECITON FENCING

DATE		SHEET TITLE	SHEET NUMBER
05-30-2018	201 EL CAMINO REAL MENLO PARK, CALIFORNIA 94025	TREE DISPOSITION PLAN	T1

Advanced Tree Care
Certified Arborist WE 1936a
P.O. BOX 5326
Redwood City, California 94063

ZAC Landscape Architects, Inc.
145 Keller Street
Petaluma, California 94952
(707) 696-2967
www.zaclandscape.com
sr@zaclandscape.com

COMMUNITY DEVELOPMENT DEPT.
701 Laurel Street
Menlo Park, CA 94025
650.330.6704
2/28/2011

TREE PROTECTION SPECIFICATIONS

1. A 6 layer of coarse mulch or woodchips is to beplaced beneath the dripline of the protected trees. Mulch is to be kept 12 from the trunk.

2. A protective barrier of 6' chain link fencing shall be installed around the dripline of protected tree(s). The fencing can be moved within the dripline if authorized by the Project Arborist or City Arborist but not closer than 2' from the trunk of any tree. Fence posts shall be 1.5 in diameter and are to be driven 2' into the ground. The distance between posts shall not be more than 10'. This enclosed area is the Tree Protection Zone (TPZ).

3. Movable barriers of chain link fencing secured to cement blocks can be substituted for fixed fencing if the Project Arborist and City Arborist agree that the fencing will have to be moved to accommodate certain phases of construction. The builder may not move the fence without authorization form the Project Arborist or City Arborist.

4. Where the City Arborist or Project Arborist has determined that tree protection fencing will interfere with the safety of work crews, Tree Wrap may be used as an alternative form of tree protection. Wooden slats at least one inch thick are to be bound securely, edge to edge, around the trunk. A single layer or more of orange plastic construction fencing is to be wrapped and secured around the outside of the wooden slats. Major scaffold limbs may require protection as determined by the City Arborist or Project Arborist. Straw waddle may also be used as a trunk wrap by coiling the waddle around the trunk up to a minimum height of six feet from grade. A single layer or more of orange plastic construction fencing is to be wrapped and secured around the straw waddle.

5. **Avoid the following conditions.**
   DO NOT:
   a. Allow run off of spillage of damaging materials into the area below any tree canopy.
   b. Store materials, stockpile soil, or park or drive vehicles within the TPZ.
   c. Cut, break, skin, or bruise roots, branches, or trunks without first obtaining authorization from the City Arborist.
   d. Allow fires under and adjacent to trees.
   e. Discharge exhaust into foliage.
   f. Secure cable, chain, or rope to trees or shrubs.
   g. Trench, dig, or otherwise excavate within the dripline or TPZ of the tree(s) without first obtaining authorization from the City Arborist.
   h. Apply soil sterilants under pavement near existing trees.

6. Only excavation by hand or compressed air shall be allowed within the dripline of trees. Machine trenching shall not be allowed.

7. Avoid injury to tree roots. When a ditching machine, which is being used outside of the dripline of trees, encounters roots smaller than 2", the wall of the trench adjacent to the trees shall be hand trimmed, making clear, clean cuts through the roots. All damaged, torn and cut roots shall be given a clean cut to remove ragged edges, which promote decay. Trenches shall be filled within 24 hours, but where this is not possible, the side of the trench adjacent to the trees shall be kept shaded with four layers of dampened, untreated burlap, wetted as frequently as necessary to keep the burlap wet. Roots 2" or larger, when encountered, shall be reported immediately to the Project Arborist, who will decide whether the Contractor may cut the root as mentioned above or shall excavate by hand or with compressed air under the root. Root is to be protected with dampened burlap.

8. Route pipes outside of the area that is 10 times the diameter of a protected tree to avoid conflict with roots.

9. Where it is not possible to reroute pipes or trenches, the contractor shall bore beneath the dripline of the tree. The boring shall take place not less than 3' below the surface of the soil in order to avoid encountering "feeder" roots.

10. Trees that have been identified in the arborist's report as being in poor health and/or posing a health or safety risk, may be removed or pruned by more than one-third, subject to approval of the required permit by the Planning Division. Pruning of existing limbs and roots shall only occur under the direction of a Certified Arborist.

