(E) Gate Closed

(E) Gate Open - 2-Cars Parked

2-Cars Parked - Gate Closed

2-Cars Parked - View Facing Street

Car In Driveway - View Facing Street

(E) Garage - Hobby Room

F.A.R. Calculator

Instructions: Enter the information in the white boxes below. The spreadsheet will calculate the proposed FAR (floor area ratio), the 100% max FAR (per the Zoning Ordinance), and the 85% max FAR (per the Zoning Ordinance). Additionally it will determine whether a FAR Modification is required.

The **Net Lot Area** does not include any Public Road Easements or Public Road Right-of-Way areas. The proposed **TOTAL Net FAR Floor Area** shall include the net floor area of all stories of all building, but may or may not include basement/cellar floor area. For further clarification on these definitions please refer to SBMC §28.15.083.

ENTER Project Address:	476 Paseo Del Descanso
Is there a basement or cellar existing or proposed?	No
ENTER Proposed TOTAL Net FAR Floor Area (in sq. ft.):	2,040

ENTER Zone ONLY from drop-down list:	E-3
ENTER Net Lot Area (in sq. ft.):	9,862
Is the height of existing or proposed buildings 17 feet or greater?	No
Are existing or proposed buildings two stories or greater?	No
The FAR Requirements are:	GUIDELINE**

ENTER Average Slope of Lot:	2.00%
Does the height of existing or proposed buildings exceed 25 feet?	No
Is the site in the Hillside Design District?	No
Does the project include 500 or more cu. yds. of grading outside the main building footprint?	No
An FAR MOD is not required per SBMC §28.15	

FLOOR AREA RATIO (FAR):	0.207
Lot Size Range:	4,000 - 9,999 sq.ft.
MAX FAR Calculation (in sq. ft.):	1,200 + (0.25 x lot size in sq.ft.)
100% MAX FAR:	0.372
100% MAX FAR (in sq. ft.):	3,666
85% of MAX FAR (in sq. ft.):	3,116
80% of MAX FAR (in sq. ft.):	2,932
The 2040 square foot proposed total is 56% of the MAX FAR.*	

* NOTE: Percentage total is rounded up.

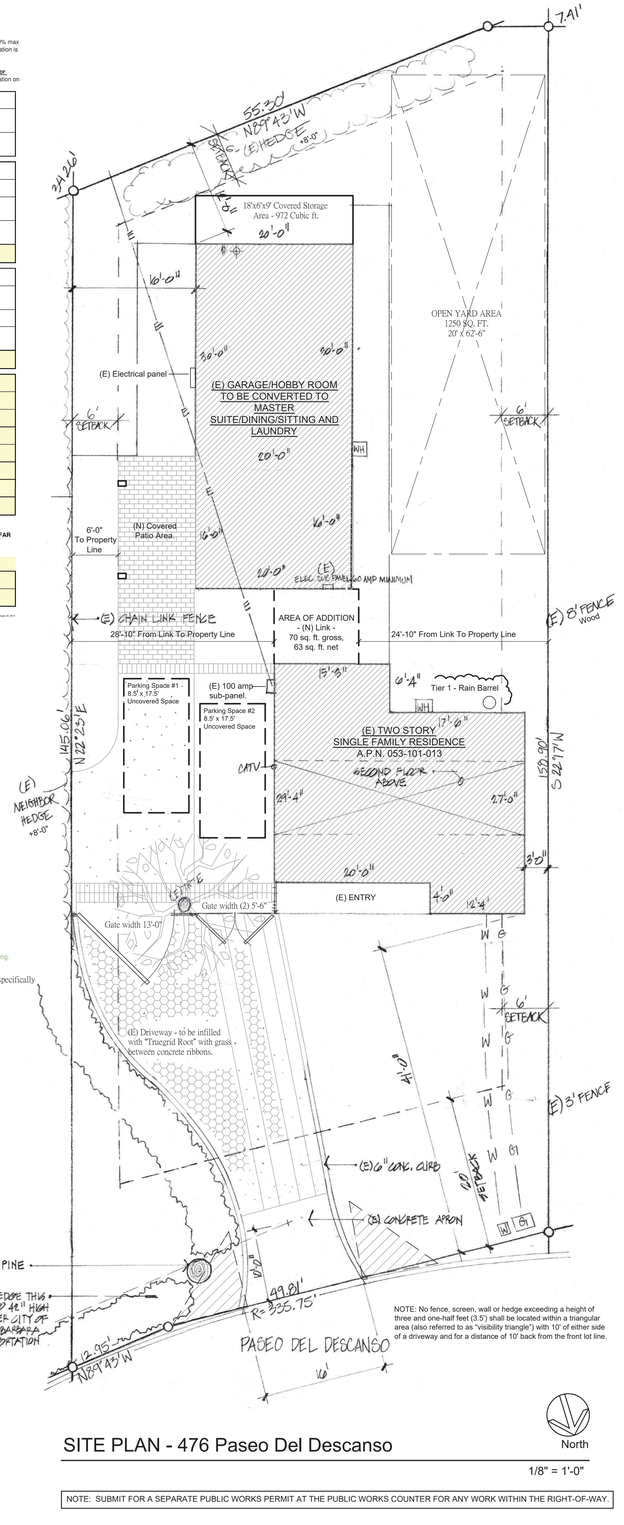
**NOTE: If your project is located on a site with multiple or overlay zones, please contact Planning Staff to confirm whether the FAR limitations are "Required" or "Guideline".

Acreage Conversion Calculator	
ENTER Acreage to Convert to square footage:	1.00
Net Lot Area (in sq. ft.):	43560

TRUEGRID® ROOT™ New!
World's Strongest & Quickest Grass Pavement

NO EXCAVATION

The World's Strongest Permeable Paver Company Introduces
TRUEGRID® ROOT™ Permeable Pavers. Heavy Loads. Instant Use Grass Paving.
https://www.truegridpaver.com/products/root/
This product is made of 100% recycled plastic, supports heavy loads and is specifically built to be planted (grass) in.
NO GRAVEL AND NO DG!



SITE PLAN - 476 Paseo Del Descanso

1/8" = 1'-0"

NOTE: SUBMIT FOR A SEPARATE PUBLIC WORKS PERMIT AT THE PUBLIC WORKS COUNTER FOR ANY WORK WITHIN THE RIGHT-OF-WAY.

PROJECT DATA / BUILDING ANALYSIS

PROJECT ADDRESS: 476 Paseo Del Descanso, Santa Barbara, Ca.

A.P.N.	053-101-013
Address:	476 Paseo Del Descanso, Santa Barbara
Zone:	RS-7.5/USS
Owner:	Brogan and Rita Donahoe
Lot Size:	.23 Acres (9905 Sq. ft.)
General Plan Neighborhood:	Upper State: East San Roque
Type of Construction:	VN
High Fire Area:	No
Parking:	Per BLD2021-01003: Existing: 1- Covered (1-(E) Garage) and 1-Uncovered Parking Exemption Code 30.175.030-N Proposed - 2-Uncovered Parking Spaces Requesting Parking Exception for 2-Uncovered Spaces
Slope:	8%
(E) Building Sq. Footages:	Total Residence: 1,286 sq. ft. Gross, 1,124 sq. ft. Net Total Garage/Hobby Room: 920 sq. ft. Gross, 859 sq. ft. Net
(N) Building Sq. Footages:	Residence: 2,206 sq. ft. Gross, 1,983 sq. ft. Net Link Addition: 65 sq. ft. Gross, 57 sq. ft. Net Total Residence: 2,271 sq. ft. Gross, 2,040 sq. ft. Net

(N) Covered Storage: 108 sq. ft. (972 cubic ft.)

(N) Covered Patio: 100 sq. ft.

This project shall comply with:

California Residential Code	2019 Edition
California Mechanical Code	2019 Edition
California Plumbing Code	2019 Edition
California Electrical Code	2019 Edition
California Fire Code:	2019 Edition
California Energy Code	2019 Edition
California Green Building Code	2019 Edition

All amendments as adopted in Santa Barbara City Ordinances (NZO) Title 30 and 5919.

CAL GREEN CODE:

Construction Waste Management requirements of CRC R324.1 will be met. Recycle and/or salvage for reuse of the non-hazardous construction and demolition waste in accordance with CGBC Chapter 4, Division 4.4 (Cal Green Code)

Finish materials including adhesives, sealants, caulks, paints and coatings, aerosol paints and coatings shall meet the volatile organic compound (VOC) emission limits in accordance with CGBC Chapter 4, Division 4.5 (Cal Green Code)

NOTE: THIS PROJECT COMPLIES WITH THE MANDATORY CONSERVATION REQUIREMENTS UNDER THE 2019 CALIFORNIA ENERGY CODES.

NOTE: THIS PROJECT DOES NOT CONTAIN / REQUIRE A FIRE SPRINKLER SYSTEM. REMODEL IS LESS THAN 75% OF EXISTING FLOOR AREA.

A MINIMUM OF 65% OF THE CONSTRUCTION WASTE GENERATED AT THE SITE IS DIVERTED TO RECYCLE OR SALVAGE PER SECTION 4.408.1 AND CITY ORDINANCE. MARBORG INDUSTRIES TO PROVIDE WASTE AND RECYCLE REMOVAL.

BUILDING IS NOT SPRINKLERED - NO SPRINKLERS EXIST.

SCOPE OF WORK

ENF2015-00738 - Numerous Violations - Abated with BLD2018-00448

All items were individually itemized and listed on how they were to be abated - permit issued 9/23/20 - This includes removing the laundry sink and new driveway gates (that received SFDB consent approval.) Also in this permit (See drawings under BLD2018-00448) area behind driveway gates was permitted as concrete.

Due to proposed construction of link and remodel of separate building - final driveway materials to be finished at the completion of BLD2021-01003 - loose gravel has been removed leaving only a base for final finish, concrete ribbons are existing and larger apron at street has been installed. Final driveway finishes/inspection will complete ENF2015-00738

Finally, existing 1-car garage - is non-conforming and is located almost directly behind residence. Changing the use of the garage to habitable space and providing two uncovered parking spaces makes site parking more realistic.

(N) Link to connect (E) Residence to (E) Garage/Hobby Room - 70 sq. ft. gross, 63 sq. ft. net

Convert (E) Garage (Non-habitable) to Dining Room (Habitable) 292 sq. ft.

(N) Covered Patio: 100 sq. ft.

Interior Remodel: Add Powder Room to (E) second floor, Convert Hobby Room to Master Suite/Laundry/Sitting - 238 sq. ft.

Minor door and window changes.

972 Cubic ft. of covered storage at rear of property.

(N) Rain barrel - Tier 1

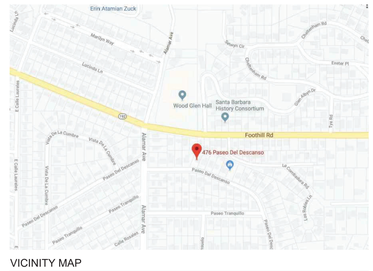
LIST OF DRAWINGS

ARCHITECTURAL

A1.0	Site Plan, Project Statistics, Vicinity Map, Site Photos and Scope of Work
G1	Residential Mandatory Measures
G2	Residential Mandatory Measures
A1.1	Existing/Demolition Plan - Upper and Lower Level
A2.0	Proposed Floor Plans - Upper and Lower Level and Door/Window Schedule
A3.0	Building Section, Details and Link Information
E1.0	Electrical Plans and Notes
T-24 (Page 1)	Title 24
T-24 (Page 2)	Title 24

STRUCTURAL

S001	General Notes
S002	Typical Details
S101	Foundation Plan
S102	Roof Framing Plan
S201	Foundation Details
S202	Roof Framing Details



VICINITY MAP

Revisions:	Date:
Zoning Plan Check Responses	2-1-22
Zoning Plan Check Responses	3-16-22
Zoning Plan Check Responses	4-17-22
SFDB Submittal	5-24-22

Owner/Builder:
Brogan and Rita Donahoe
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Email: brogan@donahoe.co
Email: rita.donahoe@gmail.com

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Cedar Structural
Mounir El-Koussa - Principal
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Santa Barbara, CA 93103
Tel. 805-455-6120
Email: mounir@cedarstructural.com

Energy Compliance:
NRG Compliance, Inc.
P.O. Box 3777 Santa
Rosa, Ca 95402 Tel:
Tel.: 707-237-6957

(N) BUILDING LINK, PATIO COVER AND INTERIOR REMODEL FOR:

Brogan and Rita Donahoe
476 Paseo Del Descanso
Santa Barbara, Ca.
Tel.: 805-779-1238
Email: brogan@donahoe.co
Email: rita.donahoe@gmail.com

Date: -

Scale: As Noted

Job: Donahoe

Sheet No.

A1.0

Instructions:
This checklist is to be used on an individual project basis and may be modified by the applicant to meet the needs of their specific project. The applicant shall strike out those sections that are not applicable to their project and indicate the location of where this information is located. The applicant and property owner assume all responsibility associated with the use of this document.

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

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

Y | N/A | RESPON. PARTY

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

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

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

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

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

SECTION 302 MIXED OCCUPANCY BUILDINGS

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

ABBREVIATION DEFINITIONS:

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

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

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

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

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

4.106 SITE DEVELOPMENT

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

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

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

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

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

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

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

Exception: Additions and alterations not altering the drainage path.

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

Exceptions:
1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   1.1 Where there is no commercial power supply.
   1.2 Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than $400.00 per dwelling unit.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

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

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

4.106.4.2 New multifamily dwellings. If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

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

4.106.4.2.1 Electric vehicle charging space (EV space) locations. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS) When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:

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

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

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

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

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
   a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

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

4.106.4.2.4 Multiple EV spaces required. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

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

4.106.4.3 New hotels and motels. All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.

Notes:

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

4.106.4.3.1 Number of required EV spaces. The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

TABLE 4.106.4.3.1

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

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

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

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

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

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

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

DIVISION 4.2 ENERGY EFFICIENCY

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

DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION

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

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

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

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

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

4.303.1.3 Showerheads.

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

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

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

4.303.1.4 Faucets.

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

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

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

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

TABLE - MAXIMUM FIXTURE WATER USE

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

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

NOTES:

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

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

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

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

Exceptions:

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

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

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

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

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

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

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

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

Notes:

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

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

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

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY

SECTION 4.501 GENERAL
4.501.1 Scope
The provisions of this chapter shall outline means of reducing the quality of air contaminants that are odorous, irritating and/or harmful to the comfort and well being of a building's installers, occupants and neighbors.

SECTION 4.502 DEFINITIONS
5.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

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

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

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

Revisions: Date:
- Zoning Plan Check Responses 2-1-22
- Zoning Plan Check Responses 3-16-22
- Zoning Plan Check Responses 4-17-22
- SFDB Submittal 5-24-22

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Email: brogan@donahoe.co
Email: rita.donahoe@gmail.com

Date: -
Scale: As Noted
Job: Donahoe

Sheet No.

G1

Instructions:
This checklist is to be used on an individual project basis and may be modified by the applicant to meet the needs of their specific project. The applicant shall strike out those sections that are not applicable to their project and indicate the location of where this information is located. The applicant and property owner assume all responsibility associated with the use of this document.

