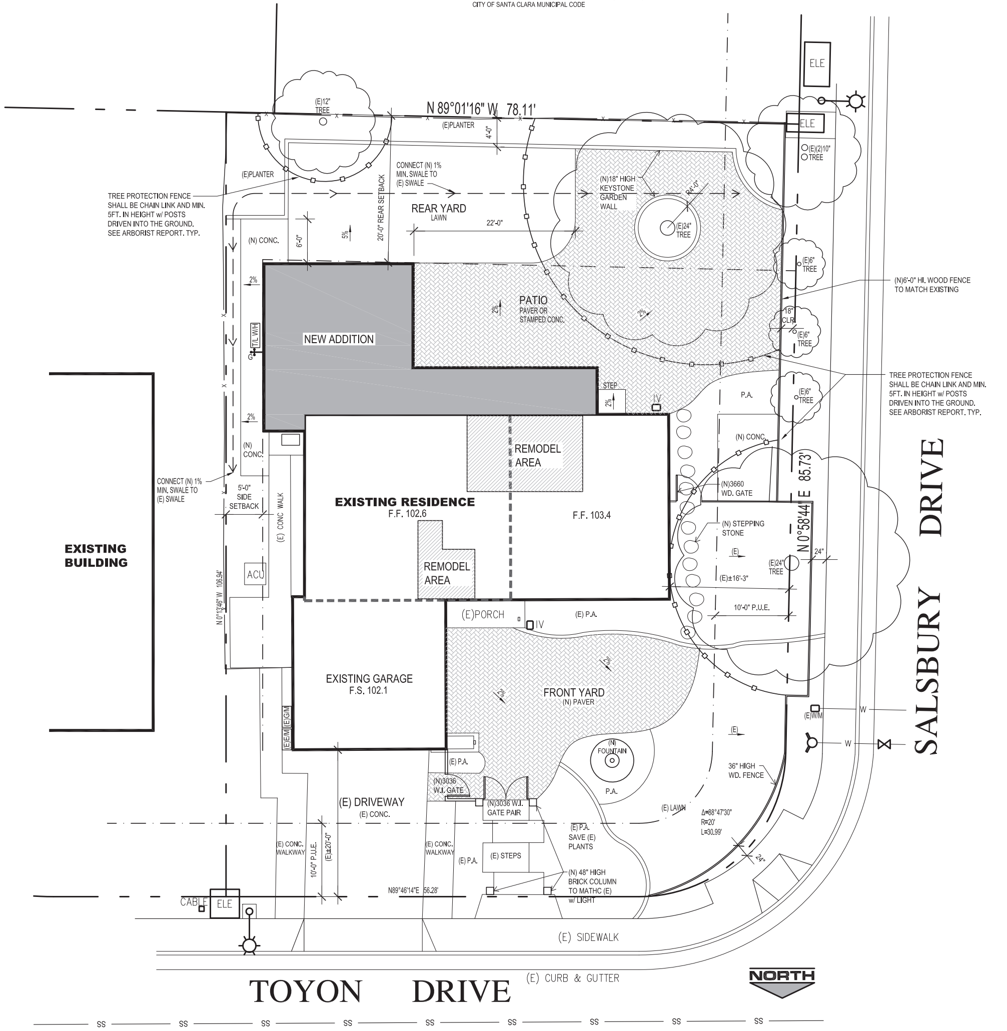
AN ADDITION & REMODEL FOR

KALYANARAMAN RESIDENCE

2826 TOYON DR, SANTA CLARA, CA 95051

APN# 296-32-012

THIS PROJECT SHALL COMPLY WITH
2019 CALIFORNIA BUILDING CODE (CBC)
2019 CALIFORNIA RESIDENTIAL CODE (CRC)
2019 CALIFORNIA MECHANICAL CODE (CMC)
2019 CALIFORNIA PLUMBING CODE (CPC)
2019 CALIFORNIA ELECTRICAL CODE (CEC)
2019 CALIFORNIA ENERGY CODE (CENC)
2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)
CITY OF SANTA CLARA MUNICIPAL CODE



N 89°01'16" W 78.11'
(E)12" TREE
(E)PLANTER
(E)PLANTER
4'-0"
CONNECT (N) 1% MIN. SWALE TO (E) SWALE
TREE PROTECTION FENCE SHALL BE CHAIN LINK AND MIN. 5FT. IN HEIGHT w/ POSTS DRIVEN INTO THE GROUND. SEE ARBORIST REPORT. TYP.
20'-0" REAR SETBACK
REAR YARD
LAWN
22'-0"
(N) CONC.
6'-0"
5%
(N)18" HIGH KEYSTONE GARDEN WALL
R4'-0"
(E)24" TREE
ELE
ELE
(E)(2)10" TREE
(E)6" TREE
(N)6'-0" HI. WOOD FENCE TO MATCH EXISTING
18" CLR
(E)6" TREE
(E)6" TREE
2%
2%
T/L W/H
G
NEW ADDITION
PATIO
PAVER OR STAMPED CONC.
2%
2%
STEP
2%
IV
P.A.
TREE PROTECTION FENCE SHALL BE CHAIN LINK AND MIN. 5FT. IN HEIGHT w/ POSTS DRIVEN INTO THE GROUND. SEE ARBORIST REPORT. TYP.
(N) CONC.
(N) CONC.
REMODEL AREA
CONNECT (N) 1% MIN. SWALE TO (E) SWALE
5'-0" SIDE SETBACK
(E) CONC WALK
EXISTING BUILDING
EXISTING RESIDENCE
F.F. 102.6
F.F. 103.4
(N)3660 WD. GATE
N 0°58'44" E 85.73'
(N) STEPPING STONE
(E)
(E)24" TREE
24"
(E)±16'-3"
10'-0" P.U.E.
ACU
N 0°13'46" W 106.94'
REMODEL AREA
(E)PORCH
IV
(E) P.A.
EXISTING GARAGE
F.S. 102.1
FRONT YARD
(N) PAVER
2%
2%
(E)E/M
(E)G/M
(E)W/M
W
W
(E)
SALSBURY DRIVE
(E) P.A.
(N)3036 W.I. GATE
(N) FOUNTAIN
P.A.
36" HIGH WD. FENCE
(N)3036 W.I. GATE PAIR
(E) LAWN
Δ=88°47'30"
R=20'
L=30.99'
(E) DRIVEWAY
(E) CONC.
(E) P.A. SAVE (E) PLANTS
(E) CONC. WALKWAY
10'-0" P.U.E.
(E)±20'-0"
(E) CONC. WALKWAY
(E) P.A.
(E) STEPS
24"
(N) 48" HIGH BRICK COLUMN TO MATHC (E) w/ LIGHT
N89°46'14"E 56.28'
CABLE
ELE
(E) SIDEWALK
(E) CURB & GUTTER
TOYON DRIVE
NORTH
SS

SITE PLAN

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION.

LEGEND

▭	EXISTING FIRST FLOOR AREA
┅	EXISTING SECOND FLOOR AREA
▨	REMODEL FLOOR AREA
■	ADDITION FLOOR AREA

SITE PLAN NOTES

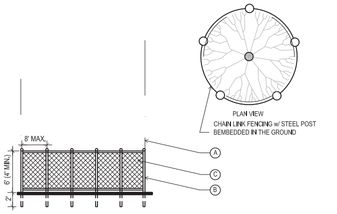
A. **GENERAL:**
- SEE OWNER FOR UP-GRADE HARDSCAPE FINISH FOR DRIVEWAY, WALKWAY & PATIO
- ALL METAL ANCHORS, FASTENERS, CONNECTORS, ETC. THAT WILL BE IN CONTACT WITH PRESSURE TREATED LUMBER MUST BE HOT-DIPPED GALVANIZED OR OTHER APPROVED CORROSION RESISTANT MATERIAL.

B. **BUILDING SETBACK:**
1. CONTRACTOR TO VERIFIED BUILDING SETBACK AND ADJUST WALL TO MEET MINIMUM SETBACK.
2. PRIOR TO FOUNDATION INSPECTION BY THE CITY, THE LICENSED LAND SURVEYOR OF RECORD SHALL PROVIDE A WRITTEN CERTIFICATION THAT ALL BUILDING SETBACKS COMPLY WITH THE APPROVED PLANS. WHICH NOTE SHALL REPRESENT A CONDITION WHICH MUST BE SATISFIED TO REMAIN IN COMPLIANCE WITH THIS DESIGN REVIEW APPROVAL.

C. **GRADING & DRAINAGE:**
1. ARROWS INDICATE DIRECTION OF SURFACE DRAINAGE.
2. GROUND IS TO SLOPE AWAY FROM FOUNDATION 5% FOR A DISTANCE OF 10 FT AWAY FROM THE BUILDING; IF 10 FT. CANNOT BE MEET, PROVIDE SWALES. PROVIDE 2% SLOPE IF IMPERVIOUS SURFACE IS USED. CRC R401.3. NO CONCENTRATED FLOW ACROSS THE RIGHT-OF-WAY. NO DRAINAGE ONTO NEIGHBORING PROPERTIES. ALL DRAINAGE TO LANDSCAPE.
3. DIRECT ROOF RUNOFF SHALL BE:
   - DIRECT ROOF RUNOFF ONTO VEGETATED AREAS
   - DIRECT RUNOFF FROM SIDEWALKS, WALKWAYS, AND/OR PATIOS ONTO VEGETATED AREAS;
   - DIRECT RUNOFF FROM DRIVEWAYS AND/OR UNCOVERED PARKING LOTS ONTO VEGETATED AREAS.
   - CONSTRUCT SIDEWALKS, WALKWAYS AND/OR PATIOS WITH PERMEABLE SURFACES
4. CONNECT ALL DOWNSPOUTS TO 3" SOLID DRAIN LINE AROUND PERIMETER OF HOUSE DRAIN TO CURB OR PROVIDE CONCRETE SPLASH BLOCK AT DOWNSPOUT LOCATIONS FOR DRAINAGE AWAY FROM STRUCTURE.

D. **UTILITIES:**
1. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES @ JOB SITE.
2. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE INSTALLATION OF FACILITIES BY PG & E, PACIFIC BELL, & CABLE TV INSTALLATION AS REQUIRED. VALVE BOXES & MANHOLES, & STRUCTURES TO BE SET TO GRADE IN CONCRETE AFTER PAVING.

E. **SITE MANAGEMENT:**
1. CONSTRUCTION SITE SHALL BE ENCLOSED BY 6' OPAQUE FENCE AT ALL TIMES DURING CONSTRUCTION.
2. NO CONSTRUCTION MATERIAL, EQUIPMENT, PORTABLE TOILETS, TRASH CONTAINERS, OR DEBRIS SHALL BE PLACED IN THE PUBLIC RIGHT-OF-WAY.
3. A TRASH CONTAINER SHALL BE MAINTAINED ON SITE AT ALL TIMES AND DEBRIS ON SITE WHICH COULD OTHERWISE BLOW AWAY, SHALL BE REGULARLY COLLECTED AND PLACED IN CONTAINER.
4. ALL CONSTRUCTION DEBRIS (WOOD SCRAPS AND OTHER DEBRIS, WHICH CANNOT BLOW AWAY) SHALL BE PILED WITHIN THE PROPERTY LINES OR THE PROJECT IN A NEAT AND SAFE MANNER.
5. THE PROJECT SHALL HAVE A SIGNAGE VIEWABLE FROM THE PUBLIC STREET THAT INDICATES THE HOURS OF CONSTRUCTION AS: MON- FRI FROM 7:30 AM TO 6 PM, SATURDAYS FROM 9AM TO 5 PM.



PLAN VIEW
CHAIN LINK FENCING w/ STEEL POST BEMBEDDED IN THE GROUND
8' MAX.
6' (4' MIN.)
2'
A
C
B

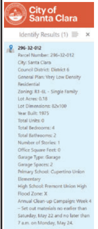
A. **DRIP LINE:** PROTECTIVE FENCING SHALL BE INSTALLED AT DRIPLINE & MAINTAINED THROUGHOUT THE CONSTRUCTION, DEMOLITION AND/OR GRADING.
B. **CHAINK LINK FENCE:** 6' HIGH
C. **STEEL POST:** 8' HIGH w/ 2' EMBEDDED IN THE GROUND.
D. **NO GRADING** SHALL OCCUR WITHIN THE DRIPLINES/FENCED AREA OF EXISTING TREES.
E. **NO CONSTRUCTION** MATERIALS OR CONSTRUCTION VEHICLES MAY BE STORED WITHIN THE DRIPLINES/FENCED AREA OF EXISTING TREES.
F. **NO SIGNS, WIRES, OR ANY OTHER OBJECT** SHALL BE ATTACHED TO THE TREE.
G. **THE CONTRACTOR IS REQUIRED** TO WATER, FERTILIZE AND ATTEND TO OTHER MAINTENANCE NEEDS OF EXISTING TREES TO MAINTAIN HEALTHY GROWTH THROUGHOUT THE CONSTRUCTION PERIOD.
H. **DAMAGED TREE** BY CONSTRUCTION SHALL BE REPAIRED IN ACCORDANCE WITH ACCEPTED ARBORICULTURE METHODS.

1 TREE PROTECTION DURING CONSTR.

PROJECT DATA

ASSESSOR'S PARCEL #:	296-32-012
PROJECT ADDRESS:	2826 TOYON DR, SANTA CLARA, CA 95051
PROPERTY OWNER:	KRISHNA KALYANARAMAN (847)899-1568 krishnakalyan@gmail.com 2826 TOYON DR, SANTA CLARA, CA 95051
PROJECT CONTACT PERSON:	TRI HONG (408)829-6083 tdhdesign@hotmail.com 19034 BONNET WAY, SARATOGA, CA. 95070
PROJECT SCOPE OF WORK:	603 S.F. ADDITION FOR MASTER BEDROOM SUITE. PROJECT WILL ALSO INCLUDE 228 S.F. KITCHEN & BATHROOM REMODEL.
OCCUPANCY:	R3-U
CONSTRUCTION:	V-B
ZONING:	R-1-10
EXISTING USE:	ONE STORY SINGLE FAMILY RESIDENCE
PROPOSED USE:	ONE STORY SINGLE FAMILY RESIDENCE
GROSS/NET LOT SIZE:	8,088 S.F.
LOT COVERAGE 40% MAX:	3,235 S.F.
NEW ADDITION:	603
EXISTING FIRST FLOOR:	1,238
EXISTING SECOND FLOOR:	692
TOTAL LIVING AREA:	2,533
EXISTING GARAGE:	420
TOTAL F.A.R.:	2,953 S.F.
EXISTING PORCH	32
TOTAL COVERAGE:	2,293 S.F. (3,235 MAX.)
TOTAL REMODEL AREA:	228 S.F.

REMOVE 1 EXISTING WOOD BURNING FIREPLACE.



City of Santa Clara

Identify Results (1)

296-32-012
Parcel Number: 296-32-012
City: Santa Clara
Council District: District 6
General Plan: Very Low Density Residential
Zoning: R1-6L - Single Family
Lot Acres: 0.18
Lot Dimensions: 82x100
Year Built: 1975
Total Units: 0
Total Bedrooms: 4
Total Bathrooms: 2
Number of Stories: 1
Office Square Feet: 0
Garage Type: Garage
Garage Spaces: 2
Primary School: Cupertino Union Elementary
High School: Fremont Union High
Flood Zone: X
Annual Clean-up Campaign: Week 4 – Set out materials no earlier than Saturday, May 22 and no later than 7 a.m. on Monday, May 24.

CONSULTANTS LIST

DESIGNER
TDH DESIGN
19034 BONNET WAY
SARATOGA, CA 95070
408.829.6083
tdhdesign@HOTMAIL.COM

ENERGY CONSULTANT
CARSTAIRS ENERGY CALC.
904 EVERT COURT
PASO ROBLES, CA 93446
805.904.9048
timmycarstairs@YAHOO.COM

STRUCTURAL ENGINEER
WESLEY LIU ENGINEERING
7246 SHARON DRIVE #O
SAN JOSE, CA 95129
408.973.1839
wesleyliu@YAHOO.COM

CIVIL ENGINEER
RW ENGINEERING, INC.
505 ALTAMONT DRIVE
MILPITAS, CA 95035
408-420-6283
rwengineering@GMAIL.COM

MANUFACTURER CONTACT
- **'Gaf' Roofing:**
  (877) 423-7663 www.gaf.com/
- **'Velux' Skylight:**
  (800) 888-3589 www.veluxusa.co
- **'Grace Construction' Flashing**
  (866) 333-3726 www.gcpat.com

GENERAL NOTES

1. **ALL WRITTEN DIMENSIONS** SHALL OVER TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. **ANY DISCREPANCIES** SHALL BE BROUGHT TO THE ATTENTION OF TDH DESIGN PRIOR TO COMMENCING.
3. **LOCATION OF UTILITIES AND EXISTING CONDITIONS** AT SITE TO BE VERIFIED PRIOR TO CONSTRUCTION BIDDING.
4. **ALL WORK APPLIANCES AND EQUIPMENT** SHALL COMPLY WITH C.E.C TITLE 24 RESIDENTIAL ENERGY STANDARDS.
5. **THE TITLE 24 ENERGY REPORT** QUALITY INSULATION IS REQUIRED PER SUBMITTED ENERGY CALCULATIONS, AND EVIDENCE OF THIRD-PARTY VERIFICATION (HERS) MUST BE PROVIDED TO THE BUILDING INSPECTOR PRIOR TO FINAL INSPECTION.
6. **BUILDER/CONTRACTOR:**
   - RESPONSIBILITY FOR METHOD AND MANNER OF CONSTRUCTION AND FOR ALL JOB SITE SAFETY DURING CONSTRUCTION.
   - SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR METHOD & MANNER OF ALL WATERPROOFING. BUILDER/CONTRACTOR SHALL REFER TO SOIL REPORT, GRADING & DRAINAGE PLAN, AND ALL WATERPROOFING WORK TO BE PERFORMED BY NHQ CERTIFIED WATERPROOFING COMPANY.
   - SHALL PROVIDE THE BUILDING OWNER, MANAGER, AND THE ORIGINAL OCCUPANTS A LIST OF THE ENERGY-SAVING CONSERVATION FEATURES DEVICES, MATERIALS, AND COMPONENTS INSTALLED IN THE BUILDING, AND INSTRUCTIONS ON HOW TO USE THEM EFFICIENTLY, SUCH FEATURES INCLUDE HEATING, COOLING, WATER HEATING, AND LIGHTING SYSTEMS, AS WELL AS INSULATION, WEATHER STRIPPING WINDOW SHADES, AND THERMAL MASS MATERIALS, THE INSTRUCTIONS SHALL BE CONSISTENT WITH SPECIFICATIONS BUT FORTH BY THE EXECUTIVE DIRECTOR.
   - SHALL PROVIDE THE HOMEOWNER WITH A LUMINAIRE SCHEDULE (AS REQUIRED IN TITLE 24 CALIFORNIA CODE OF REGULATIONS, PART 1, §10-103(B)) THAT INCLUDES A LIST OF LAMPS INSTALLED IN THE LUMINARIES.

SHEET INDEX

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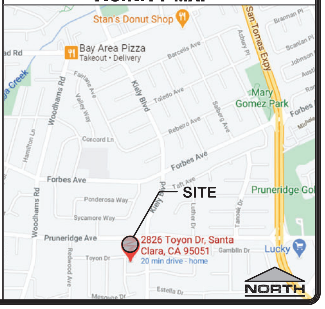
A-4 ELEVATIONS
A-5 SECTION & ROOF PLAN
A-6 DETAILS
F-1 GRACE FLASHING
T24.1 TITLE 24
T24.2 TITLE 24
T24.3 TITLE 24
G-1 CALGREEN & CITY OF SANTA CLARA REQ.
N1 GENERAL NOTES
L-1 CONCEPTUAL LANDSCAPE PLAN
SU1 SURVEY

STRUCTURAL
S0 GENERAL NOTES
S1 FOUNDATION PLAN
S2 DETAILS
S3 CEILING FRAMING PLAN
S4 ROOF FRAMING PLAN
S5 DETAILS

VICINITY MAP



Stan's Donut Shop
Bay Area Pizza
Takeout · Delivery
San Tomas Expy
Brannan Pl
Scanlan Pl
Johnson
Barcells Ave
Asbury Pl
Fairlane Ave
Valley Way
Kiely Blvd
Toledo Ave
Woodhams Rd
Mary Gomez Park
Salberg Ave
Rebeiro Ave
Forbes Ave
Hamilton Ln
Concord Ln
Forbes Ave
Taft Ave
SITE
Pruneridge Gol
Ponderosa Way
Sycamore Way
Luther Dr
Tanoak Dr
Pruneridge Ave
Redwood Ave
Toyon Dr
2826 Toyon Dr, Santa Clara, CA 95051
20 min drive - home
Gamblin Dr
Lucky
Estella Dr
Mesquite Dr
NORTH

REVISIONS	BY

SITE PLAN

AN ADDITION & REMODEL FOR
KALYANARAMAN RESIDENCE
2826 TOYON DR, SANTA CLARA, CA 95051
APN# 296-32-012

FINE CUSTOM HOME
TDH DESIGN
(408) 829-6083
19034 BONNET WAY ○ SARATOGA, CA 95070

DRAWN
LOC HUA

CHECKED
TRI HONG

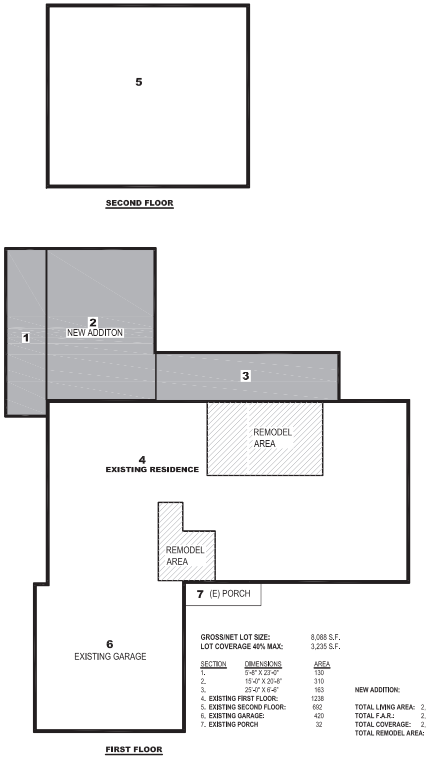
SIGNATURE

DATE
MARCH 2021

SCALE
AS SHOWN

JOB
0421

SHEET
A-1


5
SECOND FLOOR
1
2
NEW ADDITON
3
REMODEL
AREA
4
EXISTING RESIDENCE
REMODEL
AREA
7 (E) PORCH
6
EXISTING GARAGE
FIRST FLOOR

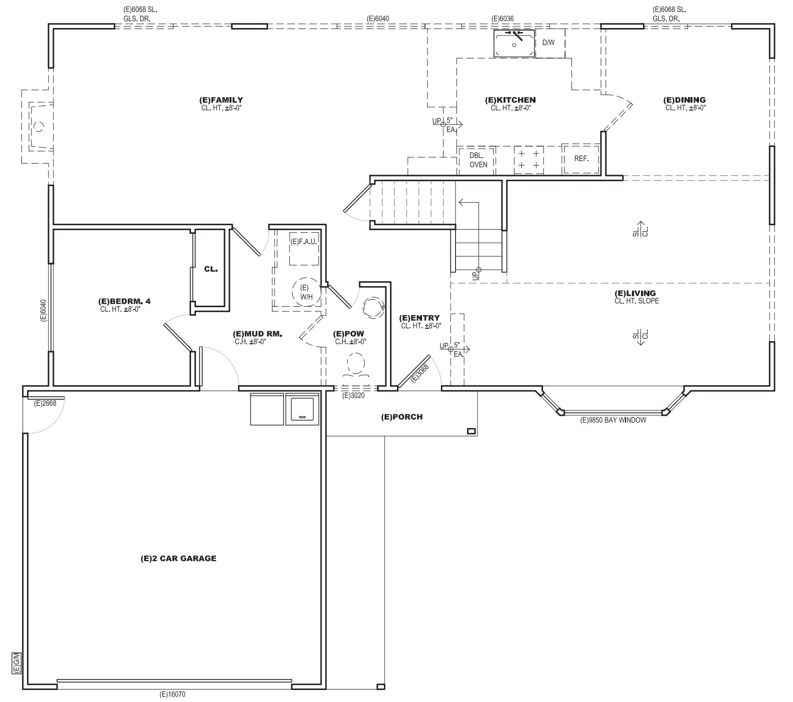
GROSS/NET LOT SIZE: 8,088 S.F.
LOT COVERAGE 40% MAX: 3,235 S.F.

SECTION	DIMENSIONS	AREA
1.	5'-8" X 23'-0"	130
2.	15'-0" X 20'-8"	310
3.	25'-0" X 6'-6"	163
4. EXISTING FIRST FLOOR:		1238
5. EXISTING SECOND FLOOR:		692
6. EXISTING GARAGE:		420
7. EXISTING PORCH		32

NEW ADDITION:	603
TOTAL LIVING AREA:	2,533
TOTAL F.A.R.:	2,953 S.F.
TOTAL COVERAGE:	2,293 S.F. (3,235 MAX.)
TOTAL REMODEL AREA:	228 S.F.

LOT COVERAGE CALC. DIAGRAM

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


(E)6068 SL.
GLS. DR.
(E)6040
(E)6036
(E)6068 SL.
GLS. DR.
D/W
(E)FAMILY
CL. HT. ±8'-0"
(E)KITCHEN
CL. HT. ±8'-0"
(E)DINING
CL. HT. ±8'-0"
UP 5"
EA.
DBL.
OVEN
REF.
(E)6040
CL.
(E)BEDRM. 4
CL. HT. ±8'-0"
(E)F.A.U.
(E)
W/H
(E)MUD RM.
C.H. ±8'-0"
(E)POW
C.H. ±8'-0"
(E)ENTRY
CL. HT. ±8'-0"
UP 5"
EA.
UP
SL.
CL.
(E)LIVING
CL. HT. SLOPE
SL.
CL.
(E)2668
(E)3020
(E)3068
(E)PORCH
(E)9850 BAY WINDOW
(E)2 CAR GARAGE
(E)G/M
(E)16070

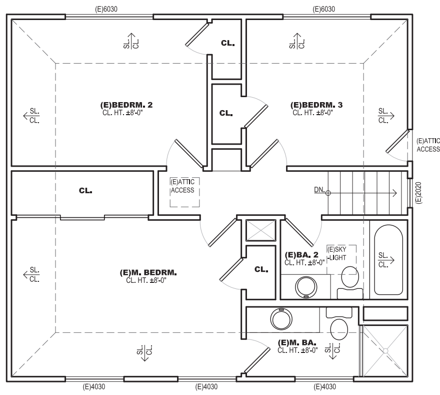
LEGEND

▬	EXISTING WALL
- - -	WALL TO REMOVE

EXISTING FIRST FLOOR PLAN

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION.


(E)6030
(E)6030
SL.
CL.
CL.
SL.
CL.
SL.
CL.
(E)BEDRM. 2
CL. HT. ±8'-0"
CL.
(E)BEDRM. 3
CL. HT. ±8'-0"
SL.
CL.
(E)ATTIC
ACCESS
CL.
(E)ATTIC
ACCESS
DN
(E)2020
SL.
CL.
(E)M. BEDRM.
CL. HT. ±8'-0"
CL.
(E)BA. 2
CL. HT. ±8'-0"
(E)SKY
LIGHT
SL.
CL.
SL.
CL.
(E)M. BA.
CL. HT. ±8'-0"
SL.
CL.
(E)4030
(E)4030
(E)4030

EXISTING SECOND FLOOR PLAN

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION,

REVISIONS	BY

EXISTING FLOOR
PLAN, LOT COVERAGE
CALC. DIAGRAM &
EXISTING PHOTOS.

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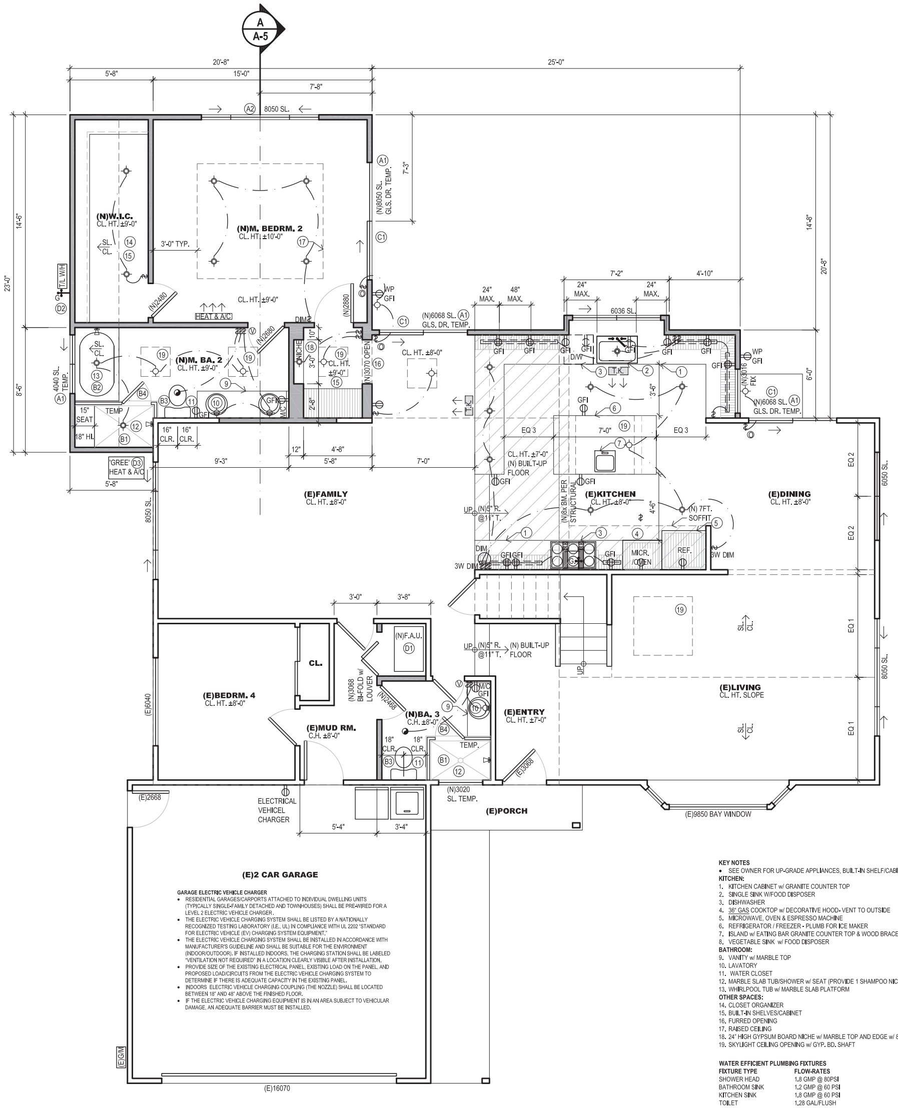
DRAWN LOC HUA
CHECKED TRI HONG
SIGNATURE
DATE MARCH 2021
SCALE AS SHOWN
JOB 0421
SHEET

A-2



(E)2 CAR GARAGE

GARAGE ELECTRIC VEHICLE CHARGER

- RESIDENTIAL GARAGES/CARPORTS ATTACHED TO INDIVIDUAL DWELLING UNITS (TYPICALLY SINGLE-FAMILY DETACHED AND TOWNHOUSES) SHALL BE PRE-WIRED FOR A LEVEL 2 ELECTRIC VEHICLE CHARGER.
- THE ELECTRIC VEHICLE CHARGING SYSTEM SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY (I.E., UL) IN COMPLIANCE WITH UL 2202 "STANDARD FOR ELECTRIC VEHICLE (EV) CHARGING SYSTEM EQUIPMENT."
- THE ELECTRIC VEHICLE CHARGING SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINE AND SHALL BE SUITABLE FOR THE ENVIRONMENT (INDOOR/OUTDOOR). IF INSTALLED INDOORS, THE CHARGING STATION SHALL BE LABELED "VENTILATION NOT REQUIRED" IN A LOCATION CLEARLY VISIBLE AFTER INSTALLATION.
- PROVIDE SIZE OF THE EXISTING ELECTRICAL PANEL, EXISTING LOAD ON THE PANEL, AND PROPOSED LOAD/CIRCUITS FROM THE ELECTRIC VEHICLE CHARGING SYSTEM TO DETERMINE IF THERE IS ADEQUATE CAPACITY IN THE EXISTING PANEL.
- INDOORS ELECTRIC VEHICLE CHARGING COUPLING (THE NOZZLE) SHALL BE LOCATED BETWEEN 18" AND 48" ABOVE THE FINISHED FLOOR.
- IF THE ELECTRIC VEHICLE CHARGING EQUIPMENT IS IN AN AREA SUBJECT TO VEHICULAR DAMAGE, AN ADEQUATE BARRIER MUST BE INSTALLED.

PROPOSED FIRST FLOOR PLAN w/ ELECTRICAL

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION.

KEY NOTES

- SEE OWNER FOR UP-GRADE APPLIANCES, BUILT-IN SHELF/CABINET AND COUNTER TOP.

KITCHEN:

1. KITCHEN CABINET w/ GRANITE COUNTER TOP
2. SINGLE SINK W/FOOD DISPOSER
3. DISHWASHER
4. 36" GAS COOKTOP w/ DECORATIVE HOOD- VENT TO OUTSIDE
5. MICROWAVE, OVEN & ESPRESSO MACHINE
6. REFRIGERATOR / FREEZER - PLUMB FOR ICE MAKER
7. ISLAND w/ EATING BAR GRANITE COUNTER TOP & WOOD BRACES
8. VEGETABLE SINK w/ FOOD DISPOSER

BATHROOM:

9. VANITY w/ MARBLE TOP
10. LAVATORY
11. WATER CLOSET
12. MARBLE SLAB TUB/SHOWER w/ SEAT (PROVIDE 1 SHAMPOO NICHE)
13. WHIRLPOOL TUB w/ MARBLE SLAB PLATFORM

OTHER SPACES:

14. CLOSET ORGANIZER
15. BUILT-IN SHELVES/CABINET
16. FURRED OPENING
17. RAISED CEILING
18. 24" HIGH GYPSUM BOARD NICHE w/ MARBLE TOP AND EDGE w/ 8'-6" ARCH FURRED SOFFIT
19. SKYLIGHT CEILING OPENING w/ GYP. BD. SHAFT

WATER EFFICIENT PLUMBING FIXTURES

FIXTURE TYPE	FLOW-RATES
SHOWER HEAD	1.8 GMP @ 80PSI
BATHROOM SINK	1.2 GMP @ 60 PSI
KITCHEN SINK	1.8 GMP @ 60 PSI
TOILET	1.28 GAL/FLUSH

NOTE: SHOWER w/ 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.

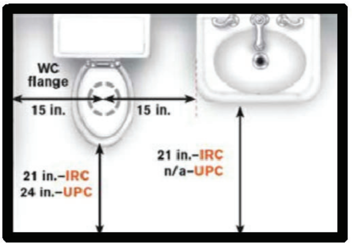
LEGEND

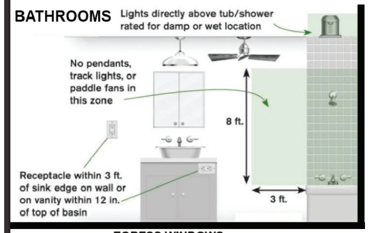
▭	EXISTING WALL
▬	NEW WALL

ELECTRICAL SYMBOLS

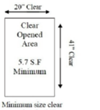
- LED WALL MOUNTED FIXTURE
- LED RECESSED MOUNTED FIXTURE
  - C = CEILING MOUNTED
  - W= WATER VAPOR PROOF
  - P = PENDANT
- LED FLUORESCENT FIXTURE
- EXHAUST FAN
- SD SMOKE ALARM
- SD & CO SMOKE & CARBON MONOXIDE ALARM
- TV TELEVISION/CABLE INTERNET
- $ SWITCH: 3W = 3 WAY D = DIMMER
  O = OCCUPANCY SENSOR
  V = VACANCY SENSOR
- OUTLET: 110V = 110 VOLT
  220V = 220 VOLT
  GFI = GROUND FAULT INTER
  WP = WEATHERPROOF
- HEAT REGISTER: C= CEILING F= FLOOR T/K = TOE KICK
- C.A.R. COLD AIR RETURN: C= CEILING L/W = LOW WALL
- HB HOSE BIB
- G GAS STUB OUT
- T/L W/H TANKLESS WATER HEATER
- F.A.U. FURNACE
- G/M GAS METER
- E/M MIN. 200 AMPS. ELECTRICAL METER. MUST BE LARGE ENOUGH TO CARRY EXTRA LOAD

FIXTURE LAYOUT

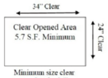



BATHROOMS
Lights directly above tub/shower rated for damp or wet location
No pendants, track lights, or paddle fans in this zone
8 ft.
Receptacle within 3 ft. of sink edge on wall or on vanity within 12 in. of top of basin
3 ft.

EGRESS WINDOWS



Minimum size clear opening for 20" opened width



Minimum size clear opening for 24" opened height

MINIMUM OPENING REQUIREMENTS

24" Minimum Clear Height
20" Minimum Clear Width
5.7 S.F. minimum opened area

SILL HEIGHT

Maximum 44" above floor

Minimum Energy Requirements per 2013 CA Energy Code – Table 151-C

U = 0.40 SGCH = 0.40

COMMON WINDOW SIZES MEETING MINIMUM EGRESS REQURIEMENTS FOR STANDARD 6-8 HEADER HEIGHT

Slider	Single/Double Hung	Single Casement
4-0 x 4-0	3-0 x 5-0	2-4 x 4-0
5-0 x 3-6	3-0 x 5-6	2-6 x 3-6
6-0 x 3-6	3-4 x 5-0	**Double Casement**
8-0 x 4-0	3-8 x 5-0	4-8 x 4-0
4-0 x 5-0		

Note: These are general dimensions. It is the Owner's responsibility to verify that the actual windows installed meet the minimum egress requirements.

2013 CRC Section R308 - Safety or Tempered glass will be required for the following locations:

- Glass within 24" of a door and where bottom edge is less than 60" from floor or walking surface.
- Glass adjacent to stairs, landings and ramps within 36" horizontally of walking surface and bottom edge less than 60" to walking surface.

FLOOR PLAN NOTES

A. GENERAL
- **BUILDER/CONTRACTOR** SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR METHOD & MANNER OF ALL WATERPROOFING.
- **ALL NEW EXTERIOR WALLS:** WRAP WITH CDX PLYWOOD TYPICAL THROUGHOUT-VERIFY W/ OWNER.
- **WINDOW, DOOR, SUN TUNNEL & SKYLIGHT:** SIZE SHOWN ARE FOR DESIGN PURPOSES ONLY. ACTUAL SIZES SHALL BE FRAMED & SET PER MFG. SPECIFICATIONS. MAKE & MODEL NUMBERS SHALL BE CALLED OUT PER SUPPLIER'S AND/OR OWNER'S SPECIFICATIONS. WINDOWS TO BE DUAL-PANED (U.N.O.) INSTALLED W/ CERTIFYING LABEL ATTACHED, SHOWING U-VALUE.
- **WATER HEATER, FURNACE, FIRE PLACE & A/C:** LISTED & INSTALLED IN ACCORDANCE W/ THE TERMS OF THEIR LISTING & THE MFG.'S INSTRUCTIONS.

1. **TEMPERED GLAZING:** ALL NEW BATHROOM WINDOWS, FRENCH DOOR & SLIDING GLASS DOOR. WHEN EDGE OF GLASS IS LESS THAN 24" FROM DOOR EDGE AND LESS THAN 60" ABOVE GROUND. WHEN GLASS IS MORE THAN 9 SQ. FT . AND EDGE OF GLASS IS LESS THAN 18" ABOVE FLOOR/GROUND AND TOP EDGE IS MORE THAN 36" ABOVE GROUND AND WITHIN 36" OF WALKING SURFACES.
2. **EGRESS WINDOWS:** 20-IN MIN. CLEAR WIDTH, 24-IN MIN. CLEAR HEIGHT, 5.7 SQ. FT. MIN. OPENABLE AREA, 5 SQ. FT MIN OPEN AREA FOR GRADE-FLOOR OPENINGS & OPENING IS TO BE MEASURED 44 INCHES MAX. ABOVE FINISHED FLOOR.
3. **ATTIC ACCESS:** 22"X30" W/ 30 INCH VERTICAL HEADROOM, CRC R807.1. PROVIDE WEATHER-STRIP OR SEAL TO PREVENT DRAFTS.