11. Any damage due to construction activities shall be reported to the Project Arborist or City Arborist within six hours so that remedial action can be taken.

12. An ISA Certified Arborist or ASCA Registered Consulting Arborist shall be retained as the Project Arborist to monitor the tree protection specifications. The Project Arborist shall be responsible for the preservation of the designated trees. Should the builder fail to follow the tree protection specifications, it shall be the responsibility of the Project Arborist to report the matter to the City Arborist as an issue of non-compliance.

13. Violation of any of the above provisions may result in sanctions or other disciplinary action.

MONTHLY INSPECTIONS

It is required that the site arborist provide periodic inspections during construction.
Four-week intervals would be sufficient to access and monitor the effectiveness of the Tree Protection Plan and to provide recommendations for any additional care or treatment.

ARBORIST CERTIFICATION

Certification of Performance *(3)*

I, Robert Weatherill certify:

* That I have personally inspected the tree(s) and/or the property referred to in this report, and have stated my findings accurately. The extent of the evaluation and appraisal is stated in the attached report and the Terms and Conditions;

* That I have no current or prospective interest in the vegetation or the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved;

* That the analysis, opinions and conclusions stated herein are my own, and are based on current scientific procedures and facts;

* That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party, nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events;

* That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted Arboricultural practices;

* That no one provided significant professional assistance to the consultant, except as indicated within the report.

I further certify that I am a member of the International Society of Arboriculture and a Certified Arborist. I have been involved in the practice of arboriculture and the care and study of trees for over 15 years.

Signed

Robert Weatherill
Certified Arborist WE 1936a
Date: 5/4/18

DATE		SHEET TITLE	SHEET NUMBER		
05-30-2018	201 EL CAMINO REAL MENLO PARK, CALIFORNIA 94025	TREE PROTECTION SPECIFICATIONS	T2	Advanced Tree Care Certified Arborist WE 1936a P.O. BOX 5326 Redwood City, California 94063	ZAC Landscape Architects, Inc. 145 Keller Street Petaluma, California 94952 (707) 696-2967 www.zaclandscape.com sr@zaclandscape.com

Mech. Enclosure

12 BLACK ACACIA 33.8"

11 BLACK ACACIA 21.7"

10 COASTAL REDWOOD 24"

8 COASTAL REDWOOD 14.8"

13 CHINESE ELM 14.11"

15 PLUM 10.5"

WOOD FENCE
-NATURAL STAIN

FLOWERING TREES
-VARIOUS TYPES

9 VALLEY OAK 40.3"

EXISTING TREES TO REMAIN
-TYPICAL

HABITAT PLANTING
-BUTTERFLY & HUMMINGBIRD

SHADE TREES AT PARKING
-CHINESE PISTACH

RETAIL / MEDICAL "D"

LOBBY

LARGE WEEPING SHRUBS CASCADE OVER WALLS

RETAIL / MEDICAL "C"

RETAIL / MEDICAL "B"

RETAIL / MEDICAL "A"

FLOWERING VINES AT WALLS
-BOUGAINVILLEA

TRASH

FLOWERING VINES AT POSTS
-STAR JASMINE

STREET TREES
-SYCAMORE
-TREE GRATES TO MATCH EXISTING

14 BLACK WALNUT 9.7"

3 VALLEY OAK 19.2"

DRIVEWAY

2 COASTAL REDWOOD 27.2"

(NO PARKING AT ECR)

EL CAMINO REAL

CAMBRIDGE ROAD

(NO PARKING ALONG CAMBRIDGE AVE.)

NORTH

LEGEND

- NATIVE HABITAT PLANTING
- FOUNDATION PLANTING
- BIODETENTION PLANTING
- WALK-ON BARK MULCH
- CONCRETE PAVING -INTERGAL COLOR
- CONCRETE PAVING -SIDEWALK GREY

SCALE: 1/8"=1'-0"

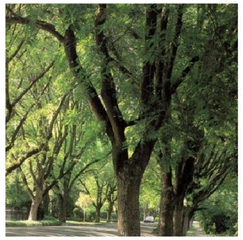
DATE		SHEET TITLE	SHEET NUMBER	
05-30-2018	201 EL CAMINO REAL MENLO PARK, CALIFORNIA 94025	LANDSCAPE PLAN	L1.0	ZAC Landscape Architects, Inc. 145 Keller Street Petaluma, California 94952 (707) 696-2967 www.zaclandscape.com sr@zaclandscape.com