2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

RESIDENTIAL MANDATORY MEASURES, SHEET 2 (January 2020, Includes August 2019 Supplement)

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

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

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

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

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

4.503 FIREPLACES

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

4.504 POLLUTANT CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

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

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

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

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

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

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

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

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

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

4.505 INTERIOR MOISTURE CONTROL

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

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

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

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

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

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

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

4.506 INDOOR AIR QUALITY AND EXHAUST

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

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

Notes:

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

4.507 ENVIRONMENTAL COMFORT

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

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

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

CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

702 QUALIFICATIONS

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

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

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

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

Notes:

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

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

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

703 VERIFICATIONS

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

Revisions:	Date:
Zoning Plan Check Responses	2-1-22
Zoning Plan Check Responses	3-16-22
Zoning Plan Check Responses	4-17-22
SFDB Submittal	5-24-22

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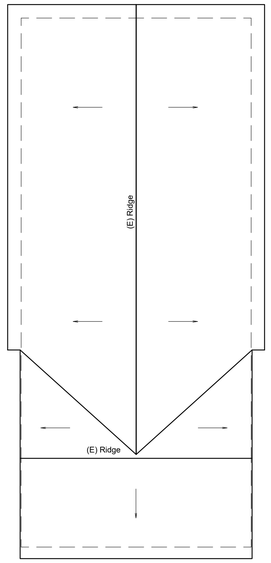
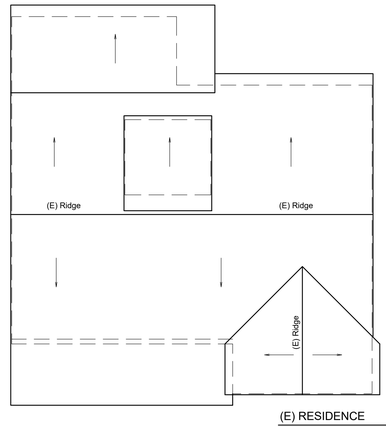
Date: -
Scale: As Noted
Job: Donahoe

Sheet No.
G2



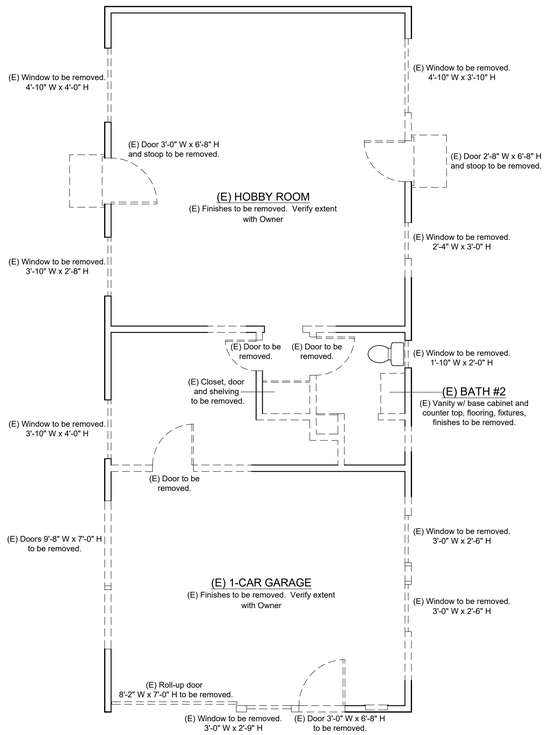
(E) GARAGE/HOBBY



(E) RESIDENCE

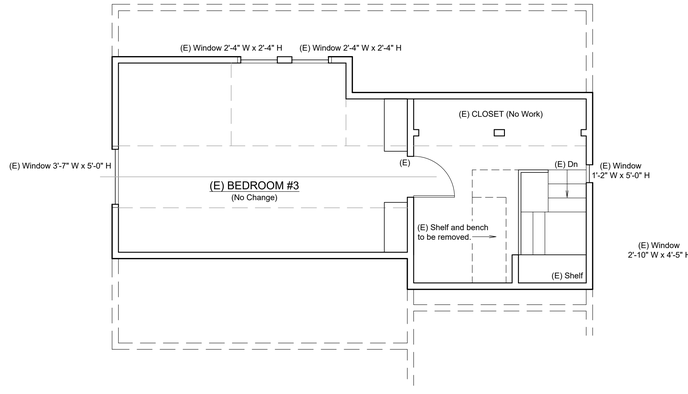
Existing Roof Plans

3/16" = 1'-0"



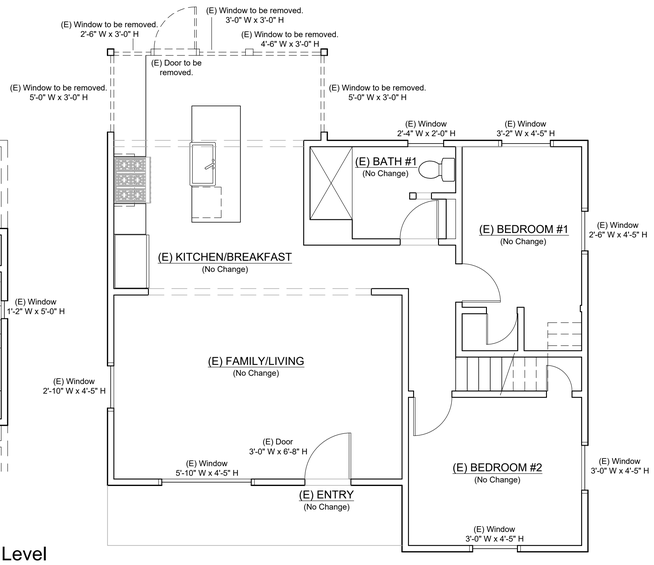
Existing/Demolition Plan - Garage and Hobby Room

1/4" = 1'-0"



Existing/Demolition Floor Plan - Residence - Upper Level

1/4" = 1'-0"



Existing/Demolition Floor Plan - Residence - Lower Level

1/4" = 1'-0"

Legend:

(E) Walls, doors and fixtures to be removed.

Revisions:	Date:
Zoning Plan Check Responses	2-1-22
Zoning Plan Check Responses	3-16-22
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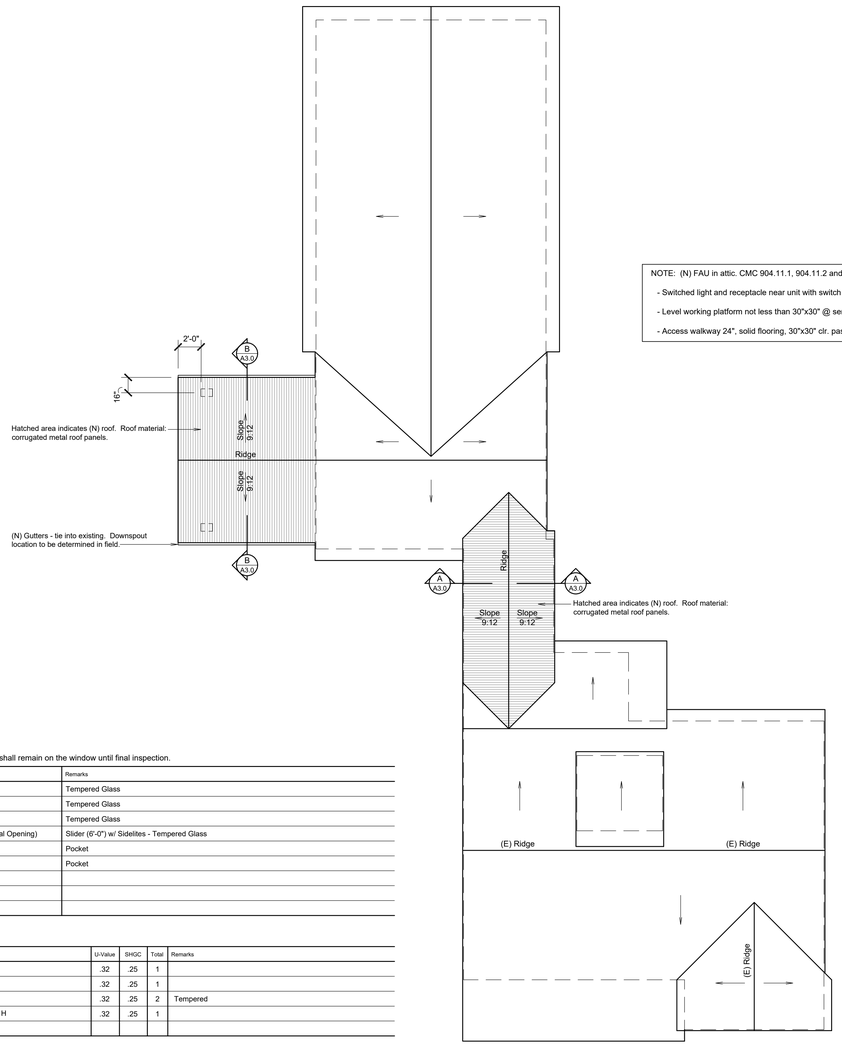
Date: -

Scale: As Noted

Job: Donahoe

Sheet No.

A1.1



Door Schedule

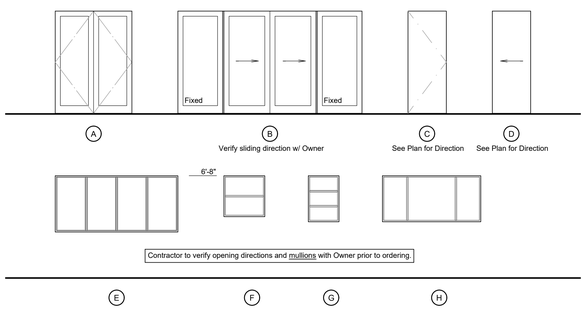
NOTE: * NFRC thermal performance labels shall remain on the window until final inspection.

Symbol	Location	Type	Height	Width	Remarks
1	LINK/HALLWAY #1	A	6'-8"	Pr. 2'-6"	Tempered Glass
2	LINK/HALLWAY #1	A	6'-8"	Pr. 2'-6"	Tempered Glass
3	MASTER BEDROOM	A	6'-8"	Pr. 2'-6"	Tempered Glass
4	DINING	B	6'-8"	12'-0" (Total Opening)	Slider (6'-0") w/ Sidelites - Tempered Glass
5	MASTER CLOSET	D	6'-8"	2'-6"	Pocket
6	MASTER BATH	D	6'-8"	2'-6"	Pocket
7	SITTING	C	6'-8"	2'-6"	
8	LAUNDRY	C	6'-8"	2'-6"	

Window Schedule

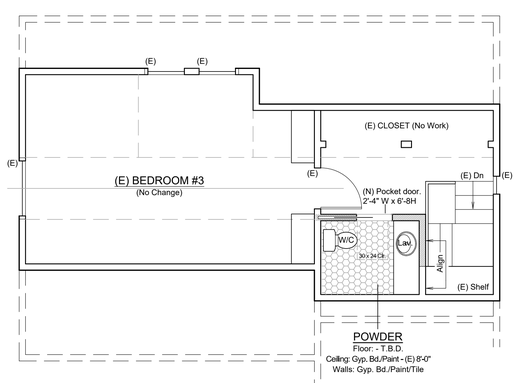
Symbol	Location	Type	Size	U-Value	SHGC	Total	Remarks
A	DINING	E	8'-0" W x 44" H	.32	.25	1	
B	MASTER CLOSET	F	2'-8" W x 32" H	.32	.25	1	
C	MASTER BATH, LAUNDRY	G	24" W x 36" H	.32	.25	2	Tempered
D	KITCHEN	H	5'-9" W (Verify) x 36" H	.32	.25	1	

Door/Window Elevations



Proposed Roof Plan

3/16" = 1'-0"

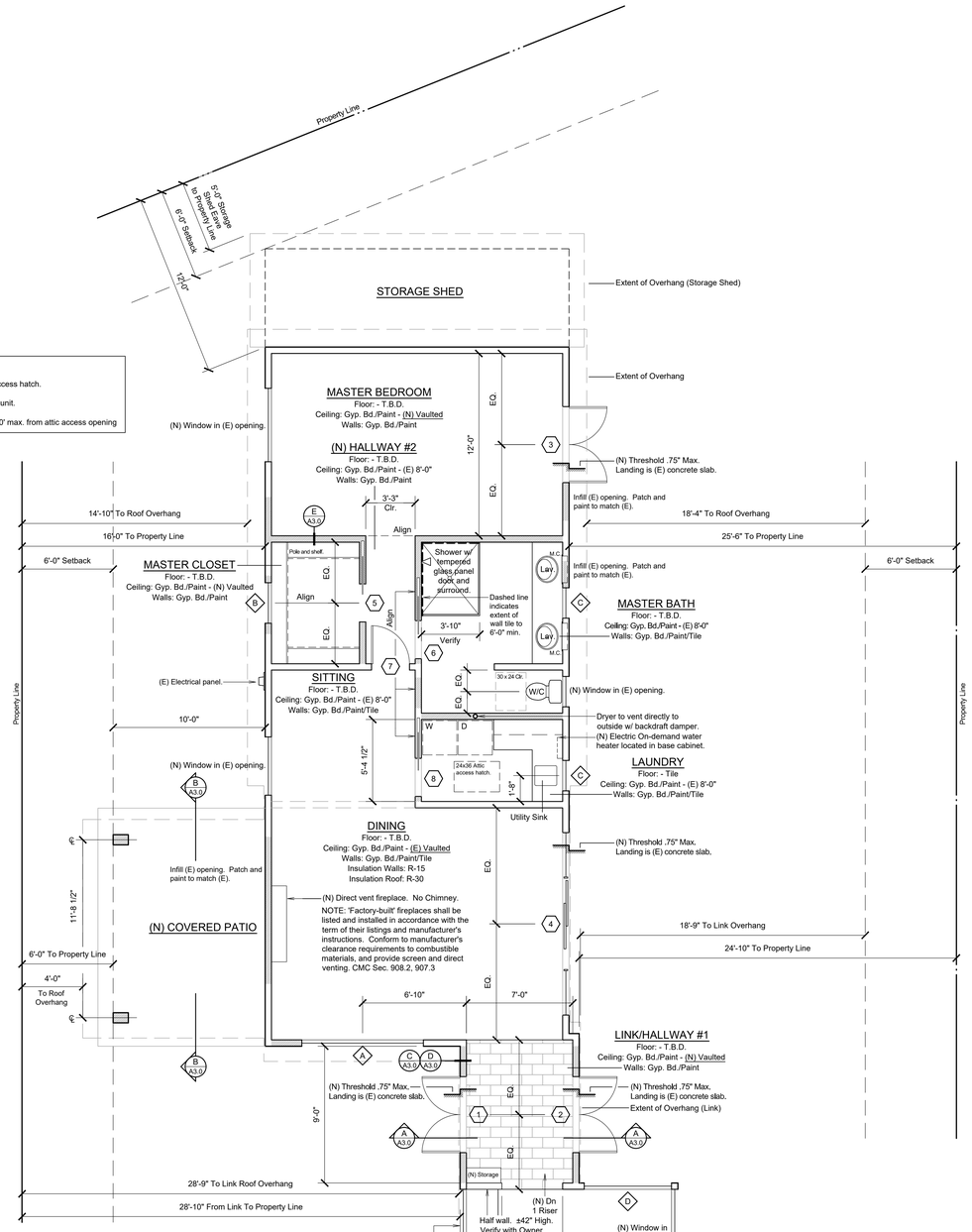


Proposed Floor Plan - Upper Level

1/4" = 1'-0"

NOTE: (N) FAU in attic. CMC 904.11.1, 904.11.2 and 904.11.3

- Switched light and receptacle near unit with switch near attic access hatch.
- Level working platform not less than 30"x30" @ service side of unit.
- Access walkway 24", solid flooring, 30"x30" clr. passageway, 20' max. from attic access opening



Proposed Floor Plan - Lower Level

1/4" = 1'-0"

Legend

(E) Walls to remain.

(N) 2x4 D.F. Studs @ 16" o.c. 5/8" Type "x" gyp. bd. Ea. side Typ. (U.N.O.)

Notes:

- All Dimensions to Finish U.N.O.
- Verify Existing and New Dimensions @ Job site
- Do Not Scale Drawings (dimensions governs)
  (E) Existing (N) New (F.O.S.) Face of Studs
- Report Structural issues during exploratory initial demolition.
- These drawings remain incomplete until such time as Owner makes all necessary Product, Equipment, Material, Finish Selections, such as those noted on the schedule "Notes" and any new information as required by the Contractor.

NOTE:
Non-compliant plumbing fixtures to be replaced with water-conserving plumbing fixtures. Non-compliant plumbing fixtures are as follows: (1) any toilet manufactured to use more than 1.6 gallons of water per flush, (2) showerhead manufactured to have a flow capacity of more than 2.5 gallons of water per minute, (3) any interior faucet that emits more than 2.2 gallons of water per minute. (CGBSC 301: California Civil Code Section 1101.1)

Water closets, showerheads and lavatory faucets are to be water-conserving type plumbing fixtures and meet the following criteria:

- the effective flush of water closets shall not exceed 1.28 gallons per flush
- showerheads shall have a maximum flow rate of 1.8 gallons per minute at 80 psi.
- lavatory faucets shall have a maximum flow rate of 1.2 gallons per minute at 60 psi and shall have a minimum flow rate of 0.8 gallons per minute at 20 psi.