B. BATHROOMS

1. TUB/SHOWER:
   - **SHOWER STALLS:** 1,024 SQ. IN. MIN. FINISHED INTERIOR, BE CAPABLE OF ENCOMPASSING A 30 INCH DIAMETER CIRCLE. ANY DOORS SHALL SWING OUT OF THE ENCLOSURE HAVE A CLEAR OPENING OF 22" MIN. (CPC 408.5, 408.6)
   - **SHOWER FLOORS:** LINED WITH AN APPROVED SHOWER PAN OR AN ON-SITE BUILT WATERTIGHT APPROVED LINING (I.E. HOT MOP). ON-SITE BUILT SHOWER LININGS SHALL EXTEND A MIN. OF 3" VERTICALLY UP THE WALL AND SHALL BE SLOPED 1/4" PER FOOT TO WEEP HOLES. (CPC 408.7)
   - **CURB SHOWER:** 1" MIN. ABOVE THE SHOWER FLOOR AND BETWEEN 2" & 9" ABOVE THE TOP OF THE DRAIN. A WATERTIGHT NAILING FLANGE THAT EXTENDS A MIN. OF 1" HIGH SHALL BE INSTALLED WHERE THE SHOWER FLOOR MEETS THE VERTICAL SURFACE OF THE SHOWER COMPARTMENT. THE FINISHED FLOOR OF THE SHOWER COMPARTMENT SHALL BE UNIFORMLY SLOPED BETWEEN 1/8" & 1/2" PER FT. TOWARDS TO THE DRAIN. (CPC 408.5)
   - **CURBLESS SHOWER:** THE ENTIRE BATHROOM SHALL BE CONSIDERED A WET LOCATION. THE FLOORING IN THE ENTIRE BATHROOM SHALL COMPLY WITH THE WATER PROOFING REQ. DESCRIBED ABOVE FOR SHOWER FLOORS AND ALL LIGHTING FIXTURES SHALL BE APPROVED FOR WET LOCATIONS.
   - **SHOWER STALLS AND BATHTUBS W/ SHOWER HEADS INSTALLED**: FINISHED W/ A SMOOTH, NONABSORBENT SURFACE TO A HEIGHT OF NOT LESS THAN 6 FT. ABOVE THE FLOOR. 2019 CRC, SECTION R307.2.
   - **UNDERLAYMENT MATERIAL:** USED AS BACKERS FOR WALL TILE OR SOLID SURFACE MATERIAL IN TUB AND SHOWER ENCLOSURES SHALL BE EITHER GLASS MAT/FIBER-REINFORCED GYPSUM BACKING PANELS (I.E. DENSSHIELD, DENS ARMOR PLUS), NON-ASBESTOS FIBER-CEMENT/FIBER MAT BACK BOARD (I.E. HARDIBACKER, CEMENT BOARD). ALL MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
   - **WATER-RESISTANT GYPSUM BOARD:** (I.E. PURPLE BOARD) MAY BE USED WHEN ATTACHED DIRECTLY TO STUDS, OVERLAID WITH MINIMUM GRADE B BUILDING PAPER AND WIRE LATH. TILE SHALL BE ATTACHED TO THE WIRE LATH. (CRC R702.4)
   - **THE MIXING VALVE IN A SHOWER:** PRESSURE BALANCING SET AT A MAXIMUM 120° F. THE WATER-FILLER VALVE IN BATHTUBS/WHIRLPOOLS SHALL HAVE A TEMPERATURE LIMITING DEVICE SET AT A MAXIMUM OF 120° F. THE WATER HEATER THERMOSTAT CANNOT BE USED TO MEET THESE PROVISIONS. (CPC 408.3, 409.4)
2. **HYDRO-MASSAGE (I.E. JACUZZI):** HYDRO-MASSAGE TUBS (I.E. JACUZZI TUBS) SHALL HAVE ACCESS TO THE MOTOR, BE SUPPLIED BY A GFCI PROTECTED DEDICATED CIRCUIT, AND BE LISTED BY A RECOGNIZED TESTING AGENCY (I.E. UL). ALL METAL CABLES, FITTINGS, PIPING, OR OTHER METAL SURFACES, WITHIN 5 FEET OF THE INSIDE WALL OF THE HYDRO- MASSAGE TUB SHALL BE PROPERLY BONDED. HYDRO-MASSAGE TUBS SHALL BE BONDED WITH A MINIMUM #8 AWG BARE COPPER WIRE AND THE BONDING SHALL BE ACCESSIBLE. (CEC 680.70)
3. **WATER CLOSET**: THE WATER CLOSET SHALL HAVE A CLEARANCE OF 30 INCHES WIDE (15 INCHES ON CENTER) AND 24 INCHES IN FRONT. (CPC 402.5). WHERE THE WATER CLOSET (OR OTHER PLUMBING FIXTURE) COMES INTO CONTACT WITH THE WALL OR FLOOR, THE JOINT SHALL BE CAULKED AND SEALED TO BE WATERTIGHT. (CPC 402.2)
4. **TEMPERED GLAZING**: WITHIN A PORTION OF WALL ENCLOSING A TUB/SHOWER WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES ABOVE THE STANDING SURFACE AND DRAIN INLET.WITHIN 60 INCHES OF A TUB/SHOWER WHERE THE GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE. GLAZING WITHIN 24 INCHES OF EITHER SIDE OF THE DOOR IN THE PLANE OF THE DOOR IN A CLOSED POSITION. GLAZING ON THE HINGE-SIDE OF AN IN-SWINGING DOOR THAT IS INSTALLED PERPENDICULAR TO A DOOR IN A CLOSED POSITION AND WITHIN 24 INCHES OF THE DOOR.(CRC 308.1, R308.4)

C. OUTDOOR

1. **LANDINGS & THRESHOLDS:** LANDING WIDTH SHALL NOT BE LESS THAN THE DOOR SERVED. 36" MIN. MEASURED IN THE DIRECTION OF TRAVEL. EXTERIOR LANDINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2%). LANDINGS OR FLOORS AT THE REQUIRED EGRESS DOORS SHALL NOT BE MORE THAN 1 1/2" LOWER THAN THE TOP OF THE THRESHOLD. EXCEPTION: THE EXTERIOR LANDING OR FLOOR SHALL NOT BE MORE THAN 7 3/4" INCHES BELOW THE TOP OF THE THRESHOLD PROVIDED THE DOOR DOES NOT SWING OVER THE LANDING OR FLOOR. 2% MAX. PER FT. SLOPE TO DRAIN. PROVIDE 'DURADEK' TILEDEK WATERPROOFING MEMBRANE FOR BALCONY FLOOR & EXTERIOR WOOD STAIR.

D. APPLIANCES

1. **FORCED AIR UNIT:**
   - LOCATED GARAGE: PROVIDE 18" HIGH PLATFORM & 4' MIN. HIGH PROTECTIVE BOLLARS.
   - LOCATED UNDER STAIRWAYS FULLY INSULATION @ WALLS, LANDING AND STAIR STRINGER. DOOR SHALL BE SOLID CORE W/ WEATHERSTRIPS.
   - PROVIDE A DEDICATED CIRCUIT.
   - PROVIDE A 120-VOLT SERVICE RECEPTACLE WITHIN 25 FEET OF THE EQUIPMENT FOR MAINTENANCE.
   - COMBUSTION AIR MUST BE MAINTAINED AS REQUIRED BY CMC.
   - PROVIDE SEISMIC SWAY BRACES OR ANCHOR UNIT TO PLATFORM.
2. **TANKLESS W/H**
   - BY 'RHEEM' PERFORMANCE PLATINUM OUTDOOR MODEL #ECOH200XLN-2 OR EQUAL. 9.5 GPM MAX. 11,000-199,900 BTU/H.
   - PROVIDE 120V WATERPROOF GFI RECEPTACLE LOCATED WITHIN 3 FEET FROM EACH WATER HEATER AND ACCESSIBLE TO THE WATER HEATER W/ NO OBSTRUCTIONS.
   - PROVIDE A 3/4 MIN. 200,00 BTU/HR MIN. GAS LINE.
   - CONTRACTOR TO PROVIDE GAS LINE DIAGRAM & CALC PER CITY INSPECTION. UPGRADE MAIN GAS METER IF REQ.
3. **SPLIT HEAT PUMPS & ACS:** 12,000 BTU (1.0 TON) 19 SEER DUCTLESS MINI-SPLIT HEAT PUMP SYSTEM - Model #WYS012AMFI19RL-16 OR EQUAL. INSTALL PER MANUFACTURER RECOMMENDATION.

ELECTRICAL NOTES

E. GENERAL
- ALL ELECTRICAL INSTALLED PER CALIFORNIA ELECTRICAL CODE AND CITY ORDINANCES CURRENTLY IN USE.
- ELECTRICAL, LIGHTING & MECHANICAL SHOWN ARE FOR DESIGN PURPOSES ONLY. CONTRACTOR TO VERIFY WITH OWNER FOR FINAL APPROVAL . .

1. LIGHTING
   - ALL INSTALLED LIGHTING SHALL BE HIGH-EFFICIENCY PER TABLE 150.0.A..
   - ALL BULBS SHALL BE LABELED AS JA8-2016 (JA8-2016-E FOR SEALED LENS OR RECESSED FIXTURE). SCREW BASE BULBS ARE PERMITTED, EXCEPT IN RECESSED LIGHTING FIXTURES.
   - RECESSED LIGHTING SHALL BE LISTED AS IC (ZERO CLEARANCE TO INSULATION) AND AT (AIR TIGHT), BE SEALED/CAULKED BETWEEN THE FIXTURE HOUSING AND CEILING, SHALL NOT CONTAIN A SCREW BASE SOCKET, AND CONTAIN BULBS MARKED WITH JA8-2016-E EFFICIENCY LABEL.
   - CLOSET LIGHTS SHALL BE FLUORESCENT, HAVE A SEALED LENS, OR LED LISTED FOR STORAGE AREA.
   - LIGHTING IN BATHROOMS, GARAGES, UTILITY ROOMS, AND LAUNDRY ROOMS SHALL HAVE AT 1 FIXTURE CONTROLLED BY A VACANCY SENSOR SWITCH THAT REQUIRES A MANUAL ON ACTIVATION (DOES NOT AUTOMATICALLY TURN ON) AND AUTOMATICALLY TURNS OFF WITHIN 30 MINUTES AFTER THE ROOM IS VACATED.
   - DIMMERS OR VACANCY SENSOR SHALL CONTROL ALL INSTALLED LIGHTING FIXTURES WITH JA8-2016 BULBS, EXCEPT THOSE IN A CLOSET THAT IS LESS THAN 70 SQUARE FEET AND IN HALLWAYS.
3. RECEPTACLES
   - ALL RECEPTACLES WILL BE TAMPER-RESISTANT (TR MARKING)
   - PROVIDE GFCI PROTECTED AT KITCHEN COUNTER TOPS, INCLUDING ISLANDS AND PENINSULAS, BATHROOMS, GARAGES, OUTDOORS, LAUNDRY, UTILITY, SUNROOMS UNFINISHED BASEMENTS AND WITHIN 6 FT OF WET BAR SINKS.
   - OUTLETS (INCLUDING RECEPTACLES, SWITCHES, LIGHTING, AND HARD-WIRED SMOKE DETECTORS) INSTALLED IN KITCHENS, FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, CLOSETS, HALLWAYS, OR LAUNDRY AREAS SHALL BE AFCI PROTECTED.
   - PROVIDE A MINIMUM OF ONE 20 AMPERE RECEPTACLE IN AREAS DESIGNATED FOR LAUNDRY EQUIPMENT.
   - SHALL HAVE NO POINT ALONG THE WALL IS FURTHER THAN 6 FEET FROM AN OUTLET.
   - PROVIDE DUPLEX OUTLETS FOR BROILER OF 220V, OVEN OF 220V, DRYER OF 220V, COMPACTOR AND REFRIGERATOR.
3. CIRCUITS
   - CIRCUITS SUPPLYING OUTLETS DWELLING UNIT BEDROOMS, FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARIORS, LIBRARYS, DENS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, KITCHENS, LAUNDRY AREAS, AND SIMILAR ROOMS/AREAS SHALL BE PROTECTED BY A LISTED COMBINATION ARC-FAULT CIRCUIT INTERRUPTER.
   - PROVIDE SEPARATE ELECTRICAL CIRCUITS FOR: KITCHEN (2) 20 AMPS SMALL APPLIANCE CIRCUITS, BATHROOM (1) 20 AMPS CIRCUIT, LAUNDRY (1) 30 AMPS CIRCUIT, MOTOR (FAU), JACUZZI MOTORS, GARBAGE DISPOSAL & DISHWASHER
4. DUCTS
   - SHALL BE A MIN. OF 3 FEET FROM ANY OPENINGS INTO THE BUILDING (I.E., DRYERS, BATH AND UTILITIES FANS, ETC., MUST BE 3 FEET AWAY FROM DOORS, WINDOWS, OPENING SKYLIGHTS OR ATTIC VENTS).
   - ALL JOINTS AND SEAMS OF DUCT SYSTEMS SHALL BE SEALED MATERIAL MEETING THE UL181 STANDARD.
5. **PLUMBING VENTS** SHALL TERMINATE NOT LESS THAN 6 INCHES ABOVE ROOF NOR LESS THAN 1 FT FROM ANY VERTICAL SURFACE. VENTS SHALL TERMINATE NOTE LESS THAN 10 FT FROM 3 FT ABOVE WINDOW, DOOR, AIR TAKE, OR VENT SHAFT NOR 3 FT ABOVE LOT LINE.
6. HOSE BIB
   - NON-REMOVABLE BACKFLOW PREVENTER OR BIB-TYPE VACUUM BREAKER WILL BE INSTALLED ON ALL EXTERIOR HOSE BIBS.
   - A SIGN OR VALVE TAG SHALL BE INSTALLED AT THE MAIN SHUTOFF VALVE TO BE WATER DISTRIBUTION SYSTEM STATING THE FOLLOWING: "WARNING, THE WATER SYSTEM FOR THIS HOME SUPPLIES FIRE SPRINKLERS THAT REQUIRE CERTAIN FLOWS AND PRESSURES TO FIGHT FIRE. DEVICES THAT RESTRICT THE FLOW OR DECREASE THE PRESSURE OR AUTOMATICALLY SHUT OFF THE WATER TO THE FIRE SPRINKLER SYSTEM, SUCH AS WATER SOFTENERS, FILTRATION SYSTEMS AND AUTOMATIC SHUTOFF VALVES, SHALL NOT BE ADDED TO THIS SYSTEMS WITHOUT A REVIEW OF THE FIRE SPRINKLER SYSTEM BY A FIRE PROTECTION SPECIALIST. DO NOT REMOVE THIS SIGN." (CRC R313.3.7)

F. KITCHEN

1. LIGHTING
   - BULBS SHALL BE LABELED AS JA8-2019 (JA8-2019-E FOR SEALED LENS OR RECESSED FIXTURE). SCREW BASE BULBS ARE PERMITTED, EXCEPT IN RECESSED LIGHTING FIXTURES.
   - SHALL BE CONTROLLED BY EITHER A DIMMER SWITCH OR BY A VACANCY SENSOR SWITCH THAT REQUIRES A MANUAL ON ACTIVATION (DOES NOT AUTOMATICALLY TURN ON) AND AUTOMATICALLY TURNS OFF WITHIN 30 MINUTES AFTER THE ROOM IS VACATED.
   - UNDER CABINET LIGHTING SHALL BE ON A SEPARATE SWITCH FROM ANY OTHER LIGHTING.
   - RECESSED LIGHTING SHALL BE LISTED AS IC (ZERO CLEARANCE TO INSULATION) AND AT (AIR TIGHT), BE SEALED/CAULKED BETWEEN THE FIXTURE HOUSING AND CEILING, SHALL NOT CONTAIN A SCREW BASE SOCKET, AND CONTAIN BULBS MARKED WITH JA8-2019-E EFFICIENCY LABEL.
2. RECEPTACLES
   - GFCI PROTECTION SHALL BE PROVIDED FOR ALL COUNTERTOP RECEPTACLES, RECEPTACLES WITHIN 6 FEET OF A SINK (INCLUDING BELOW COUNTER AND BEHIND AN APPLIANCE), AND FOR RECEPTACLES SUPPLYING DISHWASHERS. THE RESET BUTTON FOR GFCI RECEPTACLES SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION (I.E. NOT BEHIND AN APPLIANCE).
   - ALL OUTLETS AND DEVICES (I.E. RECEPTACLES, LIGHTING, HOODS, ETC.) IN THE KITCHEN SHALL BE AFCI PROTECTED AND TAMPER-RESISTANT (TR).
   - RECEPTACLES SHALL BE PROVIDED AT ALL COUNTERTOP AREAS WITH A MINIMUM DIMENSION OF 12 INCHES.
   - COUNTERTOP RECEPTACLES SHALL BE LOCATED SO THAT NO POINT ALONG THE WALL IS MORE THAN 24 INCHES FROM A RECEPTACLE.
   - COUNTERTOP RECEPTACLES SHALL BE LOCATED NO MORE THAN 20 INCHES ABOVE THE COUNTERTOP.
   - ISLANDS/PENINSULAS SHALL HAVE AT LEAST ONE RECEPTACLE MOUNTED NOT MORE THAN 12 INCHES BELOW THE COUNTERTOP AND WHERE THE COUNTERTOP DOES NOT EXTEND MORE THAN 6 INCHES BEYOND ITS BASE.
   - ELECTRIC STOVES AND OVENS SHALL BE SUPPLIED WITH A 40- OR 50- AMP BRANCH CIRCUIT.
   - RANGE HOODS SHALL BE PERMITTED TO BE CORD-AND-PLUG-CONNECTED WITH A FLEXIBLE COURT IDENTIFIED AS SUITABLE FOR USE ON RANGE HOODS IN THE INSTALLATION INSTRUCTIONS OF THE APPLIANCE MANUFACTURER, WHERE ALL THE FOLLOWING CONDITIONS ARE MET:
     - THE FLEXIBLE CORD IS TERMINATED WITH A GROUNDING-TYPE ATTACHMENT PLUG.
     - THE LENGTH OF THE CORD IS 18 INCHES TO 4 FEET.
     - RECEPTACLES ARE LOCATED TO PROTECT AGAINST PHYSICAL DAMAGE TO THE FLEXIBLE CORD.
     - THE RECEPTACLE IS ACCESSIBLE.
     - THE RECEPTACLE IS SUPPLIED BY AN INDIVIDUAL BRANCH CIRCUIT.
3. CIRCUITS
   - A MINIMUM OF TWO 20-AMP SMALL APPLIANCE BRANCH CIRCUITS ARE REQUIRED TO SERVE COUNTERTOP AND WALL RECEPTACLES IN THE KITCHEN, PANTRY AND DINING ROOM .NO BUILT-IN APPLIANCES ARE ALLOWED ON THESE CIRCUITS (EXCEPT AN ELECTRIC CLOCK OR THE IGNITION OF A GAS RANGE).
   - INDIVIDUAL (DEDICATED) CIRCUITS ARE REQUIRED FOR GARBAGE DISPOSALS, MICROWAVES, COMPACTORS, AND DISHWASHERS.
   - AFCI (ARC-FAULT CIRCUIT-INTERRUPTER) PROTECTION IS REQUIRED FOR ALL 120V 15-& 20-AMP KITCHEN CIRCUITS.
4. HOOD VENTILATION
   - LOCAL EXHAUST SYSTEM SHALL BE INSTALLED IN THE KITCHEN AND VENTED TO THE OUTDOORS (RECIRCULATION PROHIBITED) WITH A MINIMUM EXHAUST RATE AS INDICATED IN THE TABLE BELOW AND MAXIMUM 3 SONE RATING.
   - 100 CFM MIN. FLOW RATE WITH 5 AIR CHANGES PER HOUR MIN.

G. BATHROOMS
- ALL RECEPTACLES SHALL BE GFCI PROTECTED AND TAMPER-RESISTANT (TR). IF ANY NEW/ADDITIONAL OUTLETS ARE INSTALLED, THE BATHROOM SHALL HAVE A DEDICATED 20-AMP CIRCUIT. (CEC 210.8, 210.11, 406.12)
- EXHAUST FANS WITH A MINIMUM VENTILATION RATE OF 50 CFM ARE REQUIRED IN ALL BATHROOMS, EVEN IF AN OPERABLE WINDOW IS INSTALLED. EXHAUST FANS AND LIGHTING SHALL HAVE SEPARATE CONTROL SWITCHES (EVEN IF A COMBINATION UNIT IS INSTALLED). THE EXHAUST FAN MAY NEED TO BE SUPPLIED BY A GFCI PROTECTED CIRCUIT BASED ON THE MANUFACTURER'S REQUIREMENTS. (CEES 150.0(K), 150.0(O))
- LIGHTING FIXTURES LOCATED WITHIN 3 FEET HORIZONTALLY AND 8 FEET VERTICALLY OF THE BATHTUB RIM OR SHOWER STALL THRESHOLD SHALL BE LISTED FOR A DAMP LOCATION, OR LISTED FOR WET LOCATIONS WHERE SUBJECT TO SHOWER SPRAY. (CEC 410.10)
- RECEPTACLES EXCEEDING 20 AMPERES IN A WET LOCATION SHALL HAVE AN ENCLOSURE THAT IS WEATHERPROOF WHEN THE ATTACHMENT PLUG IS REMOVED. (CEC 406.9(B)2)
- RECEPTACLES SHALL NOT BE INSTALLED WITHIN OR DIRECTLY OVER A BATHTUB OR SHOWER STALL. (CEC 406.9(C))
- ALL INSTALLED LIGHTING FIXTURES SHALL BE HIGH EFFICIENCY.

H. OUTDOOR

1. **LIGHTING FIXTURES** SHALL SHALL BE CONTROLLED BY A MANUAL ON AND OFF SWITCH WITH PHOTOCELL AND MOTION SENSOR.
   - SHALL BE LISTED FOR DAMP/WET LOCATIONS.

   RECEPTACLES MUST BE GFCI PROTECTED, WATER RESISTANT, AND IN A WATERPROOF ENCLOSURE.

I. SMOKE & CARBON MONOXIDE ALARMS
- SMOKE ALARMS AND CARBON MONOXIDE ALARMS SHALL RECEIVETHEIR PRIMARY POWER FROM THE PERMANENT BUILDING ELECTRICAL POWER SYSTEM (AND SHALL BE ON THE LIGHTING CIRCUIT CONNECTED WITHIN THE SAME ROOM AS THE SMOKE ALARM). WHERE TWO OR MORE SMOKE ALARMS OR CARBON MONOXIDE ALARMS ARE REQUIRED THEY SHALL BE INTERCONNECTED IN SUCH A MANNER THAT ACTUATION OF ONE SHALL CAUSE ACTUATION OF ALL DETECTORS IN THE DWELLING UNIT.
- SMOKE ALARMS SHALL HAVE A 10-YEAR BATTERY. SMOKE ALARMS SHALL BE REPLACED 10 YEARS FROM THE DATE OF MANUFACTURE MARKED ON THE UNIT.
- SMOKE ALARMS SHALL BE INSTALLED ON THE CEILING OR WALL BETWEEN 4" AND 12" OF THE CEILING. CARBON MONOXIDE ALARMS SHALL BE INSTALLED ON THE CEILING OR WALL ABOVE THE DOOR HEADER.
- **SMOKE ALARMS** SHALL BE INSTALLED IN EACH SLEEPING ROOM, ON THE CEILING OR WALL OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS, ON EACH STORY OF A MULTISTORY UNIT, IN HABITABLE ATTICS, AND IN BASEMENTS.
- **SMOKE ALARMS** SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 217 AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF NFPA 72.
- **CARBON MONOXIDE** ALARMS SHALL BE INSTALLED ON THE CEILING OR WALL (ABOVE THE DOOR HEADER) IN EACH AREA/HALLWAY ADJACENT TO SLEEPING ROOMS, EACH OCCUPIABLE STORY, AND WITHIN A BEDROOM IF THE BEDROOM OR ATTACHED BATHROOM CONTAINS A FUEL-BURNING APPLIANCE. CO ALARMS ARE NOT REQUIRED IF THERE IS NO FUEL- BURNING APPLIANCE OR FIREPLACE IN THE HOUSE AND WHERE THE GARAGE IS DETACHED FROM THE HOUSE.
- **CARBON MONOXIDE** ALARMS (INCLUDING SMOKE & CARBON MONOXIDE COMBINATION ALARMS) SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 2034 (AND UL 217 FOR COMBO ALARMS) AND INSTALLED & MAINTAINED IN ACCORDANCE WITH NFPA 720 & MANUFACTURER'S INSTRUCTIONS.

REVISIONS	BY

PROPOSED FIRST FLOOR PLAN w/ ELECTRICAL

AN ADDITION & REMODEL FOR
KALYANARAMAN RESIDENCE
2826 TOYON DR, SANTA CLARA, CA 95051
APN# 296-32-012

FINE CUSTOM HOME
TDH DESIGN
(408) 829-6083
19034 BONNET WAY ● SARATOGA, CA 95070

DRAWN
LOC HUA

CHECKED
TRI HONG

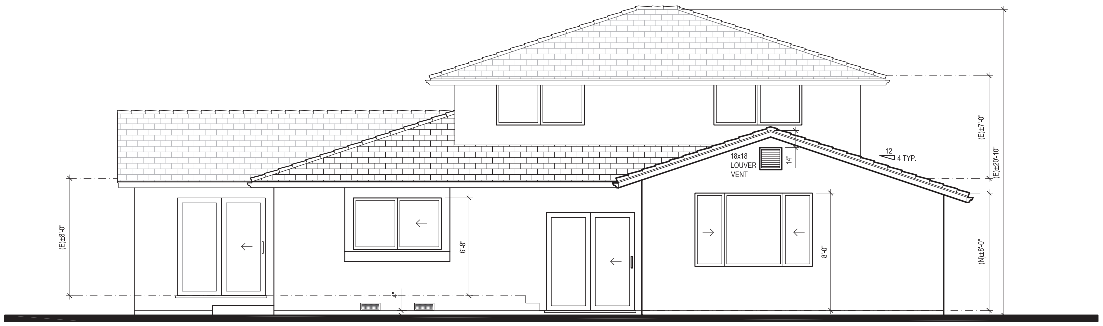
SIGNATURE

DATE
MARCH 2021

SCALE
AS SHOWN

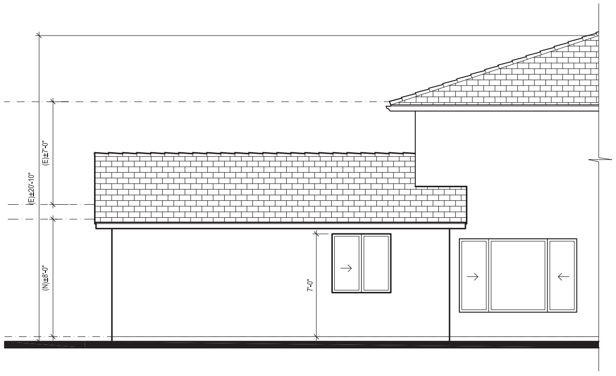
JOB
0421

SHEET
A-3



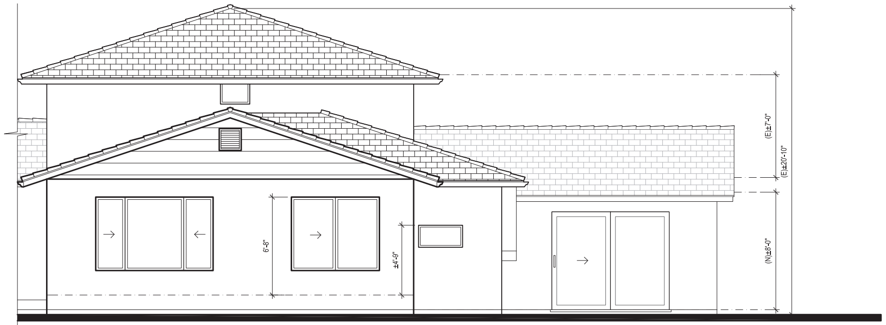
REAR ELEVATION

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



LEFT SIDE ELEVATION

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



RIGHT SIDE ELEVATION

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

EXTERIOR MATERIALS & COLOR

A. **GENERAL:**
- SEE OWNER FOR UP-GRADE WATERPROOFING SYSTEM
- ALL ADHERED MASONRY VENEER SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S INSTRUCTIONS.
- SEE OWNER FOR UP-GRADE STONE FINISH FOR ALL COLUMN, TRIM & SILL

B. **ROOFING:** FLAT CONCRETE TILE BY 'EAGLE ROOFING' BEL AIR o/ MIN. 30# FELT. ER-1900. SIZE: 17x12 3/8, 9.7 PSF OR EQUAL TO MATCH EXISTING

C. **EXTERIOR WALL (BODY):** 7/8" MIN. THICK, 3 COAT CEMENT PLASTER FINISH w/ PAPER BACKED WIRE MESH o/ 2-LAYERS GRADE 'D' BUILDING PAPER.

D. **DOORS TYPICAL:** 'MILGARD' VINYL OR EQUAL TO MATCH EXISTING.

D. **WINDOWS TYPICAL:** 'MILGARD' VINYL OR EQUAL TO MATCH EXISTING.

E. **GABLE LOUVER VENT:** 14"x18" GALV. STEEL, WHITE PAINT OR EQUAL

O. **GUTTER & DOWNSPOUT:** 26 GA. GALV. METAL

UNDERFLOOR VENT CALC.

UNDERFLOOR AREA	x 1/150 = REQ'D. FREE VENT	MIN. VENTS PROVIDED 8" x 16" VENT = 0.49 SQ.FT.
109 SQ.FT.	0.72 SQ.FT.	2 VENTS =0.98 SQ.FT.

1. FOUNATION VENTS: 8" X 16" W/ 1/4" S.S OR EQUAL TO MATCH EXISTING WIRE MESH VENTS BOTTOM OF ALL VENTS MAX. 12" ABOVE EXTERIOR ADJ. GRADE. SEE EXTERIOR ELEVATIONS FOR LOCATION

NOTE: PROVIDE ADDITIONAL FLOOR & ROOF VENTS THAT COVERED BY NEW ADDITION.

REVISIONS	BY

ELEVATIONS

AN ADDITION & REMODEL FOR
KALYANARAMAN RESIDENCE
2826 TOYON DR, SANTA CLARA, CA 95051
APN# 296-32-012

FINE CUSTOM HOME
TDH DESIGN
(408) 829-6083
19034 BONNET WAY ● SARATOGA, CA 95070

DRAWN
LOC HUA

CHECKED
TRI HONG

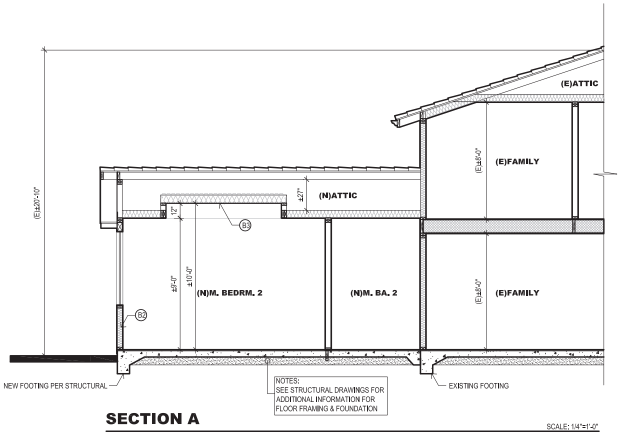
SIGNATURE

DATE
MARCH 2021

SCALE
AS SHOWN

JOB
0421

SHEET
A-4


(E)ATTIC
(E)FAMILY
(N)ATTIC
(N)M. BEDRM. 2
(N)M. BA. 2
(E)FAMILY
(E)±20'-10"
(E)±8'-0"
(E)±8'-0"
±27"
12"
±9'-0"
±10'-0"
B3
B2
NEW FOOTING PER STRUCTURAL
EXISTING FOOTING
NOTES:
SEE STRUCTURAL DRAWINGS FOR
ADDITIONAL INFORMATION FOR
FLOOR FRAMING & FOUNDATION

SECTION A

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION.

SECTION NOTES

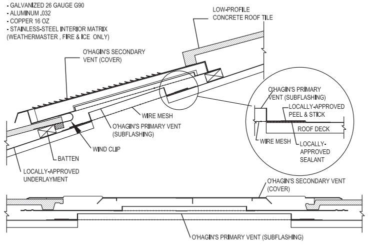
A. **GENERAL:**
  - SEE OWNER FOR UP-GRADE WATERPROOFING SYSTEM
  - SEE STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION FOR FLOOR FRAMING & FOUNDATION
  - SEE OWNER FOR UP-GRADE CABINETS AND APPLIANCES FINISH

B. **INSULATION:** PER TITLE 24.
  1. FLOOR: N/A
  2. EXTERIOR WALL: R-15 @ 2x4 STUD WALL & R-19 @ 2x6 STUD WALL
  3. CEILING: R-19 @ SLOPE CEILING & R-38 @ FLAT CEILING

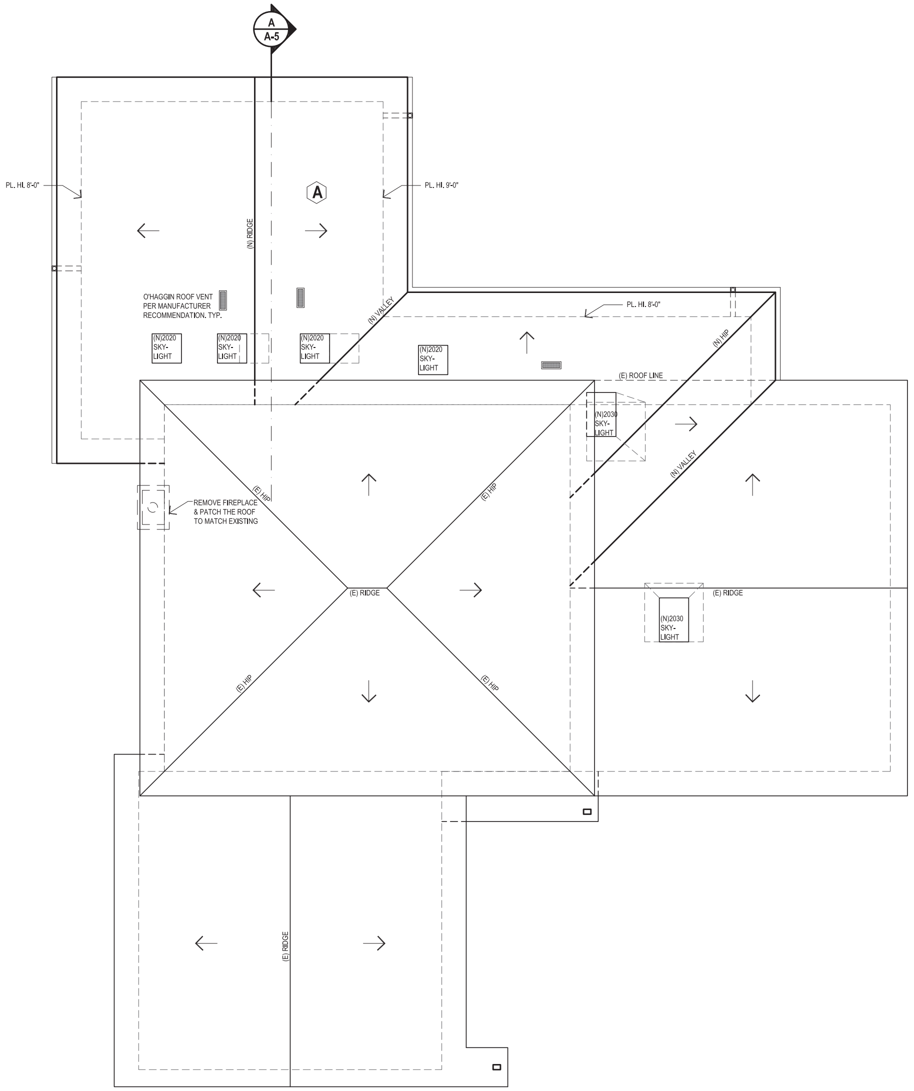
C. **CRAWLSPACE:** 18" MINIMUM CLEAR.

FOR COORDINATING ROOF TILE MANUFACTURERS, INSTALLATION INSTRUCTIONS, TECHNICAL BULLETINS & SPECIFIC INFORMATION REGARDING RAIN, SNOW, HIGH-VELOCITY WIND OR WILDLAND URBAN INTERFACE (WUI) APPLICATIONS, PLEASE CONTACT O'HAGIN TOLL FREE AT 877/324-0444 OR WWW.OHAGIN.COM

O'HAGIN VENTS ARE MANUFACTURED USING:
- PRE-PAINTED GALVANIZED 26 GAUGE G90
- GALVANIZED 26 GAUGE G90
- ALUMINUM .032
- COPPER 16 OZ
- STAINLESS-STEEL INTERIOR MATRIX (WEATHERMASTER , FIRE & ICE ONLY)


LOW-PROFILE CONCRETE ROOF TILE
O'HAGIN'S SECONDARY VENT (COVER)
WIRE MESH
O'HAGIN'S PRIMARY VENT (SUBFLASHING)
WIND CLIP
BATTEN
LOCALLY-APPROVED UNDERLAYMENT
O'HAGIN'S PRIMARY VENT (SUBFLASHING)
LOCALLY-APPROVED PEEL & STICK
ROOF DECK
WIRE MESH
LOCALLY-APPROVED SEALANT
O'HAGIN'S SECONDARY VENT (COVER)
O'HAGIN'S PRIMARY VENT (SUBFLASHING)

1 CONCRETE FLAT TILE VENT


A
A-5
PL. HI. 8'-0"
PL. HI. 9'-0"
A
(N) RIDGE
O'HAGGIN ROOF VENT
PER MANUFACTURER
RECOMMENDATION. TYP.
(N)2020 SKY-LIGHT
(N)2020 SKY-LIGHT
(N)2020 SKY-LIGHT
(N)2020 SKY-LIGHT
(N) VALLEY
PL. HI. 8'-0"
(N) HIP
(E) ROOF LINE
(N)2030 SKY-LIGHT
(N) VALLEY
REMOVE FIREPLACE
& PATCH THE ROOF
TO MATCH EXISTING
(E) HIP
(E) HIP
(E) RIDGE
(E) RIDGE
(N)2030 SKY-LIGHT
(E) HIP
(E) HIP
(E) RIDGE

ROOF PLAN

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION.

ATTIC VENT CALCULATION

ATTIC SPACE	ATTIC AREA	x 1/150 = FREE VENT REQ'D.	x 144 = SQ.IN SQ.IN. REQ'D	50% REQ.D. LOWER ATTIC & UPPER ATTIC	LOWER ATTIC EAVE VENT (3) 3" DIA. HOLES @ FREEZE 1 BLOCKING = 21.21 SQ.IN.	UPPER ATTIC FLAT TILE VENT BY O'HAGGIN VENT 1 VENT = 98.75 SQ.IN.	UPPER ATTIC 14"x18" GABLE LOUVER VENT 1 VENT = 110 SQ.IN.
A	603 SQ.FT.	4 SQ.FT.	576 SQ.IN.	288 SQ.IN.	14 BLK'G = 297 SQ.IN.	3 VENTS =296 SQ.IN.	1 VENTS =110 SQ.IN.

O'HANGIN VENT: INSTALL PER MANUFACTURER FOR RECOMMENDATION. ICC-ES SBCCI-9650A.

ROOF PLAN NOTES

A. **GENERAL:**
  - CLASS A FIRE RATING
  - MANUFACTURER'S INSTALLATION SPEC. SHALL BE PROVIDED AT THE JOB SITE FOR THE BUILDING INSPECTOR.
  - ROOF SLOPE IS TO BE 4:12 TYP. TO MATCH EXISTING
  - ARROWS INDICATE DIRECTION OF ROOF SLOPE
  - SEE ROOF PLAN FOR PLATE HEIGHT
  - OVERHANGS ARE TO BE 20" AT EAVES 12" AT RAKES.
  - PROVIDE CROSS VENTILATION AT ALL ATTIC AND ENCLOSED RAFTER SPACES. THE NET FREE VENTILATION SHALL BE A MINIMUM RATIO OF 1:150 OF THE AREA OR SPACE VENTILATED
  - INSTALL G.I. MATERIAL ROOF JACKS FOR PLUMBING VENTS, ETC. AS REQUIRED
  - PROVIDE TWO LAYERS OF UNDERLAYMENT FOR ROOF SLOPES BETWEEN 2:12 AND 4:12,. A MINIMUM OF 19 INCH WIDE STRIP OF UNDERLAYMENT FELT SHALL BE APPLIED PARALLEL WITH AND STARTING AT THE EAVES, FASTENED SUFFICIENTLY TO HOLD IN PLACE.
  - ROOFS THAT EXCEED A TOTAL WEIGHT OF 7.5 LBS/SF (INCLUDING SHEATHING AND ROOFING MATERIAL) MAY REQUIRE ADDITIONAL ROOF FRAMING AND SUPPORT.

B. **ROOFING:** CLASS 'A' FLAT CONCRETE TILE BY 'EAGLE ROOFING' BEL AIR o/ MIN. 30# FELT. ER-1900. SIZE: 17x12 3/8, 9.7 PSF.

C. **FASCIA GUTTER w/ DOWNSPOUTS:** 5", 26 GA. GALV. AS REQUIRED. FIELD VERIFY DOWNSPOUT TO BE CLEAR FROM WINDOW, DOOR, GAS METER, ELECTRICAL METER, WATER HEATER & A/C .

D. **FLASHING AT ROOF TO WALL CONNECTIONS:** PROVIDE ROOF FLASHING AT ALL WALL AND ROOF INTERSECTIONS, GUTTERS, AND WHERE THERE IS A CHANGE IN THE ROOF SLOPE OR DIRECTION AROUND ROOF OPENINGS. FLASHING SHALL BE A MINIMUM 26 GAUGE CORROSION-RESISTANT GALVANIZEDED METAL.

E. **SKYLIGHT:**
  - 'VELUX' TESTED & LABELED w/ AAMA/WDMA/CSA 101/I.S.2/A440 SEE ROOF PLAN FOR SIZE.
  - OPERABLE SKYLIGHTS SHALL BE TEN (10) FEET FROM ALL PLUMBING VENTS OR THE VENT SHALL TERMINATE THREE FEET ABOVE THE SKYLIGHT (CMC 802.8 AND CPC 906.2).

REVISIONS	BY

SECTION & ROOF PLAN

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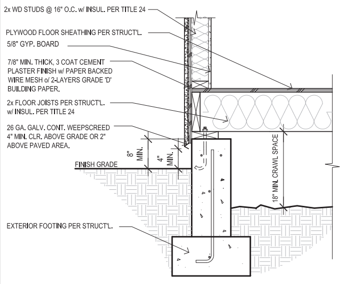
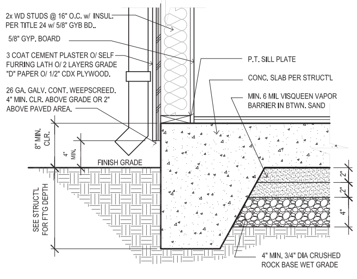
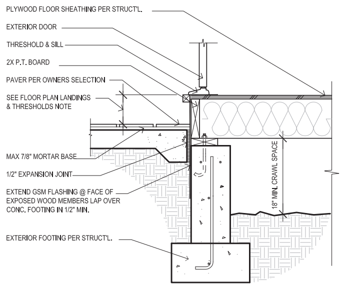

2x WD STUDS @ 16" O.C. w/ INSUL. PER TITLE 24
PLYWOOD FLOOR SHEATHING PER STRUCT'L.
5/8" GYP. BOARD
7/8" MIN. THICK, 3 COAT CEMENT PLASTER FINISH w/ PAPER BACKED WIRE MESH o/ 2-LAYERS GRADE 'D' BUILDING PAPER.
2x FLOOR JOISTS PER STRUCT'L. w/ INSUL. PER TITLE 24
26 GA. GALV. CONT. WEEPSCREED 4" MIN. CLR. ABOVE GRADE OR 2" ABOVE PAVED AREA.
8" MIN.
4" MIN.
FINISH GRADE
18" MIN. CRAWL SPACE
EXTERIOR FOOTING PER STRUCT'L.