VINES AT BUILDING

FOUNDATION PLANTING AT BUILDING

WOOD FENCING AT NEIGHBOUR

DATE 05-30-2018	201 EL CAMINO REAL MENLO PARK, CALIFORNIA 94025	SHEET TITLE LANDSCAPE CONCEPT IMAGES	SHEET NUMBER L1.1	ZAC Landscape Architects, Inc. 145 Keller Street Petaluma, California 94952 (707) 696-2967 www.zaclandscape.com sr@zaclandscape.com	ZAC



PARKING TREE

STREET TREE

FLOWERING TREES

NATIVE BUTTERFLY
& HUMMINBIRD
HABITAT

LARGE
WEEPING
SHRUBS AT
GARAGE
WALL

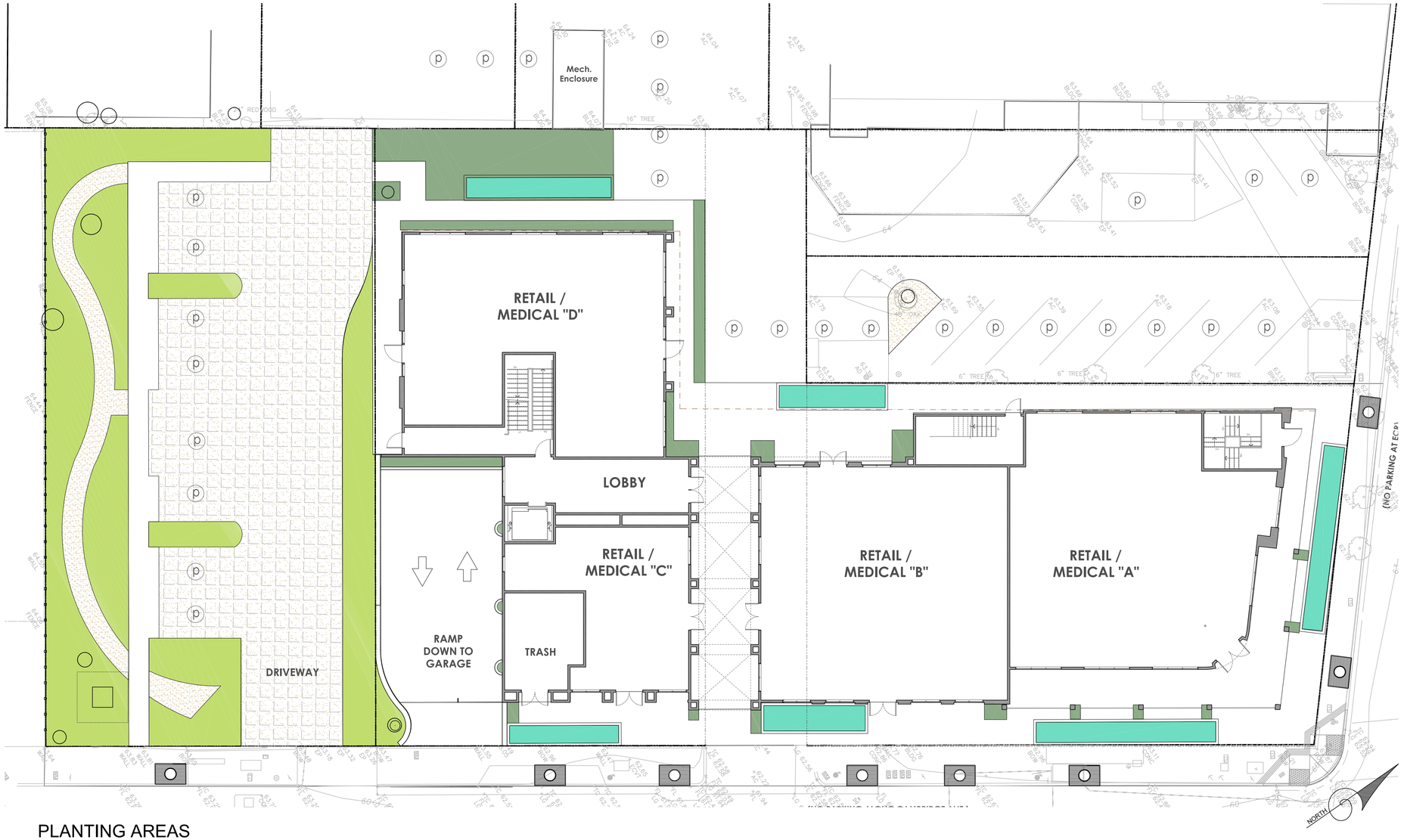
RUSHES AT RETENTION AREA

FOUNDATION PLANTING
AT BUILDING

PLANT LIST

CODE	BOTANICAL NAME	COMMON NAME	SIZE	D	E	N	Dr	W	GENERAL DESCRIPTION
TREE LEGEND									
CER BET	CERCOCARPUS PETULOIDES	CERCOCARPUS					Dr		EV 5-15H15W ARCHING HABIT GREY GREEN
COR EDD	CORNUS 'EDDIES WHITE WONDER'	WHITE DOGWOOD	15 GAL						DEC 20-30H 20-30W. WHT
LAG NAT	LAGERSTROEMIA 'NATCHEZ'	WHITE CRAPE MYRTLE	15 GAL				Dr		DEC 25H 12W WHT-ORG-RED FALL
MAG ELI	MAGNOLIA 'ELIZABETH'	YELLOW MAGNOLIA	15 GAL	D					DEC 20-30H 20W FRAG YEL
MAG SOU M	MAGNOLIA SOULANGIANA MULTI	SAUCER MAGNOLIA	15 GAL	D					DEC 25H 25W PINK FRAG
PIS CHI	PISTACIA CHINENSIS	CHINESE PISTACHE	15 GAL				Dr		DEC 50H40W MED-DEEP ROOTS RED FALL SLOW TO MOD GRWTH
PLAT ACE B	PLATANUS ACERIFOLIA 'BLOODGOOD'	SYCAMORE	24" BOX				Dr	C	DEC 60H30W FAST YELLOW FALL COLLOR
SHRUB & VINE LEGEND									
AGA ATT	AGAVE ATTENUATA	LIONS TAIL	5 GAL				Dr		EV 3H4W SOFT POINTS BOLD TEXTURE GREEN FLWR
ALO ARB	ALOE ARBORESCENS	TORCH ALOE	5 GAL						
ALO STR	ALOE STRIATA	CORAL ALOE	5 GAL						EV 28"W2H NO SPINES PINK EDGES CORAL PINK FLWR
AME ALN	AMELANCHIER ALNIFOLIA	WESTERN SERVICEBERRY	5 GAL		E	N		W	DEC 10H10W TO THICKETS LIGHT GRBEN WHT FLRS RED-YLW FALL EDIBLE BLUE BERRIES MEDICIONAL BARK WOOD USED FOR ARROWS TOOLS SHELTER PROPGATE BY SEEDS HEDGE WINDBREAK
AZA GEI 2	AZALEA GEISHA 2	GEISHA 2 AZALEA	5 GAL						WHT