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

When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be operation at a time. (Note: A hand-held shower is to be considered a showerhead for purposes of this provision.) (CGBSC 4.303)

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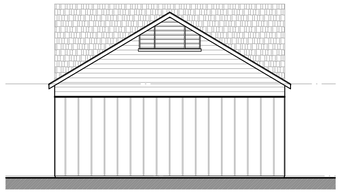
A2.0

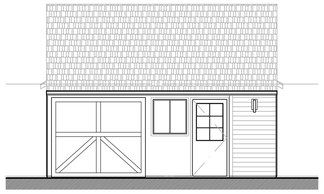


Existing Elevation - North

3/16" = 1'-0"

Existing Elevation - East

3/16" = 1'-0"

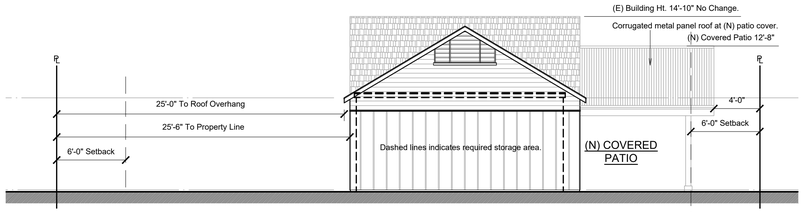


Existing Elevation - South

3/16" = 1'-0"

Existing Elevation - West

3/16" = 1'-0"

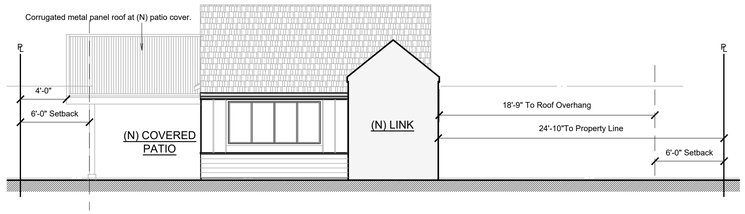


Proposed Elevation - North

3/16" = 1'-0"

Proposed Elevation - East

3/16" = 1'-0"

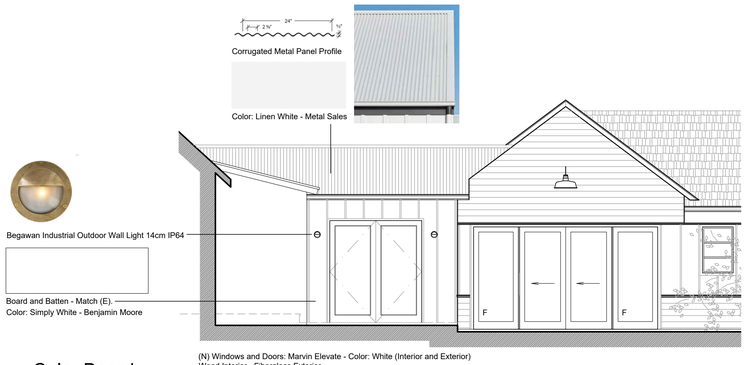


Proposed Elevation - South

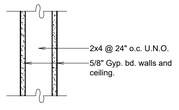
3/16" = 1'-0"

Proposed Elevation - West

3/16" = 1'-0"

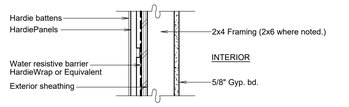


Color Board



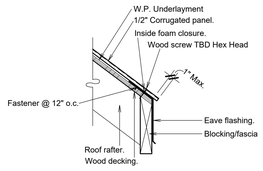
E - Typical Wall Section

Scale 1-1/2" = 1'-0"



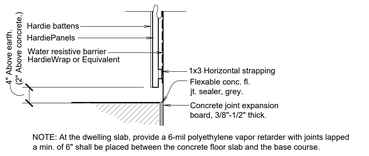
C - Exterior Wall Section

Scale 1-1/2" = 1'-0"



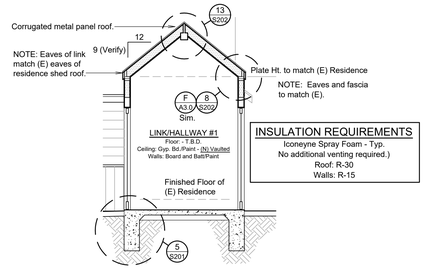
F - Eave Detail

Scale 1-1/2" = 1'-0"



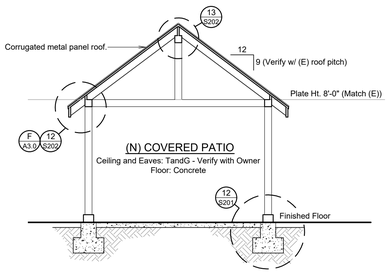
D - Weep Screed

Scale 1-1/2" = 1'-0"



A - Building Section

1/4" = 1'-0"



B - Building Section

1/4" = 1'-0"

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A3.0

Electrical Notes

1. All installed lighting must be high efficacy per table 150.0-A. 2019 California Energy Code Table 150.0

2. Lighting in Bathrooms: All lighting shall be high efficacy and at least one fixture in each bathroom shall be controlled by a vacancy sensor. California Energy Code 150(k) 5

3. Lighting in Garages, Laundry Rooms, closets and Utility Rooms: All lighting shall be high efficacy and at least one light fixture installed in Garages, Closets, Laundry Rooms and Utility rooms shall be controlled by a vacancy sensor. California Energy Code 150(k)2.J

4. Lighting in rooms other than Bathrooms, Garages, Laundry Rooms and Utility rooms: Permanently installed lights in rooms other than Restrooms, Garages, Laundry Rooms and Utility rooms shall be High Efficacy Luminaries. California Energy Code 150(k)7

5. Recessed Luminaries in Insulated Ceilings: Luminaries recessed into insulated ceilings shall not contain screw base sockets and shall be approved for zero clearance insulation cover (IC) by U.L. or other testing lab recognized by Building Official, and shall be certified air tight to show air leakage less than 2.0 CFM at 0.11 psi in accordance with ASTM E283, and sealed with a gasket or caulk between housing and ceiling. California Energy Code 150(k)

6. Screw Based Sockets: Luminaries with screw based sockets shall meet the following requirements:
   The luminaries shall not be a recessed down-light in a ceiling: and
   The luminaries shall contain lams that comply with Reference Joint Appendix JA8: and
   The installed lamps shall be marked with "JA8-2016" or "JA8-2016-E" as specified in Reference Joint Appendix JA8.

7. Dimmers or vacancy sensors shall control all luminaries required to have light sources compliant with Reference Joint Appendix JA8.

8. Outdoor lighting: Permanently installed outdoor lights on buildings on the same lot shall be High Efficacy and they shall be controlled by a motion sensor with integral photocontrol certified to comply with the 2016 California Energy Code. California Energy Code 150(k) 9A

9. Bathroom Exhaust Vent - ASHRAE 62.2

   - Fan to deliver ventilation airflow at 50 or more cfm for each bathroom.
   - Ceiling mounted intermittent local ventilation fans to have a sound rating of three sones or less at the the required airflow rate.
   - Vent fans must be witched separately from lighting. 2016 California Energy Code 150(k)2B

10. Closet lighting shall maintain 12" clearance horizontally and vertically from combustible materials and shall be completely enclosed.

11. All 120-volt, single phase, 15 and 20 ampere branch circuits supplying outlets installed in dwelling unit family room, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways or similar rooms or areas shall be protected by a listed arc-fault/branch circuit interrupter, combination type, installed to provide protection of the branch circuit. (C.E.C. Sect. 210.12(B))

12. Light fixtures within a shower or bathtub area shall be recessed and rated for wet locations.
    Light fixture - Iris Shower/Lensed Element: Dropped 5.25 Aperture 5/32T Luna Platform 15-3/4"L x 10"W x 9" H
    Max Lamp 32 Pit, TTT or TBX or equal.

13. Kitchen hood to deliver ventilation airflow at 100 or more cfm. ASHRAE 62.2

14. All 125-volt, 15 and 20 ampere receptacles in a dwelling unit shall be listed tamper-resistant receptacles.

15. Overcurrent devices shall not be located in closets or bathrooms.

16. Tamper resistant outlets shall be provided in all remodeled and new areas.

17. Bathroom receptacle and laundry receptacle outlets shall be supplied by at least one 20-ampere, dedicated branch circuit. Such circuits shall have no other outlets (CEC 210.11(C)(3)) Bathroom basin receptacle outlet shall be installed within 36" of the outside edge of the basin (CEC 210.52(D)) Receptacle outlets shall not be installed in a face-up position in the counter-tops or work area in a bathroom basin location. (CEC 210.52(D))

18. Ground fault circuit interrupter (GFCI) protection shall be provided for all receptacles that serve bathrooms, kitchen countertop work areas, garages, exterior locations, utility rooms and wet bar sinks (CEC article 210-8)

19. Kitchens are required to be AFCI and GFCI protected.

20. All branch circuits that supply 120-volt, single phase, 15 and 20 ampere branch circuits supplying outlets or devices installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry rooms or similar rooms or areas shall be protected by an arc-fault circuit interrupter(s). 2019 CEC 210.12(A) & (B).

Branch Circuit Extensions or Modifications - Dwelling Units

In any of the areas specified in 210.12(A), where branch circuit wiring is modified, replaced or extended, the branch circuit shall be protected by one of the following:
- A listed combination - type AFCI located at the origin of the Branch circuit
  or
- A listed outlet branch-circuit type AFCI located at the first receptacle outlet of the existing branch circuit.

NEC 210.12 (D) Branch Circuit Extensions or Modifications — Dwelling Units and Dormitory Units. In any of the areas specified in 210.12(A) or (B), where branch-circuit wiring is modified, replaced, or extended, the branch circuit shall be protected by one of the following:

(1) A listed combination-type AFCI located at the origin of the branch circuit

(2) A listed outlet branch-circuit-type AFCI located at the first receptacle outlet of the existing branch circuit

Exception: AFCI protection shall not be required where the extension of the existing conductors is not more than 1.8 m (6 ft) and does not include any additional outlets or devices.

To address potential existing wiring system obstacles to providing some level of AFCI protection, the NEC provides the option of installing a combination-type device at the point where the branch circuit originates (as required for new branch-circuit installations) or of installing an outlet branch-circuit-type AFCI at the first receptacle outlet in the branch circuit.

NOTE: When an addition or alteration valuation exceeds $1,000.00, **smoke detectors** are required to be installed in existing sleeping rooms and areas providing access to sleeping areas in addition to those required for new construction (CRC R314.6). Unless the repair or remodel does not involve the removal of wall and ceiling finishes and there is no means of access by means of an attic, basement, or crawlspace, alarms are to be interconnected with battery backup such that activation of one alarm shall activate all of the alarms in that individual unit. They are to be provided:

- In each sleeping room(s).
- On the wall or ceiling outside each separate sleeping area in the immediate vicinity of the bedrooms.
- Minimum of (1) detector in each story including basements and habitable attics (with alarm audible in sleeping rooms).

SMOKE ALARMS:

- Shall be placed a minimum of 20 feet horizontally from a permanently installed cooking appliance unless listed for that use (Exceptions: Ionization smoke alarms with an alarm silencing switch or photoelectric smoke alarms may be installed 10 feet or greater from a permanently installed cooking appliance; photoelectric smoke alarms may be installed 6 feet or greater from a permanently installed cooking appliance where the kitchen or cooking area and adjacent spaces have no clear interior partitions and the 10 foot distance would prohibit the placement of a smoke alarm or smoke detector required by other sections of the code)
- Shall, where possible, not be placed within 3 feet horizontally of a door to a bathroom that contains a bathtub or a shower
- Where stairs lead to other occupied levels, shall be located so that smoke rising in the stairway cannot be prevented from reaching the smoke alarm or smoke detector by an intervening door or obstruction
- For basements shall be located on the basement ceiling near the entry to the stairs
- For tray-shaped ceilings (coffered ceilings), shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 inches vertically down from the highest point
- For sloped ceilings with beams running up the slope, shall be placed on the ceiling between beams
- For sloped ceilings with beams running parallel to the ridge or for sloped ceilings with beam pockets formed by intersecting beams, shall be located at the bottom of the beam

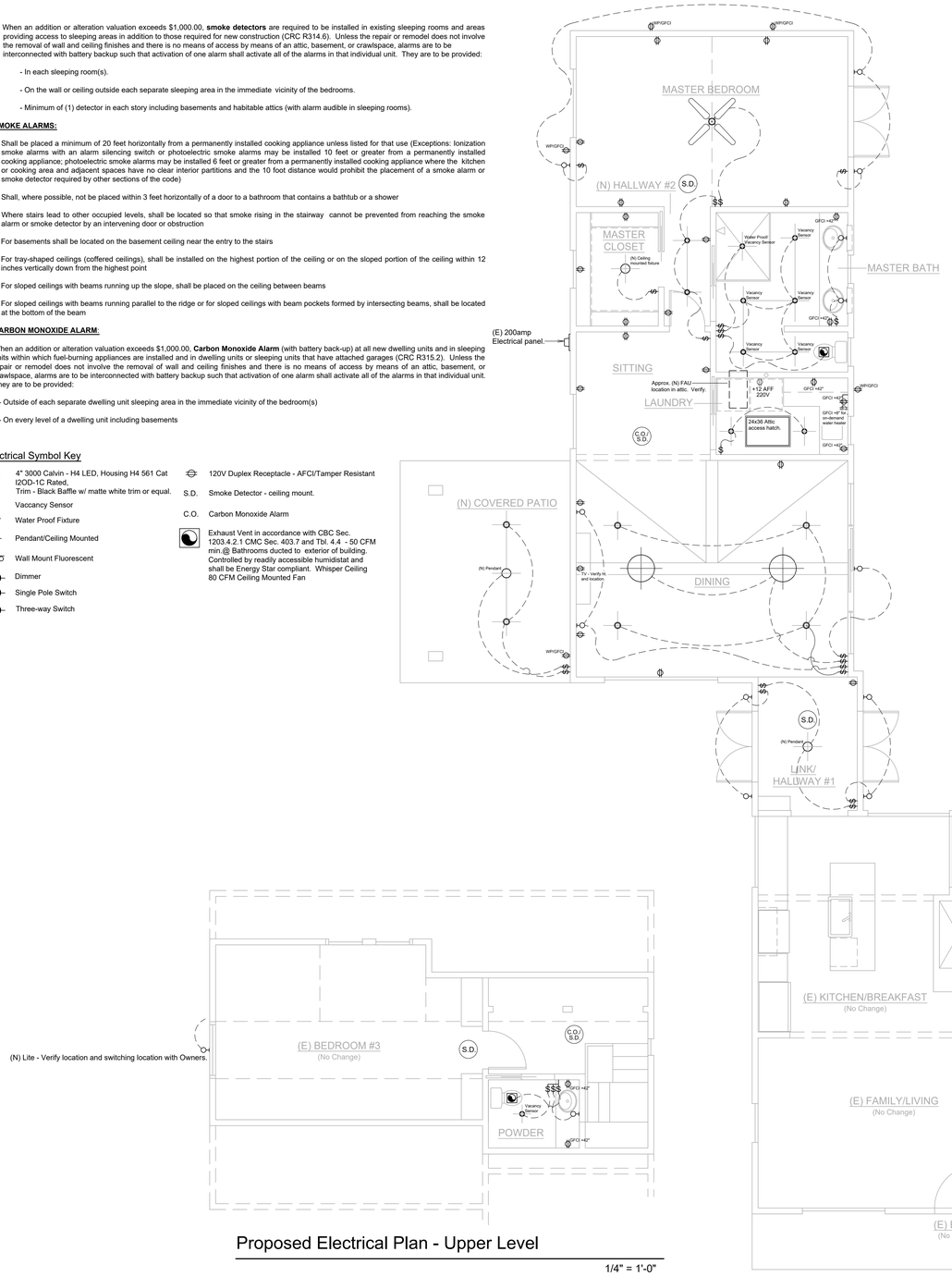
CARBON MONOXIDE ALARM:

When an addition or alteration valuation exceeds $1,000.00, **Carbon Monoxide Alarm** (with battery back-up) at all new dwelling units and in sleeping units within which fuel-burning appliances are installed and in dwelling units or sleeping units that have attached garages (CRC R315.2). Unless the repair or remodel does not involve the removal of wall and ceiling finishes and there is no means of access by means of an attic, basement, or crawlspace, alarms are to be interconnected with battery backup such that activation of one alarm shall activate all of the alarms in that individual unit. They are to be provided:

- Outside of each separate dwelling unit sleeping area in the immediate vicinity of the bedroom(s)
- On every level of a dwelling unit including basements

Electrical Symbol Key

	4" 3000 Calvin - H4 LED, Housing H4 561 Cat I2OD-1C Rated, Trim - Black Baffle w/ matte white trim or equal.		120V Duplex Receptacle - AFCI/Tamper Resistant
VC	Vaccancy Sensor	S.D.	Smoke Detector - ceiling mount.
WP	Water Proof Fixture	C.O.	Carbon Monoxide Alarm
	Pendant/Ceiling Mounted		Exhaust Vent in accordance with CBC Sec. 1203.4.2.1 CMC Sec. 403.7 and Tbl. 4.4 - 50 CFM min.@ Bathrooms ducted to exterior of building. Controlled by readily accessible humidistat and shall be Energy Star compliant. Whisper Ceiling 80 CFM Ceiling Mounted Fan
	Wall Mount Fluorescent		
	Dimmer		
	Single Pole Switch		
	Three-way Switch		



Proposed Electrical Plan - Upper Level

1/4" = 1'-0"

Proposed Electrical Plan - Lower Level

1/4" = 1'-0"

NOTE: Outdoor HID high efficacy luminaries contain only high efficacy lamps as outlined in Table 150-C of the residential energy code and has a factory installed HID ballast.

NOTE: Verify location of all new light fixtures and electrical outlets. Electrical and Mechanical shall comply with current codes.

NOTE: Permanently installed light fixtures in all rooms to be high efficiency

NOTE: Verify switch location and order with Owner.

NOTE: Dwelling units shall have receptacles located 12 ft. o.c. maximum, and 6 ft. from the end of a wall. CEC 210.52(D)

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NRG Compliance, Inc.
P.O. Box 3777 Santa
Rosa, Ca 95402 Tel:
Tel.: 707-237-6957

(N) BUILDING LINK, PATIO COVER AND INTERIOR REMODEL FOR:

Brogan and Rita Donahoe
476 Paseo Del Descanso
Santa Barbara, Ca.
Tel.: 805-779-1238
Email: brogan@donahoe.co
Email: rita.donahoe@gmail.com

Date: -
Scale: As Noted
Job: Donahoe
Sheet No.