1 EXTERIOR FOOTING


2x WD STUDS @ 16" O.C. w/ INSUL. PER TITLE 24 w/ 5/8" GYB BD..
5/8" GYP. BOARD
3 COAT CEMENT PLASTER O/ SELF FURRING LATH O/ 2 LAYERS GRADE "D" PAPER O/ 1/2" CDX PLYWOOD.
26 GA. GALV. CONT. WEEPSCREED. 4" MIN. CLR. ABOVE GRADE OR 2" ABOVE PAVED AREA.
P.T. SILL PLATE
CONC. SLAB PER STRUCT'L
MIN. 6 MIL VISQUEEN VAPOR BARRIER IN BTWN. SAND
8" MIN. CLR.
4" MIN.
FINISH GRADE
SEE STRUCT'L FOR FT'G DEPTH
2"
2"
4"
4" MIN. 3/4" DIA CRUSHED ROCK BASE WET GRADE

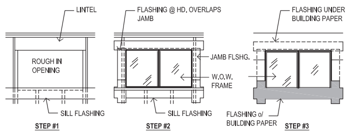
2 TYP. EXT. WALL FTG.


PLYWOOD FLOOR SHEATHING PER STRUCT'L.
EXTERIOR DOOR
THRESHOLD & SILL
2X P.T. BOARD
PAVER PER OWNERS SELECTION
SEE FLOOR PLAN LANDINGS & THRESHOLDS NOTE
MAX 7/8" MORTAR BASE
1/2" EXPANSION JOINT
EXTEND GSM FLASHING @ FACE OF EXPOSED WOOD MEMBERS LAP OVER CONC. FOOTING IN 1/2" MIN.
18" MIN. CRAWL SPACE
EXTERIOR FOOTING PER STRUCT'L.

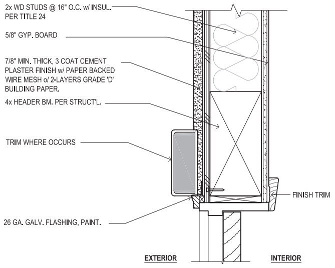
3 THRESHOLD

TYP. FLASHING OF EXTERIOR WALL OPENINGS

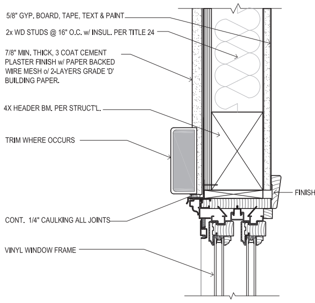
INDIVIDUALLY FLASH ALL EXTERIOR OPENINGS FOR FIXTURES SUCH AS WINDOWS, DOORS, AND VENTS TO MAKE THEM WATERPROOF. FLASHING MATERIAL SHALL PROVIDE A FOUR HOUR MINIMUM PROTECTION FROM WATER PENETRATION WHEN TESTED IN ACCORDANCE WITH ASSTM D-779. SEALANT SHALL COMPLY TO F.S. TT-S-1657. IN HIGH WIND AREAS W. R. GRACE ICE & WATER SHIELD SHALL BE USED, OVER SOLID BACKING. FLASHING MATERIAL AT LEAST 9" WIDE SHALL BE APPLIED IN A WEATHERBOARD FASHION, BEGINNING WITH THE SILL WITH A STRIP LONG ENOUGH TO PROTECT BEYOND THE JAMB FLASHING TO BE APPLIED. THE TWO JAMB FLASHING ARE THEN APPLIED, WITH SUFFICIENT LENGTH TO EXTEND BEYOND THE SILL FLASHING, AND WITH THE SAME DISTANCE AT THE TOP. FOR FIXTURES WITHOUT NAIL ON FLANGES THE FLASHING SHALL BE 12" MINIMUM WIDTH AND EXTEND INTO THE ROUGH FRAME AT THE SILL AND JAMB. FOR NAIL ON FLANGE FIXTURES INSTALL BY PRESSING FLANGE POSITIVELY INTO A CONTINUOUS BEAD OF SEALANT WHICH EXTENDS AROUND THIS BOTTOM AND SIDES OF THE FIXTURE. APPLY THE TOP HORIZONTAL FLASHING LAST, WITH SUFFICIENT LENGTH TO EXTEND BEYOND THE JAMB FLASHING. OVERLAP AND SEAL AGAINST THE TOP NAILING FLANGE OR G.S.M. HEAD FLASHING WITH A CONTINUOUS BEAD OF SEALANT. APPLY REMAINING WALL SHEATHING PAPER IN A WEATHERBOARD FASHION WITH THE SILL FLASHING LAPPING OVER THE TOP AND THE HEAD AND JAMB FLASHING BELOW.


LINTEL
ROUGH IN OPENING
SILL FLASHING
STEP #1
FLASHING @ HD. OVERLAPS JAMB
JAMB FLSHG.
W.O.W. FRAME
SILL FLASHING
STEP #2
FLASHING UNDER BUILDING PAPER
FLASHING o/ BUILDING PAPER
STEP #3

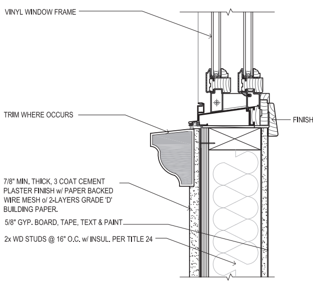
4 TYP. FLASHING


2x WD STUDS @ 16" O.C. w/ INSUL. PER TITLE 24
5/8" GYP. BOARD
7/8" MIN. THICK, 3 COAT CEMENT PLASTER FINISH w/ PAPER BACKED WIRE MESH o/ 2-LAYERS GRADE 'D' BUILDING PAPER.
4x HEADER BM. PER STRUCT'L.
TRIM WHERE OCCURS
FINISH TRIM
26 GA. GALV. FLASHING, PAINT.
EXTERIOR
INTERIOR

5 EXTERIOR DOOR HEADER

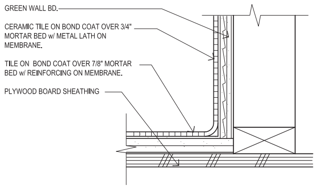

5/8" GYP. BOARD, TAPE, TEXT & PAINT
2x WD STUDS @ 16" O.C. w/ INSUL. PER TITLE 24
7/8" MIN. THICK, 3 COAT CEMENT PLASTER FINISH w/ PAPER BACKED WIRE MESH o/ 2-LAYERS GRADE 'D' BUILDING PAPER.
4X HEADER BM. PER STRUCT'L.
TRIM WHERE OCCURS
FINISH TRIM
CONT. 1/4" CAULKING ALL JOINTS
VINYL WINDOW FRAME

6 WINDOW HEADER

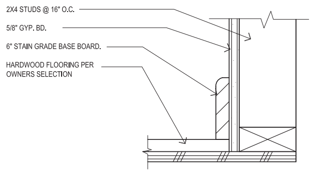

VINYL WINDOW FRAME
TRIM WHERE OCCURS
FINISH TRIM
7/8" MIN. THICK, 3 COAT CEMENT PLASTER FINISH w/ PAPER BACKED WIRE MESH o/ 2-LAYERS GRADE 'D' BUILDING PAPER.
5/8" GYP. BOARD, TAPE, TEXT & PAINT
2x WD STUDS @ 16" O.C. w/ INSUL. PER TITLE 24

7 WINDOW SILL

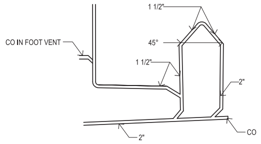
NOTE: CEMENT, FIBER-CEMENT OR GLASS MAT GYPSUM BACKERS SHALL BE USED AS A BASE FOR WALL AND CEILING PANELS IN SHOWER AND BATHTUB COMPARTMENTS AND SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. CRC R702.4.2


GREEN WALL BD.
CERAMIC TILE ON BOND COAT OVER 3/4" MORTAR BED w/ METAL LATH ON MEMBRANE.
TILE ON BOND COAT OVER 7/8" MORTAR BED w/ REINFORCING ON MEMBRANE.
PLYWOOD BOARD SHEATHING

8 CERAMIC TILE FINISH


2X4 STUDS @ 16" O.C.
5/8" GYP. BD.
6" STAIN GRADE BASE BOARD.
HARDWOOD FLOORING PER OWNERS SELECTION

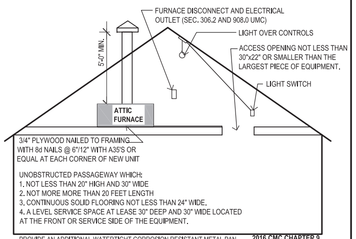
9 WOOD FINISH


1 1/2"
CO IN FOOT VENT
45°
1 1/2"
2"
2"
CO

2019 CPC SECTION 909.0 ISLAND SINK VENTING.

- TRAPS FOR ISLAND SINKS AND SIMILAR EQUIPMENT SHALL BE ROUGHED IN ABOVE THE FLOOR AND SHALL BE PERMITTED TO BE VENTED BY EXTENDING THE VENT AS HIGH AS POSSIBLE, BUT NOT LESS THAN THE DRAIN BOARD HEIGHT AND THEN RETURNING IT DOWNWARD AND CONNECTING IT TO THE HORIZONTAL SINK DRAIN IMMEDIATELY DOWNSTREAM FROM THE VERTICAL SINK FIXTURE DRAIN.
- THE RETURN VENT SHALL BE CONNECTED TO THE HORIZONTAL DRAIN THROUGH A WYE-BRANCH FITTING AND SHALL, IN ADDITION, BE PROVIDED WITH A FOOT VENT TAKEN OFF THE VERTICAL FIXTURE VENT BY MEANS OF A WYE BRANCH IMMEDIATELY BELOW THE FLOOR AND EXTENDING TO THE NEAREST PARTITION AND THEN THROUGH THE ROOF TO THE OPEN AIR, OR SHALL BE PERMITTED TO BE CONNECTED TO OTHER VENTS AT A POINT NOT LESS THAN 6 INCHES ABOVE THE FLOORLEVEL RIM OF THE FIXTURES SERVED.
- DRAINAGE FITTINGS SHALL BE USED ON THE VENT BELOW THE FLOOR LEVEL, AND A SLOPE OF NOT LESS THAN ¼ INCH PER FOOT BACK TO THE DRAIN SHALL BE MAINTAINED.
- THE RETURN BEND USED UNDER THE DRAIN BOARD SHALL BE A ONE-PIECE FITTING OR AN ASSEMBLY OF A 45 DEGREE, A 90 DEGREE, AND A 45-DEGREE ELBOW IN THE ORDER NAMED.
- PIPE SIZING SHALL BE AS ELSEWHERE REQUIRED IN THIS CODE.
- THE ISLAND SINK DRAIN, UPSTREAM OF THE RETURNED VENT, SHALL SERVE NO OTHER FIXTURES.
- AN ACCESSIBLE CLEANOUT SHALL BE INSTALLED IN THE VERTICAL PORTION OF THE FOOT VENT.

10 ISLAND SINK VENTING


FURNACE DISCONNECT AND ELECTRICAL OUTLET (SEC. 306.2 AND 908.0 UMC)
5'-0" MIN.
LIGHT OVER CONTROLS
ACCESS OPENING NOT LESS THAN 30"x22" OR SMALLER THAN THE LARGEST PIECE OF EQUIPMENT.
LIGHT SWITCH
ATTIC FURNACE
2016 CMC CHAPTER 9

3/4" PLYWOOD NAILED TO FRAMING WITH 8d NAILS @ 6"/12" WITH A35'S OR EQUAL AT EACH CORNER OF NEW UNIT

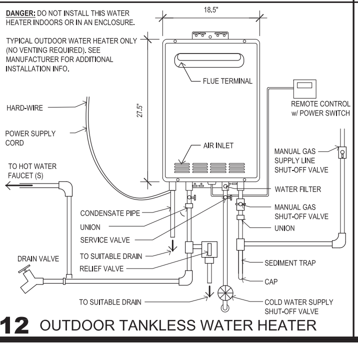
UNOBSTRUCTED PASSAGEWAY WHICH:
1. NOT LESS THAN 20" HIGH AND 30" WIDE
2. NOT MORE MORE THAN 20 FEET LENGTH
3. CONTINUOUS SOLID FLOORING NOT LESS THAN 24" WIDE.
4. A LEVEL SERVICE SPACE AT LEASE 30" DEEP AND 30" WIDE LOCATED AT THE FRONT OR SERVICE SIDE OF THE EQUIPMENT.

PROVIDE AN ADDITIONAL WATERTIGHT CORROSION RESISTANT METAL PAN BELOW CONDENSATE PRODUCING EQUIPMENT (SUCH AS THE FURNACE) INSTALLED IN THE ATTIC. NOTE THAT THE SECONDARY DRAIN LINE MUST BE SHOWN AT A POINT WHERE IT CAN BE READILY OBSERVED. CMC 312.2-312.4.

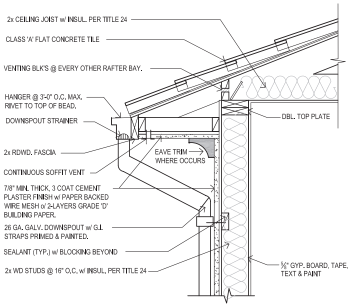
11 ATTIC FURNACE

DANGER: DO NOT INSTALL THIS WATER HEATER INDOORS OR IN AN ENCLOSURE.

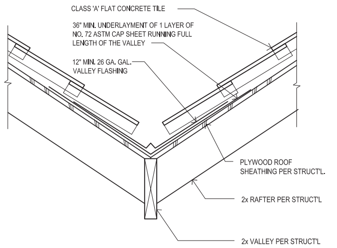
TYPICAL OUTDOOR WATER HEATER ONLY (NO VENTING REQUIRED). SEE MANUFACTURER FOR ADDITIONAL INSTALLATION INFO.


18.5"
27.5"
FLUE TERMINAL
REMOTE CONTROL w/ POWER SWITCH
HARD-WIRE
POWER SUPPLY CORD
AIR INLET
MANUAL GAS SUPPLY LINE SHUT-OFF VALVE
TO HOT WATER FAUCET (S)
WATER FILTER
CONDENSATE PIPE
MANUAL GAS SHUT-OFF VALVE
UNION
UNION
SERVICE VALVE
TO SUITABLE DRAIN
DRAIN VALVE
RELIEF VALVE
SEDIMENT TRAP
CAP
TO SUITABLE DRAIN
COLD WATER SUPPLY SHUT-OFF VALVE

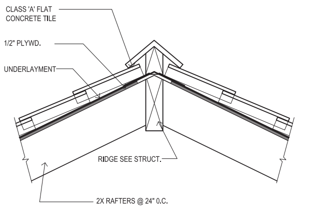
12 OUTDOOR TANKLESS WATER HEATER


2x CEILING JOIST w/ INSUL. PER TITLE 24
CLASS 'A' FLAT CONCRETE TILE
VENTING BLK'S @ EVERY OTHER RAFTER BAY.
HANGER @ 3'-0" O.C. MAX. RIVET TO TOP OF BEAD.
DOWNSPOUT STRAINER
DBL. TOP PLATE
2x RDWD. FASCIA
EAVE TRIM WHERE OCCURS
CONTINUOUS SOFFIT VENT
7/8" MIN. THICK, 3 COAT CEMENT PLASTER FINISH w/ PAPER BACKED WIRE MESH o/ 2-LAYERS GRADE 'D' BUILDING PAPER.
26 GA. GALV. DOWNSPOUT w/ G.I. STRAPS PRIMED & PAINTED.
SEALANT (TYP.) w/ BLOCKING BEYOND
2x WD STUDS @ 16" O.C. w/ INSUL. PER TITLE 24
⅝" GYP. BOARD, TAPE, TEXT & PAINT

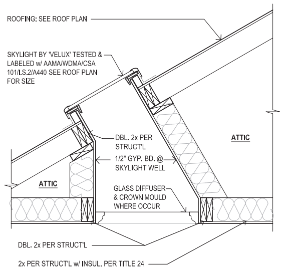
13 EAVE


CLASS 'A' FLAT CONCRETE TILE
36" MIN. UNDERLAYMENT OF 1 LAYER OF NO. 72 ASTM CAP SHEET RUNNING FULL LENGTH OF THE VALLEY
12" MIN. 26 GA. GAL. VALLEY FLASHING
PLYWOOD ROOF SHEATHING PER STRUCT'L.
2x RAFTER PER STRUCT'L
2x VALLEY PER STRUCT'L

14 OPEN VALLEY FLASHING


CLASS 'A' FLAT CONCRETE TILE
1/2" PLYWD.
UNDERLAYMENT
RIDGE SEE STRUCT.
2X RAFTERS @ 24" O.C.

15 HIP / RIDGE


ROOFING: SEE ROOF PLAN
SKYLIGHT BY 'VELUX' TESTED & LABELED w/ AAMA/WDMA/CSA 101/I.S.2/A440 SEE ROOF PLAN FOR SIZE
DBL. 2x PER STRUCT'L
1/2" GYP. BD. @ SKYLIGHT WELL
ATTIC
ATTIC
GLASS DIFFUSER & CROWN MOULD WHERE OCCUR
DBL. 2x PER STRUCT'L
2x PER STRUCT'L w/ INSUL. PER TITLE 24

16 SKYLIGHT

17

18

19

20

REVISIONS	BY

DETAILS

AN ADDITION & REMODEL FOR
KALYANARAMAN RESIDENCE
2826 TOYON DR, SANTA CLARA, CA 95051
APN# 296-32-012

FINE CUSTOM HOME
DESIGN
(408) 829-6083
19034 BONNET WAY ○ SARATOGA, CA 95070

DRAWN
LOC HUA

CHECKED
TRI HONG

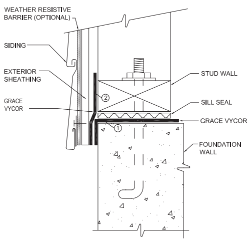
SIGNATURE

DATE
MARCH 2021

SCALE
AS SHOWN

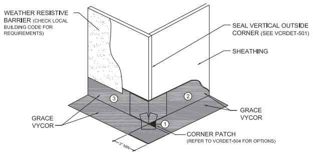
JOB
0421

SHEET
A-6


WEATHER RESISTIVE BARRIER (OPTIONAL)
SIDING
EXTERIOR SHEATHING
GRACE VYCOR
STUD WALL
SILL SEAL
GRACE VYCOR
FOUNDATION WALL
①
②

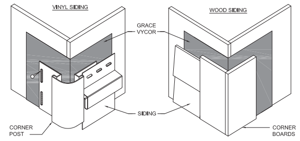
NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- C. INSTALL GRACE VYCOR IN ORDER AS SHOWN BY NUMBERS
- D. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- E. REFER TO LOCAL BUILDING CODES FOR WEATHER RESISTIVE BARRIER REQUIREMENTS
- F. IF PRIMING NECESSARY, USE PERM-A-BARRIER® WB PRIMER TO PROMOTE VYCOR ADHESION TO CONCRETE
- G. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

1 FOUNDATION SILL PLATE - OPTION 1
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-505


WEATHER RESISTIVE BARRIER (CHECK LOCAL BUILDING CODE FOR REQUIREMENTS)
SEAL VERTICAL OUTSIDE CORNER (SEE VCRDET-501)
SHEATHING
GRACE VYCOR
GRACE VYCOR
CORNER PATCH (REFER TO VCRDET-504 FOR OPTIONS)
3" MIN.
①
②
③

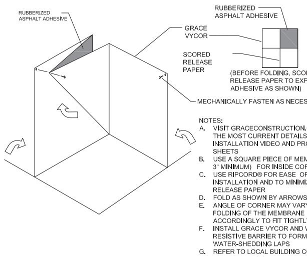
NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- C. INSTALL GRACE VYCOR IN ORDER AS SHOWN BY NUMBERS
- D. MECHANICALLY FASTEN AS NECESSARY
- E. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- F. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

2 OUTSIDE CORNER
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-500


VINYL SIDING
WOOD SIDING
GRACE VYCOR
SIDING
CORNER POST
CORNER BOARDS

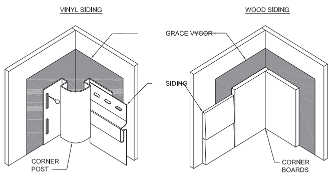
NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- C. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- D. REFER TO LOCAL BUILDING CODES FOR WEATHER RESISTIVE BARRIER REQUIREMENTS
- E. EXTEND GRACE VYCOR BEYOND JOINT BETWEEN SIDING AND CORNER POST/BOARDS
- F. INSTALL GRACE VYCOR ON OUTSIDE CORNER FOR THE HEIGHT OF THE WALL
- G. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

3 WALL-TO-WALL OUTSIDE CORNER
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-501


RUBBERIZED ASPHALT ADHESIVE
RUBBERIZED ASPHALT ADHESIVE
GRACE VYCOR
SCORED RELEASE PAPER
(BEFORE FOLDING, SCORE RELEASE PAPER TO EXPOSE ADHESIVE AS SHOWN)
MECHANICALLY FASTEN AS NECESSARY

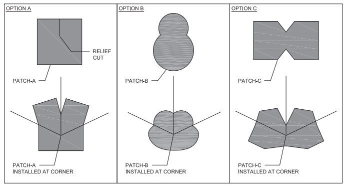
NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. USE A SQUARE PIECE OF MEMBRANE (3" x 3" MINIMUM) FOR INSIDE CORNER
- C. USE RIPCORD® FOR EASE OF INSTALLATION AND TO MINIMIZE SCORING RELEASE PAPER
- D. FOLD AS SHOWN BY ARROWS
- E. ANGLE OF CORNER MAY VARY; ADJUST FOLDING OF THE MEMBRANE ACCORDINGLY TO FIT TIGHTLY TO CORNER
- F. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- G. REFER TO LOCAL BUILDING CODES FOR WEATHER RESISTIVE BARRIER REQUIREMENTS
- H. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

4 INSIDE CORNER
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-502


VINYL SIDING
WOOD SIDING
GRACE VYCOR
SIDING
CORNER POST
CORNER BOARDS

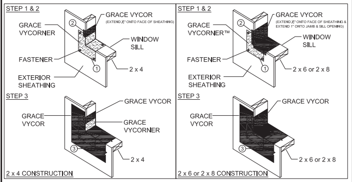
NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- C. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- D. REFER TO LOCAL BUILDING CODES FOR WEATHER RESISTIVE BARRIER REQUIREMENTS
- E. EXTEND GRACE VYCOR BEYOND JOINT BETWEEN SIDING AND CORNER POST/BOARDS
- F. INSTALL GRACE VYCOR ON INSIDE CORNER FOR THE HEIGHT OF THE WALL
- G. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

5 WALL-TO-WALL INSIDE CORNER
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-503


OPTION A
OPTION B
OPTION C
RELIEF CUT
PATCH-A
PATCH-B
PATCH-C
PATCH-A INSTALLED AT CORNER
PATCH-B INSTALLED AT CORNER
PATCH-C INSTALLED AT CORNER

NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- C. REMOVE RELEASE PAPER AT TIME OF INSTALLATION OF CORNER PATCH
- D. NOMINAL PATCH SIZE IS 3" x 3"
- E. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

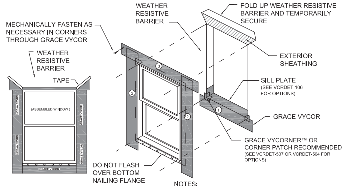
6 CORNER DETAILING PATCH OPTIONS
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-504


STEP 1 & 2
GRACE VYCOR
(EXTEND ½" ONTO FACE OF SHEATHING)
GRACE VYCORNER
WINDOW SILL
FASTENER
2 x 4
EXTERIOR SHEATHING
STEP 3
GRACE VYCOR
GRACE VYCOR
GRACE VYCORNER
2 x 4
2 x 4 CONSTRUCTION
STEP 1 & 2
GRACE VYCOR
(EXTEND ½" ONTO FACE OF SHEATHING & EXTEND 1" ONTO JAMB & SILL OPENING)
GRACE VYCORNER™
WINDOW SILL
FASTENER
2 x 6 or 2 x 8
EXTERIOR SHEATHING
STEP 3
GRACE VYCOR
GRACE VYCOR
2 x 6 or 2 x 8
2 x 6 or 2 x 8 CONSTRUCTION
①
②
③

NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT INFORMATION SHEETS
- B. INSTALL IN ORDER AS SHOWN BY NUMBERS
- C. MECHANICALLY FASTEN THE GRACE VYCORNER IN CORNERS AS NECESSARY WITH NAILS OR STAPLES
- D. CHECK LOCAL BUILDING CODES FOR WEATHER RESISTIVE BARRIER REQUIREMENTS AND INSTALL GRACE VYCOR WITH WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- E. INSTALL GRACE VYCOR FLASHING AT WINDOW (SEE VCRDET-100 TO 111)
- F. INSTALL GRACE VYCORNER AT BOTH CORNERS OF WINDOW SILL
- G. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

7 INSTALLATION BEFORE WEATHER RESISTIVE BARRIER
GRACE VYCORNER™ PREFABRICATED CORNERS

FOR WINDOWS & DOORS VCRDET-507

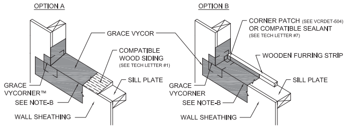

MECHANICALLY FASTEN AS NECESSARY IN CORNERS THROUGH GRACE VYCOR
WEATHER RESISTIVE BARRIER
FOLD UP WEATHER RESISTIVE BARRIER AND TEMPORARILY SECURE
WEATHER RESISTIVE BARRIER
TAPE
(ASSEMBLED WINDOW)
GRACE VYCOR
EXTERIOR SHEATHING
SILL PLATE (SEE VCRDET-106 FOR OPTIONS)
GRACE VYCOR
GRACE VYCORNER™ OR CORNER PATCH RECOMMENDED (SEE VCRDET-507 OR VCRDET-504 FOR OPTIONS)
DO NOT FLASH OVER BOTTOM NAILING FLANGE
①
②
③

HEAD FLASHING TIE-IN INSTRUCTIONS:
1. CUT, FOLD UP AND TEMPORARILY SECURE WEATHER RESISTIVE BARRIER ABOVE HEADER TO ALLOW FOR FLASHING INSTALLATION
2. INSTALL GRACE VYCOR HEAD FLASHING UNDER WEATHER RESISTIVE BARRIER ALONG HEADER
3. FOLD WEATHER RESISTIVE BARRIER BACK OVER HEAD FLASHING AND SEAL WITH TAPE AS SHOWN ABOVE

NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- C. REMOVE WEATHER RESISTIVE BARRIER FROM TOP OF WINDOW SILL PLATE
- D. INSTALL GRACE VYCOR IN ORDER AS SHOWN BY NUMBERS
- E. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- F. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

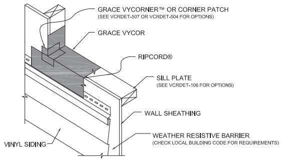
8 FLANGED WINDOW - OPTION 1
FLASHING INSTALLATION AFTER WEATHER RESISTIVE BARRIER

GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-100


OPTION A
OPTION B
GRACE VYCOR
COMPATIBLE WOOD SIDING (SEE TECH LETTER #1)
SILL PLATE
GRACE VYCORNER™
SEE NOTE-B
WALL SHEATHING
CORNER PATCH (SEE VCRDET-504) OR COMPATIBLE SEALANT (SEE TECH LETTER #7)
WOODEN FURRING STRIP
SILL PLATE
GRACE VYCORNER
SEE NOTE-B
WALL SHEATHING

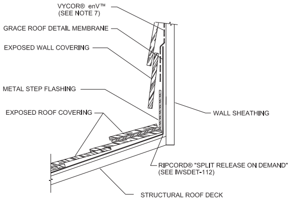
NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- B. RIPCORD® CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION AND FUTURE TIE-INS
- C. IF APPLICABLE, REMOVE WEATHER RESISTIVE BARRIER FROM TOP OF WINDOW SILL PLATE
- D. INSTALL SILL FLASHING AS SHOWN ABOVE
- E. INSTALL GRACE VYCOR AROUND REMAINING WINDOW UNIT PER GRACE WINDOW DETAILS (VCRDET-100 TO 111)
- F. CHECK LOCAL BUILDING CODES FOR WEATHER RESISTIVE BARRIER REQUIREMENTS AND INSTALL GRACE VYCOR WITH WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- G. A BACK DAM CAN BE ACCOMPLISHED USING A WOODEN FURRING STRIP, AS ILLUSTRATED ABOVE, OR BY FOLDING THE GRACE VYCOR ADHESIVE LAYER ONTO ITSELF
- H. OPTION-C: INSTALL WOODEN FURRING STRIP ON TOP OF WOODEN SIDING PRIOR TO GRACE VYCOR
- I. FOR SILL PAN DEPTHS GREATER THAN 6 INCHES, A SLOPED SILL IS REQUIRED IN ACCORDANCE WITH ASTM E 2112
- J. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

9 WINDOW SILL PAN OPTIONS
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-106


GRACE VYCORNER™ OR CORNER PATCH (SEE VCRDET-507 OR VCRDET-504 FOR OPTIONS)
GRACE VYCOR
RIPCORD®
SILL PLATE (SEE VCRDET-106 FOR OPTIONS)
WALL SHEATHING
WEATHER RESISTIVE BARRIER (CHECK LOCAL BUILDING CODE FOR REQUIREMENTS)
VINYL SIDING

NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS, INSTALLATION VIDEO AND PRODUCT DATA SHEETS
- A. RIPCORD CAN BE REMOVED FROM GRACE VYCOR FOR EASE OF INSTALLATION
- B. INSTALL GRACE VYCOR AND WEATHER RESISTIVE BARRIER TO FORM WATER-SHEDDING LAPS
- C. REMOVE WEATHER RESISTIVE BARRIER FROM TOP OF WINDOW SILL PLATE
- D. FOR SILL PAN DEPTHS GREATER THAN 6 INCHES, A SLOPED SILL IS REQUIRED IN ACCORDANCE WITH ASTM E 2112
- E. A BACK DAM CAN BE ACCOMPLISHED USING A WOODEN FURRING STRIP OR BY FOLDING THE GRACE VYCOR ADHESIVE LAYER ONTO ITSELF
- F. LEAVE RELEASE PAPER ON LOWER HALF OF GRACE VYCOR SILL FLASHING FOR FUTURE TIE-IN
- G. EXTEND GRACE VYCOR OVER NAILING FLANGE OF THE LAST COMPLETE COURSE OF SIDING PANEL AND TRIM GRACE VYCOR TO PROTECT FROM PERMANENT EXPOSURE TO UV
- H. LEAVE RELEASE PAPER ON OR OTHER BOND BREAKER BETWEEN GRACE VYCOR AND VINYL
- I. INSTALL GRACE VYCOR AROUND REMAINING WINDOW UNIT PER GRACE WINDOW DETAILS (VCRDET-100 TO 111)
- J. DETAIL ALSO RELEVANT FOR GRACE VYCOR V40 AND VYCOR BUTYL

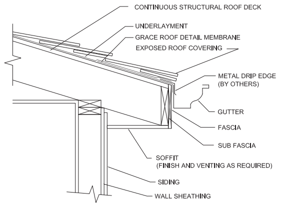
10 TIE-IN WITH VINYL SIDING AT WINDOW SILL
GRACE VYCOR® SELF-ADHERED FLASHING - VCRDET-107


VYCOR® enV™ (SEE NOTE 7)
GRACE ROOF DETAIL MEMBRANE
EXPOSED WALL COVERING
METAL STEP FLASHING
EXPOSED ROOF COVERING
WALL SHEATHING
RIPCORD® "SPLIT RELEASE ON DEMAND" (SEE IWSDET-112)
STRUCTURAL ROOF DECK

NOTES:

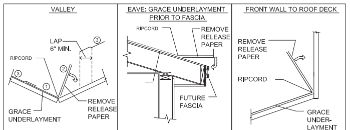
1. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS AND INSTALLATION VIDEO
2. REFER TO PRODUCT DATA SHEETS ON WEBSITE FOR FURTHER INFORMATION
3. RIPCORD® HAS BEEN REMOVED ALONG JOINT BETWEEN ROOF AND WALL FOR EASE OF INSTALLATION
4. EXTEND GRACE ROOF DETAIL MEMBRANE ON THE WALL SHEATHING ABOVE THE HIGHEST EXPECTED LEVEL OF SNOW AND ICE
5. THE METAL FLASHING IS INSTALLED OVER THE GRACE ROOF DETAIL MEMBRANE
6. INTEGRATE GRACE ROOF DETAIL MEMBRANE AND UNDERLAYMENT TO FORM WATER-SHEDDING LAPS
7. REFER TO LOCAL BUILDING CODE REQUIREMENTS FOR WEATHER RESISTIVE BARRIER

11 VERTICAL FRONT WALL
GRACE ROOF DETAIL MEMBRANE - RDMDET-102


CONTINUOUS STRUCTURAL ROOF DECK
UNDERLAYMENT
GRACE ROOF DETAIL MEMBRANE
EXPOSED ROOF COVERING
METAL DRIP EDGE (BY OTHERS)
GUTTER
FASCIA
SUB FASCIA
SOFFIT (FINISH AND VENTING AS REQUIRED)
SIDING
WALL SHEATHING

NOTES:
1. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS AND INSTALLATION VIDEO
2. REFER TO PRODUCT DATA SHEETS ON WEBSITE FOR FURTHER INFORMATION
3. THE DRIP EDGE IS INSTALLED OVER THE GRACE ROOF DETAIL MEMBRANE
4. LAYER OF UNDERLAYMENT IS INSTALLED OVER THE DRIP EDGE
5. INTEGRATE GRACE ROOF DETAIL MEMBRANE AND UNDERLAYMENT TO FORM WATER-SHEDDING LAPS
6. REPAIR ALL HOLES LEFT FROM REMOVAL OF TOE BOARDS, ROOF JACKS, ETC.

12 EAVE WITH DRIP EDGE STRIPPED-IN
GRACE ROOF DETAIL MEMBRANE - RDMDET-101


VALLEY
LAP 6" MIN.
RIPCORD
GRACE UNDERLAYMENT
REMOVE RELEASE PAPER
①
②
③
EAVE: GRACE UNDERLAYMENT PRIOR TO FASCIA
RIPCORD
REMOVE RELEASE PAPER
FUTURE FASCIA
FRONT WALL TO ROOF DECK
REMOVE RELEASE PAPER
RIPCORD
GRACE UNDER-LAYMENT

VALLEY	EAVE: GRACE UNDERLAYMENT PRIOR TO FASCIA	FRONT WALL TO ROOF DECK
A. INSTALL IN ORDER AS SHOWN BY NUMBERS B. ENGAGE RIPCORD TO SPLIT RELEASE PAPER C. ALIGN & INSTALL GRACE UNDERLAYMENT OVER VALLEY D. REFER TO NRCA OR SMACNA FOR VALLEY METAL FLASHING AND ROOF COVERING OPTIONS	A. ENGAGE RIPCORD TO SPLIT RELEASE PAPER B. ALIGN GRACE UNDERLAYMENT ALONG EAVE C. REMOVE RELEASE PAPER FROM UPPER HALF OF GRACE UNDERLAYMENT AND APPLY TO ROOF DECK D. REMOVE RELEASE PAPER ALONG EAVE AFTER FASCIA IS INSTALLED OR FOR FUTURE TIE-IN	A. ENGAGE RIPCORD TO SPLIT RELEASE PAPER B. REMOVE RELEASE PAPER FROM GRACE UNDERLAYMENT AND APPLY TO ROOF DECK C. REMOVE REMAINING RELEASE PAPER AND APPLY TO WALL D. EXTEND GRACE UNDERLAYMENT ON THE WALL SHEATHING ABOVE THE HIGHEST EXPECTED LEVEL OF SNOW AND ICE

NOTES:
- A. VISIT GRACECONSTRUCTION.COM FOR THE MOST CURRENT DETAILS AND INSTALLATION VIDEO
- B. REFER TO PRODUCT DATA SHEETS ON WEB SITE FOR FURTHER INFORMATION
- C. RIPCORD HAS BEEN REMOVED FOR EASE OF INSTALLATION

13 USE OF RIPCORD®
GRACE ICE & WATER SHIELD IWSDET-112

14

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16

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20

LH DESIGN
2870 Glen Ascot Way
San Jose, CA 95148
408.510.9888

REVISIONS

These drawings are instruments of service & are the property of LH Design . All designs and other information on these drawings are for use on the specified project and shall not be used without the expressed written consent of LH Design. Written dimensions on these drawings shall have precedence over scaled dimensions. Contractors shall verify and be precedence over scaled dimensions.Contractors shall verify and be responsible for all dimensions and conditions shown by these drawings.