ARC BAK L	ARCTOSTAPHYLOS BAKERI 'LOUIS EDMUNDS'	LUIS EDMUNDS MANZANITA	5 GAL			N	Dr		EV 3-10H5-12W PINPUR TRUNK GRY SMALL FL
ART LEN	ARTPLEX LENTIFORMIS	QUAIL BUSH	1 GAL	D		N	Dr	W	SEMI EV 4-10H4-12W CRM-WHT FLWR BLUE-SILVER LVS-QUAIL, BIRD HEDGE W INDBREAK EROSION
BOU SPEC	BOUGAINVILLEA SPECIES	BOUGAINVILLEA	5 GAL						DEC VINE YELLO-ORANGE TO PINKISH PURPLE
CAL CIT	CALLISTEMON CITRINUS	BOTTLE BRUSH	5 GAL	D		N			EV 10-15H15W LEMON SCENT FOL BEES HUM BRD CAN BE TRAINED AS TREE
CAL OCC	CALYCANTHUS OCCIDENTALIS	SPICEBUSH	5 GAL	D		N	Dr	W	DEC 4-12H 4-12W RED/BROWN FRAG bird
CAR CAL	CARPENTERIA CALIFORNICA	BUSH ANEMONE	5 GAL	D		N	Dr		EV 4-6H 4-6W SNGL WHT SPR-SUM PART SHADE
DEU GRA	DEUTZIA GRACILIS	DWARF DEUTZIA	5 GAL						
JAS OFF	JASMINUM OFFICINALE	COMMON JASMINE	1 GAL						EV 12H VINE WHT FRAG
LEU SAF	LEUCODENDRON SAFARI SUNSHINE	PINK LEUCODENDRON	5 GAL						EV 3H4W PINK FUCHIA FLWRS
RIB AUR	RIBES AUREUM	GOLDEN CURRANT	5 GAL	D			D R	W	DEC 3-4H3-4W YEL FRAGRANT LIGHT GRN LVS FRUIT YEL-RED-BLK
WES FRT M	WESTRINGIA FRUTICOSA MORNING LIGHT	VARIGATED COAST ROSEMARY	5 GAL	D			Dr		EV 3H3W LAV. GREY FOL
PERENNIAL LEGEND									
AGA BLU	AGASTACHE 'BLUE FROTUNE		4" POT	D			Dr		3H-5W DEEP BLU BUT HUM BRD
AGA SUM	AGASTACHE S'SUMMER BREEZE'	GIANT HYSSOP	4" POT	D			Dr		3-4H2W APRICOT PIN FLWT
AGV ATT B	AGAVE ATTENUATA BLUE FLAME	BLUE AGAVE	1 GAL						EV
ASC TUB	ASCLEPIAS TUBEROSA	BUTTERFLY WEED	4" POT	D					3TH 1W OROBUTIL)
ECH GER	ECHEVERIA GERANIUM		1 GAL						EV 9-11W Y -GRAY CURLY LVS SUMMER SUN SHADE
ECH	ECHEVERIA TOPSY TURVY		1 GAL						EV 1H1W YEL-OR SUCCULENT GRAY CURL LVS SUMMER SUN SHADE
JUN PAT	JUNCUS PATENS	WIRE GRASS	1 GAL	D		N	Dr		1-2H1-2W BLUISH LVS WET AREA TOL DROUGHT
PEN CEN	PENTSTEMON CENTRANTHIFOLIUS	SCARLET BUGLER	4" POT	D		N	Dr	W	EV 2-3H 2W RED GRAY LVS HERD BEE
PEN HET	PENSTEMON HETEROPHYLUS	FOOTHILL PENSTEMON	4'POT	D		N	D R	W	EV 1H2-3W BLUE FADE TO PUR PIN BUTFLI HERD BEE