T24
(Page 1)

GENERAL INFORMATION					
01	Project Name	Residential Building			
02	Run Title	Title 24 Analysis			
03	Project Location	476 Paseo Del Descanso			
04	City	Santa Barbara	05	Standards Version	2019
06	Zip code	93105	07	Software Version	CBECC-Res 2019.1.3
08	Climate Zone	6	09	Front Orientation (deg/ Cardinal)	225
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	AdditionAlteration	13	Number of Bedrooms	4
14	Addition Cond. Floor Area (ft^2)	985	15	Number of Stories	2
16	Existing Cond. Floor Area (ft^2)	1286	17	Fenestration Average U-factor	0.32
18	Total Cond. Floor Area (ft^2)	2271	19	Glazing Percentage (%)	18.75%
20	ADU Bedroom Count	n/a	21	ADU Conditioned Floor Area	n/a
22	Is Natural Gas Available?	Yes			

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

ENERGY USE SUMMARY

Energy Use (kTDV/ft^2-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	23.49	21.5	1.99	8.5
Space Cooling	16.34	18.29	-1.95	-11.9
IAQ Ventilation	0	0	0	
Water Heating	11.02	11.02	0	0
Self Utilization/Flexibility Credit	n/a	0	0	n/a
Compliance Energy Total	**50.85**	**50.81**	**0.04**	**0.1**

REQUIRED SPECIAL FEATURES

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

- New ductwork added is less than 40 ft. in length

HERS FEATURE SUMMARY

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

Building-level Verifications:
- -- None --

Cooling System Verifications:
- -- None --

Heating System Verifications:
- -- None --

HVAC Distribution System Verifications:
- Duct leakage testing
- Duct Sealing required if a duct system component, plenum, or air handling unit is altered

Domestic Hot Water System Verifications:
- -- None --

BUILDING - FEATURES INFORMATION						
01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft^2)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Residential Building	2271	1	4	3	0	2

ZONE INFORMATION						
01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
First Floor	Conditioned	New HVAC System1	985	9	DHW Sys 1	DHW Sys 2
Second Floor	Conditioned	Existing HVAC System2	443	8	DHW Sys 1	DHW Sys 2
First Floor (Existing)	Conditioned	Existing HVAC System2	843	8	DHW Sys 1	DHW Sys 2

OPAQUE SURFACES										
01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Southwest Wall	First Floor	R-15 Wall	225	Front	115.6	29.4	90	Ex. w/ Siding	New	n/a
Northwest Wall	First Floor	R-15 Wall	315	Left	130.8	33.4	90	none	New	n/a
Northwest Wall 2	First Floor	R-15 Wall	315	Left	368	35.1	90	Ex. w/ Siding	New	n/a
Northeast Wall	First Floor	R-15 Wall	45	Back	180	0	90	Ex. w/ Siding	New	n/a
Southeast Wall	First Floor	R-15 Wall	135	Right	498.8	33.4	90	none	New	n/a
Southeast Wall 2	First Floor	R-15 Wall	135	Right	368	131.3	90	Ex. w/ Siding	New	n/a
Northwest Wall 3	Second Floor	Default Wall Prior to 197	315	Left	120	17.9	90	none	Existing	No
Northeast Wall 2	Second Floor	Default Wall Prior to 197	45	Back	125.4	10.9	90	none	Existing	No
Southeast Wall 3	Second Floor	Default Wall Prior to 197	135	Right	120	5.8	90	none	Existing	No
Southwest Wall 2	First Floor (Existing)	Default Wall Prior to 197	225	Front	251.6	59	90	none	Existing	No
Northwest Wall 4	First Floor (Existing)	Default Wall Prior to 197	315	Left	257.5	27.5	90	none	Existing	No
Northeast Wall 3	First Floor (Existing)	Default Wall Prior to 197	45	Back	195	38	90	none	Existing	No
Southeast Wall 4	First Floor (Existing)	Default Wall Prior to 197	135	Right	257.5	24.2	90	none	Existing	No
Interior Surface Wall (At	Second Floor>>Attic Second Floor	Default Wall Prior to 1971	n/a	n/a	395.7	0	n/a		Existing	No
Roof (Slope 11/12)	First Floor	R-30 Roof Attic	n/a	n/a	410	n/a	n/a		New	n/a
Roof (Slope 11/12) 2	Second Floor	Default Roof Prior to 197	n/a	n/a	443	n/a	n/a		Existing	No

OPAQUE SURFACES										
01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Roof (Slope 11/12) 3	First Floor (Existing)	Default Roof Prior to 197	n/a	n/a	400	n/a	n/a		Existing	No
Interior Surface Floor	Second Floor	Default Floor No Crawlspa	n/a	n/a	443	n/a	n/a		Existing	No

OPAQUE SURFACES - CATHEDRAL CEILINGS													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Zone	Construction	Azimuth	Orientation	Area (ft^2)	Skylight Area (ft^2)	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Cool Roof	Status	Verified Existing Condition	Existing Construction
Roof (Vaulted)	First Floor	R-30 Roof No Attic	225	Front	575	0	11	0.1	0.85	No	New	n/a	

ATTIC									
01	02	03	04	05	06	07	08	09	10
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition
Attic First Floor	Attic RoofFirst Floor	Ventilated	11	0.1	0.85	No	No	New	n/a
Attic Second Floor	Attic RoofSecond Floor	Ventilated	11	0.1	0.85	No	No	Existing	No
Attic First Floor (Existing)	Attic RoofFirst Floor (Existing)	Ventilated	11	0.1	0.85	No	No	Existing	No

FENESTRATION / GLAZING															
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Window	Window	Southwest Wall	Front	225			1	29.4	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a

FENESTRATION / GLAZING															
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Window 2	Window	Northwest Wall	Left	315			1	33.4	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a
Window 3	Window	Northwest Wall 2	Left	315			1	35.1	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a
Window 4	Window	Southeast Wall	Right	135			1	33.4	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a
Window 5	Window	Southeast Wall 2	Right	135			1	131.3	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a
Window 6	Window	Northwest Wall 3	Left	315			1	17.9	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
Window 7	Window	Northeast Wall 2	Back	45			1	10.9	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
Window 8	Window	Southeast Wall 3	Right	135			1	5.8	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
Window 9	Window	Southwest Wall 2	Front	225			1	39	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
Window 10	Window	Northwest Wall 4	Left	315			1	12.5	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
Window (New)	Window	Northwest Wall 4	Left	315			1	15	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a
Window 11	Window	Northeast Wall 3	Back	45			1	18.8	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
Window (New) 2	Window	Northeast Wall 3	Back	45			1	19.2	0.32	NFRC	0.25	NFRC	Bug Screen	New	n/a
Window 12	Window	Southeast Wall 4	Right	135			1	24.2	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No

OPAQUE DOORS					
01	02	03	04	05	06
Name	Side of Building	Area (ft^2)	U-factor	Status	Verified Existing Condition
Door	Southwest Wall 2	20	0.5	Existing	No

SLAB FLOORS									
01	02	03	04	05	06	07	08	09	10
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated	Status	Verified Existing Condition
Slab	First Floor	985	150.8	none	0	80%	No	New	n/a
Slab 2	First Floor (Existing)	843	127.3	none	0	80%	No	Existing	No

OPAQUE SURFACE CONSTRUCTIONS							
01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.089	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: Wood Siding/sheathing/decking
Default Wall Prior to 197	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.302	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: Wood Siding/sheathing/decking

OPAQUE SURFACE CONSTRUCTIONS							
01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-30 Roof No Attic	Cathedral Ceilings	Wood Framed Ceiling	2x10 @ 24 in. O. C.	R-30	None / None	0.035	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-30 / 2x10 Inside Finish: Gypsum Board
Default Wall Prior to 1971	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.277	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Other Side Finish: Gypsum Board
Attic RoofFirst Floor	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Attic RoofSecond Floor	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Attic RoofFirst Floor (Existing)	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
R-30 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board
Default Roof Prior to 197	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-11	None / None	0.083	Over Ceiling Joists: R-1.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

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

BUILDING ENVELOPE - HERS VERIFICATION			
01	02	03	04
Quality Insulation Installation (QII)	High R-value Spray Foam Insulation	Building Envelope Air Leakage	CFM50
Not Required	Not Required	Not Required	n/a

WATER HEATING SYSTEMS									
01	02	03	04	05	06	07	08	09	10
Name	System Type	Distribution Type	Water Heater Name (#)	Solar Heating System	Compact Distribution	HERS Verification	Status	Verified Existing Condition	Existing Water Heating System
DHW Sys 1	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater 1 (1)	n/a	None	n/a	New	NA	
DHW Sys 2	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater 2 (1)	n/a	None	n/a	Existing	No	

WATER HEATERS													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Heating Element Type	Tank Type	# of Units	Tank Vol. (gal)	Energy Factor or Efficiency	Input Rating or Pilot	Tank Insulation R-value (Int/Ext)	Standby Loss or Recovery Eff	1st Hr. Rating or Flow Rate	NEEA Heat Pump Brand or Model	Tank Location or Ambient Condition	Status	Verified Existing Condition
DHW Heater 1	Gas	Consumer Instantaneous	1	0	0.82-UEF	<= 200 kBtu/hr	0	n/a	n/a	n/a	n/a	New	
DHW Heater 2	Gas	Small Instantaneous	1	0.1	0.82-EF	<= 200 kBtu/hr	0	80	n/a	n/a	n/a	Existing	No

WATER HEATING - HERS VERIFICATION							
01	02	03	04	05	06	07	08
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Central DHW Distribution	Shower Drain Water Heat Recovery
DHW Sys 1 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required	Not Required
DHW Sys 2 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required	Not Required

SPACE CONDITIONING SYSTEMS										
01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Heating Equipment Count	Cooling Equipment Count
New HVAC System1	Heating and cooling system other	Heating Component 1	Cooling Component 1	HVAC Fan 1	Air Distribution System 1	Setback	New	No	1	1
Existing HVAC System2	Heating and cooling system other	Heating Component 2	Cooling Component 2	HVAC Fan 2	Air Distribution System 2	n/a	Existing	No	1	1

HVAC - HEATING UNIT TYPES			
01	02	03	04
Name	System Type	Number of Units	Heating Efficiency
Heating Component 1	Central gas furnace	1	AFUE-92
Heating Component 2	Central gas furnace	1	AFUE-78

HVAC - COOLING UNIT TYPES							
01	02	03	04	05	06	07	08
Name	System Type	Number of Units	Efficiency EER/CEER	Efficiency SEER	Zonally Controlled	Mulit-speed Compressor	HERS Verification
Cooling Component 1	No Cooling	1	n/a	n/a	Not Zonal	Single Speed	n/a
Cooling Component 2	No Cooling	1	n/a	n/a	Not Zonal	Single Speed	n/a

HVAC - DISTRIBUTION SYSTEMS															
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
			Duct Ins. R-value		Duct Location		Surface Area								
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts 40 ft
Air Distribution System 1	Unconditioned attic	Non-Verified	R-6	R-6	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Air Distribution System 1-hers-dist	New	n/a	n/a	n/a
Air Distribution System 2	Unconditioned attic	Non-Verified	R-4.2	R-4.2	Attic	Attic	n/a	n/a	No Bypass Duct	Existing (not specified)	Air Distribution System 2-hers-dist	Existing + New	No	n/a	n/a

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

HVAC - FAN SYSTEMS			
01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
HVAC Fan 1	HVAC Fan	0.45	n/a

HERS RATER VERIFICATION OF EXISTING CONDITIONS

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Mario Bertacco	Documentation Author Signature: *Mario Bertacco*
Company: NRG Compliance LP	Signature Date: 04/23/2021
Address: PO Box 3777	CEA/ HERS Certification Identification (If applicable):
City/State/Zip: Santa Rosa, CA 95402	Phone: 707-237-6957

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

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

Responsible Designer Name: Amy Von Protz	Responsible Designer Signature: *Amy Von Protz*
Company: AVP Drafting	Date Signed: 04/23/2021
Address: 217 San Napoli Drive	License:
City/State/Zip: Goleta, CA 93117	Phone: (805) 722-0381

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

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type	Date
Donahoe, Brogan & Rita Addition	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	4/23/2021

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Units
476 Paseo Del Descanso Santa Barbara	CA Climate Zone 06	2,271	985	1

INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Wall	Wood Framed	R 15	86		New
Wall	Wood Framed	R 15	563		New
Wall	Wood Framed	R 15	333		New
Wall	Wood Framed	R 15	180		New
Wall	Wood Framed	R 15	237		New
Roof	Wood Framed Attic	R 30	410		New
Roof	Wood Framed Rafter	R 30	575		New
Slab	Unheated Slab-on-Grade	- no insulation	985	Perim = 151'	New

FENESTRATION Total Area: 426 Glazing Percentage: 18.8 % New/Altered Average U-Factor: 0.32

Orientation	Area(ft²)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status
Front (SW)	29.4	0.320	0.25	none	none	N/A	New
Left (NW)	83.5	0.320	0.25	none	none	N/A	New
Right (SE)	164.7	0.320	0.25	none	none	N/A	New
Left (NW)	30.4	0.580	0.65	none	none	N/A	Existing
Rear (NE)	29.7	0.580	0.65	none	none	N/A	Existing
Right (SE)	30.0	0.580	0.65	none	none	N/A	Existing
Front (SW)	39.0	0.580	0.65	none	none	N/A	Existing
Rear (NE)	19.2	0.320	0.25	none	none	N/A	New

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	92% AFUE	No Cooling	14.0 SEER	Setback	New
1	Central Furnace	78% AFUE	No Cooling	14.0 SEER	Setback	Existing

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
New HVAC System	Ducted	Ducted	Attic	6.0	New
Existing HVAC System	Ducted	Ducted	Attic	6.0	Altered

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status
1	Small Instantaneous Gas	0	0.82	Standard	New

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type	Date
Donahoe, Brogan & Rita Addition	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	4/23/2021

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Units
476 Paseo Del Descanso Santa Barbara	CA Climate Zone 06	2,271	985	1

INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Wall	Wood Framed	- no insulation	102		Existing
Wall	Wood Framed	- no insulation	115		Existing
Wall	Wood Framed	- no insulation	114		Existing
Roof	Wood Framed Attic	R 11	443		Existing
Demising	Wood Framed	- no insulation	396		Existing
Demising	Wood Framed w/o Crawl Space	- no insulation	443		Existing
Wall	Wood Framed	- no insulation	193		Existing
Door	Opaque Door	- no insulation	20		Existing

FENESTRATION Total Area: 426 Glazing Percentage: 18.8 % New/Altered Average U-Factor: 0.32

Orientation	Area(ft²)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status

HVAC SYSTEMS

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

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type	Date
Donahoe, Brogan & Rita Addition	☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	4/23/2021

Project Address	California Energy Climate Zone	Total Cond. Floor Area	Addition	# of Units
476 Paseo Del Descanso Santa Barbara	CA Climate Zone 06	2,271	985	1

INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Wall	Wood Framed	- no insulation	230		Existing
Wall	Wood Framed	- no insulation	157		Existing
Wall	Wood Framed	- no insulation	233		Existing
Roof	Wood Framed Attic	R 11	400		Existing
Slab	Unheated Slab-on-Grade	- no insulation	843	Perim = 127'	Existing

FENESTRATION Total Area: 426 Glazing Percentage: 18.8 % New/Altered Average U-Factor: 0.32

Orientation	Area(ft²)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status

HVAC SYSTEMS

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

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

2019 Low-Rise Residential Mandatory Measures Summary

*NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exceptions may apply.*
(01/2020)

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

2019 Low-Rise Residential Mandatory Measures Summary

§ 150.0(h)3A:	**Clearances.** Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer
§ 150.0(h)3B:	**Liquid Line Drier.** Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)1:	**Storage Tank Insulation.** Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.
§ 150.0(j)2A:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*
§ 150.0(j)3:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(n)1:	**Gas or Propane Water Heating Systems.** Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.
§ 150.0(n)2:	**Recirculating Loops.** Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 150.0(n)3:	**Solar Water-heating Systems.** Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing agency that is approved by the Executive Director.
Ducts and Fans Measures:	
§ 110.8(d)3:	**Ducts.** Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	**CMC Compliance.** All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, and plenums designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*
§ 150.0(m)2:	**Factory-Fabricated Duct Systems.** Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	**Field-Fabricated Duct Systems.** Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	**Backdraft Damper.** Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	**Gravity Ventilation Dampers.** Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
§ 150.0(m)9:	**Protection of Insulation.** Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
§ 150.0(m)11:	**Duct System Sealing and Leakage Test.** When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appendix RA3.
§ 150.0(m)12:	**Air Filtration.** Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*
§ 150.0(m)13:	**Space Conditioning System Airflow Rate and Fan Efficacy.** Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*

2019 Low-Rise Residential Mandatory Measures Summary

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

2019 Low-Rise Residential Mandatory Measures Summary

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

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

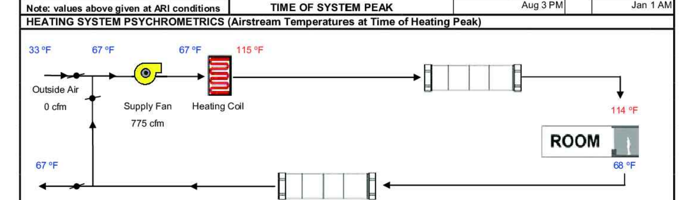
Project Name: Donahoe, Brogan & Rita Addition — Date: 4/23/2021
System Name: New HVAC System — Floor Area: 985

ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	22,400
Total Output (Btuh)	22,400
Output (Btuh/sqft)	22.7
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	775
Airflow (cfm)	775
Airflow (cfm/sqft)	0.79
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00

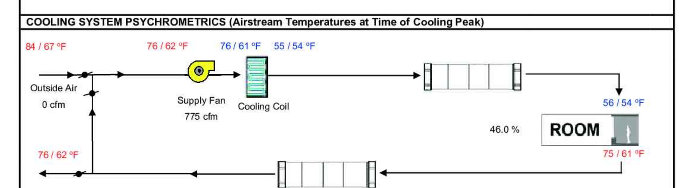
Note: values above given at ARI conditions

SYSTEM LOAD	COIL COOLING PEAK CFM	Sensible	Latent	COIL HTG. PEAK CFM	Sensible
Total Room Loads	485	10,158	570	280	13,954
Return Vented Lighting		0			
Return Air Ducts		501			735
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		501			735
TOTAL SYSTEM LOAD		11,159	570		15,424
HVAC EQUIPMENT SELECTION					
Central Heating System w/o AC		0	0		22,400
Total Adjusted System Output (Adjusted for Peak Design conditions)		0	0		22,400
TIME OF SYSTEM PEAK		Aug 3 PM			Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