PROJECT

SHEET CONTENTS

GRACE VYCOR TYP. FLASHING DETAILS

DATE
SCALE
JOB
SIGNATURE

SHEET

F-1

CERTIFICATE OF COMPLIANCE CF1R-PRF-01E
Project Name: Toyon Drive Addition **Calculation Date/Time:** 2021-06-25T10:55:52-07:00 (Page 1 of 13)
Calculation Description: Title 24 Analysis **Input File Name:** Toyon Drive Addition (2826).ribd19x

GENERAL INFORMATION					
01	Project Name	Toyon Drive Addition			
02	Run Title	Title 24 Analysis			
03	Project Location	2826 Toyon Drive			
04	City	Santa Clara	05	Standards Version	2019
06	Zip code	95051	07	Software Version	EnergyPro 8.2
08	Climate Zone	4	09	Front Orientation (deg/ Cardinal)	0
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	AdditionAlteration	13	Number of Bedrooms	5
14	Addition Cond. Floor Area (ft^2)	603	15	Number of Stories	2
16	Existing Cond. Floor Area (ft^2)	1930	17	Fenestration Average U-factor	0.3
18	Total Cond. Floor Area (ft^2)	2533	19	Glazing Percentage (%)	20.45%
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	49.75	43.82	5.93	11.9
Space Cooling	33.53	30.33	3.2	9.5
IAQ Ventilation	0	0	0	
Water Heating	12.22	10.84	1.38	11.3
Self Utilization/Flexibility Credit	n/a	0	0	n/a
Compliance Energy Total	**95.5**	**84.99**	**10.51**	**11**

REQUIRED SPECIAL FEATURES

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

- Non-standard duct location (any location other than attic)

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 buildng tables below. Registered CF2Rs and CF3Rs are required to be completedin the HERS Registry

Building-level Verifications:
- Kitchen range hood

Cooling System Verifications:
- Minimum Airflow
- Fan Efficacy Watts/CFM

Heating System Verifications:
- -- None --

HVAC Distribution System Verifications:
- Duct leakage testing
- Ducts located entirely in conditioned space confirmed by duct leakage testing

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
Toyon Drive Addition	2533	1	5	2	0	1

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
Existing Living Area	Conditioned	Main HVAC System1	1930	8	DHW Sys 1	N/A
New Living Area	Conditioned	New HVAC System2	603	8	DHW Sys 1	N/A

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
Front Wall	Existing Living Area	R-0 Wall	0	Front	248	74.4	90	none	Existing	No
Left Wall	Existing Living Area	R-0 Wall	90	Left	184	64	90	none	Existing	No
Rear Wall	Existing Living Area	R-0 Wall	180	Back	76	40	90	none	Existing	No
Right Wall	Existing Living Area	R-0 Wall	270	Right	200	70	90	none	Existing	No
Front Wall 2	Existing Living Area	R-0 Wall	0	Front	224	36	90	none	Existing	No
Left Wall 2	Existing Living Area	R-0 Wall	90	Left	200	0	90	none	Existing	No
Rear Wall 2	Existing Living Area	R-0 Wall	180	Back	224	36	90	none	Existing	No
Right Wall 2	Existing Living Area	R-0 Wall	270	Right	200	4	90	none	Existing	No
Front Wall 3	New Living Area	R-15 Wall	0	Front	54	0	90	none	New	n/a
Left Wall 3	New Living Area	R-15 Wall	90	Left	216	16	90	none	New	n/a
Rear Wall 3	New Living Area	R-15 Wall	180	Back	414	101	90	none	New	n/a
Right Wall 3	New Living Area	R-15 Wall	270	Right	198	44.5	90	none	New	n/a
Interior Surface	Existing Living Area>>__Garage__	R-0 Wall1	n/a	n/a	152	17.8	n/a		Existing	No
Interior Surface 2	New Living Area>>Existing Living Area	R-0 Wall1	n/a	n/a	336	0	n/a		New	n/a
Roof 5	Existing Living Area	R-11 Roof Attic	n/a	n/a	514	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 6	Existing Living Area	R-11 Roof Attic	n/a	n/a	688	n/a	n/a		Existing	No
Roof 7	New Living Area	R-38 Roof Attic	n/a	n/a	587	n/a	n/a		New	n/a
Raised Floor	Existing Living Area	R-0 Floor Crawlspace	n/a	n/a	1238	n/a	n/a		Existing	No
Raised Floor 2	New Living Area	R-19 Floor Crawlspace	n/a	n/a	603	n/a	n/a		New	n/a
Front Wall 4	__Garage__	R-0 Wall	0	Front	168	0	90	none	Existing	No
Left Wall 4	__Garage__	R-0 Wall	90	Left	160	0	90	none	Existing	No
Rear Wall 4	__Garage__	R-0 Wall	180	Back	168	0	90	none	Existing	No
Right Wall 4	__Garage__	R-0 Wall	270	Right	160	0	90	none	Existing	No

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Zone	Construction	Azimuth	Orientation	Area (ft^2)	Skylight Area (ft^2)	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Cool Roof	Status	Verified Existing Condition	Existing Construction
Roof	Existing Living Area	R-11 Roof Attic1	0	Front	32.1	32	4	0.1	0.85	No	Existing	No	
Roof 2	Existing Living Area	R-11 Roof Attic1	0	Front	4.1	4	4	0.1	0.85	No	Existing	No	
Roof 3	New Living Area	R-38 Roof Attic1	0	Front	16.1	16	4	0.1	0.85	No	New	n/a	
Roof 4	__Garage__	R-0 Roof No Attic	0	Front	420	0	4	0.1	0.85	No	Existing	No	

ATTIC

01	02	03	04	05	06	07	08	09	10
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition
Attic Existing Living Area	Attic RoofExisting Living Area	Ventilated	4	0.1	0.85	No	No	Existing	No
Attic New Living Area	Attic RoofNew Living Area	Ventilated	4	0.1	0.85	Yes	No	New	n/a

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Window	Window	Front Wall	Front	0			1	48.4	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 2	Window	Front Wall	Front	0			1	6	0.3	NFRC	0.23	NFRC	Bug Screen	Altered	No
Window 3	Window	Left Wall	Left	90			1	24	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 4	Window	Left Wall	Left	90			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	Altered	No
Sliding Glass Door	Window	Rear Wall	Back	180			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	Altered	No
Window 5	Window	Right Wall	Right	270			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	Altered	No
Window 6	Window	Right Wall	Right	270			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	Altered	No
Window 7	Window	Front Wall 2	Front	0			1	12	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 8	Window	Front Wall 2	Front	0			1	12	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 9	Window	Front Wall 2	Front	0			1	12	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 10	Window	Rear Wall 2	Back	180			1	18	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 11	Window	Rear Wall 2	Back	180			1	18	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	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 12	Window	Right Wall 2	Right	270			1	4	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 13	Window	Left Wall 3	Left	90			1	16	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 14	Window	Rear Wall 3	Back	180			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Sliding Glass Door 2	Window	Rear Wall 3	Back	180			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 15	Window	Rear Wall 3	Back	180			1	21	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 16	Window	Right Wall 3	Right	270			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 17	Window	Right Wall 3	Right	270			1	4.5	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Skylight	Skylight	Roof	Front	0			1	16	0.3	NFRC	0.23	NFRC	None	Altered	No
Skylight 2	Skylight	Roof	Front	0			1	16	0.3	NFRC	0.23	NFRC	None	Altered	No
Skylight 3	Skylight	Roof 2	Front	0			1	4	1.19	Table 110.6-A	0.83	Table 110.6-B	None	Existing	No
Skylight 4	Skylight	Roof 3	Front	0			1	4	0.3	NFRC	0.23	NFRC	None	New	n/a
Skylight 5	Skylight	Roof 3	Front	0			1	4	0.3	NFRC	0.23	NFRC	None	New	n/a
Skylight 6	Skylight	Roof 3	Front	0			1	4	0.3	NFRC	0.23	NFRC	None	New	n/a
Skylight 7	Skylight	Roof 3	Front	0			1	4	0.3	NFRC	0.23	NFRC	None	New	n/a

OPAQUE DOORS

01	02	03	04	05	06
Name	Side of Building	Area (ft^2)	U-factor	Status	Verified Existing Condition
Door	Front Wall	20	0.5	Existing	No
Door 2	Interior Surface	17.8	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	__Garage__	420	82	none	0	0%	No	Existing	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-0 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.361	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: 3 Coat Stucco
R-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: 3 Coat Stucco
R-0 Roof No Attic	Cathedral Ceilings	Wood Framed Ceiling	2x4 @ 16 in. O. C.	R-0	None / None	0.484	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4 Inside Finish: Gypsum Board
R-11 Roof Attic1	Cathedral Ceilings	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-11	None / None	0.085	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-11 / 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
R-38 Roof Attic1	Cathedral Ceilings	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.035	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Radiant Barrier Cavity / Frame: R-38 / 2x4 Inside Finish: Gypsum Board
R-0 Wall1	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.277	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Other Side Finish: Gypsum Board
Attic RoofExisting Living Area	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 RoofNew Living Area	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-0 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x12 @ 16 in. O. C.	R-0	None / None	0.216	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x12
R-19 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.046	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10
R-11 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-11	None / None	0.081	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
R-38 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

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	

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	0.95-UEF	<= 200 kBtu/hr	0	n/a	n/a	n/a	n/a	New	

Carstairs Energy Inc.
2238 Bayview Heights Drive, Suite E
Los Osos, CA 93402
805-904-9048 title24@yahoo.com
www.carstairsenergy.com

Toyon Dr Addition
2826 Toyon Dr
Santa Clara CA

CABEC
California Association of Building Energy Consultants
CERTIFIED ENERGY ANALYST
Timothy Carstairs

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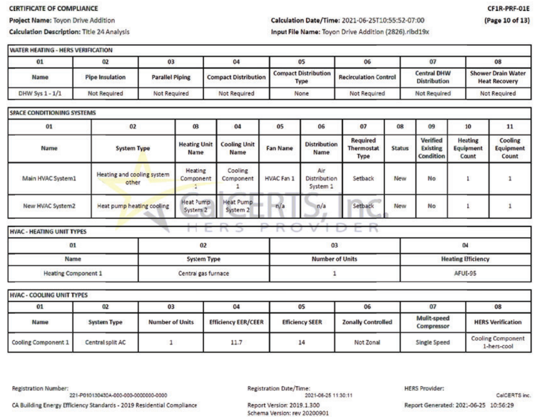
SCALE: N/A
SHEET: T24.1



CERTIFICATE OF COMPLIANCE CF1R-PRF-01E

Project Name: Toyon Drive Addition **Calculation Date/Time:** 2021-06-25T10:55:52-07:00 **(Page 10 of 13)**

Calculation Description: Title 24 Analysis **Input File Name:** Toyon Drive Addition (2826).ribd19x

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

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
Main 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
New HVAC System2	Heat pump heating cooling	Heat Pump System 2	Heat Pump System 2	n/a	n/a	Setback	New	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-95

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	Central split AC	1	11.7	14	Not Zonal	Single Speed	Cooling Component 1-hers-cool

Registration Number: 221-P010130430A-000-000-0000000-0000
CA Building Energy Efficiency Standards - 2019 Residential Compliance
Registration Date/Time: 2021-06-25 11:30:11
Report Version: 2019.1.300
Schema Version: rev 20200901
HERS Provider: CalCERTS inc.
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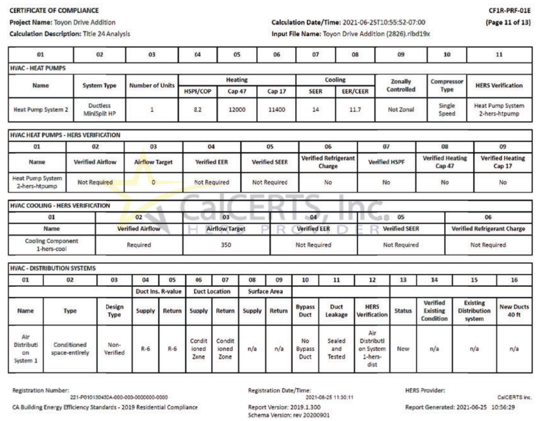

CERTIFICATE OF COMPLIANCE CF1R-PRF-01E

Project Name: Toyon Drive Addition **Calculation Date/Time:** 2021-06-25T10:55:52-07:00 **(Page 11 of 13)**

Calculation Description: Title 24 Analysis **Input File Name:** Toyon Drive Addition (2826).ribd19x

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11
			Heating			Cooling				
Name	System Type	Number of Units	HSPF/COP	Cap 47	Cap 17	SEER	EER/CEER	Zonally Controlled	Compressor Type	HERS Verification
Heat Pump System 2	Ductless MiniSplit HP	1	8.2	12000	11400	14	11.7	Not Zonal	Single Speed	Heat Pump System 2-hers-htpump

HVAC HEAT PUMPS - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge	Verified HSPF	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump System 2-hers-htpump	Not Required	0	Not Required	Not Required	No	No	No	No

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Cooling Component 1-hers-cool	Required	350	Not Required	Not Required	Not Required

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	Conditioned space-entirely	Non-Verified	R-6	R-6	Conditioned Zone	Conditioned Zone	n/a	n/a	No Bypass Duct	Sealed and Tested	Air Distribution System 1-hers-dist	New	n/a	n/a	n/a

Registration Number: 221-P010130430A-000-000-0000000-0000
CA Building Energy Efficiency Standards - 2019 Residential Compliance
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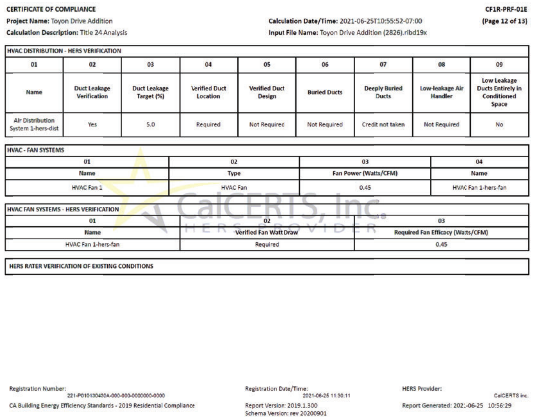

CERTIFICATE OF COMPLIANCE CF1R-PRF-01E

Project Name: Toyon Drive Addition **Calculation Date/Time:** 2021-06-25T10:55:52-07:00 **(Page 12 of 13)**

Calculation Description: Title 24 Analysis **Input File Name:** Toyon Drive Addition (2826).ribd19x

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	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	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

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

HERS RATER VERIFICATION OF EXISTING CONDITIONS

Registration Number: 221-P010130430A-000-000-0000000-0000
CA Building Energy Efficiency Standards - 2019 Residential Compliance
Registration Date/Time: 2021-06-25 11:30:11
Report Version: 2019.1.300
Schema Version: rev 20200901
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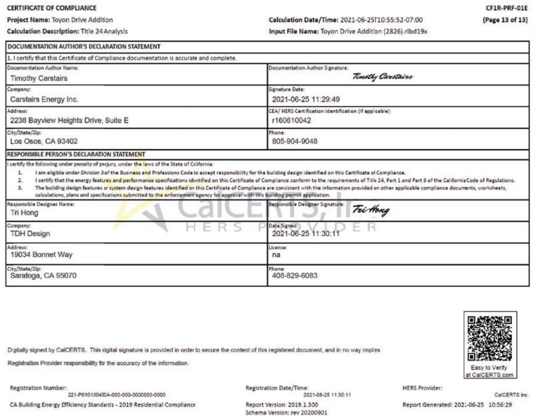

CERTIFICATE OF COMPLIANCE CF1R-PRF-01E

Project Name: Toyon Drive Addition **Calculation Date/Time:** 2021-06-25T10:55:52-07:00 **(Page 13 of 13)**

Calculation Description: Title 24 Analysis **Input File Name:** Toyon Drive Addition (2826).ribd19x

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Timothy Carstairs	Documentation Author Signature: Timothy Carstairs
Company: Carstairs Energy Inc.	Signature Date: 2021-06-25 11:29:49
Address: 2238 Bayview Heights Drive, Suite E	CEA/ HERS Certification Identification (If applicable): r160610042
City/State/Zip: Los Osos, CA 93402	Phone: 805-904-9048

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: Tri Hong	Responsible Designer Signature: Tri Hong
Company: TDH Design	Date Signed: 2021-06-25 11:30:11
Address: 19034 Bonnet Way	License: na
City/State/Zip: Saratoga, CA 95070	Phone: 408-829-6083

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

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Registration Number: 221-P010130430A-000-000-0000000-0000
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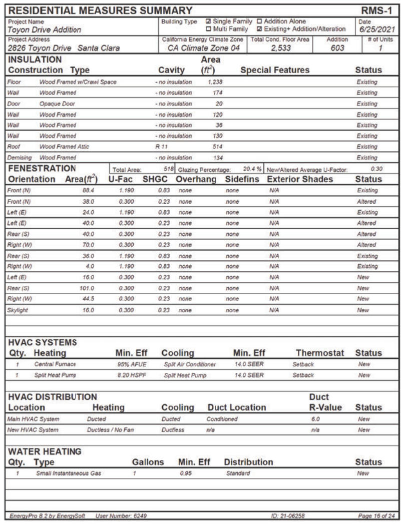

RESIDENTIAL MEASURES SUMMARY RMS-1

Project Name: Toyon Drive Addition	Building Type: ☒ Single Family ☐ Multi Family ☐ Addition Alone ☒ Existing+ Addition/Alteration			Date: 6/25/2021
Project Address: 2826 Toyon Drive Santa Clara	California Energy Climate Zone: CA Climate Zone 04	Total Cond. Floor Area: 2,533	Addition: 603	# of Units: 1

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features	Status
Floor	Wood Framed w/Crawl Space	- no insulation	1,238		Existing
Wall	Wood Framed	- no insulation	174		Existing
Door	Opaque Door	- no insulation	20		Existing
Wall	Wood Framed	- no insulation	120		Existing
Wall	Wood Framed	- no insulation	36		Existing
Wall	Wood Framed	- no insulation	130		Existing
Roof	Wood Framed Attic	R 11	514		Existing
Demising	Wood Framed	- no insulation	134		Existing

FENESTRATION Total Area: 518 Glazing Percentage: 20.4 % New/Altered Average U-Factor: 0.30

Orientation	Area(ft^2)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status
Front (N)	88.4	1.190	0.83	none	none	N/A	Existing
Front (N)	38.0	0.300	0.23	none	none	N/A	Altered
Left (E)	24.0	1.190	0.83	none	none	N/A	Existing
Left (E)	40.0	0.300	0.23	none	none	N/A	Altered
Rear (S)	40.0	0.300	0.23	none	none	N/A	Altered
Right (W)	70.0	0.300	0.23	none	none	N/A	Altered
Rear (S)	36.0	1.190	0.83	none	none	N/A	Existing
Right (W)	4.0	1.190	0.83	none	none	N/A	Existing
Left (E)	16.0	0.300	0.23	none	none	N/A	New
Rear (S)	101.0	0.300	0.23	none	none	N/A	New
Right (W)	44.5	0.300	0.23	none	none	N/A	New
Skylight	16.0	0.300	0.23	none	none	N/A	New

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	95% AFUE	Split Air Conditioner	14.0 SEER	Setback	New
1	Split Heat Pump	8.20 HSPF	Split Heat Pump	14.0 SEER	Setback	New

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
Main HVAC System	Ducted	Ducted	Conditioned	6.0	New
New HVAC System	Ductless / No Fan	Ductless	n/a	n/a	New

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status
1	Small Instantaneous Gas	1	0.95	Standard	New

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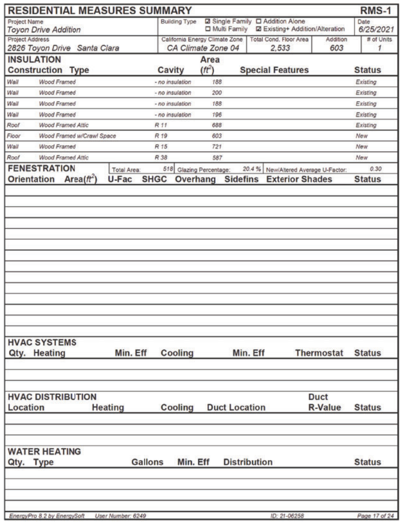

RESIDENTIAL MEASURES SUMMARY RMS-1

Project Name: Toyon Drive Addition	Building Type: ☒ Single Family ☐ Multi Family ☐ Addition Alone ☒ Existing+ Addition/Alteration			Date: 6/25/2021
Project Address: 2826 Toyon Drive Santa Clara	California Energy Climate Zone: CA Climate Zone 04	Total Cond. Floor Area: 2,533	Addition: 603	# of Units: 1

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features	Status
Wall	Wood Framed	- no insulation	188		Existing
Wall	Wood Framed	- no insulation	200		Existing
Wall	Wood Framed	- no insulation	188		Existing
Wall	Wood Framed	- no insulation	196		Existing
Roof	Wood Framed Attic	R 11	688		Existing
Floor	Wood Framed w/Crawl Space	R 19	603		New
Wall	Wood Framed	R 15	721		New
Roof	Wood Framed Attic	R 38	587		New

FENESTRATION Total Area: 518 Glazing Percentage: 20.4 % New/Altered Average U-Factor: 0.30

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

HVAC SYSTEMS

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

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

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Carstairs Energy Inc.
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Toyon Dr Addition
2826 Toyon Dr
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CABEC
California Association of Building Energy Consultants
CERTIFIED ENERGY ANALYST
Timothy Carstairs

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6/25/2021
21-06258
DRAWN BY: Timothy Carstairs
SCALE: N/A
SHEET:
T24.2

RESIDENTIAL MEASURES SUMMARY

RMS-1

Project Name *Toyon Drive Addition*	Building Type ☑ Single Family ☐ Addition Alone ☐ Multi Family ☑ Existing+ Addition/Alteration	Date *6/25/2021*

Project Address *2826 Toyon Drive Santa Clara*	California Energy Climate Zone *CA Climate Zone 04*	Total Cond. Floor Area *2,533*	Addition *603*	# of Units *1*

INSULATION

Construction	Type	Cavity	Area (ft²)	Special Features	Status
Demising	*Wood Framed*	*- no insulation*	*336*		*New*

FENESTRATION Total Area: *518* Glazing Percentage: *20.4 %* New/Altered Average U-Factor: *0.30*

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".

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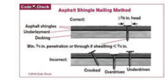
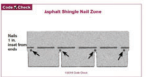
21–06258
DRAWN BY: Timothy Carstairs
SCALE: N/A
SHEET:
T24.3

Attach plywood to the rafters or ceiling joists as shown in the following table 9R602.3(2):

Sheathing Thickness	Fastener and Length	Fastener Spacing (inches) Edge	Fastener Spacing (inches) Intermediate
Up to 1/2 in.	Staple 15 ga. 1¾ in.	4	8
	Staple 16 ga. 1¾ in. or 0.097 – 0.099 Nail 2¼ in	3	6
19/32 & 5/8 in.	0.113 Nail 2 in.	3	6
	Staple 15 or 16 ga. 1¾ in. or 0.097 – 0.099 Nail 2¼ in.	4	8
23/32 & 3/4 in.	Staple 14 or 16 ga. 2 in. or 0.097 – 0.099 Nail 2¼ in.	4	8
	Staple 15 ga. 1¾ in.	3	6
	0.113 Nail 2¼ in.	3	6
	Staple 14 or 15 ga. 2¼ in. or 0.097 – 0.099 Nail 2½ in.	4	8

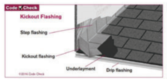
Asphalt shingles must be attached with roofing nails (not staples) with a minimum ⅜ in. diameter head and penetrating not less than ¾ in. into roof sheathing (or through for sheathing <¾ in.). [CRC R905.2.5]

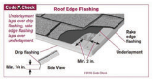




Final Inspection:

- At final inspection: flashings sealed, collars in place, all debris removed, and all exposed new and replacement wood must be painted.
- A spark arrestor is required on all chimneys. [CRC R1003.9.2]
- Kickout flashings are required where a sloped roof eave intersects a vertical sidewall. [CRC 903.2.1]
- For asphalt shingle roofs, a drip edge is required at eaves and gable edges. The drip edge shall exten ¼ inch below the sheathing and extend back on the roof for a minimum of two inches. The underlayme goes over the drip edge at eaves and under the rake flashing. [CRC R905.2.8.5]





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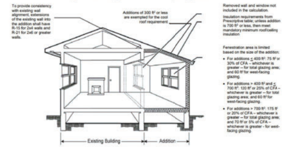
Automated Inspection Scheduling System: 408-615-2400

2019 CALIFORNIA ENERGY CODE
RESIDENTIAL PRESCRIPTIVE REQUIREMENTS FOR ADDITIONS & ALTERATIONS

❖ Prescriptive Requirements for Additions < 1000 ft²

Figure 9-3: Prescriptive Addition Envelope Requirements


To provide consistency with existing wall alignment, extensions of the existing wall into the addition shall have R-15 for 2x4 walls and R-21 for 2x6 or greater walls.
Additions of 300 ft² or less are exempted for the cool roof requirement
Removed wall and window not included in the calculation.
Insulation requirements from Prescriptive table; unless addition is 700 ft² or less, then meet mandatory minimum roof/ceiling insulation
Fenestration area is limited based on the size of the addition:
For additions ≤ 400 ft²: 75 ft² or 30% of CFA – whichever is greater – for total glazing area; and 60 ft² for west-facing glazing.
For additions > 400 ft² and ≤ 700 ft²: 120 ft² or 25% of CFA – whichever is greater – for total glazing area; and 60 ft² for west-facing glazing.
For additions > 700 ft²: 175 ft² or 20% of CFA – whichever is greater – for total glazing area; and 70 ft² or 5% of CFA – whichever is greater – for west-facing glazing.
Existing Building
Addition

A ≤ 400 ft²
Package A exceptions allow:
- 75 ft² fenestration OR 30% of addition's CFA*
- Max west-facing fenestration 60 ft²

400 ft² < A ≤ 700 ft²
Package A exceptions allow:
- 120 ft² fenestration OR 25% of addition's CFA*
- Max west-facing fenestration 60 ft²

700 ft² < A < 1000 ft²
Package A exceptions allow:
- 175 ft² fenestration OR 20% of addition's CFA*
- Max west-facing fenestration 70 ft² OR 5%*

* Whichever is greater

	A ≤ 700 ft²		700 ft² < A < 1000 ft²	
Component	Standard	Comment	Standard	Comment
Ceiling Insulation	R-30 min	Mandatory Requirements	R-30 min	Mandatory Requirements
Rafter Roof Insulations	R-22 min	150.2(a)1	R-30 min	150.2(a)1
Insulation in (N) Wall - Extension of (E) Wall	R-15 (2x4) R-21 (2x6)	150.2(a)1B	R-15 (2x4) R-21 (2x6)	150.2(a)1B
(N) Wall Insulation	U = 0.048 or Less (R21+R5 or R19+R6))	Table 150.1-A	U = 0.048 or Less (R21+R5 or R19+R6)	Table 150.1-A
Floor Insulation	Package A min (R-19 for Raised Floor)	Table 150.1-A	Package A min (R-19 for Raised Floor)	Table 150.1-A
Fenestration	U-factor 0.30 Max SHGC 0.23	Table 150.1-A	U-factor 0.30 Max SHGC 0.23	Table 150.1-A
Maximum Glazing Area	See Table above	150.2(a)1B	See Table above	150.2(a)1B
Radiant Barrier	Required	Table 150.1-A	Required, or Option B	Table 150.1-A
Quality Insulation Installation (QII)	Not Required	150.2(a)1B.v	Required (Except when converting existing unconditioned space, only applies to window/door header and air sealing)	150.2(a)1A.iv

❖ Roof and Ceiling Requirements for Prescriptive Additions (700 ft² < A < 1000 ft²)

	Option B	Option C
Roof Deck Insulations ¹˒²	R19 with air space, no radiant barrier required.	Non Required (NOTE: This attic requires ducts in conditioned space)
Ceiling Insulation	R38	R30
Duct Location	Attic, with 5% duct leakage	Conditioned Space, with 5% duct leakage, HERS required
Duct Insulation	R8	R6

1. *Roof deck insulation should be installed flush with the roof deck. Above deck insulation is applied as continuous insulation. Below deck insulation is installed in the cavities between trusses.*
2. *A designed air space may exist between the roof deck and the finishing roof material (such as roof tiles), triggering lower required insulation values.*

❖ Prescriptive Fenestration Requirements for Alterations
(Area of whole window, including frame)

Replace Exiting Only*
(No Increase in Fenestration Area)
- ❖ Vertical fen. ≤75 ft²
  U-factor ≤0.40
  SHGC ≤0.35
- ❖ Vertical fen. >75 ft²
  U-factor ≤0.30
  SHGC ≤0.23
- ❖ Skylights
  U-factor ≤0.55
  SHGC ≤0.30

Added Fenestration
1ft² ≤ Area ≤ 75 ft²
- ❖ U-factor ≤0.30
  SHGC ≤0.23

Total and west-facing area requirements do NOT apply

Alterations that add ≤ 16 sf new skylight area with a max U-factor of 0.55 and a max SHGC of 0.30 area do NOT need to meet the total fenestration area and west-facing fenestration area required

Added Fenestration
Area ≥ 75 ft²
- ❖ U-factor ≤0.30
- ❖ SHGC ≤0.23
- ❖ Total area ≤ 20%
- ❖ West Facing Area ≤ 5%

*Applies even if a single window (including frame) is being replaced

❖ Prescriptive Requirements for Envelope Alterations

Envelope Alteration Type	Applicable Mandatory Measures
Adding ceiling insulation to an existing roof, or a new roof on an existing building	Ceiling w/ attic and roof rafters: R-19 min. (U=0.054)
Adding exterior framed wall insulation	2x4 framing: R-13 (U=0.102) 2x6 framing: R-20 (U=0.071) Exception: Walls already insulated to R-11.
Adding raised floor insulation	R-19 Exception: Floors over controlled venilation or unvented crawlspaces.

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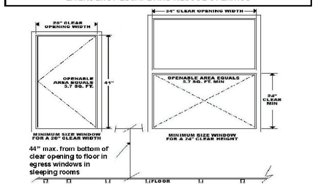
2019 CALIFORNIA RESIDENTIAL CODE - RESIDENTIAL EGRESS WINDOWS EMERGENCY ESCAPE AND RESCUE OPENINGS


20" CLEAR OPENING WIDTH
OPENABLE AREA EQUALS 5.7 SQ. FT.
41"
MINIMUM SIZE WINDOW FOR A 20" CLEAR WIDTH
34" CLEAR OPENING WIDTH
OPENABLE AREA EQUALS 5.7 SQ. FT. MIN
24" CLEAR MIN
MINIMUM SIZE WINDOW FOR A 24" CLEAR HEIGHT
44" max. from bottom of clear opening to floor in egress windows in sleeping rooms
FLOOR

Because so many fire deaths occur when occupants of residential buildings are asleep at the time of a fire, the 2019 California Residential Code (CRC), Section R310.1 requires that:

- Habitable Attics
- Basements contain one or more sleeping rooms and
- Every sleeping room below the fourth story

Shall have at least one operable window or exterior door opening approved for emergency escape and rescue (egress windows/doors). Such openings shall open directly into a public way or to a yard or court that opens to a public way.

- The net clear openable area shall be no less than 5.7 square feet (5 square feet for grade floor openings from exterior grade and basement window wells).
- In addition to the above requirement, the net clear openable height dimension shall be a minimum of 24 inches. The net clear openable width dimension shall be a minimum of 20 inches (Note: using both minimum figures will not obtain the required 5.7 square feet.)

The chart below summarizes the minimum window dimensions that will achieve a 5.7 square foot opening

Minimum Clear Opening Width/Height of Emergency Escape and Rescue Windows (inches)

Width	20	20.5	21	21.5	22	22.5	23	23.5	24	24.5	25	25.5	26	26.5	27
Height	41	40	39.1	38.2	37.3	36.5	35.7	34.9	34.2	33.5	32.8	32.2	31.6	31	30.4
Width	27.5	28	28.5	29	29.5	30	30.5	31	31.5	32	32.5	33	33.5	34	34.2
Height	29.8	29.3	28.8	28.3	27.8	27.4	26.9	26.5	26.1	25.7	25.3	24.9	24.5	24.1	24

Exception: Where residential dwelling/townhouse is equipped with automatic fire sprinkler system, sleeping rooms in basement are not required to have egress openings provided that the basement has one of the following:

- One means of egress per CRC R311 and one emergency escape and rescue opening (does not have to be in the bedroom), or
- Two means of egress per CRC R311.

❖ Window Replacement – CRC R310.2.5

When an emergency escape and rescue window is replaced within an existing frame or existing rough opening, and the replacement window is of the same operating style as the existing window or a style that provides for an equal or greater clear opening area, the replacement window is exempt from the maximum sill height requirements of CRC R310.2.2 and the requirements of CRC R310.2.1 for opening area and clear opening width/height (given that there is no change in occupancy of the space).

Replacement windows must provide or maintain the 8% natural light and 4% natural ventilation of the room's floor area.

New glazing in existing openings must be safety glass if the opening is in a hazardous location as defined in current standards for new construction.

Replacement and retrofit windows shall have a maximum U-factor of 0.30 and solar heat gain coefficient (SHGC) of 0.23.

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2019 CALIFORNIA RESIDENTIAL CODE (CRC)
ASPHALT SHINGLE RE-ROOF INFORMATION

When is a permit required?

- A re-roofing permit is required when replacing sheathing or when new sheathing is to be installed on the roof (such as solid sheathing over skip sheathing). A permit is required when dry rot repairs reach 32 sq. ft. or more of replaced decking, or any alteration or repairs occurs to the rafters, rafter tails or any structural members except a fascia board.
- A permit is not required for an asphalt shingle reroof when no new sheathing is being installed.
- No more than two (2) layers of roofing are allowed.

What inspections are required?

- Two inspections are required: Nailing (code 116) and Final Inspection (code 599). To schedule, call 408-615-2400. Plan ahead; inspection slots may fill up several days in advance.

Inspection procedures:

- The customer must provide an OSHA-approved ladder that is sufficiently secured to the structure and extends 3 ft. above the roof edge. Post the permit card in a conspicuous place for the inspector.

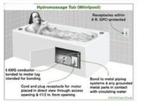
Nailing Inspection:

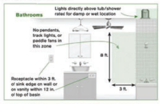
- Plan for the naling inspection to take place on the day the plywood or OSB sheathing is to be installed. 100% of the plywood or OSB must be installed for this inspection. Do not install paper or shingles prior to this inspection.
- Leave at least 1/8 inch space at all panel edge joints.
- Leave at least 1-inch space around all B vents. Use metal straps to secure the vent and prevent movement. Use flashing appropriately sized for the vent.
- Horizontal edges of plywood over skip sheathing that do not fall on solid backing (sheathing) must be installed using one of the following three methods:
  a. H- clips (within 6 inches of each corner and no more than 2 ft. apart) or,
  b. Support by solid backing such as wood strips placed underneath the plywood or OSB and between the existing skip sheathing or,
  c. Support by spacing blocks the same thickness as the skip sheathing and placed under the plywood or OSB at each rafter. Plywood or OSB shall have a minimum dimension of one foot (vertical edge) by two feet.
- Provide for adequate roof ventilation as required by code. One sq. ft. of opening for each 150 sq. ft. of area being vented. Minimum 50% of vent openings must be located at least 3 ft. above eave.
- Crickets are required on the ridge side of any penetration wider than 30 inches, except unit skylights installed in accordance with the manufacturer's instructions. [CRC R903.2.2]

BATHROOMS

Bath Electrical:

- All installed lighting shall be high efficacy. [CNC 150.0(k)1A] (**new in 2016 codes**)
- At least one light shall be controlled by a vacancy sensor (a manual-on, automatic-off occupancy sensor). [CNC 150.0(k)2AJ (**new in 2016 codes**)
- Exhaust fans must be switched separate from lighting, with the exception that lighting integral to an exhaust fan can be on the same switch if the fan is controlled by a humidistat that continues its operation after the light is off.
- All receptacle outlets in bathrooms shall be GFCI protected [CEC 210.8A1].
- All receptacle outlets in bathrooms shall be tamper resistant [CEC 406.12A].
- When a bathtub or shower stall is in an area not technically considered a bathroom (by the definitions in the electrical code), receptacles within 6 ft. of the tub/shower stall must be GFCI-protected. [CEC210.8A9]. (**new in 2016 codes**)
- A receptacle outlet is required within 3 feet of each wash basin location. It may be on the wall, or an adjacent partition, or on the face or side of the cabinet not more than 12 inches below the top of the basin [CEC 210.52D]. (**Change in 2016 codes** – previous code measured the 12 inches from the top of the vanity. Basins such as that in the figure below are sometimes well above the top of the vanity).
- Receptacles cannot be face-up in a vanity surface; listed pop-up receptacles are allowed [CEC 406.5E & 210.52D].
- A minimum of one 20-amp circuit is required for the receptacles in the bathroom(s). This circuit can have no other outlets, including lights [CEC 210.11C3]. If a 20-amp circuit serves only one (1) bathroom, lights and fans can be on the same circuit with the receptacles in that bathroom [CEC 210.11C3 exception].
- Hydro-massage tubs require an individual (dedicated) branch circuit and readily accessible GFCI protection [CEC 680.71]. An access door is required and must be large enough to remove the motor and pump. Cord-connected equipment must have the receptacle facing the opening and be no more than one foot behind the access hatch [CEC 680.73].


Hydromassage Tub (Whirlpool)
Receptacles within 6 ft. GFCI-protected
8 AWG conductor bonded to motor lug intended for bonding
Cord and plug receptacle for motor placed in direct view through access opening & <12 in. from opening
Bond to metal piping systems & any grounded metal parts in contact with circulating water
©2014 Code Check


Bathrooms
Lights directly above tub/shower rated for damp or wet location
No pendants, track lights, or paddle fans in this zone
8 ft.
Receptacle within 3 ft. of sink edge on wall or on vanity within 12 in. of top of basin
3 ft.

- Recessed light fixtures in shower enclosures must be listed for a damp or wet location [CEC 410.10A]
- Pendant light fixtures, track lights, and paddle fans shall not be installed lower than 8 feet above the flood-level rim of a tub, including the area 3 feet past the edge of the tub [CEC 410.10D].
- Electrical panels shall not be installed in bathrooms [CEC 240.24E].
- Switches and receptacles are not allowed in bathtub or shower spaces [CEC 404.4C & 406.9C].

BATHROOMS (Continued)

Bathroom Plumbing, General:

- All piping ¾ inch or more in diameter and all hot water pipes associated with a recirculation system must be insulated with min. 1-inch thick insulation. Existing inaccessible piping does not require insulation [CNC 150.0(j)2].
- Newly installed plumbing fixtures shall be water-conserving in compliance with the California Plumbing Code and Green Building Standards. Water closets shall not exceed 1.28 gallons per flush, showerheads shall not exceed 2.0 GPM and new lavatory faucets shall not exceed 1.2 GPM at 60 PSI. [CPC 407.2, 408.2 & 411.2] All Existing plumbing fixtures not included in the scope of new work shall be replaced if necessary to comply with SB407 Plumbing Fixtures Replacement requirements – See Water Conservation Certification Form.

Bathroom Plumbing, Toilets & Bidets:

- Toilets and bidets require a minimum 15 inches of clearance from the center line of the bowl to each side, and 24 inches of clearance from the front edge of the bowl [CPC 402.5]. The maximum flow rate is 1.28 GPF [CPC 403.2.1].
- Lavatory sinks require a minimum of 24 inches front clearance [CPC 402.5] (**new in 2016 code**)
- Showers require a minimum 2 inch drain and trap [CPC Table 702.1].
- All shower compartments shall have a minimum finished interior of 1024 square inches and shall be capable of encompassing a 30 inch diameter circle [CPC 408.6]. The curb may encroach on these size requirements. All surfaces shall be waterproof up to 72 inches above the drain inlet [CRC R307.2]. Thresholds shall be of sufficient width to accommodate a minimum 22 inch clear egress opening from the shower [CPC 408.5].
- Safety glass (tempered or laminated) is required for all glass shower doors and partitions and for windows in walls facing the tub or shower and located less than 60 inches above the standing surface of the tub/shower and within 60 inches horizontally [CRC R308.4.1&5].
- The maximum water temperature to a shower or tub/shower combination is 120°F. The water heater thermostat cannot be used as the control for this temperature. Valves shall provide scald and thermal shock protection, and be pressure-balanced, thermostatic, or combination pressure-balanced/thermostatic mixing in accordance with ASSE 1016 or ASME A112.18.1/CSA B125.1. [CPC 408.3].

Mechanical:

- Mechanical ventilation is required in all bathrooms with tubs or showers. The fan must move a minimum 50 CFM of air and be separately switched from the lighting. Fans that operate continuously can be 20 CFM. The duct must terminate on the exterior not less than 3 feet from openings into the building [CMC 502.2.1].
- Baths with no tub or shower (half baths) do not require mechanical ventilation if they are provided with a window at least 3 sq. ft. half of which is openable [CRC R303.3].

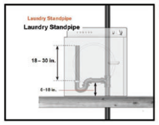
Tile & Backing:

- Water-resistant gypsum board (purple board) can be used as a tile backer board in areas that are not subject to direct exposure to water or high humidity [CRC R702.3.7.1]. Examples would be a wall behind a toilet or above a vanity countertop. Purple board cannot be used in a shower for direct application of tile. It can be used in showers behind a water-resistive membrane with mortar bed and lath. Other acceptable materials for application of tile in showers include cement board, fiber-cement or glass mat gypsum backers [CRC R702.4.2].

Laundry Rooms

Electrical:

- All new or altered lighting shall be high efficacy. [CNC 150.0(k)1A]
- At least one light shall be controlled by a vacancy sensor (a manual-on, automatic-off occupancy sensor). [CNC 150.0(k)2AJ (**new in 2016 codes**)
- All 125-volt receptacles in laundry areas GFCI protection, including the clothes washer receptacle. [CEC 210.8A10]. (**new in 2016 codes**)
- Receptacle outlets shall be tamper-resistant except those within dedicated space for an appliance not easily moved from one place to another (behind clothes washer). [CEC 406.12A]
- A separate 20-amp circuit is required for the laundry equipment. The lights and other receptacles in the room cannot be on that circut [CEC 210C2].
- All circuits supplying outlets or devices in the laundry area (including laundry areas in garages) must be AFCI protected [CEC210.12A] (**new in 2016 codes**)

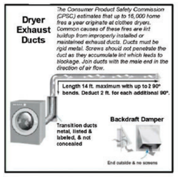


Plumbing:

- Clothes washer standpipes must be 2-inch diameter. The weir of the trap must be roughed in 6 – 18 inches above the floor; the standpipe must be a minimum of 18 and a maximum of 30 inches above the trap [CPC 804.1].

Mechanical:

- Clothes dryers in closets require a minimum of 100 sq. in. of makeup air, which can be supplied by louvers or undercutting the door [CMC 504.4.1].
- Dryer ducts must be smooth-walled metal 4-inch diameter and not more than 14 feet in length, with an allowance of 2 90° bends in that 14 ft. Deduct 2 ft. for each additional 90° bend in excess of 2 [CMC 504.4.2.1].
- Ducts may not pass through plenums or be shared with other systems or vents. They cannot be connected with screws that penetrate the duct interior [CMC 504.4].
- Dryer ducts must terminate on the building exterior in a backdraft damper. Screens or louvers cannot be installed [CMC 504.4].
- Flexible transition ducts (connectors) between the dryer and the metal duct are allowed in lengths up to 6 feet and cannot be concealed within construction [CMC 504.4.2.2 exception]. They must be UL listed and labeled (L&L) as dryer transition ducts, and cannot be plastic.


Dryer Exhaust Ducts

The Consumer Product Safety Commission (CPSC) estimates that up to 16,000 home fires a year originate at clothes dryers. Common causes of these fires are lint buildup from improperly installed or maintained exhaust ducts. Ducts must be rigid metal. Screws should not penetrate the duct as they accumulate lint which leads to blockage. Join ducts with the male end in the direction of air flow.

Length 14 ft. maximum with up to 2 90° bends. Deduct 2 ft. for each additional 90°.
Transition ducts metal, listed & labeled, & not concealed
Backdraft Damper
End outside & no screens

City of Santa Clara
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1500 Warburton Ave.
Santa Clara, CA 95050
www.santaclaraca.gov

Building Division: 408-615-2440
Email: Building@santaclaraca.gov
Permit Center: 408-615-2420
Email: PermitCenter@santaclaraca.gov
Automated Inspection Scheduling System: 408-615-2400

2019 California Codes • Residential Remodels and Additions

Applicable Codes:

For permit applications after January 1, 2020, the applicable codes are the 2019 editions of the California Residential Code (CRC), Electrical Code (CEC), Plumbing Code (CPC), Mechanical Code (CMC), Energy Code (CNC), and Green Building Standards Code (GRN).

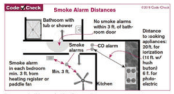
Permits:

- *A permit is required for any added or new building, electrical, plumbing, or mechanical work.*
  Exceptions: a) No mechanical permit is required for replacement of a recirculating hood/fan that does not have an outside air vent.
  b) No electrical permit is required for replacement of existing receptacles, switch devices or cord connected appliances in the same locations.
  c) No building permit is required for re-facing of existing cabinets.
- *A building permit is required if lower cabinets or more than 32 square feet of wall and/or ceiling finishes are removed and replaced.*
- *An Electrical permit is required for receptacle alterations if the removal and replacement of cabinets and countertops is a change of the existing layout.*
- *A Plumbing Fixtures Certificate of Compliance is required.*

Submittal Requirements

- A complete, written scope of work.
- An existing floor plan and a proposed floor plan, which include the layout of cabinets, electrical receptacles, light fixtures, plumbing fixtures, fans, and built-in appliances.

Smoke and Carbon Monoxide Alarms


Code Check
Smoke Alarm Distances
©2016 Code Check
Bathroom with tub or shower
No smoke alarms within 3 ft. of bathroom door
Smoke alarms
CO alarm
Distance to cooking appliances: 20 ft. for ionization (10 ft. w/ hush button) 6 ft. for photo-electric
Smoke alarm in each bedroom min. 3 ft. from heating register or paddle fan
Min. 3 ft.
Kitchen

- ***Smoke alarms*** must be located in the same areas that are required for new dwellings – in each sleeping room, outside each sleeping area (e.g., hallways), and on each story. [CRC 314.3]. In dwellings with split levels without an intervening door the upper level alarm shall suffice for the lower level provided the lower level is less than one full story below the upper level. Smoke alarms must be at least 3 feet from the door or opening of a bathroom that contains a tub or shower unless this would prevent placement of a required smoke alarm. Distances to cooking appliances shall be as in the figure above.
- ***Carbon Monoxide Alarms*** are required in dwellings equipped with gas appliances or a fireplace or an attached garage. They must be located outside each sleeping area (e.g., hallways) and on each floor level. If a fuel-burning appliance is installed in a bedroom, a carbon monoxide alarm must also be installed in that bedroom. [CRC 315.2.2 & 315.3]
- Alarms require a *hardwired power source with battery backup* and *interconnection* so that if one alarm activates all are activated. New hardwired alarms must be on a circuit protected by an AFCI circuit breaker. Hard-wiring and interconnection is required for remodeling, additions, or alterations that have an accessible attic space usable for alarm wiring or that include removal of existing wall or ceiling finishes that can be used for alarm wiring. Battery-only alarms are allowed for alterations solely on the exterior (re-roofing, decks, new windows) and for work limited to alteration or repair of plumbing, mechanical, or electrical systems (such as furnace replacement or panel upgrades). Battery-only alarms are allowed for projects where this is no removal of ceiling finishes and no accessible attic. [CRC 314.4&6, 315.5Exc.4].