DATE		SHEET TITLE	SHEET NUMBER	
05-30-2018	201 EL CAMINO REAL MENLO PARK, CALIFORNIA 94025	PLANT LIST AND IMAGES	L2.0	ZAC Landscape Architects, Inc. 145 Keller Street Petaluma, California 94952 (707) 696-2967 www.zaclandscape.com sr@zaclandscape.com



PLANTING AREAS

LEGEND

- NATIVE HABITAT PLANTING — VERY LOW WATER USE, HYDROZONE 1
- FOUNDATION PLANTING — -MODERATE WATER USE, HYDROZONE 2; -LOW WATER USE, HYDROZONE 3
- BIODETENTION PLANTING — MODERATE WATER USE, HYDROZONE 4
- WALK-ON BARK MULCH — VERY LOW WATER USE, HYDROZONE 5

SCALE: 3/32"=1'-0" 0' 4' 8' 16'

PROJECT DATA

CONTACT INFORMATION:	SANDRA REED LANDSCAPE ARCHITECT ZAC LANDSCAPE ARCHITECTS (707) 696-2967 sr@zaclandscape.com
TOTAL LANDSCAPE AREA:	4,569 SF
PROJECT TYPE:	REHABILITATED PRIVATE RESIDENCE
WATER SUPPLY TYPE:	POTABLE WATER
STATEMENT:	I HAVE TO COMPLIED WITH THE CRITERIA OF THE ORDINANCE AND APPLIED THEM FOR THE EFFICIENT USE OF WATER IN THE LANDSCAPE AND IRRIGATION DESIGN PLAN. SIGNED: ___ Reed _____ DATE: 02-13-2018
SOIL:	ALL LANDSCAPE AREAS SHALL INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR CUBIC YARDS PER 1,000 SQUARE FEET TO A DEPTH OF SIX INCHES.
MULCH:	A MINIMUM THREE INCH LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS .

Maximum Applied Water Allowance

The following calculations will help you determine your site specific water budget and establish a planting mix that will allow you to meet your water budget. Your Estimated Total Water Use must be less than your Maximum Applied Water Allowance.

1.) Maximum Applied Water Allowance (MAWA) COMMERCIAL

MAWA = (ETo) (0.62)[(0.45 x LA) + (0.55 x SLA)]

Where:
ETo = Annual Net Reference Evapotranspiration (inches)
0.45 = ET Adjustment Factor
LA = Landscaped Area (square feet)
0.62 = Conversion factor (to gallons per square foot)
SLA = Portion of the landscape area identified as Special Landscape Area (square feet)
0.55 = the additional ET adjustment factor for Special Landscape Area (1.0 - 0.45 = 0.55)

A.) Net Evapotranspiration Calculation

44.45 (Annual ETo)					
25.83 (Annual Rainfall)	x	.25	=	6.41 (Effective Rainfall)	
Net Evapotranspiration Calculation	=	Annual ETo	-	Effective Rainfall	= 38.04

B.) Adjusted Landscape Area Calculation

4569 (Landscaped Area)	x 0.45 Adjustment Factor			= 2056.05
0 (Special Landscaped Area)	x 0.55 Adjustment Factor			= 0
			Sum of Adjusted Landscape Area	= 2056.05
MAWA = 38.04	x 0.62	x 2056.05		= 48495 gallons

2.) Estimated Total Water Use (ETWU)

A.) Net Evapotranspiration Calculation

Net Evapotranspiration Calculation	= Annual ETo	- Effective Rainfall		= 38.04

B.) Adjusted Landscape Area Calculation

3036 (Very low water use plant sqft)	x 0.1		= 303.6
679 (Low water use plant sqft)	x 0.3		= 203.7
854 (Moderate water use plant sqft)	x 0.6		= 512.4
0 (High water use plant sqft)	x 1.0		= 0
		Sum of Adjusted Landscape Area	= 1,020
ETWU = 38.04	x 0.62	x 1,020 / 0.81	= 29603 gallons

Irrigation Efficiency Factor	
Square footage of landscape on drip	4569
Square footage of landscape on spray	0
Total square footage of landscape	4569
Adjusted Irrigation Efficiency Factor	0.81

HYDROZONE INFORMATION TABLE				
HYDROZONES	WATER USE	IRRIGATION METHOD	AREA (SQ. FT.)	% OF TOTAL LANDSCAPE AREA
1	VERY LOW	DRIP	2,426	53%
2	MODERATE	DRIP	187	4%
3	LOW	DRIP	679	15%
4	MODERATE	DRIP	667	15%
5	VERY LOW	NON IRRIGATED	610	13%
TOTAL AREA			4,569	100%

SUMMARY HYDROZONE TABLE			
WATER USE	AREA (SQ. FT)	% OF TOTAL LANDSCAPE AREA	
VERY LOW	3,036	66%	
LOW	679.00	15%	
MODERATE	854.00	19%	
HIGH	-	0%	
SPECIAL LANDSCAPE		0%	
TOTAL	4,569.00	100%	
DRIP IRRIGATION AREA	4,569.00	100%	
SPRAY IRRIGATION AREA	-	0%	
TOTAL LANDSCAPED AREA	4,569.00	0%	

DATE		SHEET TITLE	SHEET NUMBER		
05-30-2018	201 EL CAMINO REAL MENLO PARK, CALIFORNIA 94025	WATER USE CALCULATIONS	L3.0	Advanced Tree Care Certified Arborist WE 1936a P.O. BOX 5326 Redwood City, California 94063	ZAC Landscape Architects, Inc. 145 Keller Street Petaluma, California 94952 (707) 696-2967 www.zaclandscape.com sr@zaclandscape.com