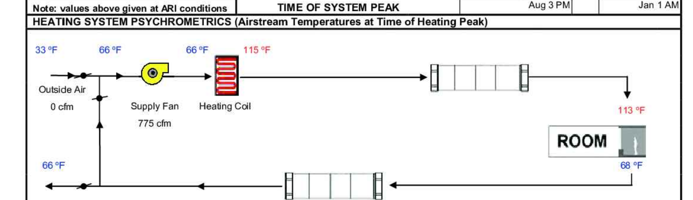
Project Name: Donahoe, Brogan & Rita Addition — Date: 4/23/2021
System Name: Existing HVAC System — Floor Area: 1,286

ENGINEERING CHECKS	
Number of Systems	1
Heating System	
Output per System	56,000
Total Output (Btuh)	56,000
Output (Btuh/sqft)	43.5
Cooling System	
Output per System	0
Total Output (Btuh)	0
Total Output (Tons)	0.0
Total Output (Btuh/sqft)	0.0
Total Output (sqft/Ton)	0.0
Air System	
CFM per System	775
Airflow (cfm)	775
Airflow (cfm/sqft)	0.60
Airflow (cfm/Ton)	0.0
Outside Air (%)	0.0 %
Outside Air (cfm/sqft)	0.00

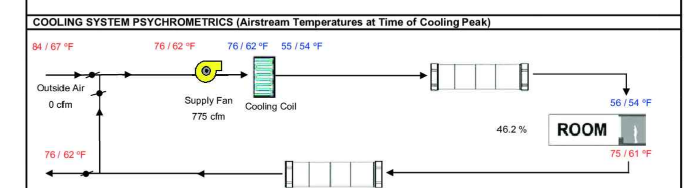
Note: values above given at ARI conditions

SYSTEM LOAD	COIL COOLING PEAK CFM	Sensible	Latent	COIL HTG. PEAK CFM	Sensible
Total Room Loads	942	19,189	745	659	32,043
Return Vented Lighting		0			
Return Air Ducts		946			1,688
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		946			1,688
TOTAL SYSTEM LOAD		21,080	745		35,419
HVAC EQUIPMENT SELECTION					
Existing FAU Without A/C		0	0		56,000
Total Adjusted System Output (Adjusted for Peak Design conditions)		0	0		56,000
TIME OF SYSTEM PEAK		Aug 3 PM			Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



Revisions:	Date:
Zoning Plan Check Responses	2-1-22
Zoning Plan Check Responses	3-16-22
Zoning Plan Check Responses	4-17-22
SFDB Submittal	5-24-22

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Date: -
Scale: As Noted
Job: Donahoe
Sheet No.

T24
(Page 2)

A. GENERAL NOTES

1. The following notes, details, schedules, & specifications shall apply to all phases of this project unless specifically noted otherwise. Notes and details on the structural plans shall take precedence over general notes and typical details. Where no details are given, construction shall be as shown for similar work.

2. All drawings are considered to be part of the contract documents. The Contractor shall be responsible for the review and coordination of all drawings and specifications prior to the start of construction. Any discrepancies shall be brought to the attention of CEDAR Structural, Inc prior to the start of construction so that a clarification can be issued. Any work performed in conflict with the contract documents or any applicable code requirements shall be corrected by the Contractor at no expense to the Owner or CEDAR Structural, Inc.

3. All information on existing conditions shown on the structural plans are based on best present knowledge available, but without guarantee of accuracy. The Contractor shall be responsible for the verifications of all dimensions and conditions at the site. Any discrepancies between actual site conditions and information shown on the drawings or specifications shall be brought to the attention of CEDAR Structural, Inc prior to the start of construction.

4. Contractor is to refer to the architectural drawings for:
   - dimensions
   - sizes and locations of all interior and exterior wall locations
   - sizes and locations of all floor, roof, and wall openings
   - sizes and location of all drains, slopes, depressions, and steps
   - specification of all finishes and waterproofing
   - all other non-structural elements

5. Contractor is to refer to the mechanical, electrical, and plumbing plans for:
   - size and location of all equipment
   - pipe runs, sleeves, hangers, and trenches
   - all other mechanical, electrical, or plumbing related elements

6. Structural plans are not to be scaled. Contractor shall use all written dimensions on architectural plans.

7. Construction materials shall be uniformly spread out if placed on floor or roof so as to not overload the framing. Load shall not exceed the design live load per square foot. It is the Contractor's responsibility to provide adequate shoring and/or bracing as required.

8. Specifications and detailing of all waterproofing and drainage items, while sometimes shown on the structural plans for general information purposes only, are solely the design responsibility of others.

9. CEDAR Structural, Inc will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the construction delineated by these plans. It should be understood that the Contractor (and agents of the contractor) shall supervise and direct all work and shall be solely and completely responsible for all construction means, methods, techniques, sequences, procedures and conditions on the job site, including safety of all persons and property during the entire period of construction. Periodic observations by CEDAR Structural, Inc are not intended to include verification of dimensions or review the adequacy of the Contractor's safety measures on or near the construction site.

10. Modifications of the plans, notes, details, or specifications shall not be permitted without prior approval from CEDAR Structural, Inc.

11. All workmanship shall conform to the best practice prevailing in the various trades performing the work. The Contractor shall be responsible for coordinating the work of all trades.

12. It is the contractor's responsibility to ensure that only approved structural plans are used during the course of construction. The use of unapproved documents shall be at the contractor's own risk. Correction of all work based on such documents shall be performed at the Contractor's expense.

13. These plans and specifications represent the structural design only. No information nor warranty is provided for the work of any other Consultant. This includes, but is not limited to, waterproofing, drainage, ventilation, accessibility, or dimensions.

B. FOUNDATIONS

1. The soil design values used in structural calculations can be found on S001.

2. Soils values are per table 1806.2 of the 2019 California Building Code (CBC).

3. All compaction, fill, backfilling, and site preparation shall be performed in accordance with Chapter 18 & Appendix J of the CBC. All such work shall be performed under the supervision of the Building Official.

4. Excavate to required depths and dimensions (as indicated on the drawings), cut square and smooth with firm level bottoms. Care shall be taken not to over-excavate foundation at lower elevation and prevent disturbance of soils around high elevation.

5. Foundations shall be poured in neat excavations.

6. Excavate all foundations to required depths into compacted fill or natural soil (as per plans and details) and as verified by the building official.

7. All foundations shall be inspected and approved by the appropriate building official and/or a representative of a soils engineer prior to forming and placement of reinforcing or concrete.

8. Foundations shall not be poured until all required reinforcing steel, framing hardware, sleeves, inserts, conduits, pipes, etc. and formwork are properly placed and inspected by the appropriate building official or inspector.

9. It is the responsibility of the contractor in charge of framing to properly position all holdown bolts, anchor bolts, column bases, and all other cast-in place hardware. Refer to typical details. All hardware to be secured prior to foundation inspections.

10. The sides and bottoms of dry excavations must be moistened just prior to placing concrete. Conversely, de-water footings as required to remove standing water and to maintain optimum working conditions.

11. The Contractor shall be solely responsible for all excavation procedures including lagging, shoring, and the protection of adjacent property, structures, streets, and utilities in accordance with all federal, state, and local safety ordinances. The Contractor shall provide for the design and installation of all cribbing, bracing, and shoring required.

C. REINFORCEMENT

1. Reinforcing steel shall be deformed, clean, free of rust, grease or any other material likely to impair concrete bond.

2. All bars shall conform to ASTM A615, Grade 60 minimum (UNO on structural plans), except that #3 bars may be Grade 40. All welded wire fabric (WWF) shall conform to ASTM A185.

3. Reinforcing steel that is to be welded shall conform to ASTM A706. All welding of reinforcement shall be subject to special inspection.

4. Contractor shall take necessary steps (standard ties, anchorage devices, etc.) to secure all reinforcing steel in their true position and prevent displacement during concrete placement.

5. Fabrication, placement and installation of reinforcing steel shall conform to:
   (a) Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice
   (b) CBC Section 1907.

6. Shop drawings for fabrication of reinforcing steel shall be approved by the Contractor and submitted to the Architect and Engineer for review and approval prior to fabrication. Shop drawings are not required for slabs-on-grade or foundations unless specifically noted on the structural plans.

7. Heating of reinforcing steel to aid in bending and shaping of bars is not permitted. All bends in reinforcing steel are to be made cold. All bend radii shall conform to CRSI Manual of Standard Practice.

8. Refer to Concrete notes for specific minimum splice length and splice staggering requirements. Lap welded wire fabric (WWF) reinforcement two (2) modules minimum (UNO). All splices are to be staggered.

The contractor shall submit a written statement of responsibility to the building official and owner for installation of the following items requiring special inspections.

2019 CBC SPECIAL INSPECTIONS - CONCRETE

NO.	TYPE OF INSPECTION REQUIRED	FREQUENCY	CODE
1	INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS. B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4.A.	CONTINUOUS	CBC 2019 TABLE 1705.3 ACI 318-16 17.8.2

D. CONCRETE

1. New concrete shall have:
   - An ultimate compressive strength (F'c) of 2500 psi at 28 days (UNO).
   - A maximum slump of 5" at point of placement.
   - A w/c ratio of 0.55 or less for all slabs, walls, and columns, and 0.60 or less for all foundations.
   - A normal dry-weight density (UNO).

2. Special inspection is not required, except where specified herein, on the structural plans, or by the Building Department. At a minimum, special inspection is always required on:
   - Structural slabs, flat plates
   - Walls, columns, beams
   - Piles, caissons
   - Welding of reinforcement, installation of mechanical bar splice devices, epoxy applications

When required or specified, special inspection services shall conform to CBC Chapter 17 and shall be provided by an ICC certified inspector or Building Department approved engineer.

The Building Department reserves the right to waive or require the special inspection requirements [CBC 1704.1 and 1704.4]. Nothing in these plans waives the Building Department right to require special inspection on at any point and on any material.

3. All concrete work shall conform with CBC Chapter 19.

4. All cement shall be Portland Cement Type I or II and shall conform to ASTM C 150.

5. All aggregates shall conform to ASTM C33. Maximum aggregate sizes:
   (a) Footings:
      i. Maximum 1-1/2"
      ii. Minimum 1"
   (b) All other work:
      i. Maximum 1"
      ii. Minimum 3/4"

6. Where not specifically detailed, the minimum concrete cover on reinforcing steel shall be:
   (a) Permanently exposed to earth or weather
      i. Cast against earth: 3"
      ii. Cast against forms: 2"
   (b) Not exposed to earth or weather
      i. Slabs, walls, joists: 3/4"
      ii. Beams, girders, columns: 1-1/2"

7. Minimum lap splice length for all reinforcing steel shall be 40 bar diameter unless specifically noted otherwise on the structural plans and/or details. All lap splices to be staggered.

8. All anchor bolts used in concrete construction shall have a minium total embedment as follows (UNO) :
   (a) 5/8" dia.: 7"
   (b) 3/4" dia.: 8"
   (c) 7/8" dia.: 9"
   (d) 1" dia.: 10"

Overall length of anchor bolts shall be coordinated with sill plate requirements as indicated elsewhere in these specifications. All anchor bolts in contact with preservative-treated wood shall be hot dipped zinc galvanized or stainless steel.

9. All reinforcing steel, anchor bolts, dowels, inserts, and any other hardware to be cast in concrete shall be well secured in position prior to foundation inspection. All hardware to be installed in accordance with respective manufacturer's specifications. Refer to architectural and structural plans for locations of embedded items.

10. Locations of all construction joints, other than specified on the structural plans, shall be approved by Architect and CEDAR Structural, Inc prior to forming. Construction joints shall be thoroughly air and water cleaned and heavily roughened so as to expose coarse aggregates. All surfaces to receive fresh concrete shall be maintained continuously wet at least three (3) hours in advance of concrete placement.

Unless specifically detailed or otherwise noted, construction and control joints shall be provided in all concrete slabs-on-grade. Joints shall be located such that the area does not exceed 400 sq. feet.

11. The Architect, CEDAR Structural, Inc, and appropriate inspectors shall be notified in a timely manner for a reinforcement inspection prior to the placement of any concrete.

12. The Contractor shall obtain approval from the Architect and CEDAR Structural, Inc prior to placing sleeves, pipes, ducts, chases, coring and opening on or through structural concrete beams, walls, floors, and roof slabs unless specifically detailed or noted on the plans. All piles or conduits passing through concrete members shall be sleeved with standard steel pipe sections.

13. The Contractor is responsible for design, installation, maintenance and removal of all formwork. Forms shall be properly constructed, sufficiently tight to prevent leakage, sufficiently strong, and braced to maintain their shape and alignment until no longer needed for concrete support. Joints in formwork shall be tightly fitted and blocked, and shall produce a finished concrete surface that is true and free from blemishes. Forms for exposed concrete shall be pre-approved by the Architect to ensure conformance with design intent.

14. Remove form work in accordance with the following schedule:
   (a) Forms at slab edge: 1 day
   (b) Side forms at footings: 2 days
   (c) All other vertical surfaces: 7 days
   (d) Beams, columns, girders: 15 days
   (e) Elevated slabs: 28 days

CEDAR Structural, Inc reserves the right to modify removal schedule above based on field observations, concrete conditions, and/or concrete test results.

15. All concrete (except slabs-on-grade 6" or less) shall be mechanically vibrated as it is placed. Vibrator to be operated by experienced personnel. The vibrator shall be used to consolidate the concrete. The vibrator shall not be used to convey concrete, nor shall it be placed on reinforcing and/or forms.

16. Concrete shall be maintained in a moist condition for a minimum of five (5) days after placement.

17. Concrete shall not be permitted to free fall more than six (6) feet. For heights greater than six (6) feet, use tremie, pump or other method consistent with applicable standards.

18. When specified ultimate compressive strength is greater than 2500 psi, Contractor shall submit mix designs to Architect and CEDAR Structural, Inc for approval seven (7) days prior to placement. Mix designs shall be prepared by an approved testing laboratory. Sufficient data must be provided for all admixtures.

19. Refer to Architectural plans for locations of all dimensions, slab depressions, slopes, drains, curbs, and control joints.

E. FASTENERS

1. Nails:
   (a) Shall be "common" nails unless noted otherwise.
   (b) Shall not be driven closer than ½ their length nor closer than ¼ of their length to the edge or end of a member, except for sheathing.
   (c) Shall be installed in pre-drilled lead holes if necessary to avoid splitting.
   (d) In contact with preservative-treated wood shall be hot dipped zinc galvanized or stainless steel.
   (e) All nailing conform to 2019 CBC Table 2304.10.1.

2. Lag screws:
   (a) Shall be installed into pre-drilled lead holes. Lubricant (or soap) shall be used to facilitate installation and prevent damage to the screws.
   (b) In contact with preservative-treated wood shall be hot dipped zinc galvanized or stainless steel.

3. Bolts:
   (a) Shall conform to ASTM A307 unless specifically noted otherwise on plans and details.
   (b) Shall be installed in pre-drilled holes a maximum of 1/16" larger than the specified bolt diameter.
   (c) When installed against wood surfaces, shall have standard washers under the heads and nuts.
   (d) In contact with preservative-treated wood shall be hot dipped zinc galvanized or stainless steel.

4. Anchor Bolts:
   (a) Shall be 5/8" diameter with 3x3x0.229" steel plate washers at shearwalls.
   (b) Shall be 5/8" diameter with 2x2x3/16" steel plate washers at non-shearwalls.
   (c) Shall have 7" minimum embedment. (Contractor to coordinate length of bolts with sill plate thicknesses)
   (d) Shall conform to ASTM A307
   (e) Shall be hot dipped zinc galvanized or stainless steel
   (f) Shall not be spaced greater than 72" o.c. Refer to shearwall schedule for specific anchor bolt spacing requirements.
   (g) Shall be placed a maximum of 12" from wall corners, wall ends, and sill plate splices (but not less than 7 diameters), and a minimum of two bolts per piece of sill plate is required.
   (h) Shall be secured in place prior to foundation inspection

F. ROUGH CARPENTRY

1. Refer to 2019 CBC Table 2304.10.1. for all minimum nailing requirements.

2. Refer to individual sections for applicable material specifications.

3. Fabricate, size, install, connect, fasten, bore, notch, and cut wood and plywood with joints true, tight, and well-nailed, screwed or bolted as required. All members to have solid bearing without being shimmed, unless noted otherwise. Set horizontal members subject to bending with the crown up. Install framing plumb, square, true and cut for full bearing. Splices are not permitted between bearings. Use full lengths unless otherwise specified.

4. Metal framing angles, anchor, clips, straps, ties, holdowns, etc. shall be manufactured by Simpson Strong-Tie Co. No substitutions shall be permitted without prior approval of CEDAR Structural, Inc.

5. All walls are to have continuous double 2x top plates spliced per provided details.

6. Wall Studs:
   (a) Unless specifically noted on the plan and details, use the following guidelines for wall framing:
      i. Use 2x4 studs at 16" o.c. for walls less than 9'-0" tall.
      ii. Walls 9'-0" to 16'-0" tall shall be constructed of 2x6 studs at 16" o.c.
      iii. Request specifically engineered wall details for walls greater than 16'-0" tall.