LIGHTING;

Electrical - Lighting:

- All installed lighting shall be high efficacy. [CNC 150.0(k)1A]
- Under-cabinet lighting must be switched separately from other lighting.[CNC 150.0(k)2L]

KITCHENS

Electrical - Lighting:

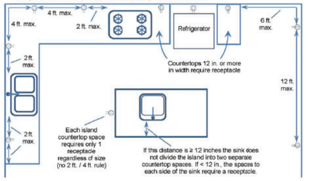
- All installed lighting shall be high efficacy. [CNC 150.0(k)1A] (**new in 2016 codes**)
- Under-cabinet lighting must be switched separately from other lighting.[CNC 150.0(k)2L]

Electrical – Branch Circuits:

- A minimum of two 20-amp small appliance branch circuits are required to serve countertop and wall receptacles in the kitchen, pantry and dining room [CEC 210.11A]. No built-in appliances are allowed on these circuits (except an electric clock or the ignition of a gas range).
- Individual (dedicated) circuits are required for garbage disposals, microwaves, compactors, and dishwashers. [CEC210.19A1b]
- AFCI (arc-fault circuit-interrupter) protection is required for all 120V 15-& 20-amp kitchen circuits. [CEC210.12A] (**new in 2016 codes**)

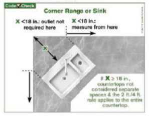
Electrical – Receptacles:

- Receptacles shall be installed at each countertop space ≥ 12 in. in width [CEC 210.52C1]. Receptacles shall be installed so that no point along the wall line is more than 24 inches horizontally from an outlet in that space [CEC 210.52C1]. The maximum spacing between receptacles, measured on the wall-countertop line, is 48 inches.

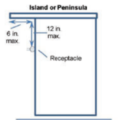

4 ft. max.
4 ft. max.
2 ft. max.
Refrigerator
6 ft. max.
2 ft. max.
Countertops 12 in. or more in width require receptacle
12 ft. max.
2 ft. max.
Each island countertop space requires only 1 receptacle regardless of size (no 2 ft. / 4 ft. rule)
If this distance is ≥ 12 inches the sink does not divide the island into two separate countertop spaces. If < 12 in., the spaces to each side of the sink require a receptacle.

- All receptacles serving kitchen countertop surfaces shall have GFCI protection [210.8A6].
- Countertop receptacles shall not be installed in a face up position [CEC 406.5E]. Listed "pop-up" receptacles are allowed [CEC 210.52C5]. Receptacles or strip outlets can be installed on the underside of the cabinet above the countertop if within 20 inches of the countertop.
- Dishwashers require GFCI protection, including 240-volt dishwashers. (**new in 2016 codes**)
- All GFCI device controls must be in readily accessible locations. Outlets behind a dishwasher are not readily accessible. GFCI protection can be provided by using a GFCI circuit breaker.
- All general purpose and countertop receptacles must be tamper-resistant. [CEC 406.12A]

Kitchen Electrical – Receptacles (Continued):


Code Check
Corner Range or Sink
X <18 in.: outlet not required here
X <18 in.: measure from here
X
If X ≥ 18 in., countertops not considered separate spaces & the 2 ft./4 ft. rule applies to the entire countertop.

- Corner sinks separate the space on each side when the distance between the corner and the sink is < 18 inches. If ≥ 18 in., the 2 ft. / 4 ft. rule continues behind the sink [CEC 210.52C4].
- The 24-inch/48-inch rule does not apply to island or peninsular courtertops. These require only one receptacle per countertop space, regardless of length [CEC 210.52C2&3]. An island or peninsula is considered divided into separate countertop spaces when a sink or range is installed and does not have 12 inches of space behind it. See the diagram on page 2.
- On islands and peninsulas only, receptacles are allowed on the side of the cabinet, not more than 12 inches below the countertop and with no overhanging countertop greater than 6 inches [CEC 210.52C5 exc.]
- Bar-type counters are considered wall space. Wall spaces ≥ 2 ft. require receptacles so that no portion of the wall is more than 6 ft. from a receptacle outlet, measured at the floor/wall line [CEC 210.52A1&2].



- A range hood / microwave combination can be cord-and-plug connected if the circuit is an individual (dedicated) branch circuit. The receptacle outlet shall be a single type, not a duplex receptacle that would accept two plugs [CEC 422.16B4].

Kitchen Plumbing:

- Dishwashers shall be connected with an approved drainage air gap devices located above the flood level rim of the sink [CPC 807.3].
- Newly installed kitchen faucets shall not exceed 1.8 gallons per minute [GRN 4.303.1.4.4]. All Existing plumbing fixtures not included in the scope of new work shall be replaced if necessary to comply with SB407 Plumbing Fixtures Replacement requirements – See Water Conservation Certification Form.
- All piping ¾ inch or more in diameter and all hot water pipes from the heating source to the kitchen fixtures must be insulated with min. 1-inch thick insulation [CNC 150.0(j)2]. Existing inaccessible piping does not require insulation.

Kitchen Mechanical:

- A mechanical permit is required to replace a kitchen exhaust hood that includes an outside air vent. The vent must terminate on the building exterior at least 3 ft. from other openings into the building [CMC502.2.1]. Flexible (corrugated) ducting is not allowed for exhaust hoods [CMC 504.3].

City of Santa Clara
Building Division
1500 Warburton Ave.
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Email: PermitCenter@santaclaraca.gov
Automated Inspection Scheduling System: 408-615-2400

2019 CALIFORNIA GREEN BUILDING STANDARD CODE (CGC)
RESIDENTIAL CHECKLIST

New residential buildings shall be designed to include the green building mandatory measures specified in this checklist. This checklist shall also 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 the specific area of the addition or alteration.

BUILDING PERMIT NO.: BLD20
ADDRESS: 2826 TOYON DR, SANTA CLARA, CA 95051

MANDATORY MEASURES SPECIFIED (Please check boxes below)

Feature or Measure	Yes
SITE DEVELOPMENT (CGC 4.106)	
Storm water drainage and retention during construction. A plan shall be developed and shall be implemented to manage storm water drainage during construction per CGC 4.106.2.	☐
Grading and paving. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings per CGC 4.106.3.	☐
Electric vehicle (EV) charging for new construction. Provide capability for future electric vehicle charging in one- and two-family dwellings and in townhouses with attached private garages; 10% of total parking spaces, as specified, for multifamily dwellings; and in new hotels and motels per CGC 4.106.4. EV spaces for hotels/motels shall comply with accessibility provisions for EV charging stations in the *California Building Code*, Chapter 11B.	☐
ENERGY EFFICIENCY (CGC 4.201)	
California Energy Code. The building's construction shall meet or exceed the requirements of the 2019 California Building Energy Efficiency Standards per CGC 4.201.1.	☐
WATER EFFICIENCY AND CONSERVATION	
INDOOR WATER USE (CGC 4.303)	
Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the prescriptive requirements of Section 4.303.1.1 through 4.303.1.4.	
Water closets: The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (CGC 4.303.1.1).	☒
Urinals: The effective flush volume of wall mounted urinals shall not exceed 0.125 gallons per flush, and all other urinals shall not exceed 0.5 gallons per flush (CGC 4.303.1.2).	☒
Showerheads. The flow rate for single showerhead and multiple showerheads serving one shower shall not exceed 1.8 gallons per minute at 80 psi, and shall be certified to the performance criteria of the U.S. EPA WaterSense Specification (CGC 4.303.1.3).	☒
Residential lavatory faucets. The flow rate shall not be more than 1.2 gallons per minute at 60 psi, and not less than 0.8 gallons per minute at 20 psi (CGC 4.303.1.4.1).	☒
Lavatory faucets in common and public use areas. The flow rate shall not exceed 0.5 gallons per minute at 60 psi (CGC 4.303.1.4.2).	☐
Metering Faucets. The flow rate shall not deliver more than 0.2 gallons per cycle (CGC 4.303.1.4.3).	☐
Kitchen Faucets. The flow rate shall not exceed 1.8 gallons per minute at 60 psi (CGC 4.303.1.4.4).	☒
Standards for plumbing fixtures and fittings. Plumbing fixtures and fittings shall meet the applicable standards referenced in Table 1701.1 of the California Plumbing Code per CGC 4.303.2.	☒

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BLD Permit No.: ____

OUTDOOR WATER USE (CGC 4.304)	
Outdoor potable water use in landscape areas. Residential developments shall comply with the City Water Service and Use Rules and Regulations, Item No. 24, or the California Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent, per CGC 4.304.1.	☐
ENHANCED DURABILITY AND REDUCED MAINTENANCE (CGC 4.406)	
Rodent proofing. Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be rodent proofed by closing such openings with cement mortar, concrete masonry, or similar method acceptable to the City per CGC 4.406.1.	☒
CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING (CGC 4.408)	
Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of nonhazardous construction and demolition waste in accordance with Section 4.408.2, 4.408.3, or 4.408.4, or meet a more stringent local construction and demolition waste management (CGC 4.408.1).	☒
BUILDING MAINTENANCE AND OPERATION (CGC 4.410)	
An operation and maintenance manual shall be provided to the building occupant or owner per CGC 4.410.1.	☐
Recycling by occupants. Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible areas that serve all buildings on the site and is identified for depositing, storage and collection of nonhazardous materials for recycling per CGC 4.410.2.	☐
ENVIRONMENTAL QUALITY (CGC 4.503)	
Gas fireplace. Any installed gas fireplaces shall be a direct-vent sealed-combustion type per CGC 4.503.1.	☐
Woodstoves. 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 per CGC 4.503.1.	☐
POLLUTANT CONTROL (CGC 4.504)	
Covering of duct openings and 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 components openings shall be covered with tape, plastic, sheet metals, or other methods acceptable to the City to reduce the amount of water, dust or debris, which may enter the system per CGC 4.504.1.	☒
Adhesive, sealants and caulks shall meet the VOC or other toxic compound limits per CGC 4.504.2.1.	☒
Paints, stains and other coatings shall comply with VOC limits per CGC 4.504.2.2.	☒
Aerosol paints and coatings shall meet the product-weighted MIR limits for ROC and other requirements per CGC 4.504.2.3.	☒
Verification. Documentation shall be provided, at the request of the Building Division, to verify compliance with VOC finish materials per CGC 4.504.2.4.	☒
Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of CGC 4.504.3.	☒
Resilient flooring systems. Where resilient flooring is installed, at least 80% of the floor area receiving resilient flooring shall comply with the requirements of CGC 4.504.4.	☒
Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall comply with the formaldehyde requirements of CGC 4.504.4.	☒
INTERIOR MOISTURE CONTROL (CGC 4.505)	
Concrete slab foundations. Vapor retarder and capillary break shall be installed if a slab on grade foundation system is used. The use of a 4" thick base of ½" or larger clean aggregate under a 6 mil vapor retarder with joint lapped not less than 6" shall be provided per CGC 4.505.2 and CRC R506.2.3.	☐
Moisture content of building material. 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% moisture content. Moisture content shall be checked prior to finish material being applied per CGC 4.505.3.	☒

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BLD Permit No.: ____

ENVIRONMENTAL COMFORT (CGC 4.507)	
Heating and air-conditioning system shall be sized, designed and have their equipment selected using the following methods per CGC 4.507.2: 1. Heat Loss/Heat Gain values in accordance with ANSI/ACCA 2 Manual J-2016 or equivalent; 2. Duct systems are sized according to ANSI/ACCA 1 Manual D-2016 or equivalent; 3. Select heating and cooling equipment in accordance with ANSI/ACCA 3 Manual S-2014 or equivalent.	☒
INSTALLER AND SPECIAL INSPECTOR QUALIFICATION (CGC 702)	
Installer training. HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a recognized training or certification program per CGC 702.1.	☒
Special inspection. Special inspectors employed by the City must be qualified and able to demonstrate competence in the discipline they are inspecting per CGC 702.2.	☒
VERIFICATION (CGC 703)	
Upon request, verification of compliance with this code may include construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the building department which will show substantial conformance per CGC 703.1.	☒

Responsible Designer's Declaration Statement		**Contractor Declaration Statement**	
I hereby certify that this project has been desgned to meet the requirements of the 2019 California Green Building Standards Code.		I hereby certify, as the builder or installer under the permit listed herein, that this project will be constructed to meet the requirements of the California Green Building Standards Code.	
Name:	TRI HONG	Name:	
Signature:		Signature:	
Date:	05.06.21	Date:	
Company:	TDH design	License:	
Address:	19034 BONNET WAY	Address:	
City:	SARATOGA State: CA Zip: 95070	City:	State: Zip:

REVISIONS	BY

CALGREEN

AN ADDITION & REMODEL FOR
KALYANARAMAN RESIDENCE
2826 TOYON DR, SANTA CLARA, CA 95051
APN# 296-32-012

FINE CUSTOM HOME
TDH DESIGN
(408) 829-6083
19034 BONNET WAY
SARATOGA, CA 95070

DRAWN
LOC HUA

CHECKED
TRI HONG

SIGNATURE

DATE
MARCH 2021

SCALE
AS SHOWN

JOB
0421

SHEET
G1

GENERAL NOTES

1. **CODE REFERENCES:** ALL WORKS SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF ALL GOVERNING CODES, REGULATIONS AND ORDINANCES. THESE SHALL INCLUDE THE LATEST ADOPTED EDITION OF THE CALIFORNIA BUILDING CODE (CBC), CALIFORNIA RESIDENTIAL CODE (CRC), CALIFORNIA PLUMBING CODE (CPC), CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA ELECTRICAL CODE (CEC), CALIFORNIA ENERGY CODE (CEC), CALIFORNIA GREEN BUILDING CODE (CGBSC) AND OTHER HEALTH AND SAFETY CODES, ORDINANCES AND REQUIREMENTS ADOPTED BY GOVERNING AGENCIES. IN THE CASE OF CONFLICTS BETWEEN THERE REGULATIONS AND THE CONTRACT DOCUMENTS, THE MOST RESTRICTIVE SHALL APPLY
2. **DRAWINGS & SPECIFICATION** ARE DIVIDED INTO SECTIONS FOR CONVENIENCE ONLY. CONTRACTORS, SUBCONTRACTORS & MATERIAS SUPPLIERS SHALL REFER TO ALL RELEVANT SECTIONS IN BIDDING AND PERFORMING THEIR WORK AND SHALL BE RESPONSIBLE FOR ALL ASPECTS OF THE WORK REGARDLESS OF WHERE THE INFORMATION OCCURS IN THE DRAWINGS.
3. **REFERENCE TO PRODUCT MANUFACTURER OR TRADE NAMES** ARE FOR MINIMUM PERFORMANCE STANDARDS ONLY. PRODUCT SUBSTITUTION MAY BE ALLOWED UPON APPROVAL BY THE DESIGNER. MATERIAL AND DETAIL SUBSTITUTIONS MADE BY THE CONTRACTOR WITHOUT WRITTEN APPROVAL BY THE DESIGNER SHALL VOID ANY RESPONSIBILITY OR LIABILITY OF THE DESIGNER AS TO PERFORMANCE, REPAIR COST, ANCILLARY DAMAGE OR THE PERFORMANCE OF RELATED MATERIALS AND DETAILS.
4. **MANUFACTURER'S SPECIFICATION:** ALL CONSTRUCTION SHALL BE IN STRICT CONFORMANCE WITH MANUFACTURER'S LATEST WRITTEN SPECIFICATIONS. ALL DISCREPANCIES BETWEEN THESE SPECIFICATIONS AND THE CONTRACT DOCUMENTS PREPARED BY THE DESIGNER AND HIS CONSULTANTS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER BEFORE COMMENCING WORK.
5. **QUALITY CONTROL SERVICES** INCLUDE INSPECTIONS AND TESTS PERFORMED BY INDEPENDENT AGENCIES AND GOVERNING AUTHORITIES, AS WELL AS BY THE CONTRACTOR. INSPECTION AND TESTING SERVICE ARE INTENDED TO DETERMINE COMPLIANCE OF THE WORK AND REQUIREMENTS SPECIFIED. APPROVAL BY A BUILDING OFFICIAL DOES NOT MEAN APPROVAL OR FAILURE TO COMPLY WITH THE CONTRACT DOCUMENTS. INSPECTIONS AND TESTING SHALL BE PERFORMED AT THE REQUEST OF THE OWNER, THE DESIGNER AND/OR THE GOVERNING AGENCIES AND AS SET FORTH IN THESE CONDITIONS. QUALITY CONTROL SERVICE ARE THE CONTRACTOR'S RESPONSIBILITY, INCLUDING THOSE SPECIFIED TO BE PERFORMED BY AN INDEPENDENT AGENCY AND NOT BY THE CONTRACTOR. THE CONTRACTOR SHALL EMPLOY AND PAY ANY INDEPENDENT AGENCY, TESTING LABORATORY RESULTS OF INSPECTIONS OR TESTS DO NOT INDICATE COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIR REPLACEMENT, CORRECTION, AND RE-TEST THAT IS REQUIRED.
6. **WATER PROOFING:** BUILDER/CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR METHOD & MANNER OF ALL WATER PROOFING. CONTRACTOR SHALL REFER TO SOIL REPORT, GRADING & DRAINAGE PLAN, AND ALL WATERPROOFING WORK TO BE PERFORMED BY NHQ CERTIFIED WATERPROOFING COMPANY.
7. **PLANS ARE FOR GENERAL CONSTRUCTION PURPOSES ONLY**. THEY ARE NOT EXHAUTIVELY DETAILED NOR FULLY SPECIFIED. THE DRAWINGS WERE PREPARED TO THE LEVEL OF COMPLETION SATISFACTORY FOR BUILDING PERMIT PURPOSES AND FOR CONSTRUCTION BY A KNOWLEGEABLE AND EXPERIENCED LICENSED CONTRACTOR.THE CONTRACTOR IS RESPONSIBLE FOR PREPARATION OF ANY SUPPLEMENTAL DETAILS, PRODUCT SPECIFICATIONS, COORDINATION AND INSTALLATION OF ALL MATERIALS AND EQUIPMENT.
8. **MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS ARE SHOWN FOR INTENT ONLY.** THESE SYSTEMS SHALL BE DESIGNED/BUILT BY THE CONTRACTOR. THE CONTRACTROR SHALL BE RESPOSIBLE FOR ALL NECESSARY PERMITS, DRAWINGS, CALCULATIONS & TITLE 24 ENERGY COMPLIANCE.
9. **ALL WRITTENT DIMENSIONS** SHALL TAKE PRECEDENCE OVER SCALE SHOWN ON THE PLANS, SECTIONS & DETAILS. DIMENSIONS ARE TO FACE OF STUDS, FACE OF FOUNDATION, FACE OF CONCRETE BLOCK, TOP OF THE SHEATHING, TOP OF SLAB, OR CENTER OF OPENINGS, U.O.N. DO NOT SCALE DRAWINGS.
10. **CONTRACTOR SHALL VERIFY DIMENSIONS** AND REVIEW ANY CONFLICTS OR DISCREPANCIES WITH THE DESIGNER PRIOR TO COMMENCEMENT OF WORK.
11. **BEFORE COMMENCING WORK**, THE CONTRACTOR SHALL NOTIFY THE OWNER IN WRITING OF ANY WORK THAT CANNOT BE FULLY GUARANTEED OR EXECUTED WITHIN THE INTENT OF THE DRAWINGS PRIOR TO THE BID SUBMITTAL.
12. **CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, PERMITS, AND SERVICES** NECESSARY FOR CONSTRUCTION OF THE BUILDING & SITE IMPROMENTS CONFORMING TO THE CONTRACT DOCUMENTS. DRAWING AND SPECIFICATIONS REPRESENT FINISHED STRUCTURE.THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS OF CONSTRUCTION INCLUDING SHORING AND TEMPORARY BRACING AND SHALL TAKE ALL NECESSARRY MEASURES TO INSURE THE SAFETY OF ALL PERSONS AND STRUCTURES NEAR OR ADJACENT TO THE SITE. CARE SHALL BE TAKEN TO PROTECT FROM ANY DAMAGE TO TREES AND VEGETATION ON THE SITE AND ON ADJOINING PROPERTIES. ANY TRIMMING OR OTHER ALTERATION DONE TO TREES SHALL BE DONE SO ONLY BY APPROVAL OF THE OWNER
13. **CONTRACTOR SHALL FIELD INSPECT JOB SITE** PRIOR TO COMMENCEMENT OF WORK AND SHALL ADHERE TO ALL RULES GOVERNING CONSTRUCTION, SAFETY, BUILDING ACCESS, AND THE USE OF THE FACILITIES AS SET BY THE BUILDING OWNER, BUILDING DEPARTMENT, FIRE DEPARTMENT AND THE STATE AUTHORITIES.
14. **THE CONTRACTOR SHALL VERIFY** AT THE SITE, ALL CONDITIONS AFFECTING WORK AND COST, CONSTRUCTION DOCUMENTS FOR ANY AREAS OF QUESTION AFFECTING CONFLICT, DISCREPANCY, ELIGIBILITY OR OMISSION. ALL AREAS OF QUESTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER WRITING BEFORE COMMENCING ANY WORK/OR SUBMITTING ANY BID. COMMENCEMENT OF ANY WORK SHALL CONSTITUTE ACCEPTANCE BY THE CONTRACTOR OF ALL CONDITIONS AFFECTING WORK.
15. **CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL SUBCONTRACTORS** TO INSURE A TIMELY COMPLETION OF THE JOB. NO ALLOWANCE SHALL BE MADE FOR INCREASED COSTS INCURRED DUE TO LACK OF PROPER COORDINATION.
16. **UTILITIES LOCATION:** CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING LOCATION OF ALL UTILITIES PRIOR TO EXCAVATION AND/OR DEMOLITION.
17. **PROPERTY DAMAGE:** CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY OR CONSTRUCTION RESULTING FROM WORK OF CONTRACTOR AND/OR SUBCONTRACTORS, AND SHALL REPAIR ALL SUCH DAMAGE TO ORIGINAL CONDITION AT NO ADDITIONAL COST.
18. **WORKMANSHIP** THROUGHOUT SHALL BE OF THE HIGHEST QUALITY OF EACH TRADE INVOLVED.
19. **ALL JOINTS, PENETRATIONS, & OTHER OPENINGS** IN THE BUILDING ENVELOPE SHALL BE SEALED, CAULKED, GASKET, OR WEATHER STRIPPED TO LIMIT AIR LEAKAGE.
20. **ALL PATCHING, REPAIRING AND REPLACING** OF MATERIALS AND SURFACES CUT OR DAMAGED IN EXECUTION OF WORK SHALL BE DONE WITH APPLICABLE MATERIALS SO THAT SURFACES REPLACED WILL, UPON COMPLETION, MATCH SURROUNDING SIMILAR SURFACES.
21. **DO NOT CUT AND PATCH STRUCTURAL WORK** IN A MANNER THAT WOULD RESULT IN A REDUCTION OF LOAD CARRYING CAPCITY OR LOAD DEFLECTION RATIO. SUBMIT PROPOSAL AND OBTAIN DESIGNER'S AND ENGINEER'S APPROVAL BEFORE PROCEEDING WITH CUT AND PATCH OF STRUCTURAL WORK.
22. **CLEAN-UP** CONTRACTOR SHALL REMOVE ALL RUBBISH & WASTE MATERIALS ON A REGULAR BASIS AND SHALL EXERCISE STRICT CONTROL OVER JOB CLEANING TO PREVENT ANY DIRT, DEBRIS, OR DUST FROM AFFECTING IN ANY WAY FINISHED AREAS IN OR OUTSIDE THE JOB SITE . BEFORE FILING THE NOTICE OF COMPLETION, THE BUILDING WILL BE FULLY CLEANED. CLEANING SHALL INCLUDE WINDOWS, FLOORING/CARPET, CABINETRY, WALLS, AND CEILINGS. THE BUILDING SHALL BE SUITABLE FOR IMMEDIATE OCCUPANCY BY OWNER.

2019 CALIFORNIA ENERGY CODE (CEC)

BUILDING ENVELOPE:

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.*
2. **LABELING:** FENESTRATION PRODUCTS AND EXTERIOR DOORS MUST HAVE A LABEL MEETING THE REQUIREMENTS OF § 10-111(A).
3. **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.*
4. **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.
5. **INSULATION CERTIFICATION BY MANUFACTURERS:** INSULATION MUST BE CERTIFIED BY THE DEPARTMENT OF CONSUMER AFFAIRS, BUREAU OF HOUSEHOLD GOODS AND SERVICES (BHGS).
6. **INSULATION REQUIREMENTS FOR HEATED SLAB FLOORS:** HEATED SLAB FLOORS MUST BE INSULATED PER THE REQUIREMENTS OF § 110.8(G).
7. **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.
8. **RADIANT BARRIER:** WHEN REQUIRED, RADIANT BARRIERS MUST HAVE AN EMITTANCE OF 0.05 OR LESS AND BE CERTIFIED TO THE DEPARTMENT OF CONSUMER AFFAIRS.
9. **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.*
10. **LOOSE-FILL INSULATION:** LOOSE FILL INSULATION MUST MEET THE MANUFACTURER'S REQUIRED DENSITY FOR THE LABELED R-VALUE.
11. **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.*
12. **RAISED-FLOOR INSULATION:** MINIMUM R-19 INSULATION IN RAISED WOOD FRAMED FLOOR OR 0.037 MAXIMUM U-FACTOR.*
13. **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).
14. **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).
15. **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.
16. **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 & GAS LOG:

1. **PILOT LIGHT:** CONTINUOUSLY BURNING PILOT LIGHTS ARE NOT ALLOWED FOR INDOOR AND OUTDOOR FIREPLACES.
2. **CLOSABLE DOORS:** MASONRY OR FACTORY-BUILT FIREPLACES MUST HAVE A CLOSABLE METAL OR GLASS DOOR COVERING THE ENTIRE OPENING OF THE FIREBOX.
3. **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.*
4. **FLUE DAMPER:** MASONRY OR FACTORY-BUILT FIREPLACES MUST HAVE A FLUE DAMPER WITH A READILY ACCESSIBLE CONTROL.*

SPACE CONDITIONING, WATER HEATING & PLUMBING SYSTEM :

1. **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.*
2. **HVAC EFFICIENCY:** EQUIPMENT MUST MEET THE APPLICABLE EFFICIENCY REQUIREMENTS IN TABLE 110.2-A THROUGH TABLE 110.2-K.*
3. **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.*
4. **THERMOSTATS:** ALL HEATING OR COOLING SYSTEMS NOT CONTROLLED BY A CENTRAL ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) MUST HAVE A SETBACK THERMOSTAT.*
5. **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
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.
7. **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.*
8. **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.
9. **CLEARANCES:** AIR CONDITIONER AND HEAT PUMP OUTDOOR CONDENSING UNITS MUST HAVE A CLEARANCE OF AT LEAST FIVE FEET FROM THE OUTLET OF ANY DRYER
10. **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.
11. **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.
12. **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.*
13. **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.
14. **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.
15. **RECIRCULATING LOOPS:** RECIRCULATING LOOPS SERVING MULTIPLE DWELLING UNITS MUST MEET THE REQUIREMENTS OF § 110.3(C)5.
16. **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 & FANS:

1. **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.
2. **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.*
3. **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.
4. **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.
5. **BACKDRAFT DAMPER:** FAN SYSTEMS THAT EXCHANGE AIR BETWEEN THE CONDITIONED SPACE AND OUTDOORS MUST HAVE BACKDRAFT OR AUTOMATIC DAMPERS.
6. **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.
7. **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.
8. **POROUS INNER CORE FLEX DUCT:** POROUS INNER CORE FLEX DUCTS MUST HAVE A NON-POROUS LAYER BETWEEN THE INNER CORE AND OUTER VAPOR BARRIER.
9. **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.
10. **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.*
11. **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 :5 0.45 WATTS PER CFM FOR GAS FURNACE AIR HANDLERS AND :5 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 :5 0.62 WATTS PER CFM. FIELD VERIFICATION TESTING IS REQUIRED IN ACCORDANCE WITH REFERENCE RESIDENTIAL APPENDIX RA3.3.*

REQUIREMENTS FOR VENTILATION & INDOOR AIR QUALITY:

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.
2. **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.
3. **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 :5 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.
4. **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.
5. **KITCHEN RANGE HOODS:** KITCHEN RANGE HOODS MUST BE RATED FOR SOUND IN ACCORDANCE WITH SECTION 7.2 OF ASHRAE 62.2.
6. **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, SPA SYSTEMS & EQUIPMENT MEASURES:

1. **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.*
2. **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.
3. **COVERS:** OUTDOOR POOLS OR SPAS THAT HAVE A HEAT PUMP OR GAS HEATER MUST HAVE A COVER.
4. **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. **PILOT LIGHT.** NATURAL GAS POOL AND SPA HEATERS MUST NOT HAVE A CONTINUOUSLY BURNING PILOT LIGHT.
5. **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:

1. **LIGHTING CONTROLS AND COMPONENTS:** ALL LIGHTING CONTROL DEVICES AND SYSTEMS, BALLASTS, AND LUMINAIRES MUST MEET THE APPLICABLE REQUIREMENTS OF § 110.9.*
2. **LUMINAIRE EFFICACY:** ALL INSTALLED LUMINAIRES MUST MEET THE REQUIREMENTS IN TABLE 150.0-A.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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).*
8. **SCREW BASED LUMINAIRES:** SCREW BASED LUMINAIRES MUST CONTAIN LAMPS THAT COMPLY WITH REFERENCE JOINT APPENDIX JA8.*
9. **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.
10. **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.
11. **INTERIOR SWITCHES AND CONTROLS:** ALL FORWARD PHASE CUT DIMMERS USED WITH LED LIGHT SOURCES MUST COMPLY WITH NEMA SSL 7A.
12. **INTERIOR SWITCHES AND CONTROLS:** EXHAUST FANS MUST BE CONTROLLED SEPARATELY FROM LIGHTING SYSTEMS.*
13. **INTERIOR SWITCHES AND CONTROLS:** LIGHTING MUST HAVE READILY ACCESSIBLE WALL-MOUNTED CONTROLS THAT ALLOW THE LIGHTING TO BE MANUALLY TURNED ON AND OFF.*
14. **INTERIOR SWITCHES AND CONTROLS:** CONTROLS AND EQUIPMENT MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
15. **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).
16. **INTERIOR SWITCHES AND CONTROLS:** LIGHTING CONTROLS MUST COMPLY WITH THE APPLICABLE REQUIREMENTS OF § 110.9.
17. **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.
18. **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.
19. **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.
20. **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.* **INTERIOR SWITCHES AND CONTROLS.** UNDER CABINET LIGHTING MUST BE CONTROLLED SEPARATELY FROM CEILING-INSTALLED LIGHTING SYSTEMS.
21. **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.
22. **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.
23. **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.
24. **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).
25. **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.
26. **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.
27. **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:
   - COMPLY WITH THE APPLICABLE REQUIREMENTS IN SECTIONS 110.9, 130.0, 130.1, 140.6 AND 141.0; AND
   - 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.

ELECTRICAL:

1. **GROUNDING ELECTRODE** PER 2019 CEC 250.50
2. **GROUNDING CONDUCTORS** TO BE PROVIDED WHERE INSTALLING A BRANCH CIRCUIT OR FEEDER SUPPLYING A SEPARATE BUILDING OR STRUCTURE. 2019 CEC 250.32(B).
3. **AT LEAST ONE WALL SWITCH-CONTROLLED LIGHTING OUTLET** SHALL BE INSTALLED IN EVERY HABITABLE ROOM, IN BATHROOMS, HALLWAYS, STAIRWAYS, ATTACHED GARAGES, DETACHED GARAGES WITH ELECTRICAL POWER, ATTICS, UNDER FLOOR SPACES, UTILITY ROOMS, BASEMENTS USED FOR STORAGE OR HAVING EQUIPMENT THAT REQUIRES SERVICING, AND AT OUTDOOR ENTRANCES OR EXITS. 2019 CEC 210.70.
4. **DWELLINGS WITH DIRECT GRADE LEVEL ACCESS** SHALL HAVE AT LEAST ONE RECEPTACLE OUTLET AT GRADE LEVEL AT THE FRONT AND BACK OF THE DWELLING. ALL 125 VOLT, 15 AND 20 AMP, RECEPTACLES INSTALLED OUTDOORS WITH DIRECT GRADE LEVEL ACCESS SHALL BE GFCI PROTECTED. ALL RECEPTACLES INSTALLED OUTDOORS IN WET OR DAMP LOCATIONS SHALL BE IN A WEATHERPROOF ENCLOSURE AS PER 2019 CEC 210.52(E), 210.8(A)(3), & 406.9.
5. **IN EACH BASEMENT, IN EACH ATTACHED GARAGE**, AND IN EACH DETACHED GARAGE OR ACCESSORY BUILDING WITH ELECTRIC POWER, AT LEAST ONE RECEPTACLE OUTLET, IN ADDITION TO ANY PROVIDED FOR SPECIFIC EQUIPMENT, SHALL BE INSTALLED THESE OUTLETS ARE TO BE GFCI PROTECTED. 2019 CEC 210.52(G).
6. **PROVIDE GFCI PROTECTION TO ALL 125 VOLT, 15 AMP AND 20 AMP RECEPTACLES INSTALLED IN BATHROOMS, GARAGES** , OUTDOORS, CRAWLSPACES AT OR BELOW GRADE, UNFINISHED BASEMENTS, RECEPTACLES TO SERVE COUNTER TOP SURFACES INSTALLED IN KITCHENS, AND RECEPTACLES WITHIN 6 FEET OF A SINK, OR SHOWER/TUB AND LAUNDRY AREAS. 2019 CEC 210.8(A).
7. ***ARC* -FAULT CIRCUIT INTERRUPTER** PROTECTION IS REQUIRED IN DWELLINGS FOR ALL 120 VOLT SINGLE PHASE 15 AND 20 AMP BRANCH CIRCUITS SPECIFIED IN 2019 CEC 210.12.
8. **RECEPTACLE OUTLETS SHALL BE SPACED NOT MORE THAN** 12 FEET APART AND A MAXIMUM OF 6 FEET FROM THE ENDS OF WALLS OR OPENINGS. RECEPTACLE OUTLETS ARE ALSO REQUIRED IN WALLS 2 FEET OR GREATER. 2019 CEC 210.52(A).
9. **PROVIDE TWO OR MORE 20 AMP SMALL APPLIANCE BRANCH CIRCUITS** EVENLY PROPORTIONED IN THE KITCHEN, PANTRY, BREAKFAST ROOM, DINING ROOM, OR SIMILAR AREA. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS. 2019 CEC 210.52(B). ***NOTE:*** ONE ADDITIONAL 20 AMP BRANCH CIRCUIT SHALL BE PROVIDED TO SUPPLY THE LAUNDRY RECEPTACLE OUTLET(S). THIS CIRCUIT SHALL HAVE NO OTHER OUTLETS. 2019 CEC 210.11(C)(2).
10. **PROVIDE FUSES OR APPROVED CIRCUIT BREAKERS** AT AIR CONDITIONING UNITS AND HEAT PUMPS AS PER 2019 CEC 440. (DO NOT EXCEED MAXIMUM FUSE REQUIREMENTS OR MINIMUM ON EQUIPMENT SPECIFICATION PLATE).
11. **EQUIPMENT GROUNDING CONDUCTOR** IS REQUIRED WITH ALL BRANCH CIRCUITS AND FEEDERS SUPPLYING A SEPARATE BUILDING OR STRUCTURE. 2019 CEC 250.32(B).
12. **DEVICE OR EQUIPMENT FILL IN A JUNCTION BOX** TO BE CALCULATED USING TWICE THE WIRE SIZE VOLUME IF THE DEVICE IS WIDER THAN 2 INCHES. 2019 CEC 314.16(B)(4).
13. **LIGHTING JUNCTION BOXES** TO BE DESIGNED FOR THE PURPOSE AND LISTED WITH THE CAPACITY OF HOLDING 50 POUNDS. IT MUST BE MARKED FOR THE PURPOSE OF HOLDING LUMINARIES. 2019 CEC 314.27(A).
14. **ARMORED CLAD CABLE (AC)** IS ACCEPTABLE FOR BRANCH CIRCUITS AND FEEDERS. 2019 CEC 320.10(1).
15. **METAL CLAD CABLE (MC) IS PERMITTED FOR WET LOCATIONS** IF MEETING THE CONDITIONS OF 2019 CEC 330.10(A)(11).
16. **FLEXIBLE METAL CONDUIT** ISN'T PERMITTED FOR USE IN WET LOCATIONS, REGARDLESS OF ANY CONDITIONS. 2019 CEC 348.12(1).
17. **FLEXIBLE METAL CONDUIT AND LIQUID TIGHT FLEXIBLE METAL CONDUIT** MAY BE FISHED WITHIN WALLS OR CONCEALED SPACES WITHOUT THE NEED FOR SUPPORT. 2019 CEC 348.30(A).
18. **RECEPTACLES IN WET LOCATIONS.** 120 VOLT AND 250 VOLT ARE REQUIRED TO BE LISTED WEATHER-RESISTANT TYPE. 2019 CEC 406.9(A) & (B).
19. **TAMPER-RESISTANT RECEPTACLES** IN DWELLING TO BE INSTALLED IN AREAS SPECIFIED BY 210.52 SHALL BE LISTED TAMPER- RESISTANT TYPE. 2019 CEC 406.12.
20. **ALL LUMINAIRES AND LAMP HOLDERS SHALL BE LISTED.** 2019 CEC 410.6.
21. **THOSE LUMINARIES ALLOWED IN CLOTHES CLOSETS** BY 2019 CEC 410.16(A) SHALL BE INSTALLED PER THE REQUIREMENTS OF 2019 CEC 410.16(C)
22. **HYDRO MASSAGE BATHTUBS** AND THEIR ASSOCIATED EQUIPMENT MUST BE SUPPLIED BY AT LEAST ONE SEPARATE INDIVIDUAL CIRCUIT. 2019 CEC 680.71.
23. **ELECTRICAL PANEL/FIRE RATED WALL:** DO NOT INSTALL ELECTRICAL PANELS LARGER THAN 16 SQUARE INCHES IN RATED FIREWALLS. GARAGE TO DWELLING UNIT SEPARATION IS NOT A RATED FIREWALL. (R302.4.2). NEVER INSTALL ELECTRICAL PANELS IN A CLOSET. MAINTAIN A CLEARANCE OF 36 INCHES IN FRONT OF THE PANELS (CEC110.26).
24. **BOND ALL METAL GAS & WATER PIPES** TO GROUND. ALL GROUND CLAMPS MUST BE ACCESSIBLE AND OF AN APPROVED TYPE. (CEC 250.104)

SOLAR READY BUILDINGS:

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).
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).
3. **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.*
4. **AZIMUTH:** ALL SECTIONS OF THE SOLAR ZONE LOCATED ON STEEP-SLOPED ROOFS MUST BE ORIENTED BETWEEN 90 DEGREES AND 300 DEGREES OF TRUE NORTH.**SHADING.** THE SOLAR ZONE MUST NOT CONTAIN ANY OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO: VENTS, CHIMNEYS, ARCHITECTURAL FEATURES, AND ROOF MOUNTED EQUIPMENT.*
5. **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.*
6. **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.
7. **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.
8. **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.
9. **MAIN ELECTRICAL SERVICE PANEL:** THE MAIN ELECTRICAL SERVICE PANEL MUST HAVE A MINIMUM BUSBAR RATING OF 200 AMPS.
10. **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".