7. Blocking:
   (a) Provide min. one row of nominal 2" thick blocking of same width as stud, fitted snugly and spiked into studs at mid-height of partitions or walls over eight feet high.
   (b) All cripple walls (or "pony walls") less than 14" in height shall be solid blocking.
   (c) Refer to shearwall section for additional blocking requirements.

8. Notching:
   (a) Is not permitted of any structural member without prior approval
   (b) In exterior and bearing walls, notches shall not exceed 25% of the stud depth.
   (c) Non-bearing partition walls, notches shall not exceed 40% of the stud depth.
   (d) Successive notches in the same member shall be spaced a minimum of 18" apart.

9. Boring:
   (a) Is not permitted of any structural member without prior approval
   (b) In exterior and bearing walls, holes shall not exceed 40% of the stud depth.
   (c) Non-bearing partition walls, shall may be drilled not greater than 60% of the stud depth.
   (d) Successive holes in the same member shall be spaced a minimum of 18" apart.

10. Bearing:
   (a) Provide a minimum of 1½" of bearing for all 2x joists and all 4x10/6x8 headers & smaller.
   (b) Provide a minimum of 3" of bearing for all beams and headers 4x12/6x10 & larger, unless noted otherwise on plans.
   (c) Members bearing on prefabricated hangers are to have full bearing and nailing per manufacturer's specifications.

11. Posts:
   (a) Posts inside walls shall bear on sill plates and shall be continuous between top and bottom plates, unless specifically noted otherwise.
   (b) Provide posts under all beams, girders or double joists equal to the width of the supported member.
   (c) Posts on upper levels are to be stacked on posts of equal size at levels below, unless a larger post is specified on the plans.
   (d) Vertical blocking ("squash blocks") shall be used to fully transfer the post area through floors to foundation. Vertical blocking shall be equal to floor thickness plus 1/16".
   (e) Headers framing into continuous posts without trimmer studs shall be supported by Simpson HUC hangers unless noted otherwise on the plans.
   (f) Posts when isolated, shall be seated in Simpson post or column bases, unless noted otherwise on the plans

12. Roof Framing:
   (a) Provide wood joists, as specified, laid with the crown up and spaced as indicated.
   (b) Provide a minimum of 1½" end bearing unless otherwise shown.
   (c) Provide full depth solid 2x blocking or cross-bridging between the joists at 8'-0" o.c. max.
   (d) Provide all cricket framing required to achieve positive drainage per Architecturals.
   (e) Install plywood panels with the face grain across the framing and close joints and nail at each support. Fully nail with common nails per plans.
   (f) Provide Simpson "PSCL" clips at all plywood joints perpendicular to framing. Provide clips midway between framing members at the unsupported edges of plywood when members are spaced at 24" o.c. or greater. If clips are not used, provide solid blocking for joints perpendicular to framing.

13. Floor Framing:
   (a) Provide wood joists, as specified, laid with the crown up and spaced as indicated.
   (b) Provide a minimum of 1½" end bearing unless otherwise shown.
   (c) Provide full depth solid 2x blocking or cross-bridging between the joists at 8'-0" o.c. max. For floors framed with I joists, refer to the manufacturer's specifications for blocking requirements.
   (d) Provide full depth solid 2x blocking between the joists under all walls and partitions where the wall or partition is perpendicular to the floor framing (including floors framed with I joists)
   (e) Install 3/4" plywood sheathing with the face grain across supports, end supports staggered and the edges of sheets centered over supports.

14. Shearwalls:
   (a) Refer to plans for all shearwall locations, length type and nailing.
   (b) Refer to Shearwall Schedule for additional information.
   (c) Shearwall lengths specified on plans are minimum required.
   (d) Shearwalls to be nailed with common nails. All nails to have minimum 3/8" edge distance to panel or framing member.
   (e) If 3x framing is required, stagger edge nailing. 3x framing is required at:
      i. all panel joints
      ii. all sill plates on concrete or masonry
      iii. all sill plates at double-sided shearwalls
   (f) OSB may be used in lieu of plywood.

G. TIMBER

1. All structural lumber shall be Douglas Fir-Larch, S4S and shall conform to CBC Section 2303.1.1 and DOC PS20-15.

2. The minimum lumber grade of each member shall be as follows (unless specifically noted otherwise on plans and details):
   (a) 2x studs, blocking, plates: Stud
   (b) 2x joists: #2 or better
   (c) 3x or larger beams or posts #1 or better

It is recommended that all exposed members be Select Structural or better and free of heart center due to visual characteristics.

3. All lumber in contact with concrete or masonry shall be pressure treated Douglas Fir. Whenever it is necessary to cut, notch, bore or splice pressure treated material, all newly cut surfaces shall be thoroughly painted with the same preservative.

4. Maximum moisture content for all structural members shall not exceed 19%.

5. All plywood sheathing shall be CDX grade (or better) Douglas Fir with exterior glue. All sheathing shall conform to CBC Standard 23-2 and DOC PS1-09 or DOC PS2-10 and grade-marked by the American Plywood Association (APA). Panel index to be 40/20 for floors and 24/0 for roofs unless specifically noted otherwise on the plans and details.

H. ENGINEERED LUMBER

1. Laminated Veneer Lumber (LVL):
   (a) Shall be 1-3/4" minimum thickness with the following minimum properties:
      i. E = 1900 ksi
      ii. Fb = 2600 psi
      iii. Fv = 285 psi
      iv. Fc (parallel) = 2500 psi
      v. Fc (perp.) = 750 psi
      vi. Ft (parallel) = 1500 psi
      vii. Specific Gravity = 0.50
   (b) Shall be fabricated by an approved manufacturer
   (c) Shall bear a minimum of 3-1/2" on specified supports. Provide full depth solid blocking at all bearing points
   (d) Shall be nailed in accordance with manufacturer's specifications. Unless otherwise approved, nailing into the top edge shall not be spaced any closer than:
      i. 16d 6"
      ii. 10d 4"
      iii. 8d 3"
      iv. When nailing must be reduced, stagger rows a minimum of 1/2" apart while maintaining proper edge distances
   (e) Shall be, when comprised of multiple members, connected with 16d nail, 1/2" bolts or 1/4" lag screws in accordance with manufacturer's specifications.
   (f) Shall not be cut, notched or drilled without specific written approval of CEDAR Structural, Inc.

2. Laminated Strand Lumber (LSL):
   (a) Shall be 1-3/4" minimum thickness with the following minimum properties:
      i. E = 1550 ksi
      ii. Fb = 2325 psi
      iii. Fv = 310 psi
      iv. Fc (parallel) = 2500 psi
      v. Fc (perp.) = 800 psi
      vi. Ft (parallel) = 1070 psi
      vii. Specific Gravity = 0.50
   (b) Shall be fabricated by an approved manufacturer
   (c) Shall bear a minimum of 3-1/2" on specified supports. Provide full depth solid blocking at all bearing points
   (d) Shall be nailed in accordance with manufacturer's specifications. Unless otherwise approved, nailing into the top edge shall not be spaced any closer than:
      i. 16d 6"
      ii. 10d 4"
      iii. 8d 3"
      iv. When nailing must be reduced, stagger rows a minimum of 1/2" apart while maintaining proper edge distances
   (e) Shall be, when comprised of multiple members, connected with 16d nail, 1/2" bolts or 1/4" lag screws in accordance with manufacturer's specifications.
   (f) Shall not be cut, notched or drilled without specific written approval of CEDAR Structural, Inc.

3. Parallel Strand Lumber (PSL):
   (a) Shall be 2-1/2" minimum thickness with the following minimum properties:
      i. E = 2000 ksi
      ii. Fb = 2900 psi
      iii. Fv = 290 psi
      iv. Fc (parallel) = 2900 psi
      v. Fc (perp.) = 750 psi
      vi. Ft (parallel) = 2025 psi
      vii. Specific Gravity = 0.50
   (b) Shall be fabricated by an approved manufacturer
   (c) Shall bear a minimum of 3-1/2" on specified supports. Provide full depth solid blocking at all bearing points
   (d) Shall be nailed in accordance with manufacturer's specifications. Unless otherwise approved, nailing into the top edge shall not be spaced any closer than:
      i. 16d 6"
      ii. 10d 4"
      iii. 8d 3"
      iv. When nailing must be reduced, stagger rows a minimum of 1/2" apart while maintaining proper edge distances
   (e) Shall be, when comprised of multiple members, connected with 16d nail, 1/2" bolts or 1/4" lag screws in accordance with manufacturer's specifications.
   (f) Shall not be cut, notched or drilled without specific written approval of CEDAR Structural, Inc.

4. Plywood I Joists:
   (a) Type and manufacturer shall be clearly noted on the plans. Substitutions shall not be permitted without prior approval of CEDAR Structural Inc
   (b) Shall be installed in accordance with applicable code approvals and manufacturer's specifications
   (c) Shall bear a minimum of 1-3/4" at all end supports, and 3-1/2" at intermediate supports. Provide full depth solid blocking at all bearing points.
   (d) Shall be installed with intermediate blocking or bridging as specified by manufacturer. Only omit intermediate blocking when specifically allowed by manufacturer.
   (e) Shall not be cut, notched, or drilled without specific written approval of CEDAR Structural, Inc

5. Glu-laminated Beams (GLB):
   (a) Shall be 24F-V4 for simple single spans and 24F-V8 for beams that are cantilevered and/or continuous over interior supports. They shall have the following minimum properties
      i. E = 1800 KSI
      ii. Fb = 2400 PSI
      iii. Fc = 650 PSI
      iv. Fv = 265 PSI
   (b) Shall not be notched, cut, or drilled without prior approval from CEDAR Structural
   (c) Shall have exterior glue and weather-treatment prior to installation
   (d) Shall be fabricated by an approved manufacturer. An A.I.T.C. Certificate of Compliance shall be given to the building inspector prior to installation.
   (e) Shall have factory standard camber, except where noted otherwise on the plans.

ABBREVIATIONS

@	AT
AB	ANCHOR BOLT
ABV	ABOVE
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECT
BLDG	BUILDING
BLKG	BLOCKING
BLW	BELOW
BM	BEAM
B.N.	BOUNDAY NAILING
BTM	BOTTOM
BRG	BEARING
BTWN	BETWEEN
CANT	CANTILEVER
CBC	CALIFORNIA BUILDING CODE
CJ	CEILING JOIST
CLG	CEILING
CLR	CLEARANCE
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CTSK	COUNTERSINK
D	PENNY
DBL	DOUBLE
DEMO	DEMOLISH
DET	DETAIL
DF	DOUGLAS FIR
DIA.	DIAMETER
DIM	DIMENSION
DJ	DECK JOIST
DL	DEAD LOAD
DN	DOWN
DWG	DRAWING
(E)	EXISTING
EA	EACH
EQ	EQUAL
E.W.	EACH WAY
EXT	EXTERIOR
FDN	FOUNDATION
FJ	FLOOR JOIST
F.N.	FIELD NAILING
FLR	FLOOR
FRMG	FRAMING
FT	FEET
FTG	FOOTING
GA	GAGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GLB	GLUE LAMINATED BEAM
GYPBD	GYPSUM BOARD
HDR	HEADER
HORIZ	HORIZONTAL
HT	HEIGHT
IN	INCH
INT	INTERIOR
JST	JOIST
KP	KING POST
LB	POUND
LL	LIVE LOAD
MAX	MAXIMUM
MB	MACHINE BOLT
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
(N)	NEW
N/A	NOT APPLICABLE
NON	NONE
NTS	NOT TO SCALE
O/	OVER
OC	ON CENTER
OSB	ORIENTED STRAND BOARD
PCF	POUNDS PER CUBIC FOOT
PERF	PERFORATED
PERP	PERPENDICULAR
PL	PLATE
PLYWD	PLYWOOD
PT	PRESSURE TREATED
REINF.	REINFORCING BARS (REBAR)
REQ'D	REQUIRED
RET	RETAINING
REV	REVISED
RJ	ROOF JOISTS
RR	ROOF RAFTERS
SDS	SIMPSON SDS SCREWS
SIM	SIMILAR
SOG	SLAB ON GRADE
SPECS	SPECIFICATIONS
SQ	SQUARE
SS	SELECT STRUCTURAL
STD	STANDARD
STL	STEEL
STRUC	STRUCTURAL
S/W	SHEARWALL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
THRD	THREADED
THRU	THROUGH
TRMR	TRIMMER (STUD)
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W	WEIGHT

DESIGN LOADS & CODES

GRAVITY LOADS
- ROOF LOADS: 13 PSF DL/20 PSF LL
- WALL LOADS: 13 PSF

SOIL LOADS
- BEARING PRESSURE: 1500 PSF

WIND LOADS
- ULT. WIND SPEED, V_{ULT}: 92 MPH
- ASD WIND SPEED, V_{ASD}: 75 MPH
- EXPOSURE CATEGORY: C

SEISMIC LOADS
- SEISMIC DESIGN CATEGORY: E
- SITE CLASS: D
- IMPORTANCE FACTOR: 1.0
- RISK CATEGORY: II
- SEISMIC SITE VALUES
  - S_S = 2.179, S_{DS} = 1.743
  - S_1 = 0.787, S_{D1} = 0.892
  - S_{MS} = 2.615, F_a = 1.2
  - S_{M1} = 1.338, F_v = 1.7
- SEISMIC SYSTEM: WOOD SHEAR WALLS
- DESIGN BASE SHEAR
  - R = 6.5
  - C_S = 0.2682
  - V = 0.2682*W

GOVERNING DESIGN CODES
- 2019 CALIFORNIA BUILDING CODE
- ASCE 7-16
- ANSI/AWC NDS-2015
- ACI 318-14

STRUCTURAL SHEET INDEX

S001	GENERAL NOTES
S002	TYPICAL DETAILS
S101	FOUNDATION PLAN
S102	ROOF FRAMING PLAN
S201	FOUNDATION DETAILS
S202	ROOF FRAMING DETAILS

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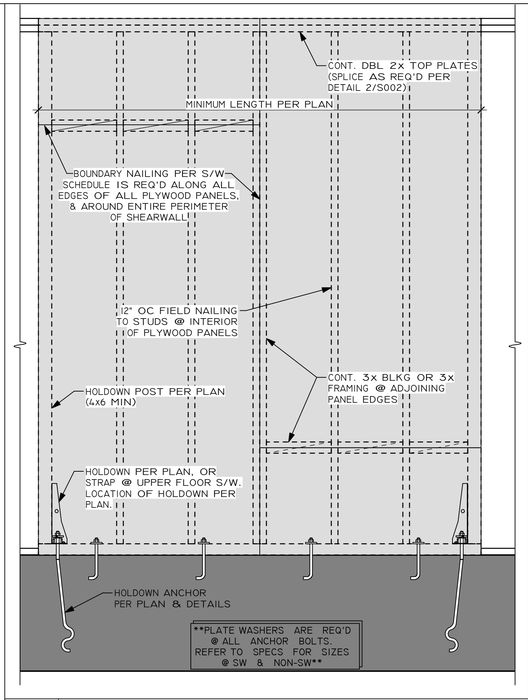
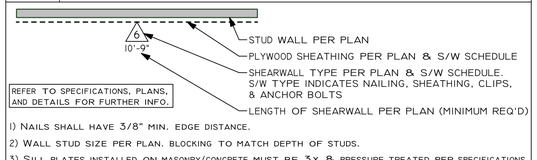
DATE	3/31/2021
SCALE	N/A

GENERAL NOTES

S001



4 TYP. ELEVATION @ WOOD SHEARWALL



1) NAILS SHALL HAVE 3/8" MIN. EDGE DISTANCE.

2) WALL STUD SIZE PER PLAN. BLOCKING TO MATCH DEPTH OF STUDS.

3) SILL PLATES INSTALLED ON MASONRY/CONCRETE MUST BE 3x & PRESSURE TREATED PER SPECIFICATIONS.

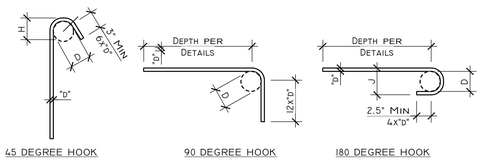
4) SHEATHING MAY BE PLACED ON EITHER SIDE OF WALL @ SINGLE-SIDED SHEARWALLS. REFER TO PLANS FOR SUGGESTED LOCATIONS. CONTRACTOR IS TO VERIFY ALL FINISHES WITH ARCHITECT PRIOR TO CONSTRUCTION.

5) ALL INTERIOR & EXTERIOR BEARING WALLS, AT A MINIMUM, TO HAVE CONTINUOUS FULL DEPTH BLOCKING BETWEEN JOISTS & RAFTERS W/ A35 TO TOP PLATES @ 32" OC (@ FLOOR) & 48" OC (@ ROOF).

6) PLYWOOD PANELS ARE TO BE INSTALLED ALONG THE CENTERLINE OF ALL FRAMING MEMBERS. MINIMUM DIMENSION OF HORIZONTAL PLYWOOD SECTION TO BE 12". MINIMUM DIMENSION OF VERTICAL PLYWOOD SECTION TO BE 24".

7) AT DOUBLE SIDED SHEARWALLS, ALL EDGE NAILS ARE TO BE STAGGERED ON ADJACENT PANEL EDGES OR PANEL JOINTS MUST BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS. PLYWOOD JOINT AND SILL PLATE NAILING IS TO BE STAGGERED IN ALL CASES.