2019 CALIFORNIA MECHANICAL CODE (CMC)

1. **BATHROOMS, WATER CLOSET COMPARTMENTS AND SIMILAR ROOMS** SHALL HAVE WINDOW AT LEAST 3 SQUARE FEET IN AREA, HALF OF WHICH MUST BE OPENABLE, OR MECHANICAL VENTILATION MUST BE PROVIDED. (R303.3) PROVIDE VENTILATION FOR PRODUCTS OF COMBUSTION TO OUTSIDE AIR. (CMC 802.0)
2. **PROVIDE VENTILATION** FOR PRODUCTS OF COMBUSTION TO OUTSIDE AIR. (CMC80230)
3. **APPLIANCES AND RECEPTACLES INSTALLED IN GARAGES AND CARPORTS** SHALL BE LOCATED SO THAT ALL BURNERS AND BURNER-IGNITION DEVICES ARE LOCATED 18 INCHES MINIMUM ABOVE THE FLOOR UNLESS LISTED AS FLAMMABLE VAPOR IGNITION RESISTANT. PROVIDE PROTECTIVE BOLLARD OR OTHER IMPACT BARRIER OR LOCATED OUT OF THE NORMAL PATH FOR VEHICLES. (CMC 305.1)
4. **LIQUEFIED PETROLEUM GAS (LPG) APPLIANCES** SHALL NOT BE INSTALLED IN A PIT, BASEMENT OR SIMILAR LOCATION. LPG APPLIANCES SHALL NOT BE INSTALLED IN AN ABOVE GRADE UNDERFLOOR SPACE OR BASEMENT UNLESS SUCH LOCATION IS PROVIDE WITH AN APPROVED MEANS FOR REMOVAL OF UNBURNED GAS (CMC 303.7.1)
5. **SHOW MINIMUM 22 INCH BY 30 INCH ACCESS OPENING** TO ATTIC, IN A HALLWAY OR OTHER LOCATION WITH READY ACCESS. (CMC 304.4; R807.1) IN ATTICS IN WHICH AN APPLIANCE IS INSTALLED, AN OPENING AND PASSAGEWAY AT LEAST AS LARGE AS THE LARGEST COMPONENT OF THE APPLIANCE SHALL BE REQUIRED. (CMC 903.2.3)
6. **DOMESTIC CLOTHES DRYER MOISTURE EXHAUST DUCTS** SHALL TERMINATE ON THE OUTSIDE OF THE BUILDING AND SHALL BE EQUIPPED WITH A BACK-DRAFT DAMPER. SHEET METAL SCREWS OR OTHER FASTENERS THAT WILL OBSTRUCT THE FLOW SHALL NOT BE USED. UNLESS OTHERWISE PERMITTED OR REQUIRED BY THE DRYER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND BY THE BUILDING OFFICIAL, DOMESTIC DRYER MOISTURE EXHAUST DUCTS SHALL NOT EXCEED A TOTAL COMBINED HORIZONTAL AND VERTICAL LENGTH OF 14 FEET INCLUDING TWO 90° ELBOWS. TWO FEET SHALL BE DEDUCTED FOR EACH 90° ELBOW IN EXCESS OF TWO. 2019 CMC, SECTION 504.4.
7. **MAKE UP AIR.** WHEN A CLOSET IS DESIGNED FOR THE INSTALLATION OF A CLOTHES DRYER, A MINIMUM OPENING OF 100 SQUARE INCHES FOR MAKEUP AIR SHALL BE PROVIDED IN THE DOOR OR BY OTHER APPROVED MEANS. 2019 CMC, SECTION 504.4.1.
8. **INSTALLATION OF A LISTED COOKING APPLIANCE OR MICROWAVE OVEN ABOVE A LISTED COOKING APPLIANCE.** THE INSTALLATION OF A LISTED COOKING APPLIANCE OR MICROWAVE OVEN OVER A LISTED COOKING APPLIANCE SHALL CONFORM TO THE CONDITIONS OF THE UPPER APPLIANCE'S LISTING AND THE MANUFACTURERS' INSTALLATION INSTRUCTIONS. 2019 CMC, SECTION 921.4
9. **DOMESTIC RANGE VENTS.** DUCTS FOR DOMESTIC KITCHEN DOWNDRAFT GRILL-RANGE VENTILATION SHALL BE INSTALLED AS PER 2019 CMC, SECTION 504.2.
10. **FUEL BURNING EQUIPMENT** SHALL BE ASSURED A SUFFICIENT SUPPLY OF COMBUSTION AIR AS PER CHAPTER 7, 2019 CMC.
11. **WARM AIR FURNACES SHALL NOT BE INSTALLED** IN A ROOM USED OR DESIGNED TO BE USED AS A BEDROOM OR BATHROOM UNLESS DIRECT VENT TYPE OR INSTALLED IN AN APPROVED CLOSET ENCLOSURE PER 2019 CMC, SECTION 904.1.
12. **ATTIC FURNACE.** THE DISTANCE FROM THE PASSAGEWAY ACCESS TO THE FURNACE SHALL NOT EXCEED 20 FEET MEASURED ALONG THE CENTER LINE OF THE PASSAGEWAY. THE PASSAGEWAY SHALL BE UNOBSTRUCTED AND SHALL HAVE CONTINUOUS SOLID FLOORING NOT LESS THAN 24 INCHES WIDE FROM THE ENTRANCE OPENING TO THE FURNACE. A LEVEL WORKING PLATFORM NOT LESS THAN 30 INCHES IN DEPTH AND WIDTH SHALL BE PROVIDED IN FRONT OF THE ENTIRE FIRE BOX SIDE OF THE WARM AIR FURNACE. IF THE FURNACE TEMPERATURE LIMIT CONTROL, AIR FILTER, FUEL CONTROL VALVE, VENT COLLAR, OR AIR HANDLING UNIT IS NOT SERVICEABLE FROM THE FIRE BOX SIDE OF THE FURNACE, A CONTINUOUS FLOOR NOT LESS THAN 24 INCHES IN WIDTH SHALL BE PROVIDED FROM THE PLATFORM IN FRONT OF THE FIRE BOX SIDE OF THE FURNACE TO AND IN FRONT OF THIS EQUIPMENT. A PERMANENT ELECTRIC OUTLET AND LIGHTING FIXTURE CONTROLLED BY A SWITCH LOCATED AT THE REQUIRED PASSAGEWAY OPENING SHALL BE PROVIDED AT OR NEAR THE FURNACE. 2019 CMC, SECTION 304.4.
13. **VENT TERMINATION.** GAS VENTS WITH LISTED VENT CAPS 12 INCHES IN SIZE OR SMALLER SHALL BE PERMITTED TO BE TERMINATED IN ACCORDANCE WITH TABLE 802.6.2, PROVIDED THEY ARE LOCATED AT LEAST 8 FEET FROM THE VERTICAL WALL OR SIMILAR OBSTRUCTION. ALL OTHER GAS VENTS SHALL TERMINATE NOT LESS THAN 2 FEET ABOVE THE HIGHEST POINT WHERE THEY PASS THROUGH THE ROOF AND AT LEAST 2 FEET HIGHER THAN ANY PORTION OF A BUILDING WITHIN 10 FEET. 2019 CMC, SECTION 802.6.2. ***NOTE:*** SINGLE WALL METAL PIPE SHALL NOT ORIGINATE IN AN UNOCCUPIED ATTIC OR CONCEALED SPACE AND SHALL NOT PASS THROUGH ANY ATTIC, INSIDE WALL, CONCEALED SPACE OR FLOOR. 2019 CMC, SECTION 802.7.3.2.
14. **APPROVAL OF EQUIPMENT.** LISTED AND UNLISTED EQUIPMENT SHALL COMPLY WITH THE 2019 CMC, SECTION 301.2.
15. **IGNITION SOURCE.** HEATING AND COOLING EQUIPMENT LOCATED IN A GARAGE THAT GENERATES A GLOW, SPARK, OR FLAME CAPABLE OF IGNITING FLAMMABLE VAPORS SHALL BE INSTALLED WITH SOURCES OF IGNITION AT LEAST 18 INCHES ABOVE THE FLOOR LEVEL. 2019 CMC, SECTION 305.

2019 CALIFORNIA RESIDENTIAL CODE (CRC)

1. REQUIRED WINDOW AREA FOR LIGHT SHALL BE NOT LESS THAN 8 PERCENT OF THE FLOOR AREA OF THE ROOM SERVED; THE MINIMUM OPENABLE AREA TO THE OUTDOORS SHALL BE 4 PERCENT OF THE FLOOR AREA BEING VENTILATED. THE GLAZED AREA NEED NOT BE OPENABLE FOR VENTILATION WHEN A WHOLE HOUSE VENTILATION SYSTEM IS INSTALLED (R303.1)
2. EVERY SLEEPING ROOM AND ANY BASEMENT MUST HAVE AT LEAST ONE OPENABLE WINDOW OR DOOR APPROVED FOR EMERGENCY RESCUE WITH A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE FEET, EXCEPT THE WINDOWS AT THE GRADE FLOOR SHALL HAVE A MINIMUM NET AREA OF 5.0 SQUARE FEET. THE MINIMUM NET VERTICAL OPENING DIMENSION SHALL BE 24 INCHES. THE MINIMUM NET CLEAR OPENING WIDTH DIMENSION SHALL BE 20 INCHES. THE BOTTOM OF THE CLEAR OPENING SHALL BE NO MORE THAN 44 INCHES FROM THE FLOOR (R 310.1).
3. EACH BATHROOM CONTAINING A BATHING FACILITY SHALL BE MECHANICALLY VENTILATED FOR THE PURPOSES OF HUMIDITY CONTROL. (R303.3.1)
4. ATTIC VENTILATION: 1/150 OF ATTIC AREA. IF 40 PERCENT TO 50 PERCENT OF THE VENTS ARE NO MORE THAN 3 FEET BELOW THE RIDGE OR HIGHEST POINT OF THE ROOF AREA; THEN THE RATIO MAY BE REDUCED TO 1/300. (R806.2) UNVENTED ATTICS MAY BE ALLOWED IF MEETING THE REQUIREMENTS OF R806.5.
5. ATTIC VENTILATION: 1/150 OF ATTIC AREA. IF 40 PERCENT TO 50 PERCENT OF THE VENTS ARE NO MORE THAN 3 FEET BELOW THE RIDGE OR HIGHEST POINT OF THE ROOF AREA; THEN THE RATIO MAY BE REDUCED TO 1/300. (R806.2) UNVENTED ATTICS MAY BE ALLOWED IF MEETING THE REQUIREMENTS OF R806.5.
6. ENCLOSED RAFTER SPACES SHALL HAVE A MINIMUM 1 INCH SPACE BETWEEN THE INSULATION AND ROOF SHEATHING AND AT THE LOCATION OF ALL EAVE AND CORNICE VENTS. (R806.3)
7. UNDERFLOOR SPACE SHALL HAVE A VENTILATION OPENING AREA OF 1/150 SQUARE FEET OF UNDERFLOOR AREA. IF A CLASS I VAPOR RETARDER IS USED THE RATIO MAY BE REDUCED TO 1/1500. ONE OPENING SHALL BE PLACED WITHIN 3 FEET OF EACH BUILDING CORNER. OPENINGS SHALL BE COVERED WITH A COVERING HAVING OPENINGS NO GREATER THAN ¼ INCH. (R408.2)
8. HEATING SYSTEM IS REQUIRED TO MAINTAIN 68 DEGREES AT 3 FEET ABOVE FLOOR LEVEL AND 2 FEET FROM EXTERIOR WALLS IN ALL HABITABLE ROOM. (R303.10)
9. ALL HABITABLE ROOMS EXCEPT KITCHENS SHALL BE AT LEAST 70 SQUARE FEET IN AREA AND SHALL HAVE A WIDTH OF AT LEAST 7 FEET. IN ADDITION THERE SHALL BE AT LEAST ONE ROOM WITH A MINIMUM OF 120 SQUARE FEET IN EACH DWELLING. MINIMUM CEILING HEIGHT SHALL BE 7 FEET. SEE CRC FOR EXCEPTIONS. (R304/R305)
10. REQUIRED EGRESS DOOR SHALL BE SIDE HINGED AND HAVE A MINIMUM NET CLEAR WIDTH OF 32 INCHES AND A MINIMUM HEIGHT OF 78 INCHES. (R311.2)
11. THERE SHALL BE A LANDING AT EACH SIDE OF ALL DOORS NOT MORE THAN 1 ½ INCHES LOWER THAN THE THRESHOLD AT THE REQUIRED EGRESS DOOR, AND NOT MORE THAN 7¾ INCHES FOR OTHER EXTERIOR DOORS. THE LANDING SHALL BE AT LEAST AS WIDE AS THE DOOR SERVED AND 36 INCHES MINIMUM LENGTH MEASURED IN THE DIRECTION OF TRAVEL. A LANDING IS NOT REQUIRED AT DOORS OTHER THAN THE REQUIRED EGRESS DOOR WHERE A STAIRWAY OF TWO OR FEWER RISERS IS LOCATED ON THE EXTERIOR OF THE DOOR, AND THE DOOR DOES NOT SWING OVER THE STAIRWAY. (R311.3)
12. STAIRWAY RISE SHALL BE 4 INCHES MINIMUM AND 7¾ INCHES MAXIMUM. RUN SHALL BE 10 INCHES MINIMUM. HEADROOM SHALL BE 80 INCHES MINIMUM. WIDTH SHALL BE 36 INCHES MINIMUM. HANDRAILS SHALL PROVIDE GRASPABILITY AND BE 34 TO 38 INCHES ABOVE TREAD NOSING WITHOUT OPENINGS LESS THAN 4 3/8 INCHES CLEAR, EXCEPT OPENINGS FORMED BY THE RISER, TREAD, AND BOTTOM RAIL OF THE GUARD MAY BE 6 INCHES MAXIMUM DIAMETER. (R 311.7 & R312.1.3 EXCEPTION 1 & 2)
13. ENCLOSED USEABLE SPACE UNDER INTERIOR STAIRS SHALL BE FINISHED WITH ½ INCH GYPSUM BOARD (R302.7)
14. FIRE BLOCKING IS REQUIRED IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP AND BOTTOM OF THE RUN. (R302.11)
15. THERE SHALL BE A FLOOR OR LANDING AT THE TOP AND BOTTOM OF EACH STAIRWAY. WIDTH AND LENGTH OF LANDINGS SHALL BE NOT LESS THAN THE WIDTH OF THE STAIRWAY SERVED. A FLOOR OR LANDING IS NOT REQUIRED AT THE TOP OF AN INTERIOR FLIGHT OF STAIRS, INCLUDING STAIRS IN AN ENCLOSED GARAGE, PROVIDED A DOOR DOES NOT SWING OVER THE STAIRS. (R311.7.6)
16. GUARDS SHALL BE LOCATED ALONG OPEN SIDED WALKING SURFACES, INCLUDING STAIRS, RAMPS, LANDINGS, AND DECKS, THAT ARE MORE THAN 30 INCHES ABOVE THE FLOOR OR GRADE, MEASURED AT ANY POINT WITHIN 36 INCHES HORIZONTALLY. REQUIRED GUARDS SHALL BE NOT LESS THAN 42 INCHES ABOVE THE ADJACENT WALKING SURFACE, EXCEPT THAT HANDRAILS MAY BE CONSIDERED AS GUARDS AT STAIRWAYS. OPENINGS IN GUARDS SHALL NOT EXCEED 4 INCHES. (R312)
17. EXTERIOR DECK SUPPORT POSTS SHALL BE CROSS-BRACED IN TWO DIRECTIONS FOR LATERAL STABILITY.
18. MINIMUM SIZE OF CONCRETE FOOTINGS FOR EXTERIOR DECKS SHALL BE IN ACCORDANCE WITH CRC TABLE R507.3.1, BASED ON THE TRIBUTARY AREA OF THE FOOTING AND AN ASSUMED BEARING CAPACITY OF SOIL OF 1500 POUNDS PER SQUARE FOOT, UNLESS A HIGHER BEARING CAPACITY HAS BEEN JUSTIFIED BY A GEOTECHNICAL REPORT. (R507.3.1)
19. LATERAL RESTRAINT OF DECK POSTS AT FOOTINGS SHALL BE PROVIDED BY MANUFACTURED CONNECTORS OR A MINIMUM POST EMBEDMENT OF 12 INCHES IN SURROUNDING SOILS OR CONCRETE PIERS. (R507.4.1)
20. PROVIDE DETAIL AT JUNCTION OF EXTERIOR DECKING, WALL AND INTERIOR FLOOR FRAMING. SHOW ELEVATIONS, FLASHING, AND ANCHORAGE. DECK FRAMING SHALL BE POSITIVELY ATTACHED TO BUILDING FRAMING AT A MINIMUM OF 2 LOCATIONS WITHIN 24 INCHES OF EACH END OF THE DECK WITH HOLD-DOWN TENSION DEVICES HAVING AN ALLOWABLE DESIGN CAPACITY OF NOT LESS THAN 1500 POUNDS EACH, OR AT A MINIMUM OF 4 LOCATIONS WITH HOLD-DOWN TENSION DEVICES OF NOT LESS THAN 750 POUNDS ALLOWABLE DESIGN CAPACITY. (R507.9.2)
21. DECK FRAMING AND SUPPORT POSTS TO BE OF PRESERVATIVE TREATED OR NATURALLY DURABLE LUMBER. (R317.1) HARDWARE AND FASTENERS SHALL BE HOT-DIPPED GALVANIZED, STAINLESS STEEL, SILICON BRONZE, OR COPPER. (R317.3.1)
22. NATURALLY DURABLE WOOD OR PRESERVATIVE TREATED WOOD, PER AWPA U1, SHALL BE REQUIRED IN THE FOLLOWING LOCATIONS (R317.1):
    A. WOOD JOISTS AND GIRDERS CLOSER THAN 18 INCHES OR 12 INCHES, RESPECTIVELY, TO THE EXPOSED GROUND.
    B. WOOD FRAMING MEMBERS THAT REST ON CONCRETE OR MASONRY AND ARE LESS THAN 8 INCHES FROM THE GROUND.
    C. SILLS AND SLEEPERS ON A CONCRETE OR MASONRY SLAB THAT IS IN DIRECT CONTACT WITH THE GROUND UNLESS SEPARATED BY AN IMPERVIOUS MOISTURE BARRIER.
    D. WOOD SIDING, SHEATHING AND WALL FRAMING ON THE EXTERIOR OF THE BUILDING HAVING A CLEARANCE OF LESS THAN 6 INCHES FROM THE GROUND OR LESS THAN 2 INCHES FROM A HORIZONTAL CONCRETE SURFACE.
    E. ALL WOOD IN CONTACT WITH THE GROUND.
    F. ALL WOOD EMBEDDED IN CONCRETE THAT IS IN DIRECT CONTACT WITH THE GROUND OR EXPOSED TO WEATHER AND THAT SUPPORTS STRUCTURES INTENDED FOR HUMAN OCCUPANCY.
23. WEATHERPROOFING OF EXTERIOR SURFACES ABOVE AND BELOW GRADE IS REQUIRED. (R406 & R703)
24. CONCRETE SLABS SHALL BE SEPARATED FROM EARTH BY A MINIMUM 6 MIL VAPOR RETARDER, WITH EDGES LAPPED A MINIMUM OF 6 INCHES. THIS MAY BE OMITTED IF THE SPACE ABOVE IS NOT HEATED AND IS NOT LIKELY TO BECOME HEATED IN THE FUTURE. (R506.2.3)
25. A CAPILLARY BREAK SHALL BE INSTALLED WHEN CONCRETE SLAB-ON-GROUND FLOORS ARE REQUIRED TO HAVE A VAPOR RETARDER. THIS CAPILLARY BREAK SHALL BE A 4 INCH THICK BASE OF ½ INCH OR LARGER CLEAN AGGREGATE WITH A VAPOR RETARDER IN DIRECT CONTACT WITH CONCRETE. THE CONCRETE MIX DESIGN SHALL ADDRESS BLEEDING, SHRINKAGE, AND CURLING, IN ACCORDANCE WITH ACI 302.2R-06. AS AN ALTERNATIVE, THE SLAB DESIGN MAY BE PREPARED BY A LICENSED DESIGN PROFESSIONAL. (R506.2.3.1 & CALGREEN 4.505.2.1)
26. THE GROUND ADJACENT TO THE FOUNDATION SHALL BE SLOPED SO THAT THE GRADE SHALL FALL A MINIMUM OF 6 FEET WITHIN THE FIRST 10 FEET. IMPERVIOUS SURFACES MAY BE SLOPED AT 2 PERCENT MINIMUM. (R401.3)
27. ALL FASTENERS USED FOR ATTACHMENT OF SIDING SHALL BE CORROSION-RESISTANT AND FASTENED IN ACCORDANCE WITH CRC TABLE R703.3(1). (R703.3.3)
28. CORROSION RESISTANT FLASHING SHALL BE PROVIDED AT OPENINGS AND INTERSECTIONS/ATTACHMENTS. (R703.4)
29. COMMON WALL BETWEEN GARAGE AND DWELLING SHALL HAVE ½ INCH GYPSUM BOARD APPLIED ON THE GARAGE SIDE. GARAGE CEILING WITH HABITABLE SPACE ABOVE SHALL HAVE 5/8 INCH TYPE X GYPSUM WALLBOARD APPLIED TO THE CEILING. CARPORTS WITH NO ENCLOSED USES ABOVE DO NOT REQUIRE PROTECTION. (R302.6)
30. NO OPENINGS MAY BE PROVIDED BETWEEN A GARAGE AND A SLEEPING ROOM. OTHER OPENINGS SHALL BE EQUIPPED WITH SOLID WOOD OR STEEL DOORS 1 3/8 INCHES IN THICKNESS, OR 20 MINUTE FIRE RATED DOORS, EQUIPPED WITH SELF-CLOSING OR AUTOMATIC-CLOSING AND SELF-LATCHING DEVICE. (R302.5.1)
31. GARAGE AND CARPORT FLOOR SURFACES SHALL BE OF APPROVED NONCOMBUSTIBLE MATERIAL. ASPHALTIC SURFACES SHALL BE PERMITTED AT GROUND LEVEL IN CARPORT. (R309.1 & R309.2)
32. NEW DWELLINGS MUST HAVE A 120 VOLT POWERED SMOKE ALARM IN EVERY SLEEPING ROOM, OUTSIDE EACH SLEEPING ROOM, ON EVERY STORY OF THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS, BUT NOT INCLUDING CRAWL SPACES OR UNINHABITABLE ATTICS. (R314.3)
33. WHEN MORE THAN ONE SMOKE ALARM OR CARBON MONOXIDE ALARM IS REQUIRED, THE ALARM DEVICES SHALL BE INTERCONNECTED. IF THE PROPOSED SCOPE OF WORK DOES NOT RESULT IN THE REMOVAL OF WALL AND CEILING, FINISHES EXPOSING AREAS REQUIRING INSTALLATION DEVICES MAY BE BATTERY OPERATED. (R314.4 & R315.7)
34. WHEN ALTERATIONS, REPAIRS, OR ADDITIONS REQUIRE A PERMIT, SMOKE ALARMS SHALL BE INSTALLED WHERE REQUIRED IN NEW DWELLINGS. (R314.2.2)
35. FOR NEW CONSTRUCTION AND WORK IN AN EXISTING DWELLING, WHERE AN ADDITION IS MADE TO AN EXISTING DWELLING OR A FUEL-BURNING APPLIANCE IS ADDED, CARBON MONOXIDE ALARMS SHALL BE INSTALLED IN SLEEPING ROOMS WITHIN WHICH FUEL- BURNING APPLIANCES ARE INSTALLED, OUTSIDE OF EACH SLEEPING AREA, AND ON EACH OCCUPIABLE LEVEL. CARBON MONOXIDE ALARMS ARE NOT REQUIRED IN DWELLINGS WHERE THERE IS NO FUEL-FIRED APPLIANCE OR ATTACHED GARAGE. (R315.2; R315.3)
36. PROVIDE SEISMIC STRAPPING OR ANCHORAGE RESISTING OVERTURNING OF WATER HEATER. (CPC 507.2, CRC R301.2.2.10)
37. SHOWERS AND TUBS WITH SHOWERS REQUIRE A NON-ABSORBENT SURFACE UP TO 72 INCHES ABOVE THE FLOOR. (R307.2). PROVIDE CURTAIN ROD OR APPROVED ENCLOSURE MATERIAL.
38. SAFETY GLAZING SHALL BE REQUIRED WITHIN 24 INCHES OF A DOOR EDGE OR WITHIN 36 INCHES OF A STAIRWAY, LANDING OR RAMP WHEN THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60 INCHES FROM THE FLOOR OR WALKING SURFACE. (R308.4.2 & R308.4.3)
39. SAFETY GLAZING IS REQUIRED IN ALL FIXED AND OPERABLE PANELS OF SWINGING, SLIDING AND BI-FOLD DOORS. (R308.4.1)
40. SAFETY GLAZING IS REQUIRED IN ENCLOSURES AND WALLS FACING HOT TUBS, SAUNAS, STEAM ROOMS, SHOWERS AND TUBS WHERE THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60 INCHES FROM ANY STANDING OR WALKING SURFACE. (R308.4.5)
41. FIRE BLOCKING SHALL BE PROVIDED IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES, AND PARALLEL ROWS OF STUDS OR STAGGERED STUDS; VERTICALLY AT FLOOR AND CEILING LEVELS, HORIZONTALLY AT INTERVALS NOT TO EXCEED 10 FEET. (R302.11)
42. STORAGE USE OR PLACEMENT OF A FUEL-BURNING APPLIANCE IN AN UNDERFLOOR AREA MAY TRIGGER THE REQUIREMENT FOR A 1/2 INCH GYPSUM WALLBOARD OR 5/8 INCH WOOD PANEL MEMBRANE ON THE UNDERSIDE OF THE FLOOR-FRAMING MEMBER. SEE SECTION R302.13 OF THE CRC FOR EXCEPTIONS.
43. PROVIDE ONE LAYER OF NUMBER 15 ASPHALT FELT OR OTHER APPROVED MATERIAL UNDER EXTERIOR SIDING. MATERIAL SHALL HAVE UPPER LAYER LAPPED 2 INCHES MINIMUM OVER LOWER LAYER WITH 6 INCHES MINIMUM LAPS AT JOINTS. (R703.2) PROVIDE 2 LAYERS OF GRADE D PAPER, OR EQUIVALENT, BETWEEN WOOD SHEATHING AND STUCCO LATH. (R703.7.3)

2019 CALIFORNIA PLUMBING CODE (CPC)

1. ALL ROOF AREAS OF BUILDINGS SHALL BE PROVIDED WITH GUTTERS OR ROOF DRAINS. PROVIDE ADEQUATE ROOF SLOPE FOR DRAINAGE (1/4 INCH PER FOOT, MINIMUM) OR SUBMIT DEFLECTION AND PONDING CALCULATIONS. PRIMARY ROOF DRAINS SHALL BE DESIGNED BASED ON A 60 MINUTE STORM WITH A 100 YEAR RETURN PERIOD, PER TABLE D OF THE CPC. SECONDARY ROOF DRAINS SHALL BE PROVIDED NOT LESS THAN 2 INCHES ABOVE THE ROOF SURFACE (CPC 1101.12)
2. PROVIDE PRESSURE RELIEF VALVE WITH DRAIN TO OUTSIDE FOR WATER HEATER. (CPC 608.3) PROVIDE SEISMIC STRAPPING OR ANCHORAGE RESISTING OVERTURNING OF WATER HEATER. (CPC 507.2, CRC R301.2.2.10)
3. FUEL BURNING WATER HEATER IS NOT ALLOWED IN BEDROOM OR BATHROOM UNLESS DIRECT VENT TYPE OR COMPLYING WITH CPC 504.1.
4. WATER CLOSET SHALL BE LOCATED IN A SPACE NOT LESS THAN 30 INCHES IN WIDTH WITH 24 INCH MINIMUM CLEARANCE IN FRONT. (CPC 402.5)
5. PROVIDE BACKFLOW PREVENTERS ON ALL HOSE BIBS. (CPC 603.5.7)
6. PROVIDE A MINIMUM 18 INCH BY 24 INCH FOUNDATION ACCESS THROUGH FLOORS OR A 16 INCH BY 24 INCH FOUNDATION ACCESS THROUGH PERIMETER WALLS WITHIN 5 FEET OF ALL PLUMBING CLEANOUTS. (R408.4; CPC 707.9)
7. PROVIDE AN **APPROVED DISHWASHER AIR GAP FITTING** AS PER 2019 CPC, SECTION 807.3.
8. POTABLE WATER OUTLETS WITH HOSE ATTACHMENTS, OTHER THAN WATER HEATER DRAINS, BOILER DRAINS, AND CLOTHES WASHER CONNECTORS, SHALL BE PROTECTED BY A LISTED NON-REMOVABLE HOSE BIB TYPE BACKFLOW PREVENTER OR A LISTED ATMOSPHERIC VACUUM BREAKER AS PER 2019 CPC, SECTION 603.5.7.
9. **JOINTS.** WHERE A FIXTURE COMES IN CONTACT WITH THE WALL OR FLOOR, THE JOINT BETWEEN THE FIXTURE AND THE WALL OR FLOOR SHALL BE MADE WATERTIGHT. 2019 CPC, SECTION 402.2
10. NO **UNDERFLOOR CLEANOUT** SHALL BE LOCATED MORE THAN 5 FEET FROM AN ACCESS DOOR, TRAP DOOR, OR CRAWL HOLE. 2019 CPC, SECTION 707.9.
11. **GAS WATER HEATERS LOCATED IN RESIDENTIAL GARAGES OR ADJACENT SPACES** OPEN TO THE GARAGE THAT ARE NOT PART OF THE LIVING SPACE SHALL BE INSTALLED SO THAT THE PILOTS, BURNERS, AND BURNER-IGNITER DEVICES ARE AT LEAST 18 INCHES ABOVE THE FLOOR UNLESS LISTED AS FLAMMABLE VAPOR IGNITION RESISTANT. 2019 CPC, SECTION 507.13.
12. **FUEL BURNING WATER HEATERS** SHALL BE INSTALLED PER 2019 CPC, SECTION 506.0, FOR COMBUSTION AIR.
13. **WATER HEATERS THAT DEPEND ON THE COMBUSTION** OF FUEL FOR HEAT SHALL NOT BE INSTALLED IN BEDROOMS OR BATHROOMS UNLESS INSTALLED IN AN APPROVED CLOSET OR DIRECT VENT TYPE PER 2019 CPC, SECTION 504.1.
14. **LISTED WATER HEATERS SHALL BE INSTALLED IN** ACCORDANCE WITH THEIR LISTING AND THE MANUFACTURES' INSTRUCTIONS. **UNLISTED WATER HEATERS** SHALL BE INSTALLED WITH A CLEARANCE OF 12" ON ALL SIDES AND REAR. 2019 CPC, SECTION 504.3.1 & 504.3.2.
15. ANY WATER SYSTEM CONTAINING **STORAGE WATER HEATING EQUIPMENT** SHALL BE PROVIDED WITH AN APPROVED, LISTED, AND ADEQUATELY SIZED COMBINATION PRESSURE AND TEMPERATURE RELIEF VALVE. 2019 CPC, SECTION 608.3.
16. **RELIEF VALVES LOCATED INSIDE A BUILDING** SHALL BE PROVIDED WITH A DRAIN OF GALVANIZED STEEL, HARD DRAWN COPPER PIPING AND FITTINGS, CPVC, OR LISTED VALVE DRAIN. THE DRAIN SHALL EXTEND FROM THE VALVE TO THE OUTSIDE OF THE BUILDING WITH THE END OF THE PIPE NOT MORE THAN 2 FEET NOR LESS THAN 6 INCHES ABOVE THE GROUND AND POINTING DOWNWARD. 2019 CPC, SECTION 608.5. ***NOTE:*** NO PART OF SUCH DRAINPIPE SHALL BE TRAPPED, AND THE TERMINAL END OF THE DRAINPIPE SHALL NOT BE THREADED.
17. **WATER HEATERS SHALL BE ANCHORED OR STRAPPED** TO RESIST HORIZONTAL DISPLACEMENT DUE TO EARTHQUAKE MOTION. STRAPPING SHALL BE AT POINTS WITHIN THE UPPER ONE-THIRD AND LOWER ONE-THIRD OF ITS VERTICAL DIMENSIONS. AT THE LOWER POINT, A MINIMUM DISTANCE OF 4 INCHES SHALL BE MAINTAINED ABOVE THE CONTROLS WITH THE STRAPPING. 2019 CPC, SECTION 507.2.
18. **GAS UTILIZATION EQUIPMENT** CONNECTED TO A PIPING SYSTEM SHALL HAVE AN ACCESSIBLE APPROVED **MANUAL SHUT OFF VALVE** WITH A NON-DISPLACEABLE VALVE MEMBER, OR A LISTED GAS CONVENIENCE OUTLET INSTALLED WITHIN 6' OF THE EQUIPMENT IT SERVES. SHUT OFF VALVES SERVING DECORATIVE GAS APPLIANCES SHALL BE PERMITTED TO BE INSTALLED IN FIREPLACES IF LISTED FOR SUCH USE. 2019 CPC, SECTION 1212.6.
19. **SHOWERS AND TUB-SHOWER COMBINATIONS** IN ALL BUILDINGS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE OR THE THERMOSTATIC MIXING VALVE TYPE. 2019 CPC, SECTION 408.3.

2019 CALIFORNIA BUILDING CODE (CBC)

1. **IN DWELLING UNITS, SMOKE ALARMS SHALL BE INSTALLED** ON THE WALL OR CEILING OF THE AREA IMMEDIATELY OUTSIDE EACH SEPARATE SLEEPING AREA, IN EACH ROOM USED FOR SLEEPING PURPOSES, AND ON EACH STORY WITHIN THE DWELLING UNIT. IN DWELLINGS WITH BASEMENTS, AN ALARM SHALL BE INSTALLED ON EACH STORY AND IN THE BASEMENT. IN DWELLING UNITS WHERE A STORY OR BASEMENT IS SPLIT INTO TWO OR MORE LEVELS AND DOES NOT HAVE AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM NEED ONLY BE INSTALLED ON THE UPPER LEVEL, EXCEPT THAT WHEN THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL, AN ALARM SHALL BE INSTALLED ON EACH LEVEL. WHERE THE CEILING HEIGHT OF A ROOM THAT OPENS ONTO A HALLWAY SERVING A BEDROOM EXCEEDS THE HEIGHT OF THE HALLWAY BY 24 INCHES, SMOKE ALARMS SHALL BE INSTALLED IN THE HALLWAY AND IN THE ADJACENT ROOM. IN NEW CONSTRUCTION, THE REQUIRED SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM A COMMERCIAL SOURCE AND HAVE A BATTERY BACKUP. WHEN MORE THAN ONE SMOKE ALARM IS BEING PROVIDED THE ALARMS SHALL BE INTERCONNECTED. 2019 CRC, SECTION R314.
2. WHEN INTERIOR **ALTERATIONS, REPAIRS, OR ADDITIONS HAVING A VALUE IN EXCESS OF $1,000** ARE MADE, PROVIDE APPROVED **SMOKE ALARMS** AS REQUIRED FOR NEW BUILDINGS. THE ALARM MAY BE BATTERY OPERATED. 2019 CRC, SECTION R314.6.2.
3. **FOR NEW CONSTRUCTION, AND ALTERATION, REPAIRS AND ADDITIONS, AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED** IN DWELLING UNITS AND IN SLEEPING UNITS WITHIN WHICH FUEL-BURNING APPLIANCES INCLUDING FIREPLACES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES. 2019 CRC, SECTION R315.1.
4. **SPRINKLERS SHALL BE INSTALLED** TO PROTECT ALL AREAS OF A NEW DWELLING UNIT. FIRE SPRINKLERS SHALL BE DESIGNED AND INSTALLED PER 2019 CRC, SECTION R313.2.1.
5. **BASEMENTS, HABITABLE ATTICS, AND EVERY SLEEPING ROOM IN DWELLING UNITS** SHALL HAVE NOT LESS THAN ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING APPROVED FOR **EMERGENCY ESCAPE OR RESCUE** THAT SHALL OPEN DIRECTLY INTO A PUBLIC WAY, YARD, OR COURT THAT OPENS TO A PUBLIC WAY. ESCAPE OR RESCUE WINDOWS SHALL HAVE A MINIMUM NET CLEAR OPENING AREA OF NOT LESS THAN 5.7 SQUARE FEET, EXCEPT THAT WHEN ESCAPE AND RESCUE WINDOWS ARE ON THE GRADE-FLOOR THEY CAN HAVE A MINIMUM NET CLEAR OPENING AREA OF 5 SQUARE FEET. ALL EMERGENCY ESCAPE AND RESCUE WINDOWS SHALL HAVE THE BOTTOM OF THE CLEAR OPENING NOT GREATER THAN 44 INCHES MEASURED FROM THE FLOOR. THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24 INCHES. THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20 INCHES. STORM SHELTERS AND BASEMENTS THAT ARE LESS THAN 200 SQUARE FEET AND ARE ONLY USED TO HOUSE MECHANICAL EQUIPMENT ARE EXEMPT FROM THIS REQUIREMENT. 2019 CRC, SECTION R310.1. **SEE EXCEPTION 2** WHERE THE DWELLING OR TOWNHOUSE IS EQUIPPED WITH AN AUTOMATIC SPRINKLER SYSTEM INSTALLED IN ACCORDANCE WITH SECTION P2904, SLEEPING ROOMS IN BASEMENTS SHALL NOT BE REQUIRED TO HAVE EMERGENCY ESCAPE AND RESCUE OPENINGS PROVIDED THAT THE BASEMENT HAS ONE OF THE FOLLOWING: 2.1 ONE MEANS OF EGRESS COMPLYING WITH SECTION R311 AND ONE EMERGENCY ESCAPE AND RESCUE OPENING. 2.2 TWO MEANS OF EGRESS COMPLYING WITH SECTION R311.
6. **PRIVATE GARAGES SHALL BE SEPARATED FROM A DWELLING UNIT AND ITS ATTIC SPACE** BY MINIMUM ½ INCH GYPSUM BOARD APPLIED ON THE GARAGE SIDE. PRIVATE GARAGES LOCATED BENEATH HABITABLE SPACES SHALL BE SEPARATED FROM THE HABITABLE SPACE BY MEANS OF MINIMUM 5/8 INCH GYPSUM BOARD. A GARAGE SHALL NOT OPEN DIRECTLY INTO A ROOM USED FOR SLEEPING PURPOSES. DOOR OPENINGS BETWEEN A PRIVATE GARAGE AND A DWELLING UNIT ARE REQUIRED TO BE SELF-CLOSING AND SELF- LATCHING. WHEN NOT PROTECTED BY FIRE SPRINKLERS, THE DOOR SHALL BE CONSTRUCTED OF SOLID WOOD, SOLID MATERIAL, OR HONEY COMB CORE STEEL AND MUST BE 1-3/8 INCH THICK OR HAVE A 20 MINUTE FIRE RATING. 2019 CRC, SECTIONS R302.5 & R302.6.
7. **DUCTS MAY PASS THROUGH THE WALLS OR A CEILING SEPARATING A PRIVATE GARAGE FROM A DWELLING UNIT** PROVIDED THE DUCTS WITHIN THE GARAGE ARE CONSTRUCTED OF STEEL HAVING A THICKNESS OF NOT LESS THAN 26 GAUGE GALVANIZED SHEET STEEL AND THE DUCT HAS NO OPENINGS INTO THE GARAGE. 2019 CRC, SECTION R302.5.2.
8. PROVIDE **READILY ACCESSIBLE NATURAL VENTILATION DIRECTLY TO THE OUTDOORS** FOR ALL HABITABLE ROOMS WITHIN A DWELLING UNIT EQUAL TO 4 PERCENT OF THE FLOOR AREA VENTILATED. 2019 CRC, SECTION R303.1.
9. PROVIDE **NATURAL OR ARTIFICIAL LIGHT** TO ALL HABITABLE ROOMS WITHIN A DWELLING UNIT. NATURAL LIGHT SHALL BE EQUAL TO 8 PERCENT OF THE FLOOR AREA SERVED. ARTIFICIAL LIGHT SHALL HAVE AN AVERAGE ILLUMINATION OF 6 FOOT-CANDLES AT A HEIGHT OF 30 INCHES ABOVE THE FLOOR LEVEL. 2019 CRC, SECTION R303.1.
10. B-2**ROOMS CONTAINING BATHTUBS, SHOWERS, SPAS, AND SIMILAR BATHING FIXTURES** SHALL BE PROVIDED WITH AN AGGREGATE GLAZING AREA OF NOT LESS THAN 3 SQUARE FEET OF WHICH AT LEAST ONE HALF MUST BE OPENABLE OR BE MECHANICALLY VENTILATED WITH THE EXHAUST AIR GOING DIRECTLY TO THE OUTSIDE. 2019 CRC, SECTION R303.3.
11. B-3PROVIDE **SAFETY GLAZING** FOR ALL GLAZING IN LOCATIONS SPECIFIED AS HAZARDOUS IN THE 2019 CRC, SECTION R308.4.
12. B-4**SHOWER COMPARTMENTS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS** SHALL BE FINISHED WITH A SMOOTH, NONABSORBENT SURFACE TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR. 2019 CRC, SECTION R307.2.
13. B-5PROVIDE AN APPROVED **ATTIC ACCESS** IN A READILY ACCESSIBLE LOCATION SIZED 22 INCHES BY 30 INCHES WITH MINIMUM 30 INCH VERTICAL HEADROOM. 2019 CRC, SECTION R807.1. **IF MECHANICAL EQUIPMENT** IS INSTALLED IN THE ATTIC SPACE THE ACCESS MUST BE SIZED SO THAT THE LARGEST PIECE OF EQUIPMENT CAN BE REMOVED, BUT IN NO CASE SMALLER THAN 22 INCH BY 30 INCH WITH 30 INCH VERTICAL HEADROOM CLEARANCE PER 2019 CMC, SECTION 304.4.
14. B-6**ENCLOSED USABLE SPACE UNDER INTERIOR STAIRWAYS** IN DWELLING UNITS SHALL HAVE THE WALLS AND SOFFITS PROTECTED ON THE ENCLOSED SIDE WITH ½ INCH GYPSUM BOARD. 2019 CRC, SECTION R302.7.
15. B-7**PRIVATE STAIRWAYS** SHALL BE CONSTRUCTED WITH A 7.75 INCH MAXIMUM RISE, A 10 INCH MINIMUM RUN, AND A 36 INCH MINIMUM WIDTH. A NOSING NOT LESS THAN ¾ INCH BUT NOT MORE THAN 1-1/4 INCH SHALL BE PROVIDED ON STAIRWAYS WITH SOLID RISERS WHERE THE TREAD DEPTH IS LESS THAN 11 INCHES. THE LARGEST TREAD RUN AND THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH. MAINTAIN A CONTINUOUS 6 FOOT 8 INCH HEADROOM CLEARANCE ABOVE THE STAIRWAY. 2019 CRC, SECTION R311.7.
16. B-8A MINIMUM OF **ONE HANDRAIL IS REQUIRED ON ALL STAIRWAY RUNS WITH FOUR OR MORE RISERS** THAT SERVE DWELLING UNITS. THE TOP OF HANDRAILS SHALL BE PLACED NOT LESS THAN 34 INCHES NOR MORE THAN 38 INCHES ABOVE THE NOSING OF THE TREADS EXCEPT FOR AT THE LOWEST RISER, LANDING TRANSITIONS, AND THE START OF THE FLIGHT WHERE THEY MAY BE ALLOWED TO BE HIGHER. A CLEAR SPACE OF 1-1/2 INCHES IS REQUIRED BETWEEN THE HANDRAIL AND THE WALL. THE MAXIMUM PROJECTION OF THE HANDRAIL INTO THE REQUIRED STAIRWAY WIDTH SHALL BE 4-1/2 INCHES. OPENINGS IN OPEN **GUARDS ON STAIRWAYS** SHALL BE SIZED SUCH THAT A 4-3/8 INCH SPHERE WILL NOT PASS THROUGH. THE TRIANGULAR OPENINGS FORMED BY THE RISER, TREAD AND BOTTOM RAIL AT THE OPEN SIDE OF A STAIRWAY SHALL BE OF A MAXIMUM SIZE SUCH THAT A SPHERE OF 6 INCHES IN DIAMETER CANNOT PASS THROUGH THE OPENING. 2019 CRC, SECTION R311.7.8 AND R312.1.3.
17. B-9**CIRCULAR HANDRAILS** SHALL HAVE A MINIMUM DIAMETER OF 1-1/4 INCHES AND A MAXIMUM DIAMETER OF 2 INCHES. **NON- CIRCULAR HANDRAILS** SHALL HAVE A MINIMUM PERIMETER DIMENSION OF 4 INCHES, A MAXIMUM PERIMETER DIMENSION OF 6- 1/4 INCHES, AND A MAXIMUM CROSS-SECTION OF 2-1/4 INCHES. **HANDRAILS WITH A PERIMETER GREATER THAN 6-1/4 INCHES** SHALL HAVE A GRASPABLE FINGER RECESS AREA ON BOTH SIDES OF THE PROFILE. THE FINGER RECESS SHALL BEGIN WITHIN A DISTANCE OF 3/4 INCH MEASURED VERTICALLY FROM THE TALLEST PORTION OF THE PROFILE AND ACHIEVE A DEPTH OF AT LEAST 5/16 INCH WITHIN 7/8 INCH BELOW THE WIDEST PART OF THE PROFILE. THE REQUIRED DEPTH SHALL CONTINUE FOR AT LEAST 1-3/4 INCHES BELOW THE TALLEST PORTION OF THE PROFILE. THE MINIMUM WIDTH OF THE HANDRAIL ABOVE THE RECESS SHALL BE 1-1/4 INCHES TO A MAXIMUM OF 2-3/4 INCHES. 2019 CRC, SECTION R311.7.8.5.
18. **GUARDS** ARE REQUIRED WHERE OPEN-SIDED WALKING SURFACES INCLUDING STAIRS, RAMPS, AND LANDINGS ARE LOCATED MORE THAN 30 INCHES ABOVE THE FLOOR BELOW. THESE GUARDS SHALL BE A MINIMUM OF 42 INCHES IN HEIGHT. OPENINGS IN OPEN GUARDS FOR THESE AREAS SHALL BE SIZED SUCH THAT A 4 INCH DIAMETER SPHERE CANNOT PASS THROUGH ANY OPENING. 2019 CRC, SECTION R312.1.
19. **ON STAIRWAYS, GUARDS WHOSE TOP RAIL ALSO SERVES AS A HANDRAIL** SHALL HAVE A HEIGHT NOT LESS THAN 34 INCHES AND NOT MORE THAN 38 INCHES MEASURED VERTICALLY FROM A LINE CONNECTING THE LEADING EDGE OF THE TREADS. 2019 CRC, SECTION 312.1.2 EXCEPTION #2.
20. **INTERIOR SPACES INTENDED FOR HUMAN OCCUPANCY SHALL BE PROVIDED WITH HEATING FACILITIES** CAPABLE OF MAINTAINING A ROOM TEMPERATURE OF 68 DEGREES FAHRENHEIT AT A POINT 3 FEET ABOVE THE FLOOR AND 2 FEET FROM EXTERIOR WALLS IN ALL HABITABLE ROOMS. 2019 CRC, SECTION R303.10.
21. **CEILING HEIGHTS** FOR HABITABLE SPACE, HALLWAYS AND PORTIONS OF BASEMENTS CONTAINING THESE SPACES SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 7 FEET. BATHROOMS, TOILET ROOMS AND LAUNDRY ROOMS SHALL HAVE A CEILING HEIGHT NOT LESS THAN 6 FEET 8 INCHES. 2019 CRC, SECTION R305.1.
22. **FACTORY BUILT CHIMNEYS AND FACTORY BUILT FIREPLACES** SHALL BE LISTED AND INSTALLED IN ACCORDANCE WITH THE TERMS OF THEIR LISTING AND THE MANUFACTURER'S INSTRUCTIONS. 2019 CRC, SECTIONS R1004.1 & R1005.1.
23. **PROVIDE ACCESS TO ALL UNDER-FLOOR SPACES.** ACCESS PROVIDED THROUGH THE FLOOR SHALL BE A MINIMUM SIZE OF 18 INCHES BY 24 INCHES. ACCESS PROVIDE THROUGH THE WALL SHALL BE A MINIMUM OF 16 INCHES BY 24 INCHES AND SHALL NOT BE LOCATED UNDER A DOOR TO THE RESIDENCE. 2019 CRC, SECTION 408.4.
24. **PROVIDE ADEQUATE VENTILATION AT ALL UNDER-FLOOR SPACES.** 2019 CRC, SECTION 408.1.
25. PROVIDE ADEQUATE **VENTILATION TO ALL ATTIC SPACES.** 2019 CRC, SECTION R806.1
26. PROVIDE **FIRE BLOCKING AND DRAFT STOPPING** IN CONCEALED LOCATIONS OF COMBUSTIBLE CONSTRUCTION IN ACCORDANCE WITH THE 2019 CRC, SECTIONS R302.11 & R302.12.
27. **ALL GYPSUM BOARD, STUCCO, PLASTER, AND LATH** SHALL BE INSTALLED AS PER 2019 CRC, CHAPTER 7.***NOTE:*** WHEN LATH IS APPLIED OVER WOOD BASE SHEATHING, INCLUDE TWO LAYERS OF GRADE D PAPER. 2019 CRC, SECTION R703.6.3.
28. PROVIDE **WEATHER PROTECTION** ON ALL EXTERIOR WALLS LOCATED ABOVE GRADE THAT ARE NOT CONSTRUCTED OF CONCRETE OR MASONRY. 2019 CRC, SECTION R703.1.