5 SHEARWALL LEGEND & NOTES



45 DEGREE HOOK 90 DEGREE HOOK 180 DEGREE HOOK

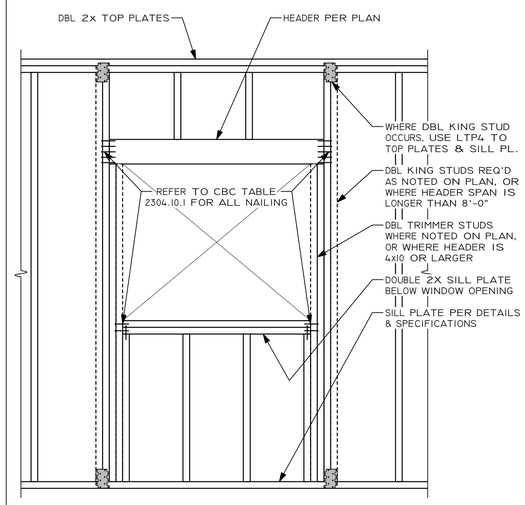
STANDARD TIES/STIRRUPS		
BAR DIA.	D	H
#3	1.5"	2.5"
#4	2"	3"
#5	2.5"	3.75"
#6	4.5"	4.5"
#7	5.25"	5.25"
#8	6"	6"

STANDARD END HOOKS		
BAR DIA.	D	H
#3	2.25"	3"
#4	3"	4"
#5	3.75"	5"
#6	4.5"	6"
#7	5.25"	7"
#8	6"	8"
#9	9.5"	11.75"
#10	10.75"	13.25"

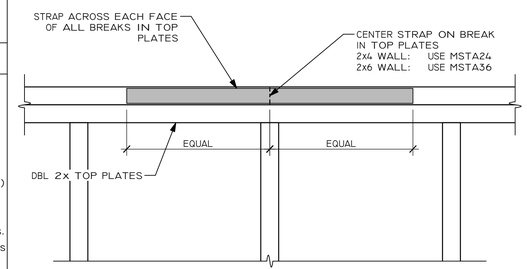
ALL BAR BEND DIAMETERS & END LENGTHS TO CONFORM TO THE CRSI MANUAL OF STANDARD PRACTICE

LAP SPLICE & DEVELOPMENT LENGTH				
BAR DIA.	LAP SPLICE, TENSION CLASS A	LAP SPLICE, TENSION CLASS B	HOOKED LENGTH	COMPRESSION LENGTH
#3	12"	15"	7"	9"
#4	15"	20"	10"	11"
#5	22"	29"	12"	14"
#6	31"	40"	15"	17"
#7	50"	64"	17"	19"
#8	62"	80"	19"	22"

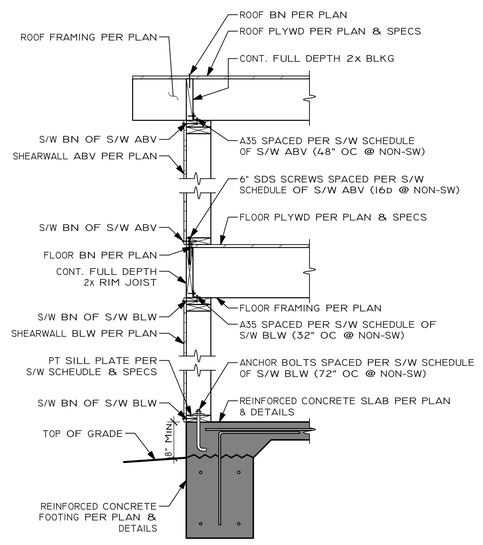
6 REINFORCEMENT HOOKS & LENGTHS



1 TYP. OPENING IN STUD WALL



2 TYP. SPLICE AT TOP PLATES



3 TYP. SECTION @ WOOD SHEARWALL

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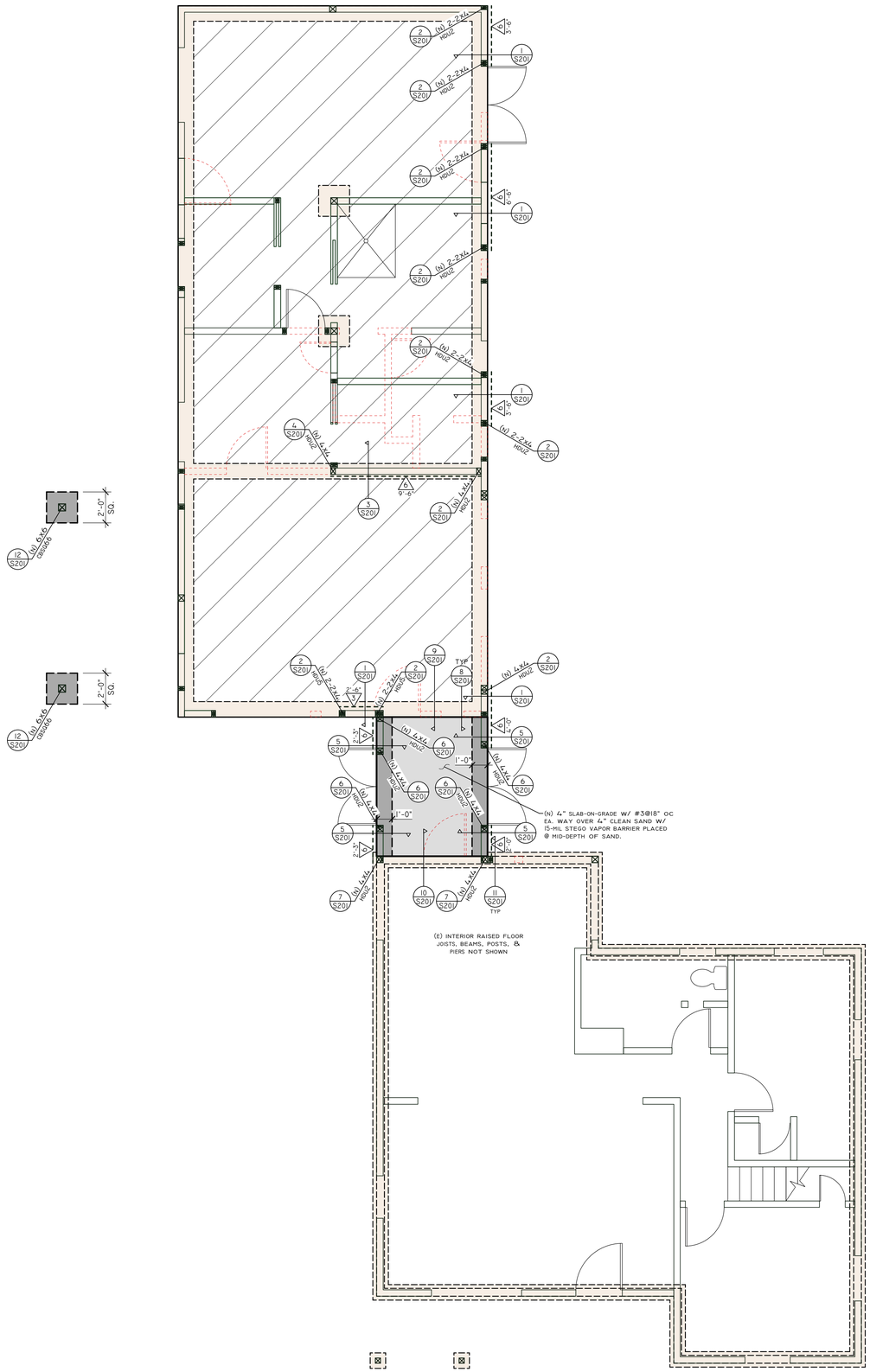
ENGINEER:	MSE
DATE	3/31/2021
SCALE	N/A

TYPICAL DETAILS

S002



HOLDOWN PULL TEST NOTES

*HOLDOWNS TO BE PULL TESTED TO LOADS SHOWN ON PLAN ADJACENT TO S/W. GC TO PROVIDE TEST RESULTS TO ENGINEER OF RECORD.

FOUNDATION NOTES

FOUNDATION DESIGN, AS IT RELATES TO (N) FOOTINGS, IS IN CONFORMANCE WITH CBC TABLE 1806.2. NO SOILS REPORT WAS PROVIDED PRIOR TO THE STRUCTURAL DESIGN OF THIS PROJECT.

IN THE EVENT THE BUILDING OFFICIAL OR SOILS ENGINEER DETERMINES THAT ON-SITE SOILS ARE EXPANSIVE, OR IF THERE ARE OTHER GEOLOGIC ISSUES OF CONCERN, SPECIAL PROVISIONS MAY BE MADE TO THE FOUNDATION DESIGN TO MITIGATE AGAINST DAMAGE. IF THIS IS THE CASE, ALL CONSTRUCTION AS IT RELATES TO THE FOUNDATIONS MUST BE HALTED AND THE CLIENT IS TO CONTACT CEDAR STRUCTURAL, INC., OBTAIN A SOILS REPORT FROM A GEOTECHNICAL ENGINEER, AND ENLIST CEDAR STUCTURAL, INC. TO REVISE THE FOUNDATION DESIGN AS REQUIRED. REVISED PLANS ARE TO BE RESUBMITTED TO THE BUILDING DEPARTMENT.

FOUNDATION LEGEND

- (N) WOOD POST CONT. TO FOUNDATION
- WOOD FRAMED WALL ABOVE
- (N) PLYWOOD SHEARWALL — LENGTH / # NAIL SPACING
- (E) WALLS TO DEMO — REFER TO ARCH. PLANS
- (E) CONCRETE FOOTING
- (E) CONCRETE SLAB-ON-GRADE
- (N) CONCRETE FOOTING

SHEARWALL SCHEDULE

TYPE	SHEATHING & NAILING	DOUBLE SIDED?	SILL/BNDRY PLATES	A35 W/ #6x1/2 WOOD SCREWS	A35 (W/ 8D)	1/4"x6" SDS	5/8" DIA. AB OR TITEN HD
6	15/32" STRUC I PLYWD B.N. = 10D @ 6" O.C. F.N. = 10D @ 12" O.C.	NO	2x SILL 2x BNDRY	12" O.C.	24" O.C.	18" O.C.	48" O.C.
4	15/32" STRUC I PLYWD B.N. = 10D @ 4" O.C. F.N. = 10D @ 12" O.C.	NO	3x SILL 3x BNDRY	9" O.C.	15" O.C.	12" O.C.	32" O.C.
3	15/32" STRUC I PLYWD B.N. = 10D @ 3" O.C. F.N. = 10D @ 12" O.C.	NO	3x SILL 3x BNDRY	7" O.C.	12" O.C.	9" O.C.	24" O.C.
2	15/32" STRUC I PLYWD B.N. = 10D @ 2" O.C. F.N. = 10D @ 12" O.C.	NO	3x SILL 3x BNDRY	N/A	9" O.C.	7" O.C.	18" O.C.

A. ALL NAILS TO BE COMMON NAILS. BOX TYPE NAILS ARE NOT PERMITTED.
B. 3"x3"x.229" PLATE WASHERS ARE REQUIRED AT ALL SHEAR WALLS. WASHERS ARE TO BE SLOTTED W/ STANDARD CUT WASHER PLACED BETWEEN NUT AND PLATE WASHER. PLATE WASHERS ARE TO EXTEND WITHIN 1/2" OF THE EDGE OF SILL PLATE ON THE SIDE WITH PLYWOOD.
C. ALL TRANSFERS ARE TO BE INSTALLED AT 1-1/2" MIN. THICK MEMBERS. CLIPS ARE TO BE STAGGERED WHERE SPACING IS < 6" O.C.
D. REFER TO DETAILS 3, 4, & 5/S002 FOR MORE INFORMATION ON CONSTRUCTION OF SHEARWALLS

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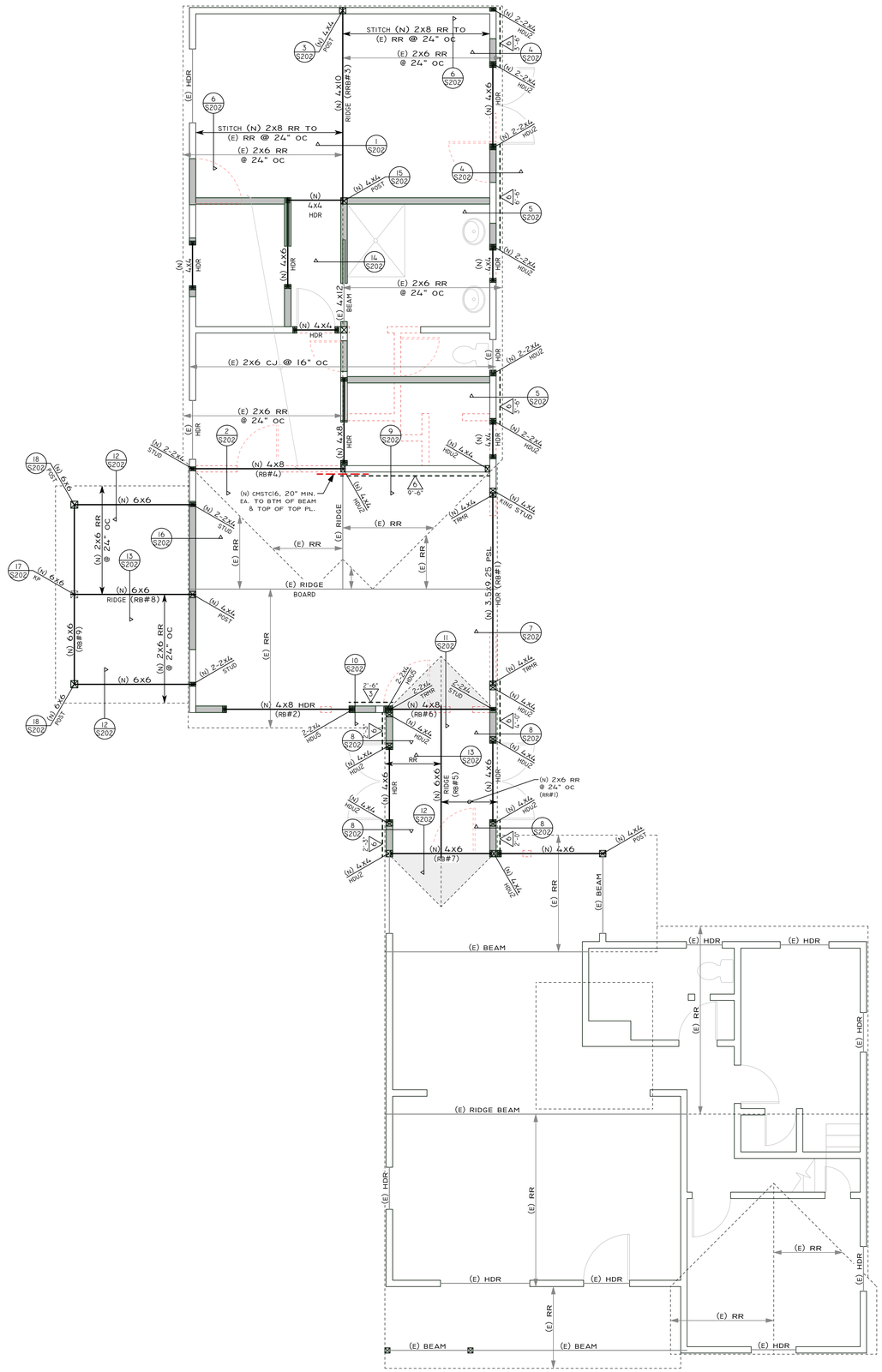
ENGINEER:	MSE
DATE	3/31/2021
SCALE	1/4" = 1'-0"

FOUNDATION PLAN

S101



FRAMING LEGEND

- (N) WOOD POST CONT. TO FOUNDATION BELOW
- (N) PLYWOOD SHEARWALL — LENGTH / NAIL SPACING
- (E) STUD WALL TO REMAIN
- (N) 2x4@16" OC STUD WALL
- 2x6 WHERE OCCURS PER ARCH
- (E) WALL TO DEMO — REFER TO ARCH'S
- (N) ROOF FRAMING — SIZE/SPACING PER PLAN
- (N) BEAM AS NOTED
- (E) ROOF FRAMING
- (E) BEAM
- (N) SIMPSON STRAP — MODEL # AS NOTED

ROOF FRAMING NOTES

ALL 2X LUMBER TO BE DOUGLAS FIR NO. 2.
ALL 3X AND LARGER LUMBER TO BE DOUGLAS FIR NO. 1.

ALL BEAMS TO BEAR FULLY ON PLATES WITH SPECIFIED TRIMMER, KING STUDS, OR POST BELOW AS NOTED ON PLAN OR TYPICAL HEADER DETAIL 1/S002.

(N) ROOF SHEATHING TO BE 5/8" PLYWOOD, PI 32/16, W/ 10D @ 6" O.C. B.N. & 12" O.C. F.N.

ALL WALLS SHALL HAVE CONTINUOUS DOUBLE 2X TOP PLATES. WHERE BREAK OCCURS IN TOP PLATES, ADD STRAPS AS NOTED ON PLANS OR PER TOP PLATE SPLICE DETAIL 2/S002.

WATERPROOFING, FLASHING, & FINISH DETAILS ARE BY OTHERS.

REFER TO S001 FOR ADDITIONAL MATERIAL SPECIFICATIONS AND GENERAL REQUIREMENTS. CONTRACTOR IS TO CONFIRM DIMENSIONS PRIOR TO THE START OF CONSTRUCTION. DIMENSIONS ARE PER ARCHITECTURAL DRAWINGS.