ABBREVIATIONS

#	POUND OR NUMBER
&	AND
@	AT
AD	AREA DRAIN
AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
BD	BUILDING DEPARTMENT
BSMT	BASEMENT
BYND	BEYOND
BOT	BOTTOM
CHNL	CHANNEL
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
DBL	DOUBLE
DEMO	DEMOLISH OR DEMOLITION
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DR	DOOR
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR OR ELEVATION
EQ	EQUAL
EXIST	EXISTING
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
FD	FLOOR DRAIN OR FIRE DEPARTMENT
FEC	FIRE EXTINGUISHER CABINET
FIXT	FIXTURE
FLR	FLOOR
FND	FOUNDATION
GA	GAUGE
GALV	GALVANIZED
GWB	GYPSUM WALL BOARD
HI	HIGH
HP	HIGH POINT
HR	HOUR
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
INSUL	INSULATED OR INSULATION
INT	INTERIOR
LO	LOW
MAX	MAXIMUM
MECH	MECHANICAL
MEMBR	MEMBRANE
MIN	MINIMUM
MTL	METAL
OC	ON CENTER
PCC	PRE-CAST CONCRETE
PD	PLANNING DEPARTMENT
PLUMB	PLUMBING
PLYD	PLYWOOD
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
REQD	REQUIRED
RM	ROOM
SIM	SIMILAR
SPEC	SPECIFIED OR SPECIFICATION
SPK	SPRINKLER OR SPEAKER
SSTL	STAINLESS STEEL
STC	SOUND TRANSMISSION COEFFICIENT
STL	STEEL
STRUCT	STRUCTURE OR STRUCTURAL
T&G	TONGUE AND GROOVE
TELE	TELEPHONE
TLT	TOILET
TO	TOP OF
TOP	TOP OF PLATE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
W/	WITH
WD	WOOD

REVISIONS	BY

CONSTRUCTION NOTES

FINE CUSTOM HOME

TDH DESIGN

(408) 829-6083

19034 BONNET WAY • SARATOGA, CA 95070

DRAWN
LOC HUA

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TRI HONG

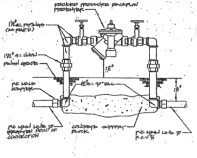
SIGNATURE

DATE

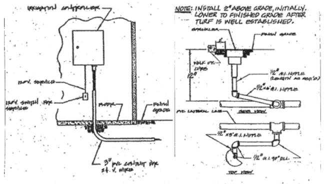
SCALE

JOB

SHEET
N-1

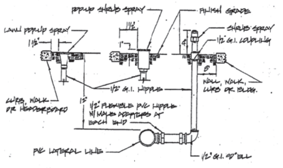

REDUCED PRESSURE BACKFLOW PREVENTER
1½" G.I. FITTINGS (AS REQ'D)
1½" G.I. UNION
FINISH GRADE
12"
18"
PVC MALE ADAPTER
1½" G.I. 90° ELL
PVC MAIN LINE TO IRRIGATION POINT OF CONNECTION
CONCRETE SUPPORT BLOCK
PVC MAIN LINE TO R.C.V.'S

REDUCED PRESSURE BACKFLOW ASSEMBLY
(NO SCALE)

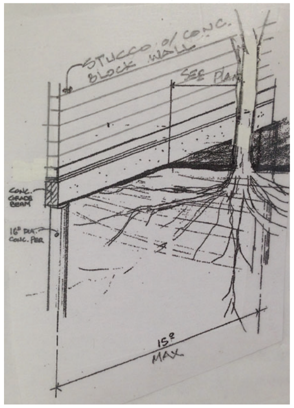

IRRIGATION CONTROLLER
120V. SERVICE
120V. SWITCH FOR SERVICE
FINISH GRADE
3" PVC CONDUIT FOR 24 V. WIRE
SPRINKLER
FINISH GRADE
WALK OR CURB
12"
1/2" G.I. NIPPLE (LENGTH AS REQ'D)
1/2"x6" G.I. NIPPLE
SIDE VIEW
PVC LATERAL LINE
1/2"x8" G.I. NIPPLE
1/2" G.I. 90° ELL
TOP VIEW

NOTE: INSTALL 2" ABOVE GRADE, INITIALLY. LOWER TO FINISHED GRADE AFTER TURF IS WELL ESTABLISHED.

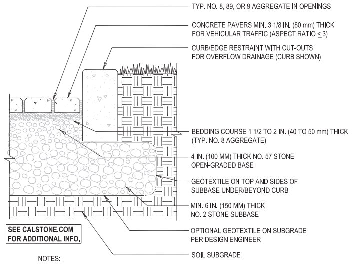
SPRINKLER RISER DETAIL


POP-UP SHRUB SPRAY
FINISH GRADE
LAWN POP-UP SPRAY
1½"
1"
4"
SHRUB SPRAY
1/2" G.I. COUPLING
6"
WALL, WALK, CURB OR BLDG.
1/2" G.I. NIPPLE
CURB, WALK OR HEADERBOARD
12"
1/2" FLEXIBLE PVC NIPPLE W/ MALE ADAPTERS AT EACH END
PVC LATERAL LINE
1/2" G.I. 90° ELL

TYPICAL RISER DETAIL

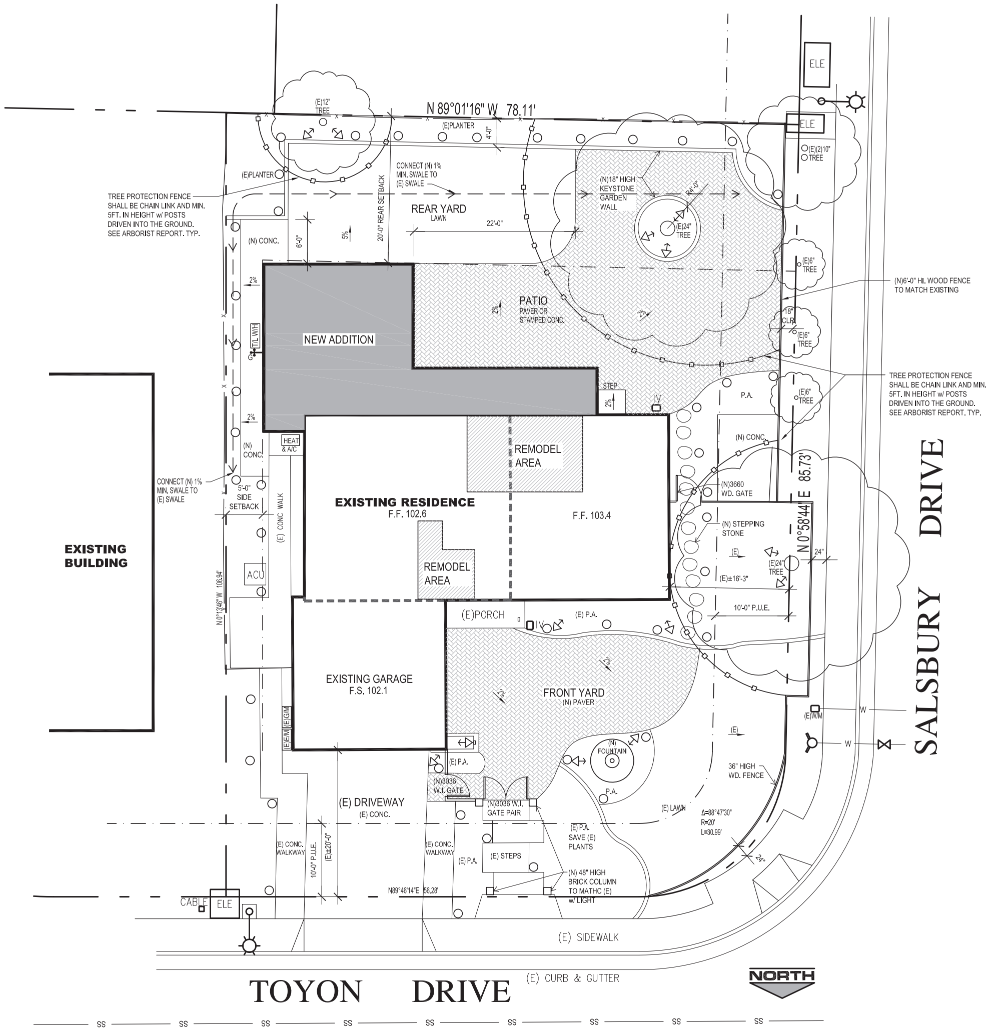

STUCCO o/ CONC. BLOCK WALL
SEE PLAN
CONC. GRADE BEAM
16" DIA. CONC. PIER
15' MAX.

TREE @ FOOTING


TYP. NO. 8, 89, OR 9 AGGREGATE IN OPENINGS
CONCRETE PAVERS MIN. 3 1/8 IN. (80 mm) THICK FOR VEHICULAR TRAFFIC (ASPECT RATIO ≤ 3)
CURB/EDGE RESTRAINT WITH CUT-OUTS FOR OVERFLOW DRAINAGE (CURB SHOWN)
BEDDING COURSE 1 1/2 TO 2 IN. (40 TO 50 mm) THICK (TYP. NO. 8 AGGREGATE)
4 IN. (100 MM) THICK NO. 57 STONE OPEN-GRADED BASE
GEOTEXTILE ON TOP AND SIDES OF SUBBASE UNDER/BEYOND CURB
MIN. 6 IN. (150 MM) THICK NO. 2 STONE SUBBASE
OPTIONAL GEOTEXTILE ON SUBGRADE PER DESIGN ENGINEER
SOIL SUBGRADE
SEE CALSTONE.COM FOR ADDITIONAL INFO.

NOTES:
1. 2 3/8 IN. (60 MM) THICK PAVERS MAY BE USED IN PEDESTRIAN AND RESIDENTIAL APPLICATIONS.
2. NO. 2 STONE SUBBASE THICKNESS VARIES WITH DESIGN.
CONSULT ICPI PERMEABLE INTERLOCKING CONCRETE PAVEMENT MANUAL.
3. NO. 2 STONE MAY BE SUBSTITUTED WITH NO.3 OR NO.4 STONE.

1 PERMEABLE PAVEMENT ICPI-68


N 89°01'16" W 78.11'
(E)12" TREE
(E)PLANTER
(E)PLANTER
4'-0"
ELE
ELE
(E)(2)10" TREE
TREE PROTECTION FENCE SHALL BE CHAIN LINK AND MIN. 5FT. IN HEIGHT w/ POSTS DRIVEN INTO THE GROUND. SEE ARBORIST REPORT. TYP.
CONNECT (N) 1% MIN. SWALE TO (E) SWALE
20'-0" REAR SETBACK
REAR YARD
LAWN
22'-0"
6'-0"
5%
(N) CONC.
(N)18" HIGH KEYSTONE GARDEN WALL
R4'-0"
(E)24" TREE
(E)6" TREE
(N)6'-0" HI. WOOD FENCE TO MATCH EXISTING
18" CLR
(E)6" TREE
(E)6" TREE
TREE PROTECTION FENCE SHALL BE CHAIN LINK AND MIN. 5FT. IN HEIGHT w/ POSTS DRIVEN INTO THE GROUND. SEE ARBORIST REPORT. TYP.
2%
PATIO
PAVER OR STAMPED CONC.
2%
2%
NEW ADDITION
T/L W/H
G
STEP
2%
IV
P.A.
(N) CONC.
2%
(N) CONC.
HEAT & A/C
REMODEL AREA
CONNECT (N) 1% MIN. SWALE TO (E) SWALE
5'-0" SIDE SETBACK
(E) CONC WALK
EXISTING BUILDING
EXISTING RESIDENCE
F.F. 102.6
F.F. 103.4
REMODEL AREA
ACU
N 0°13'46" W 106.94'
(N)3660 WD. GATE
(N) STEPPING STONE
(E)
(E)24" TREE
N 0°58'44" E 85.73'
24"
(E)±16'-3"
10'-0" P.U.E.
SALSBURY DRIVE
(E)PORCH
IV
(E) P.A.
EXISTING GARAGE
F.S. 102.1
FRONT YARD
(N) PAVER
2%
(E)E/M
(E)G/M
(E) P.A.
(N) FOUNTAIN
(N)3036 W.I. GATE
(N)3036 W.I. GATE PAIR
P.A.
(E)
(E)W/M
W
W
36" HIGH WD. FENCE
(E) LAWN
Δ=88°47'30"
R=20'
L=30.99'
24"
(E) DRIVEWAY
(E) CONC.
(E) CONC. WALKWAY
10'-0" P.U.E.
(E)±20'-0"
(E) CONC. WALKWAY
(E) P.A.
(E) STEPS
(E) P.A. SAVE (E) PLANTS
(N) 48" HIGH BRICK COLUMN TO MATHC (E) w/ LIGHT
N89°46'14"E 56.28'
CABLE
ELE
(E) SIDEWALK
TOYON DRIVE
(E) CURB & GUTTER
NORTH
SS
SS
SS
SS
SS
SS
SS
SS
SS

CONCEPTUAL LANDSCAPE PLAN

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

CONTRACTOR TO VERIFY ALL EXISTING CONDITION.

LEGEND

⇦⇨	SPOT LIGHT
○	PATH LIGHT

REVISIONS	BY

CONCEPTUAL
LANDSCAPE PLAN

AN ADDITION & REMODEL FOR
KALYANARAMAN RESIDENCE
2826 TOYON DR, SANTA CLARA, CA 95051
APN# 296-32-012

FINE CUSTOM HOME
TDH DESIGN
19034 BONNET WAY ● SARATOGA, CA 95070
(408) 829-6083

DRAWN
LOC HUA

CHECKED
TRI HONG

SIGNATURE

DATE
MARCH 2021

SCALE
AS SHOWN

JOB
0421

SHEET
L-1

NOTES:

1. THIS ELECTRONIC FILE IS SOLELY FOR THE USE OF THE ARCHITECT FOR THE DEVELOPMENT OF HIS/HER ARCHITECTURAL DRAWINGS TO OBTAIN BUILDING PERMITS.
2. THE DELIVERY OF THIS MAP IN AN ELECTRONIC FILE DOES NOT CONSTITUTE THE DELIVERY OF MY PROFESSIONAL WORK PRODUCT. THE SIGNED PAPER PRINT IS PROVIDED TO THE CLIENT AS AN INSTRUMENT OF SERVICE. IN EVENT THE ELECTRONIC FILE IS ALTERED, THE SAID PAPER PRINT MUST BE REFERRED TO FOR THE ORIGINAL AND CORRECT SURVEY INFORMATION. RW ENGINEERING, INC. SHALL NOT BE RESPONSIBLE FOR ANY MODIFICATIONS MADE, BY OTHERS, TO THE ELECTRONIC FILE, OR ANY PRODUCTS DERIVED FROM THE ELECTRONIC FILE.
3. THIS MAP REPRESENTS TOPOGRAPHY OF THE SURFACE FEATURES ONLY AT THE TIME THE SURVEY WORK WAS COMPLETED.
4. UNLESS SPECIFIED ON THIS MAP, LOCATIONS OF THE UNDERGROUND AND OVERHEAD UTILITIES ARE NEITHER INTENDED NOR IMPLIED. FOR THE LOCATIONS OF UNDERGROUND UTILITIES CALL "USA" (1-800-642-2440).
5. ALL DISTANCES AND DIMENSIONS ARE IN FEET AND DECIMALS.
6. BUILDING FOOTPRINTS ARE SHOWN AT GROUND LEVEL.
7. FINISH FLOOR ELEVATION TAKEN AT DOOR THRESHOLD (EXTERIOR).
8. A TITLE REPORT FOR THE SUBJECT PROPERTY HAS NOT BEEN EXAMINED BY RW ENGINEERING, INC.. OTHER EASEMENTS OF RECORD MAY EXIST THAT ARE NOT SHOWN ON THIS MAP.

SITE BENCHMARK: ⯐

BRASS PIN
ELEVATION= 100.00' (ASSUMED DATUM)

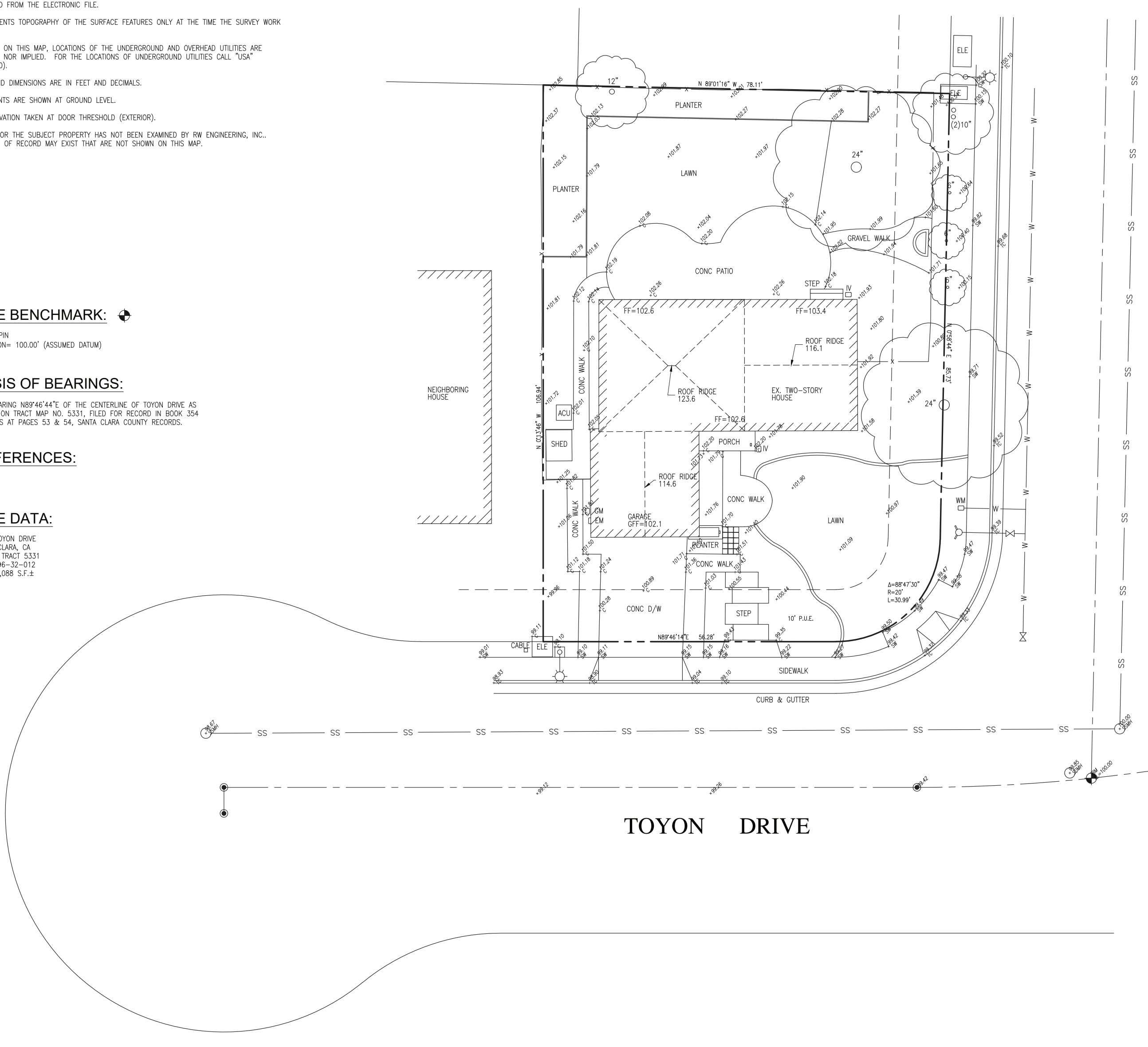
BASIS OF BEARINGS:

THE BEARING N89°46'44"E OF THE CENTERLINE OF TOYON DRIVE AS SHOWN ON TRACT MAP NO. 5331, FILED FOR RECORD IN BOOK 354 OF MAPS AT PAGES 53 & 54, SANTA CLARA COUNTY RECORDS.

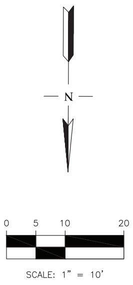
REFERENCES:

SITE DATA:

2826 TOYON DRIVE
SANTA CLARA, CA
LOT 15 TRACT 5331
APN: 296-32-012
AREA: 8,088 S.F.±



N 89°01'16" W 78.11'
12"
PLANTER
PLANTER
LAWN
(2)10"
24"
ELE
ELE
GRAVEL WALK
CONC PATIO
STEP
IV
FF=102.6
FF=103.4
ROOF RIDGE 116.1
ROOF RIDGE 123.6
EX. TWO-STORY HOUSE
FF=102.6
N 0°58'44" E 85.73'
24"
N 0°13'46" W 106.94'
CONC WALK
ACU
SHED
NEIGHBORING HOUSE
PORCH
IV
ROOF RIDGE 114.6
CONC WALK
GM
EM
GARAGE GFF=102.1
CONC WALK
LAWN
WM
PLANTER
CONC WALK
STEP
CONC D/W
10' P.U.E.
Δ=88°47'30"
R=20'
L=30.99'
N89°46'14"E 56.28'
CABLE
ELE
SIDEWALK
CURB & GUTTER
SS
W
SALSBURY DRIVE
TOYON DRIVE



SCALE: 1" = 10'

ABBREVIATION

AD	AREA DRAIN
A.E.	ANCHOR EASEMENT
AC	ASPHALT CONCRETE
ACU	AC UNIT
BRI	BRICK
C/G	CURB & GUTTER
C	CONCRETE
DI	DRAIN INLET
FF	FINISH FLOOR GRADE
FL	FLOWLINE
GM	GAS METER
IV	IRRIGATION VALVE
LG	LIP OF GUTTER
MB	MAIL BOX
P.U.E.	PUBLIC UTILITY EASEMENT
P.S.E.	PUBLIC SERVICE EASEMENT
SDMH	STORM DRAIN MANHOLE
SSCO	SANITARY SEWER CLEANOUT
SSMH	SANITARY SEWER MANHOLE
S/W	SIDEWALK
TC	TOP OF CURB
TRC	TOP OF ROLLED CURB
W.C.E.	WIRE CLEARANCE EASEMENT
WM	WATER METER

LEGEND

——— - - ———	PROPERTY LINE
——— — ———	CENTERLINE
——— SS ———	UTILITY LINE-TYPE AS NOTED
☼—○	STREET LIGHT
▯PG&E	UTILITY BOX-TYPE AS NOTED
▯WM/GM	WATER/GAS METER
⋈ WV	WATER VALVE
▥	CURB CATCH BASIN
♉	FIRE HYDRANT
○MH	MANHOLE-TYPE AS NOTED
○CO	SANITARY SEWER CLEANOUT
PP ○— OH	POWER POLE W/ OVERHEAD WIRE
⯐	BENCHMARK
— 200 —	CONTOUR LINE
◉ MON	MONUMENT
✿ 12"	TREE-TRUNK DIAMETER IN INCHES SPECIES NOTED WHEN KNOWN
—)	GUY WIRE

NO.	REVISION	DATE	BY

RW ENGINEERING, INC.
CIVIL ENGINEERS • LAND SURVEYORS
505 ALTAMONT DRIVE
MILPITAS, CA 95035
(P) (408) 262-1899
(FAX) (408) 824-5556
rwengineering@gmail.com

ROBERT Y. WANG
NO. 8931
RENEWAL DATE: 09-30-22

2826 TOYON DRIVE
SANTA CLARA, CA

APN: 296-32-012
SANTA CLARA COUNTY

TOPOGRAPHIC MAP

DATE: 3/27/2021
SCALE: AS NOTED
DESIGNED BY: RW
DRAWN BY: RW
SHEET NO.

SU-1

OF 1 SHEETS

GENERAL NOTES

GENERAL NOTES

101. ALL WORK PERFORMED IN THIS PROJECT SHALL COMPLY WITH 2019CBC AND ALL PERTINENT LOCAL CODE REQUIREMENTS, LAWS AND ORDINANCES.
102. ALL WORK PERFORMED SHALL COMPLY WITH THESE GENERAL REQUIREMENTS UNLESS OTHERWISE NOTED ON PLANS OR SPECIFICATIONS.
103. CONTRACTOR SHALL COORDINATE ALL DRAWINGS, VERIFY ALL DIMENSIONS, ELEVATIONS AND CONNECTIONS BEFORE CONSTRUCTION.
104. CONTRACTOR SHALL BE RESPONSIBLE FOR ON SIDE VERIFICATION OF CONDITIONS.
105. DRAWINGS ARE NOT TO BE SCALE. DIMENSIONS NOT SPECIFIED, WHEN REQUIRED BY FIELD CONDITION, SHALL BE DETERMINED BY ENGINEER.
106. ENGINEER SHALL BE NOTIFIED FOR ANY FIELD CONDITIONS DIFFERENT FROM THOSE INDICATED ON DRAWINGS.
107. ENGINEER SHALL BE NOTIFIED FOR ANY QUESTIONS WHICH MAY ARISE PERTAINING TO THE DRAWINGS AND SPECIFICATIONS
108. GENERAL CONTRACTOR AND HIS/HER SUBCONTRACTORS ARE RESPONSIBLE FOR ALL THE EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING AND THE PROTECTION OF THE ADJACENT PROPERTY, STRUCTURES, STREET AND UTILITIES.
109. TYPICAL DETAILS ON THESE SHEETS SHALL APPLY WHERE NO SPECIFIC DETAILS OR SECTIONS ARE GIVEN.
110. MATERIAL NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER STRUCTURAL NOTES CONTAINED HEREIN.
111. ALL DRAWINGS AND SUBSEQUENT REVISIONS IF ANY SHALL BE APPROVED BY BUILDING OFFICIAL PRIOR TO STARTING CONSTRUCTION.
112. ALL DRAWINGS AND SUBSEQUENT REVISIONS IF ANY SHALL BE MADE WITH WRITTEN APPROVAL OF ENGINEER.
113. CONTRACTOR SHALL VERIFY ALL HEATING, VENTILATING, PLUMBING AND ELECTRICAL OPENINGS AND NOTIFY THE ENGINEER FOR ANY DEVIATIONS FROM THE DRAWINGS.
114. THE STRUCTURAL DRAWINGS SHOW STRUCTURAL FEATURE ONLY. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND OTHER DRAWINGS FOR NON-STRUCTURAL ITEMS.
115. EXCEPT AS NOTED HEREIN. NO STRUCTURAL MEMBERS SHALL BE OMITTED, NOTCHED, CUT, BLOCKED OUT, OR RELOCATED WITHOUT PRIOR APPROVAL BY THE ENGINEER OF RECORD.
116. THE STRUCTURAL DRAWINGS FOR THIS PROJECT DESCRIBE THE BUILDING STRUCTURE ONLY, AND ARE NOT INTENDED TO SHOW NON-STRUCTURAL ITEMS COORDINATION FOR AND INSTALLATION OF MECHANICAL, ELECTRICAL, ARCHITECTURAL AND MISCELLANEOUS NON-STRUCTURAL ITEMS SHOWN ELSEWHERE IN THE PROJECT PLANS SHALL BE THE RESPONSIBILITY OF GENERAL CONTRACTOR
117. SUBCONTRACTORS FOR STRUCTURAL PORTIONS OF THE BUILDING, INCLUDING BUT NOT LIMITED TO FOUNDATIONS AND STRUCTURAL FRAME, ARE ADVISED TO REVIEW ALL DIVISIONS OF THE PLANS AND SPECIFICATIONS FOR NON-STRUCTURAL ITEMS WHICH MAYBE EMBEDDED IN, ATTACHED TO OR OTHERWISE CONNECTED TO THE STRUCTURAL ELEMENTS OF THE BUILDING BEFORE SUBMITTING THEIR BIDS.
118. IN CASED OF CONFLICT, THE MORE STRINGENT REQUIREMENT SHALL GOVERN.

FRAMING NOTES:

201. CONTRACTOR SHALL REVIEW ALL TYPICAL FRAMING DETAILS (e.q. TOP PLATE SPLICE. WALL CORNER CONNECTIONS, SHEAR PANEL NAILING, etc.), SILL NAILING AND BLOCK REQUIREMENTS PER FOOTNOTES IN SHEAR WALL SCHEDULE PRIOR TO STARTING ANY FRAME WORK,
202. BEAM-TO-POST (ISOLATED) CONNECTIONS SHALL BE PROPERLY ALIGNED AND CONNECTED WITH BRACKETS U.N.O.
203. WHERE PARTITION WALLS PARALLEL TO THE FRAMING BELOW, DOUBLE JOISTS SHALL BE PROVIDED BELOW THE WALL. WHERE PERPENDICULAR, 2x BLOCKING SHALL BE PROVIDED BETWEEN EACH JOISTS.
204. 2x BLOCKINGS SHALL BE PROVIDED BETWEEN THE FLOOR JOISTS AT THE ENDS AND AT EACH SUPPORT OF THE FLOOR, SUCH AS BEARING WALL, STRUCTURAL BEAM, etc. BLOCKING MAY BE OMITTED ONLY AS SPECIFIED ON PLAN , OR AT THE ENDS OF FLOOR JOISTS WHERE THEY ARE NAILED TO A HEADER, BEAM, OR RIM JOIST.
205. BOTTOM OF POSTS SHALL HAVE FULL BEARING IN A TIGHT-FIT CONDITION WITH THE SUPPORTING STRUCTURAL MEMBER BELOW.
206. WHERE POST TERMINATED ON FLOOR WITH STUD WALLS OR BEAM BELOW, THE SPACE BETWEEN THE BOTTOM OF THE POST AND THE TOP OF THE PLATE OR THE BEAM SHALL BE SOLIDLY FILLED WITH 2x BLOCKINGS AND THE STUD WALL BELOW SHALL HAVE MATCHING POST AT SAME LOCATION.
207. U.O.N. BOTTOM OF ISOLATED POSTED WHEN TERMINATED ON FLOOR SHALL BE FIXED TO THE FLOOR DIAPHRAGM BY 2-A35 CLIPS.
208. PROVIDE A35 CLIP ON EACH SIDE OF GIRDER TRUSS AT BEARING WALLS.
209. PROVIDE 3/8" CDX(OSB) AT FIREPLACE FRAMING.
210. CUTTING BEAMS, JOISTS, AND RAFTERS: NOTCHED FROM TOP EDGE AND BORED HOLES SHALL BE: 1) LIMITED TO 1/6 MEMBER DEPTH: 2) LOCATED AWAY FROM BEARING NOT MORE THAN 3 TIMES MEMBER DEPTH. ALL OTHER CUTS, NOTCHES, AND BORED HOLES EXCEEDING 2" DIAMETER ARE PERMITTED ONLY WHEN APPROVED IN ADVANCE.
211. ALL FRAMING, BRACING, NAILING, NOTCHING, DRILLING, OR BORING SHALL BE IN ACCORDANCE WITH IBC UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED.
212. U.O.N ALL WINDOW AND DOOR OPENINGS 8 FT AND WIDER SHALL HAVE DOUBLE KING STUDS & TRIMMERS
213. U.O.N. ALL FLUSH MOUNTED SAWN LUMBERS BEAMS OR MULTIPLE JOISTS SHALL HAVE "HHUS" HANGERS WHERE FLUSH MOUNTED. FLUSH MOUNTED GLU-LAM BEAMS SHALL BE AS INDICATED ON PLAN.
214. U.O.N ALL FLUSH MOUNTED SINGLE FLOOR JOISTS(TJI) SHALL HAVE "IUS" HANGERS AND ALL FLUSH MOUNTED SINGLE ROOF RAFTER (>8'-0" LONG) SHALL HAVE "LSU26" HANGER.
215. ALL EXTERIOR WALL CORNERS SHALL BE TIED WITH ST2215'S AT SLOPING PLATES CONDITION.
216. POSTS OR MULTI-STUDS SHALL BE PROVIDED AT LOWER FLOOR UNDER POSTS OR MULTI-STUDS ABOVE.
217. U.O.N. ALL BEARING AND/OR SHEAR WALLS WHICH ARE PLUMBING WALLS SHALL BE 2x6 WALL.
218. ALL CALIFORNIA FRAMING SHALL BE 2x6 RAFTERS AT 24" O.C WITH CRIPPLE WALLS SUPPORT AT 8'-0" ON CENTER AT HIGH ROOF.

SHEATHING NOTES:

301. ANY PLYWOOD SHEATHING PANELS USED ON ROOF, FLOOR AND SHEAR WALLS SHALL NOT BE LESS THAN 24" WIDE UNLESS ALL EDGES OF THE UNDERSIZE SHEETS ARE SUPPORTED BY FRAMING MEMBER OR BLOCKING.
302. ROOF PLYWOOD SHALL BE 1/2" CDX(OSB) APA 24/0. FACE GRAIN PERPENDICULAR TO FRAMING MEMBERS BELOW. STAGGER ADJACENT PANELS BY 4 FEET. NAILED WITH 8d COMMON NAILS AT 6"O.C. ALL PLYWOOD PANEL EDGES AND 12"O.C. ALL INTERMEDIATE SUPPORTS.
303. FLOOR PLYWOOD SHALL BE 3/4" CDX APA 48/24 TONGUE AND GROOVE. FACE GRAIN PERPENDICULAR TO FRAMING MEMBER BELOW. STAGGER ADJACENT PANELS BY 4 FEET. NAILED WITH 10d COMMON NAILS AT 6"O.C. AT ALL PLYWOOD EDGES AND AT 10"O.C. AT ALL INTERMEDIATE SUPPORTS.
304. ALL FLOOR PLYWOOD SHALL BE GLUED TO THE JOISTS. THE FIELD-GLUED FLOOR SYSTEM SHALL BE INSTALLED ACCORDING TO THE RECOMMENDATION OF THE APA. GLUE SHALL BE APPLIED TO JOISTS AND THE GROOVE IN THE EDGE OF THE T&G PANEL. GLUE SHALL MEET THE REQUIREMENTS OF THE APA ADHESIVE SPEC. AFG-DI AND SHALL BE APPLIED AS DIRECTED BY THE GLUE MANUFACTURER. GLUE MAY BE APPLIED MANUALLY OR WITH ELECTRIC EQUIPMENT.
305. SHEAR WALL PLYWOOD SHALL BE 3/8"(1/2") CDX(OSB) APA 24/0. ALL PLYWOOD PANEL EDGES BLOCKED AND NAILED PER SHEAR WALL SCHEDULE. ALL PLYWOOD PANEL INTERMEDIATE SUPPORTS SHALL BE NAILED WITH 8d(10d) COMMON OR GALVANIZED BOX NAILS AT 12 "O.C.
306. SHEAR WALL CDX(OSB) SHALL BE PLACED ON THE DESIGNED SIDE OF STUDS AS SHOWN ON PLANS. THE CDX MAY BE PLACED ON THE OPPOSITE SIDE PROVIDED: 1) THERE ARE NO PERPENDICULAR WALLS INTERSECTING FULL LENGTH OF SHEAR WALL. 2) SHEAR WALL CDX(OSB) IS CONTINUOUSLY PLACED ACROSS PERPENDICULAR WALL FRAMING. OR 3) SHEAR WALL CORNER DETAIL IS PROPERLY FOLLOWED.
307. ALL CALIFORNIA ROOF FRAMING SHALL HAVE ROOF CDX(OSB) AT BOTH UPPER AND LOWER ROOF.
308. ALL ROOF AND FLOOR BEAMS AND COLLECTORS(COLL.) SHALL RECEIVE CDX(OSB) EDGE NAILING ALONG ITS FULL LENGTH.

MISCELLANEOUS NOTES:

401. U.N.O PROVIDE ST6236 AT TOP PLATES AT PLUMBING PENETRATIONS.
402. AL SIMPSON CS STRAPS SHALL BE ATTACHED TO FRAMING WITH 8d NAILS IN EVERY OTHER HOLE IN EACH ROW.
403. ALL FRAMING ANCHORS, STRAPS, HANGERS, POST CAPS, COLUMN BASES, HOLDOWNS, HINGE CONNECTORS, ANGLES AND CLIPS SHALL BE MANUFACTURED BY SIMPSON OR EQUAL. NAILING SCHEDULE SHALL BE IN ACCORDANCE WITH PRODUCT REQUIREMENTS.
404. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING THE APPROPRIATE SIZE AND CONFIGURATION OF CONNECTORS FROM THE SERIES DESIGNED ON DRAWINGS. UNLESS NOTED OTHERWISE.
405. UNLESS NOTED OTHERWISE ALL NAILS SHALL BE COMMON NAIL.
406. ALL TOE NAILING SHALL BE 8d NAILS.
407. ALL NAILS EXPOSED TO THE WEATHER SHALL BE HOT-DIPPED GALVANIZED NAILS.
408. CONVENTIONAL LET-IN BRACINGS ARE NOT REQUIRED IN THIS PROJECT.
409. NELSON STUDS SHALL BE MANUFACTURED AND FABRICATED PER TRW NELSON REQUIREMENTS.
410. ALL ITEMS (SPRINKLER PIPES, MECHANICAL EQUIPMENTS...ect.) INTENDED TO BE SUPPORTED ON, OR FROM THE STRUCTURE, UNLESS WITHIN THE STRUCTURAL DRAWINGS, SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO INSTALLING.
411. UNLESS NOTES OTHERWISE, SEE ARCHITECTURAL DRAWING FOR DIMENSIONS, WALKS. RAMPS, PATIOS, ELEVATIONS, ROOF PITCHED etc

LUMBER NOTES:

501. ALL LUMBER SHALL HAVE MOISTURE CONTENT NOT EXCEEDING 19% PRIOR TO INSTALLATION.
502. WOOD MEMBER AGAINST CONCRETE AND OTHER MEMBERS LOCATED WITHIN 8" OF FINISH GRADE SHALL BE PRESSURE TREATED DOUGLAS FIR LARCH.
503. 2x4 STUD SHALL BE DOUGLAS FIR LARCH STANDARD GRADE OR BETTER.
504. 2x6 STUD SHALL BE DOUGLAS FIR LARCH #2 OR BETTER.
505. TOP & SOLE PLATES SHALL BE DOUGLAS FIR LARCH #2 OR BETTER
506. 3x & 4x POST SHALL BE DOUGLAS FIR LARCH #2 OR BETTER.
507. 2x & 4x JOISTS AND BEAMS SHALL BE DOUGLAS FIR LARCH #2 OR BETTER.
508. 6x & 8x FRAMING MEMBERS SHALL BE DOUGLAS FIR LARCH #1 OR BETTER.
509. SIMPLY SUPPORTED GLUED-LAM BEAMS SHALL BE 24F-V4 DFL/DFL.
510. GLUED-LAM BEAMS CANTILEVERED AT ENDS OR CONTINUOUSLY ACROSS SUPPORTS SHALL BE 24F-V8 DFL/DFL.
511. GLUED-LAM BEAMS SHALL BEAR AITC CERTIFICATES AND SUBMITTED TO THE BUILDING OFFICIAL.
512. GLU-LAMINATED FABRICATION SHALL BE PERFORMED IN AN APPROVED FABRICATOR'S SHOP IN ACCORDANCE WITH CBC 1701.7
513. PSL SHALL BE 2.0E. LVL SHALL BE 1.9E AND LSL (BEAM) SHALL BE 1.5E.