SHEARWALL SCHEDULE

TYPE	SHEATHING & NAILING	DOUBLE SIDED?	SILL/BNDRY PLATES	A35 W/ #6x1/2 WOOD SCREWS	A35 (W/ 8d)	1/4"x6" SDS	5/8" DIA. AB OR TITEN HD
6	15/32" STRUC I PLYWD B.N. = 10D @ 6" O.C. F.N. = 10D @ 12" O.C.	NO	2x SILL 2x BNDRY	12" O.C.	24" O.C.	18" O.C.	48" O.C.
4	15/32" STRUC I PLYWD B.N. = 10D @ 4" O.C. F.N. = 10D @ 12" O.C.	NO	3x SILL 3x BNDRY	9" O.C.	15" O.C.	12" O.C.	32" O.C.
3	15/32" STRUC I PLYWD B.N. = 10D @ 3" O.C. F.N. = 10D @ 12" O.C.	NO	3x SILL 3x BNDRY	7" O.C.	12" O.C.	9" O.C.	24" O.C.
2	15/32" STRUC I PLYWD B.N. = 10D @ 2" O.C. F.N. = 10D @ 12" O.C.	NO	3x SILL 3x BNDRY	N/A	9" O.C.	7" O.C.	18" O.C.

A. ALL NAILS TO BE COMMON NAILS. BOX TYPE NAILS ARE NOT PERMITTED.
B. 3"x3"x.229" PLATE WASHERS ARE REQUIRED AT ALL SHEAR WALLS. WASHERS ARE TO BE SLOTTED W/ STANDARD CUT WASHER PLACED BETWEEN NUT AND PLATE WASHER. PLATE WASHERS ARE TO EXTEND WITHIN 1/2" OF THE EDGE OF SILL PLATE ON THE SIDE WITH PLYWOOD.
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SCALE	1/4" = 1'-0"

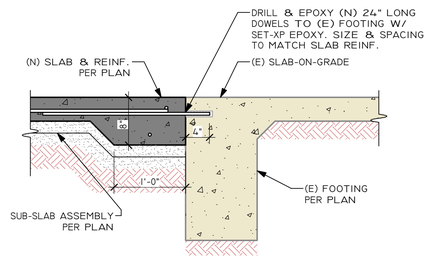
ROOF FRAMING PLAN

S102

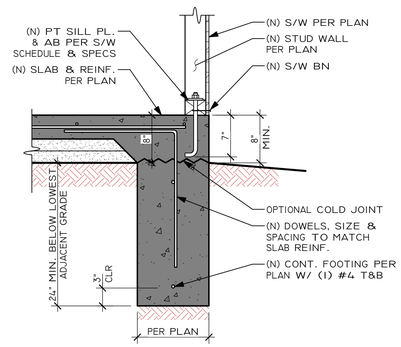
17

13

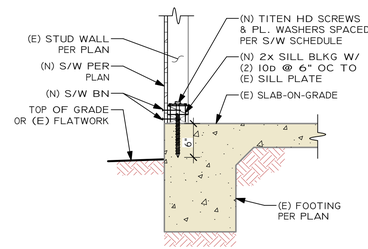
9 (N) SLAB @ (E) EXTERIOR FOOTING



5 SHEAR TRANSFER @ (N) EXT. FOOTING



1 SHEAR TRANSFER @ (E) EXT. FOOTING



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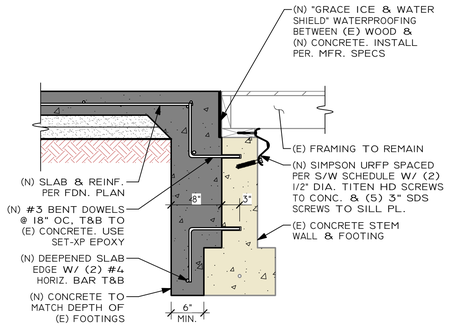
14

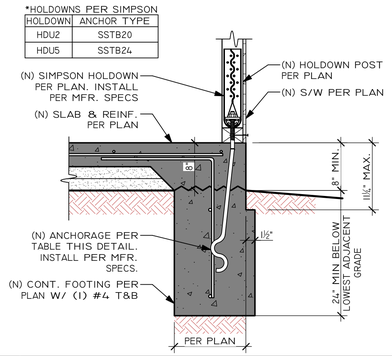
10 (N) SLAB @ (E) EXTERIOR FOOTING



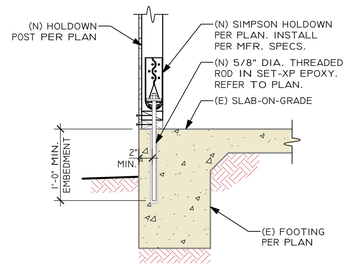
6 (N) HOLDOWN @ (N) EXT. FOOTING

*HOLDOWNS PER SIMPSON

HOLDOWN	ANCHOR TYPE
HDU2	SSTB20
HDU5	SSTB24



2 (N) HOLDOWN @ (E) EXT. FOOTING



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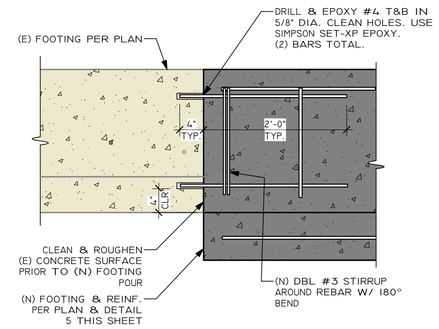
15

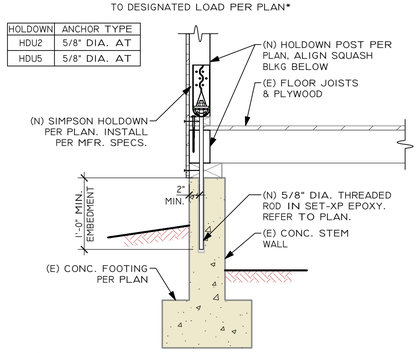
11 (N) FOOTING @ (E) FOOTING



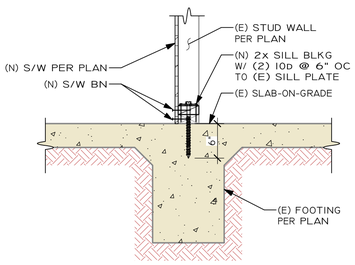
7 (N) HOLDOWN @ (E) EXT. FOOTING

EPOXY HOLDOWNS TO BE PULL TESTED TO DESIGNATED LOAD PER PLAN

HOLDOWN	ANCHOR TYPE
HDU2	5/8" DIA. AT
HDU5	5/8" DIA. AT



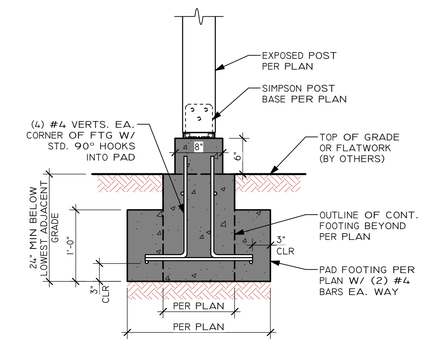
3 SHEAR TRANSFER @ (E) INT. FOOTING



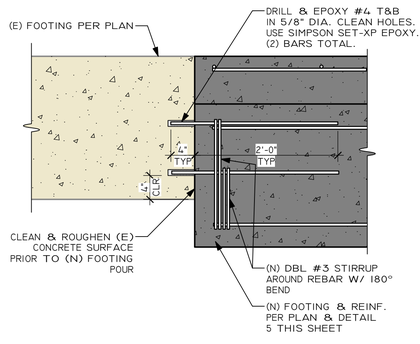
20

16

12 (N) EXTERIOR PAD FOOTING @ POST



8 (N) FOOTING @ (E) FOOTING



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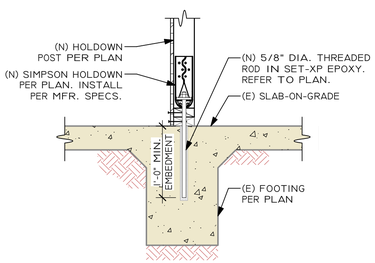

EPOXY HOLDOWNS TO BE PULL TESTED TO DESIGNATED LOAD PER PLAN

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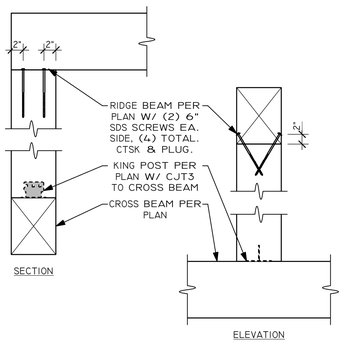
SANTA BARBARA, CA 93105

DRAWING REVISIONS

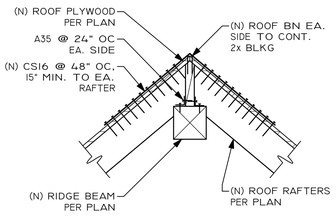
CEDAR JOB NUMBER	21010
ENGINEER:	MSE
DATE	3/31/2021
SCALE	1" = 1'-0"

FOUNDATION DETAILS

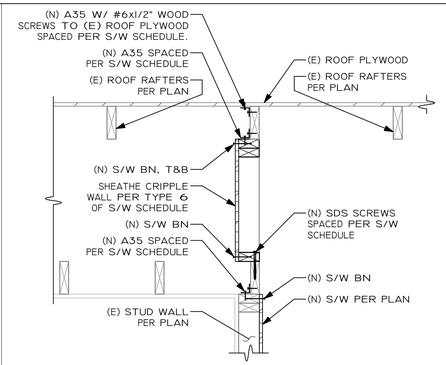
S201



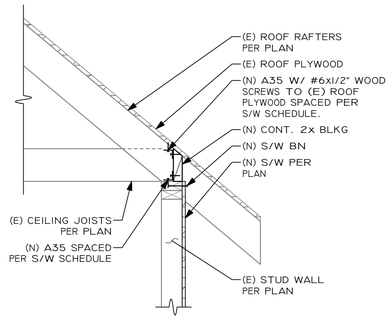
17 (N) KING POST @ RIDGE/CROSS BEAM



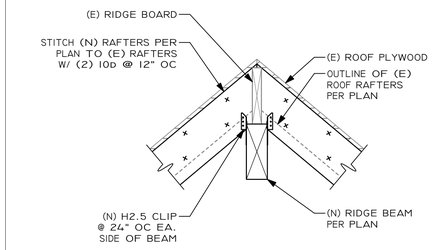
13 (N) ROOF FRAMING @ RIDGE BEAM



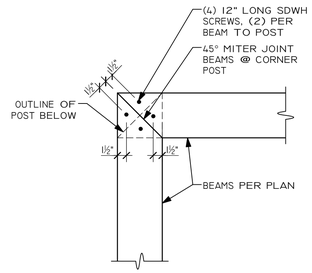
9 SHEAR TRANSFER @ (N) INTERIOR S/W



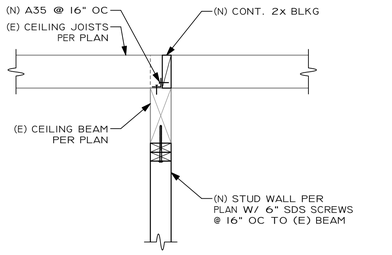
5 SHEAR TRANSFER @ (N) EXTERIOR S/W



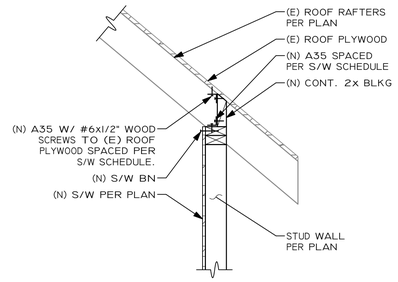
1 SISTERED RAFTERS @ (N) RIDGE BEAM



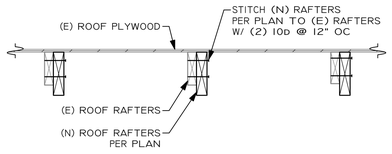
18 (N) EXTERIOR BEAMS @ CORNER POST



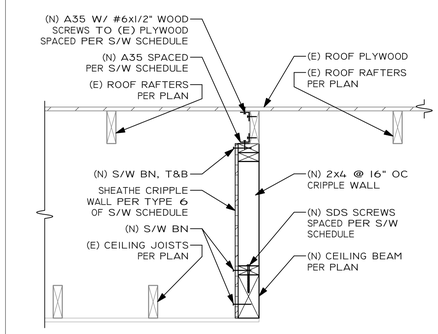
14 (N) INTERIOR WALL @ (E) BEAM



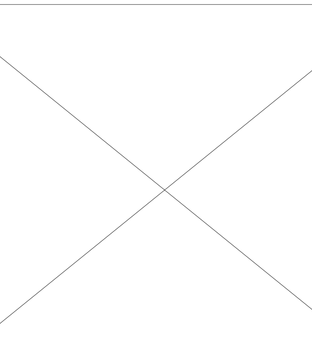
10 SHEAR TRANSFER @ (N) EXTERIOR S/W



6 (N) STRENGTHENED ROOF FRAMING



2 SHEAR TRANSFER @ (N) CEILING BEAM



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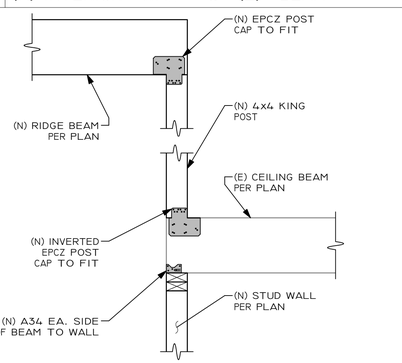
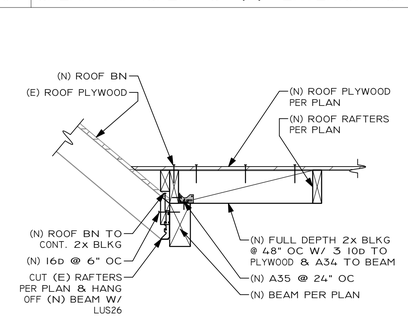
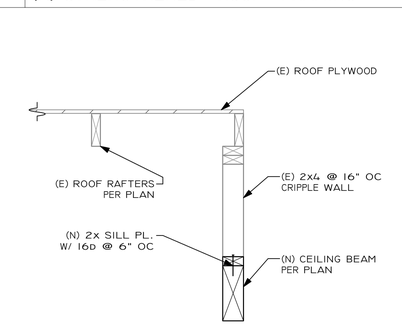


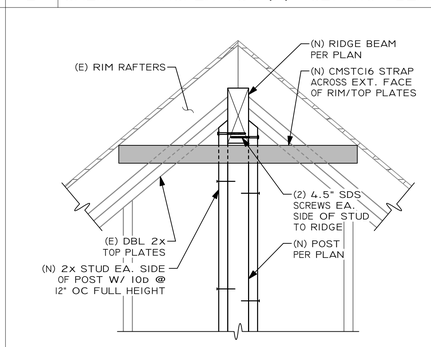
15 (N) RIDGE BEAM @ INTERIOR POST



11 (N)/(E) ROOF FRAMING @ (N) BEAM

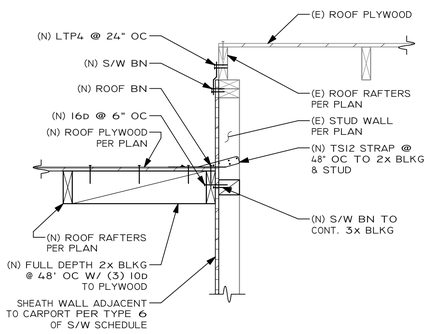


7 (E) ROOF FRAMING @ (N) HEADER

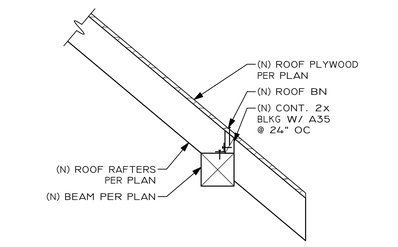


3 (N) RIDGE BEAM @ POST

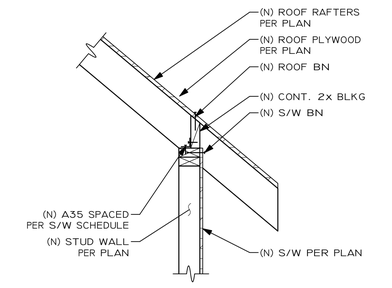
20



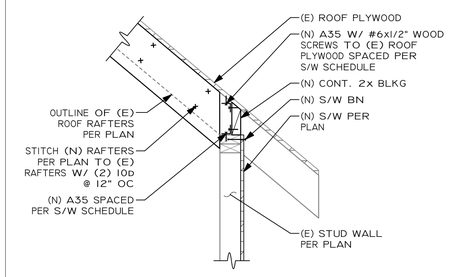
16 SHEAR TRANSFER @ STEP IN ROOF



12 (N) ROOF FRAMING @ CARPORT BEAM



8 SHEAR TRANSFER @ (N) EXTERIOR S/W



4 SHEAR TRANSFER @ (N) EXTERIOR S/W

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SANTA BARBARA, CA 93105

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2
3
4

CEDAR JOB NUMBER	21010
ENGINEER:	MSE
DATE	3/31/2021
SCALE	1" = 1'-0"

ROOF FRAMING DETAILS

S202