FOUNDATION NOTES:

601. SOILS REPORT PREPARED BY:

NO REPORT

~~602.~~ FOUNDATION PLANS AND PERTINENT DETAILS SHALL BE REVIEWED AND APPROVED BY THE ABOVE SOILS ENGINEER PRIOR TO ANY FOUNDATION WORK.
~~603.~~ SOIL REPORT SHALL TAKE PRECEDENCE OVER STRUCTURAL NOTES AND DETAILS.
~~604.~~ SITE GRADING, SUBGRADE PREPARATION, CUTTING SLOPES, EXCAVATION AND PLACEMENT OF ENGINEERED FILL MATERIAL SHALL BE PERFORMED IN ACCORDANCE WITH THE SOIL REPORT AND/OR GRADING PLAN.
~~605.~~ FOR SLAB-ON-GRADE CONSTRUCTION, THE SOIL REPORT SHALL BE REFERENCED REGARDING COMPACTION, SOAKING, MOISTURE BARRIER, SUB BASE , GRAVEL, SAND, etc.
606. FINISH GRADE SHALL BE SLOPED AWAY FROM THE FOUNDATION AND MINIMUM 8 INCHES BELOW THE SILL PLATE.
607. SITE DRAINAGE REQUIREMENTS INCLUDING FINAL PAD GRADES, ROOF DRAINAGE DOWN SPOUTS SHALL BE REFERENCED TO GRADING & PLOT PLANS.
608. REFER TO ARCHITECTURAL PLANS FOR LOCATION AND DIMENSION OF UNDER-FLOOR VENTILATION, CONCRETE DRIVEWAY, DOOR PADS AND OTHER SIMILAR ITEMS.

CONCRETE NOTES:

701. FOUNDATION CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS.
702. REBARS, DOWELS AND OTHER EMBEDDED ELEMENTS SHALL BE SECURED IN PLACE AND APPROVED BY THE BUILDING OFFICIAL BEFORE POURING CONCRETE.
703. COLD JOINTS MAY BE USED WHERE SHOWN. JOINTING SURFACE SHALL BE CLEAN FREE OF FOREIGN MATERIAL AND INTENTIONALLY ROUGHENED.
704. SPECIAL INSPECTION REQUIRED WHERE CONCRETE STRENGTH GREATER THAN 2500psi IS SPECIFIED.

REINFORCEMENT NOTES:

801. REINFORCING STEEL SHALL BE DEFORMED BARS OF BILLET OR AXLE STEEL BAR ASTM A615 GRADE 40.
802. REINFORCEMENT SHALL BE CLEAN AND FREE OF EXTRANEOUS MATERIAL.
803. ALL REINFORCEMENT SHALL BE PLACED AND SUPPORTED IN A TRUE LINE AS SHOWN.
804. 3 INCHES CLEARANCE SHALL BE PROVIDED WHERE CONCRETE IS CASTED AGAINST EARTH, 2 INCHES CLEARANCE FOR CONCRETE EXPOSED TO EARTH OR WEATHER BUT DEPOSITED AGAINST FORMS, AND 3/4" CLEARANCE FOR SLABS AND WALLS WHERE CONCRETE IS NOT EXPOSED TO EARTH OR WEATHER.
805. LAP ALL REINFORCING SPLICES A MINIMUM 48 BAR DIAMETERS BUT IN NO CASE LESS THAN 24 INCHES.
806. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185
807. CONTRACTOR SHALL INFORM ENGINEER 48 HOURS PRIOR TO POURING STRUCTURAL CONCRETE FOR REVIEWING THE WORK.

ANCHORAGE NOTES:

901. U.O.N. ON FOUNDATION PLAN, SILL PLATE FOR ALL EXTERIOR, INTERIOR BEARING AND SHEAR WALL SHALL BE ANCHORED TO CONCRETE FOUNDATION WITH 5/8" ø ANCHOR BOLTS AT MAXIMUM 4 FEET ON CENTER, ANCHOR BOLT SHALL BE INSTALLED WITH SIMPSON BP5/8-3 (3" x 3" x 1/4") BEARING PLATES.
902. BEARING WALL, SHEAR WALL AND EXTERIOR WALL SILLS RECEIVING FASTENERS SHALL HAVE THE FIRST FASTENERS AT 6" FROM EACH CUT END OF THE SILL. TWO FASTENERS MINIMUM PER EACH PIECE.
903. INTERIOR NON-BEARING WALL SILLS TO RECEIVE THE FIRST FASTENER AT 6 INCHES FROM EACH CUT OF THE SILL.
904. ANCHOR BOLTS MATERIAL SHALL BE ASTM A307.
905. POWER DRIVEN ANCHOR PINS (HILTI X-CP 72 P8 S23, ICC REPORT ESR-2379) MAY BE USED ON INTERIOR NON-SHEAR WALL ONLY.
906. POWER DRIVEN ANCHOR PINS SHALL BE SPACED AT MAXIMUM 16" O.C.
907. UNLESS HELD IN PLACE WHEN POURING CONCRETE, FASTENERS TO BE INSTALLED AFTER THE CONCRETE HAS SET FOR 7 DAYS MINIMUM.
908. ANCHOR BOLTS SHALL BE EMBEDDED 7" MINIMUM INTO CONCRETE OR REINFORCED MASONRY AND 15" MINIMUM INTO UNREINFORCED GROUTED MASONRY.
USE 12" LONG ANCHOR BOLTS W/ 3x SILLS TO MAINTAIN 7" MIN. EMBEDMENT.
909. U.O.N., HPAHD, HTT, HDA, PHD AND HD HOLDOWNS SHALL BE ATTACHED TO 4x4 POST MIN. WITH SHEAR EDGE NAILING ALONG FULL HEIGHT.
910. CONTRACTOR SHALL VERIFY LOCATION OF HOLDOWNS AND ANCHOR BOLTS WITH ROUGH FRAMING TO ASSURE PROPER AND ACCURATE INSTALLATION.
911. U.O.N. INDIVIDUAL ISOLATED POSTS SHALL BE ANCHORED BY PB CONNECTORS.
912. HOLDOWNS SHALL BE TIED ON PLACE PRIOR TO INSPECTION.

NAILING SCHEDULE (MINIMUM)

THIS NAILING SCHEDULE TO BE USED ONLY IF NOT SPECIFIED ELSEWHERE IN STRUCTURAL DRAWINGS.

1001. ALL NAILING SPECIFIED ON DRAWING AND THIS SCHEDULE SHALL BE IN ACCORDANCE WITH 2009 IBC TABLE 2304.9.1

CONNECTION	FASTENING	LOCATION
1. Joist to sill or girder	3-8d common 3-3"x0.131" nails 3-3" 14 gage staples	toenail
2. Bridging to joist	2-8d common 2-3"x0.131" nails 2-3" 14 gage staples	toenail each end
3. 1"x6" subfloor or less to each joist	2-8d common	face nail
4. > 1"x6" subfloor to each joist	3-8d common	face nail
5. 2" subfloor to joist or girder	2-16d common	blind and face nail
6. Sole plate to joist or blk'g also see s.w.s.	16d @ common 16" o.c. 3"x0.131" nails @ 8"o.c. 3" 14 gage staples @12"o.c.	typical face nail
Sole plate to joist or blk'g at braced wall panel	3-16d at 16" 4-3"x0.131 nails at 16" 4-3" 14gage staple per 16"	braced wall panels
7. Top plate to stud	2-16d common 3-3"x0.131 nails 3-3" 14gage staples	end nail
8. Stud to sole plate	4-8d common 4-3"x0.131 nails 3-3" 14gage staples	toenail
	2-16d common 3-3"x0.131 nails 3-3" 14gage staples	end nail
9. Double studs	16d common @ 24"o.c. 3"x0.131 nail @ 8"o.c. 3"14gage staple @ 8"o.c.	face nail
10. Double top plates	16d @ 16"o.c. 3"x0.131 nail @ 12"o.c. 3"14gage staple @ 12"o.c.	typical face nail
Double top plates	8-16d common 12-3"x0.131 nails 12-3" 14gage staples	lap splice
11. Blk'g btwn joists or rafters to top pl	3-8d common 3-3"x0.131 nails 3-3" 14gage staples	toenail
12. Rim joist to top plate	8d @ 6"o.c. 3"x0.131 nail @ 6"o.c. 3"14gage staple @ 6"o.c.	toenail
13. Top plates, laps & intersections	2-16d common 3-3"x0.131 nails 3-3" 14gage staples	face nail
14. Continuous header, two pieces	16d common @ 16"o.c.	along edge
15. Ceiling joist to plate	3-8d common 5-3"x0.131 nails 5-3" 14gage staples	toenail
16. Continuous header to stud	4-8d common	toenail
17. Ceiling joists, laps over partitions	3-16d common 4-3"x0.131 nails 4-3" 14gage staples	face nail
18. Ceiling joist to parallel rafters	3-16d common 4-3"x0.131 nails 4-3" 14gage staples	face nail
19. Rafter to plate	3-8d common 3-3"x0.131 nails 3-3" 14gage staples	toenail
20. 1" diagonal brace to each stud and plate	2-8d common 2-3"x0.131 nails 3-3" 14gage staples	face nail
21. 1"x8" sheathing to each bearing	3-8d common	face nail
22. > 1"x8" sheathing to each bearing	3-8d common	face nail
23. Built-up corner studs	16d common @ 24"o.c. 3"x0.131 nail @ 16"o.c. 3"14gage staple @ 16"o.c.	
24. Built-up girder & beams	20d common @ 32"o.c. 3"x0.131 nail @ 24"o.c. 3"14gage staple @ 24"o.c.	face nail at top and bott staggered on opposite sides
	2-20d common 3-3"x0.131 nails 3-3" 14gage staples	face nail at ends and each splice
25. 2" planks	16d common	at each bearing
26. Collar tie to rafter	3-10d common 4-3"x0.131 nails 4-3" 14gage staples	face nail
27. Jack rafter to hip	3-10d common 4-3"x0.131 nails 4-3" 14gage staples	toenail
	2-16d common 3-3"x0.131 nails 3-3" 14gage staples	face nail
28. Roof rafter to 2x ridge beam	2-16d common 3-3"x0.131 nails 3-3" 14gage staples	toenail or face nail
29. Joist to band joist	3-16d common 4-3"x0.131 nails 4-3" 14gage staples	face nail
30. Ledger strip	3-16d common 4-3"x0.131 nails 4-3" 14gage staples	face nail
31. Panel siding(to framing)	6d for 1/2" or less 8d for 5/8"	

1002. ANY CONTINUOUS WALL LINES CONTAINING SHEAR WALL SEGMENTS SHALL HAVE THEIR TOP PLATES SPLICED ACCORDING TO THE DETAIL "TYPICAL TOP PLATES SPLICE" LOCATED ON STRUCTURAL DETAIL SHEET.
1003. ALL MACHINE BOLTS SHALL CONFORM TO ASTM A307.
1004. BOLT HOLES SHALL BE 1/32" TO 1/16" LARGER THAN THE BOLT DIAMETER.
1005. A METAL PLATE, METAL STRAP, OR WASHER NOT LESS THAN A STANDARD CUT WASHER SHALL BE BETWEEN THE WOOD AND THE BOLT HEAD AND BETWEEN THE WOOD AND THE NUT.
1006. HOLES FOR NAILS SHALL BE PRE-DRILLED WHERE SPLITTING OF WOOD MAY OCCUR.
1007. FASTENERS, HARDWARES IN CONTACT WITH PRESSURE-TREATED AND FIRE-RETARDENT TREATED WOOD SHALL BE OF HOT-DIPPED GALVANIZED, STAINLESS STEEL OR COPPER.

EARTHQUAKE DESIGN DATA

ANALYSIS PROCEDURE USED	EQUIVALENT LATERAL PROCEDURE
RESPONSE MODIFICATION FACTOR (R)	6.5
OVER STRENGTH FACTOR	2.5
INPORTANT FACTOR:	1
OCCUPANCY CATERGORY	II, STANDARD
SPECTRAL RESPONSE ACCELERATIONS Ss & S1	1.505, 0.600
SPECTRAL RESPONSE COEFFICIENTS Sds, Sd1	1.204, 0.600
SEISMIC DESIGN CATEGORY (SDC)	D
BASIC SEISMIC FORCE RESISTING SYSTEMS:	BEARING WALL SYSTEM LIGHT-FRAMED WALLS SHEATHED W/ WOOD STRUCTURAL PANELS
DESIGN BASE SHEAR:	0.130W (ASD)

WIND DESIGN DATA

WIND SPEED:	95MPH
WIND EXPOSURE:	B
DESIGN METHOD:	SIMPLIFIED PROCEDURE
TOPOGRAPHIC FACTOR Kzt	1
WIND DIRECTIONALITY FACTOR Kd:	.85

SHEAR WALL SCHEDULE

TYPE	ALLOWABLE SHEAR (plf)	SHEAR MATERIAL	EDGE NAILLING	FIELD NAILING (intermediate)	SILL NAILING @ ea 16" o.c. (footnote 2)	BLOCK NAILING @ ea 16" o.c. (footnote 3)	MUDSILL AND ANCHOR BOLT
P1	260	3/8" CDX (OSB)	8d Common or Galv Box @ 6"o.c. block all edges	8d Common or Galv Box @ 12"	2x W/3-16d	(1)- A35 OR A35 @ 16"O.C.	2x W/ 5/8"ø @ 4'-0"O.C.
P2	350	3/8" CDX (OSB)	8d Common or Galv Box @ 4"o.c. block all edges	8d Common or Galv Box @ 12"	2x W/4-16d	(2)- A35 OR A35 @ 12"O.C.	2x W/ 5/8"ø @ 2'-8"O.C.
P3	490	3/8" CDX (OSB)	8d Common or Galv Box @ 3"o.c. Staggered, 3x at all adjoin'g panel edges & 3x mudsill block all edges	8d Common or Galv Box @ 12"	2x W/6-16d in 2 rows w/4x member below diaphragm	(2)-A35 OR A35 @ 10"O.C.	3x W/ 5/8"ø @ 2'-0"O.C.
P4	640	3/8" CDX (OSB)	8d Common or Galv Box @ 2"o.c. Staggered, 3x at all adjoin'g panel edges & 3x mudsill block all edges	8d Common or Galv Box @ 12"	2x w/8-16d in 2 rows w/ 4x member below diaphragm	(2)-A35 OR A35 @ 8"O.C.	3x W/ 5/8"ø @ 1'-4"O.C.
P8	770	1/2" CDX (OSB)	10d Common or Galv Box @ 2"o.c. Staggered, 3x at all adjoin'g panel edges & 3x mudsill block all edges	10d Common or Galv Box @ 12"	3x w/(4)SDS1/4ø x6" Wood Screws w/4x member below diaphragm	(3)-A35 OR A35 @ 6"O.C.	3x W/ 5/8"ø @ 1'-4"O.C.
P9	870	5/8" CDX (OSB) or 1/2" STRUCTURAL I	10d Common or Galv Box @ 2"o.c. Staggered, 3x at all adjoin'g panel edges & 3x mudsill block all edges	10d Common or Galv Box @ 12"	3x w/(5)SDS1/4ø x6" Wood Screws w/4x member below diaphragm	(3)-A35 OR A35 @ 6"O.C.	3x W/ 5/8"ø @ 1'-4"O.C.
P3D	980	3/8" CDX (OSB) BOTH SIDE (footnote 4)	8d Common or Galv Box @ 3"o.c. Staggered, 3x at all adjoin'g panel edges & 3x mudsill block all edges offset panel joints	8d Common or Galv Box @ 12"	3x w/(6)SDS1/4ø x6" Wood Screws w/4x member below diaphragm	(3)-A35 OR A35 @ 5"O.C.	3x W/ 5/8"ø @ 1'-0"O.C.
P4D	1280	3/8" CDX (OSB) BOTH SIDE (footnote 4)	8d Common or Galv Box @ 2"o.c. Staggered, 3x at all adjoin'g panel edges & 3x mudsill block all edges offset panel joints	8d Common or Galv Box @ 12"	3x w/(7)SDS1/4ø x6" Wood Screws w/4x member below diaphragm	(4)-A35 OR A35 @ 4"O.C.	3x W/ 5/8"ø @ 8"O.C.

1. A) CONTRACTOR SHALL REVIEW ALL TYPICAL SHEAR WALL CONNECTION DETAILS & NOTES BEFORE CONSTRUCTION.
   B) U.N.O. CONTRACTOR SHALL ENSURE THAT ALL SHEAR MATERIAL SHALL EXTENDED FROM HORIZONTAL DIAPHRAGM (PLYWOOD CDX OR EQUAL) TO HORIZONTAL DIAPHRAGM.
2. A) SILL NAILING IS THE FASTENING OF THE SILL (SOLE) PLATE LOCATED AT THE BOTTOM OF SHEAR WALLS TO BLOCKING, RIM JOISTS OR BEAM BENEATH THE HORIZONTAL DIAPHRAGM (FLOOR SHEATING CDX). CARE MUST BE TAKEN TO ENSURE THE PENETRATION TO THESE FASTENERS INTO THE BLOCKING, RIM JOISTS OR BEAM BELOW.
   B) SILL NAILING DOES NOT APPLY WHEN THE ABOVE MENTIONED SILL PLATE IS RESTING DIRECTLY ON CONCRETE SURFACE. IN THIS CASE, THE SILL ANCHOR REQUIREMENTS AS INDICATED ON THE FOUNDATION PLAN AND DISCUSSED IN THE ANCHORAGE NOTES ON THIS SHEET SHALL BE FOLLOWED.
   C) SILL NAILING INDICATED ON SHEAR WALL SCHEDULE MAY BE OMITTED AND REPLACED WITH A MINIMUM OF 2-16d AT 16"O.C FOR THE FOLLOWING CONDITIONS:
      A) AT ALL NON-SHEAR WALLS.
      B) AT PERIMETER SHEAR WALLS WITH THE SHEAR MATERIAL (OF UPPER SHEAR WALL) OCCURRING AT THE EXTERIOR FACE OF BUILDING AND EXTENDING PASS THE SILL PLATE. EDGE NAIL MUST BE PROVIDED AT BLOCKING OR RIM JOIST IN ADDITION TO THE EDGE NAILING AT THE MUD SILL / TOP PLATES
3. A) BLOCK NAILING IS THE FASTENING OF BLOCKINGS, RIM JOISTS OR BEAM DIRECTLY BELOW THE SHEAR WALL TO THE TOP PLATES OR BEAMS IMMEDIATELY BELOW.
   B) ALL BLOCKINGS OTHER THAN THOSE LOCATED UNDERNEATH THE SHEAR WALL SHALL BE HELD IN PLACE BY A35 PER BLOCK OR A35 AT 16"O.C..
   C) BLOCK NAILING INDICATED ON SHEAR SCHEDULE MAY BE OMITTED AND REPLACED WITH 8d TOE NAILS AT 6 INCHES ON CENTER WHERE SHEAR MATERIAL OF LOWER SHEAR WALL IS EXTENDED ABOVE THE TOP PLATES AND NAILED INTO BLOCKING OR RIM JOIST. IN ADDITION TO THIS NAILING, EDGE NAILING SHOULD ALSO BE PROVIDED AT TOP PLATES OF LOWER SHEAR WALL.
   D) LS50 OR LTP4 CLIPS CAN BE USED TO SUBSTITUTE A35 CLIPS AS INDICATED IN THE TABLE.
4. A) WHERE PLYWOOD IS APPLIED ON BOTH FACES OF A WALL AND NAIL SPACING IS LESS THAN 6 INCHES ON CENTER ON EITHER SIDE, PANEL JOISTS SHALL BE OFFSET TO FALL ON DIFFERENT FRAMING MEMBERS OR FRAMING SHOULD BE 3-INCHES NOMINAL OR THICKER AND NAILS ON EACH SIDE SHALL BE STAGGERED.
   B) WHERE PLYWOOD IS APPLIED ON BOTH FACES OF A WALL AND NAIL SPACING IS LESS THAN 6"O.C. ON EITHER SIDE, 3x SILL IS REQUIRED.
5. A) PLYWOOD EDGE AND FIELD NAILING SHALL BE COMMON NAILS OR GALVANIZED BOX NAILS AS INDICATED IN SHEAR WALL SCHEDULE.
6. FASTENERS, HARDWARES IN CONTACT WITH PRESSURE-TREATED AND FIRE-RETARDENT TREATED WOOD SHALL BE OF HOT-DIPPED ZINC COATED GALVANIZED, STAINLESS STEEL, SILICON BRONZE OR COPPER.

ABBREVIATIONS

A.B.	ANCHOR BOLTS
ABV.	ABOVE
ADJ.	ADJACENT
A.F.F.	ABOVE FINISH FLOOR
APA	AMERICAN PLYWOOD ASSO.
ARCH	ARCHITECTURAL
BLDG	BUILDING
BLK'G	BLOCKING
BM	BEAM
BOTT	BOTTOM
BRG	BEARING
C	CAMBER
CANT'L	CANTILEVER
C.J.	CEILING JOIST
CLG	CEILING
CLR	CLEARANCE
CONC	CONCRETE
C.M.U.	CONC. MASONARY UNIT
CONN	CONNECT, CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CS'K	COUNTERSINK
C.T.	COLLAR TIE
DBL	DOUBLE
DET	DETAIL
DF	DOUGLAS FIR
DIAG	DIAGONAL
DIAPH	DIAPHRAGM
DIM	DIMENSION
DIR	DIRECTION
DR	DOOR
DRW'G	DRAWING
EA.	EACH
E.F.	EACH FACE
EL	ELEVATION
EMB.	EMBEDMENT
E.N.	EDGE NAILING
EQ	EQUAL
E.W.	EACH WAY
E.W.E.F.	EACH WAY EACH FACE
EXP	EXPANSION
(E)	EXISTING
F.F.	FINISH FLOOR
F.H.	FULL HEIGHT
FIN	FINISH
FLR	FLOOR
F.J.	FLOOR JOIST
F.L.	FULL LENGTH OF MEMBER
F.N.	FACE NAILED
FND	FOUNDATION
F.P.	FIREPLACE
FRAM'G	FRAMING
FT	FEET
FTG	FOOTING
GALV	GALVANIZED
GAR	GARAGE
GEN.	GENERAL
GLB	GLU-LAM BEAM
GR	GRADE
HDR	HEADER
HT	HEIGHT
INFO	INFORMATION
INT	INTERIOR
J.H.	JOIST HANGER
JNT	JOINT
JST	JOIST
KP	KING POST
KS	KING STUD
LAT	LATERAL(LOAD)
LOC.	LOCATION
MANUF.	MANUFACTURER
MAT'L	MATERIAL
MAX	MAXIMUM
M.B.	MACHINE BOLT
MFG.	MANUFACTURING
MIN	MINIMUM
MTD.	MOUNTED
(N)	NEW
N/A	NOT APPLICABLE
NAIL'G	NAILING
N.T.S.	NOT TO SCALE
O/	OVER
O.C.	ON CENTER
OPN'G	OPENING
OPT.	OPTIONAL
OSB	ORIENTED STRAND BOARD
PC.'S	PIECES
P.E.N.	PLYWOOD EDGE NAILING
PERIM	PERIMETER
PL	PLATE
PLYWD	PLYWOOD
P.T.	PRESSURE TREATED
RAF.	RAFTERS
REQ'D	REQUIRED
REQ'T	REQUIREMENT
RET	RETAINING
RF	ROOF
R.R.	ROOF RAFTER
S.A.D.	SEE ARCH DRW'GS
S.G.E.	STRUCTURAL GABLE END
S.B.	STRONG BACK
SCH	SCHEDULE
SECT	SECTION
SIM	SIMILAR
SHT	SHEET
SHT'G	SHEATHING
SIMP	SIMPSON COMPANY
SPC'G	SPACING
SPECS	SPECIFICATIONS
SQ	SQUARE
S.S.D.	SEE STR. DRW'GS
STL	STEEL
STR	STRUCTURAL
S.W.S.	SHEAR WALL SCHEDULE
S.W.T.	SHEAR WALL TYPE
T & B	TOP AND BOTTOM
T & G	TONGUE AND GROOVE
T.D.	TIEDOWN OR HOLDOWN
T.N.	TOE NAIL
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.S.F.	TOP OF SUB-FLOOR
T.O.W.	TOP OF WALL
TOT	TOTAL
TR	TRIMMER
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
U.O.N.	UNLESS OTHERWISE NOTED
U-S-D	UP SIDE DOWN
WDW.	WINDOW
WF	STEEL WIDE FLANGE
WWF	WELDED WIRE FABRIC
W/	WITH
W/O	WITHOUT
@	AT
'	FEET
"	INCHES
//	PARALLEL
⊥	PERPENDICULAR
&	AND
ø	DIAMETER
CL	CENTER LINE
U	HANGER
≈	APPROXIMATELY

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Wesley Liu Engineering
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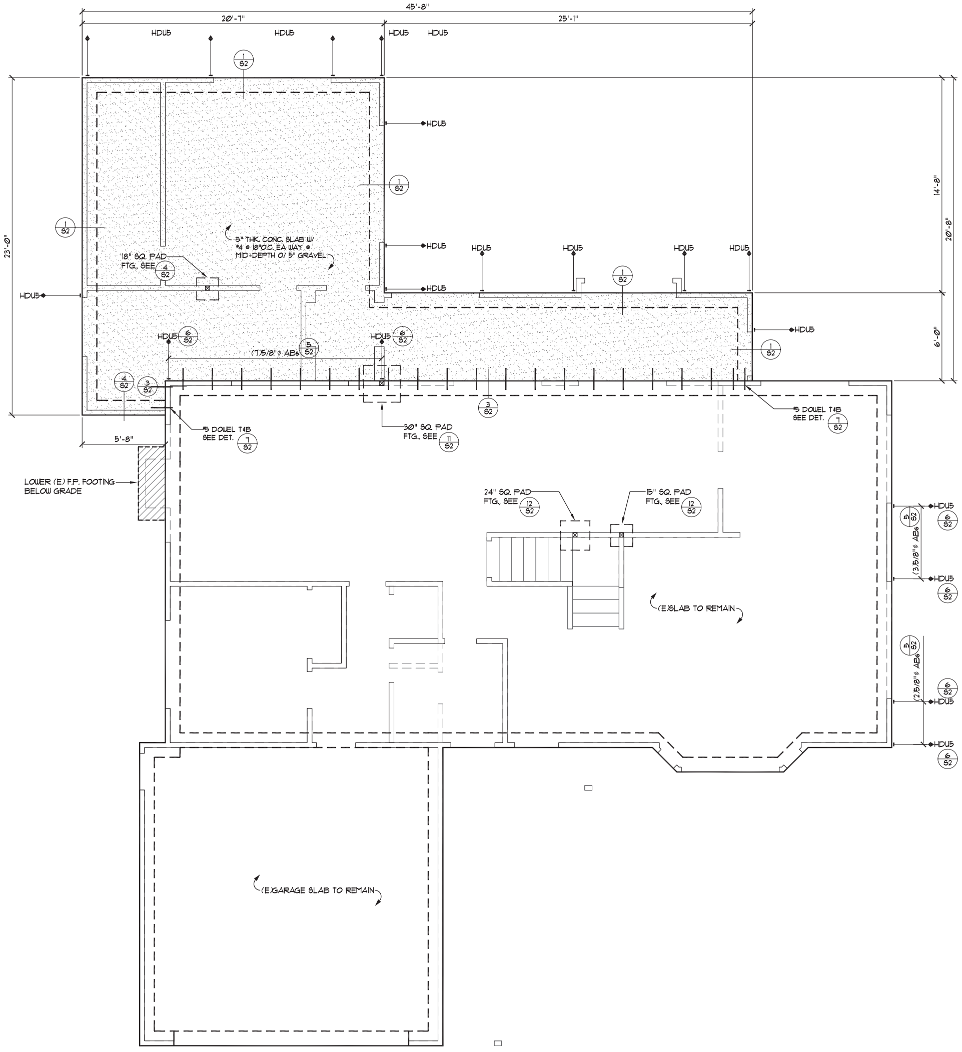
C 50570
EXP. 12/31/22

Addition and Remodel
2826 Toyon Drive
Santa Clara, California 95051

Date 06/21/2021
Scale 3/4" = 1'-0"
Drawn By W.L.
Checked
Job No. 210526
Sheet S0


45'-8"
20'-7"
25'-1"
HDU5
23'-0"
20'-8"
14'-8"
6'-0"
5'-8"
1/S2
3/S2
4/S2
5/S2
6/S2
7/S2
11/S2
12/S2
5" THK. CONC. SLAB W/ #4 @ 18"O.C. EA WAY @ MID-DEPTH O/ 5" GRAVEL
18" SQ. PAD FTG., SEE 4/S2
(7)5/8"ø ABs
#5 DOWEL T&B SEE DET. 7/S2
30" SQ. PAD FTG., SEE 11/S2
24" SQ. PAD FTG., SEE 12/S2
15" SQ. PAD FTG., SEE 12/S2
LOWER (E) F.P. FOOTING BELOW GRADE
(E)SLAB TO REMAIN
(3)5/8"ø ABs
(2)5/8"ø ABs
(E)GARAGE SLAB TO REMAIN

FOUNDATION PLAN

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

ADDITION AND REMODELING:

1. EXISTING CONSTRUCTION SHOWN ON DRAWINGS WAS OBTAINED FROM EXISTING DRAWINGS AND/OR BY FIELD MEASUREMENTS.
2. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS AND DIMENSIONS PRIOR TO STARTING CONSTRUCTION.
3. CUTTING, DRILLING, REMOVAL...ETC. OF THE EXISTING CONSTRUCTION SHALL BE PERFORMED IN A GREAT CARE NOT TO DAMAGE THE INTEGRITY OF THE BUILD'G.
4. NO EXISTING MEMBERS MAY BE REMOVED UNLESS THE STRUCTURAL PLANS INDICATES OTHERWISE.
5. IF STRUCTURAL MEMBERS NOT INDICATED FOR REMOVAL ARE INTERFERING WITH THE NEW WORK, THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED.
6. CONTRACTOR SHALL SAFELY SHORE THE EXISTING CONSTRUCTION WHEREVER THE EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF THE NEW WORKS.
7. ALL LOCATIONS WHERE NEW STRUCTURE IS ATTACHED TO EXISTING STRUCTURAL SHALL BE WATERPROOF AND DAMPPROOF.
8. OWNER OR HIS CONTRACTOR TO ENSURE THAT THE NEW ALTERATION WORKS SHALL NOT CAUSE ANY EXISTING MECHANICAL, ELECTRICAL, PLUMBING ETC. SYSTEMS UNOPERATIONAL.

ADDITION FOUNDATION NOTES:

1. PROVIDE RETROFIT 5/8"ø ANCHOR BOLTS AT ALL AREA OF NEW WORK ON THE EXISTING HOUSE (EXTERIOR WALLS AND INTERIOR BEARING WALLS AND SHEAR WALLS). SEE DETAIL 5/S2.
2. SEE DETAIL 6/S2 FOR HOLDOWN BOLT EPOXY DETAIL.
3. SEE DETAIL 7/S2 FOR DOWEL NEW FOOTING TO EXISTING FOOTING.
4. SPECIAL INSPECTION IS REQUIRED FOR ALL EPOXY BOLTS.

FOUNDATION NOTES:

1. SEE ALL PERTINENT INFORMATION IN STRUCTURAL NOTES ON SHEET S0.
2. SLOPE FINISH GRADE AWAY FROM BUILDING.
3. SEE DETAIL 1/S2 FOR TYPICAL FOOTING SIZE AND REINFORCEMENT.
4. U.O.N. ALL SLAB ON GRADE SHALL BE 5" THICK WITH #4 @ 18"O.C. AT MID-DEPTH OVER 5" GRAVEL OVER COMPACTED SOIL AT LIVING AREA.
   GARAGE SLAB SHALL BE 5" THICK WITH #4 @ 18"O.C. AT MID-DEPTH OVER 5" GRAVEL OVER COMPACTED SOIL.
5. ALL LUMBER MEMBERS IN DIRECTLY CONTACT WITH CONCRETE FOUNDATION SHALL BE PRESSURE-TREATED DOUGLAS FIR.
6. U.N.O. ALL ANCHOR BOLTS SHALL BE 5/8" DIAMETER (7" MINIMUM EMBEDMENT) AT 4'-0" O.C. MAX AND TO BE EQUALLY SPACED. TWO BOLTS MINIMUM PER LENGTH OF MUDSILL PLATE, 12" MAXIMUM AND 6" MINIMUM FROM CUT END.
   ANCHOR BOLTS SHALL BE INSTALLED WITH SIMPSON BP 5/8-3 BEARING PLATES.
7. FASTENERS, HARDWARES IN CONTACT WITH PRESSURE-TREATED AND FIRE-RETARDENT TREATED WOOD SHALL BE OF HOT-DIPPED ZINC COATED GALVANIZED, STAINLESS STEEL,
8. ANCHOR BOLTS SHALL BE PROVIDED AT ALL EXTERIOR WALLS, INTERIOR BEARING AND SHEAR WALLS AS SPECIFIED ABOVE.
9. ALL OTHER WALLS MAY BE ATTACHED WITH HILTI X-CP 72 (ESR-2379) OR APPROVED EQUAL SHOT PINS AT 16"O.C. WITH PLATE WASHERS. FIRST TWO PINS PLACED 6" AND 10" FROM PLATE ENDS.
10. SHOT PINS SHALL BE INSTALLED MIN. 7 DAYS AFTER THE CONCRETE IS POURED.
11. HOLDOWNS SHALL NOT BE SCALED OFF OF FOUNDATION PLANS. THEY SHALL BE LOCATED BY CLOSE EVALUATION OF ARCHITECHTURAL FLOOR PLANS AND FRAMING PLANS ABOVE.
12. HOLDOWN RODS OR STRAPS MUST BE SET IN PLACE WITHIN THE FORMS PRIOR TO FOUNDATION INSPECTION.
13. HOLDOWN RODS MAY BE SIMPSON 'SB' BOLTS, REFER TO MANUFACTURE SPECIFICATIONS FOR EMBED, COVERAGE AND OTHER REQUIREMENTS
14. U.N.O. HTT, HDU AND STHD HOLDOWNS SHALL BE ATTACHED TO 4x4 POST MINIMUM WITH SHEAR EDGE NAILING ALONG FULL HEIGHT OF POST.
15. SEE DETAIL 9/S2 FOR TYPICAL HOLDOWNS AT FOUNDATION.
16. SEE OTHER DRAWINGS FOR HEIGHTS OF DRIVEWAY, SIDEWALKS, STOOPS.

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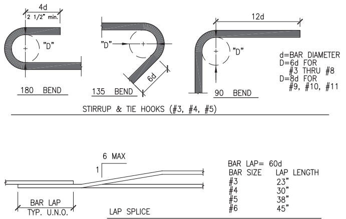
17

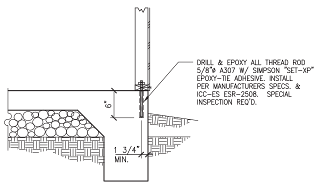
13


4d
2 1/2" min.
"D"
180 BEND
"D"
6d
135 BEND
12d
"D"
90 BEND
d=BAR DIAMETER
D=6d FOR
#3 THRU #8
D=8d FOR
#9, #10, #11
STIRRUP & TIE HOOKS (#3, #4, #5)
6 MAX
1
BAR LAP
TYP. U.N.O.
LAP SPLICE

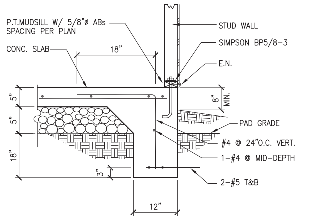
BAR LAP= 60d

BAR SIZE	LAP LENGTH
#3	23"
#4	30"
#5	38"
#6	45"

9 TYP. REBAR BEND & LAP


DRILL & EPOXY ALL THREAD ROD 5/8"ø A307 W/ SIMPSON "SET-XP" EPOXY-TIE ADHESIVE. INSTALL PER MANUFACTURERS SPECS. & ICC-ES ESR-2508. SPECIAL INSPECTION REQ'D.
6"
1 3/4" MIN.

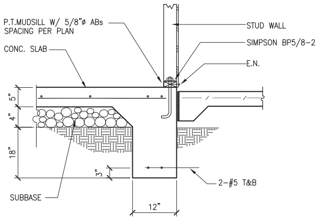
5 EPOXY ANCHOR BOLT


P.T.MUDSILL W/ 5/8"ø ABs SPACING PER PLAN
CONC. SLAB
18"
STUD WALL
SIMPSON BP5/8-3
E.N.
5"
5"
18"
3"
8" MIN.
PAD GRADE
#4 @ 24"O.C. VERT.
1-#4 @ MID-DEPTH
2-#5 T&B
12"

1 TYPICAL FOOTING

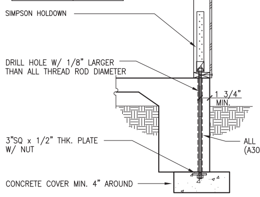
18

14

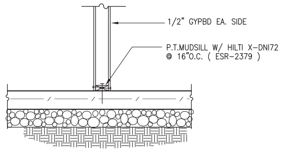

P.T.MUDSILL W/ 5/8"ø ABs SPACING PER PLAN
CONC. SLAB
STUD WALL
SIMPSON BP5/8-2
E.N.
5"
4"
18"
3"
SUBBASE
2-#5 T&B
12"

10

HOLDOWN	ALL-THREAD (A307)
HDU5	5/8"ø
HDU8	7/8"ø
HDU11	1"ø


SIMPSON HOLDOWN
DRILL HOLE W/ 1/8" LARGER THAN ALL THREAD ROD DIAMETER
1 3/4" MIN.
3"SQ x 1/2" THK. PLATE W/ NUT
ALL THREAD ROD (A307)
CONCRETE COVER MIN. 4" AROUND

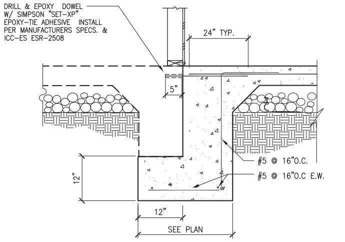
6 BOLTED HOLDOWN TO FOOTING


1/2" GYPBD EA. SIDE
P.T.MUDSILL W/ HILTI X-DNI72 @ 16"O.C. (ESR-2379)

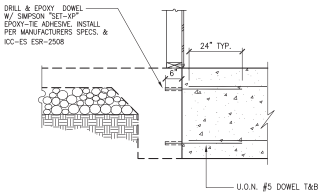
2 INTERIOR PARTITION

19

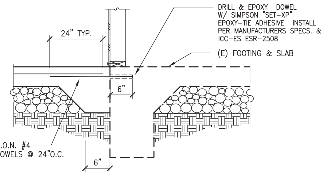
12


DRILL & EPOXY DOWEL W/ SIMPSON "SET-XP" EPOXY-TIE ADHESIVE INSTALL PER MANUFACTURERS SPECS. & ICC-ES ESR-2508
24" TYP.
5"
#5 @ 16"O.C.
#5 @ 16"O.C E.W.
12"
12"
SEE PLAN

11


DRILL & EPOXY DOWEL W/ SIMPSON "SET-XP" EPOXY-TIE ADHESIVE. INSTALL PER MANUFACTURERS SPECS. & ICC-ES ESR-2508
24" TYP.
6"
U.O.N. #5 DOWEL T&B

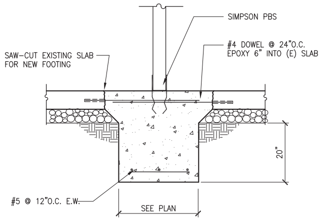
7 EPOXY DOWELS


24" TYP.
DRILL & EPOXY DOWEL W/ SIMPSON "SET-XP" EPOXY-TIE ADHESIVE INSTALL PER MANUFACTURERS SPECS. & ICC-ES ESR-2508
(E) FOOTING & SLAB
6"
U.O.N. #4 DOWELS @ 24"O.C.
6"

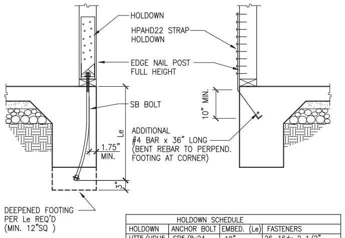
3 NEW SLAB TO (E) FOOTING

20

16


SIMPSON PBS
#4 DOWEL @ 24"O.C. EPOXY 6" INTO (E) SLAB
SAW-CUT EXISTING SLAB FOR NEW FOOTING
20"
#5 @ 12"O.C. E.W.
SEE PLAN

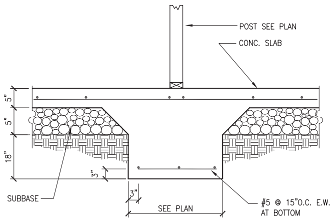
12


HOLDOWN
HPAHD22 STRAP HOLDOWN
EDGE NAIL POST FULL HEIGHT
SB BOLT
10" MIN.
Le
1.75" MIN.
ADDITIONAL #4 BAR x 36" LONG (BENT REBAR TO PERPEND. FOOTING AT CORNER)
3"
DEEPENED FOOTING PER Le REQ'D (MIN. 12"SQ)

HOLDOWN SCHEDULE

HOLDOWN	ANCHOR BOLT	EMBED. (Le)	FASTENERS
HTT5/HDU5	SB5/8x24	18"	26-16dx 2 1/2"
HDU8	SB7/8x24	18"	20-SDS1/4"x2 1/2"
HDU11	SB1x30	24"	30-SDS1/4"x2 1/2"
HDU14	SB1x30	24"	36-SDS1/4"x2 1/2"

8 TYPICAL HOLDOWN


POST SEE PLAN
CONC. SLAB
5"
5"
18"
3"
3"
SUBBASE
SEE PLAN
#5 @ 15"O.C. E.W. AT BOTTOM

4 INTERIOR PAD FOOTING

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WESLEY W. LIU
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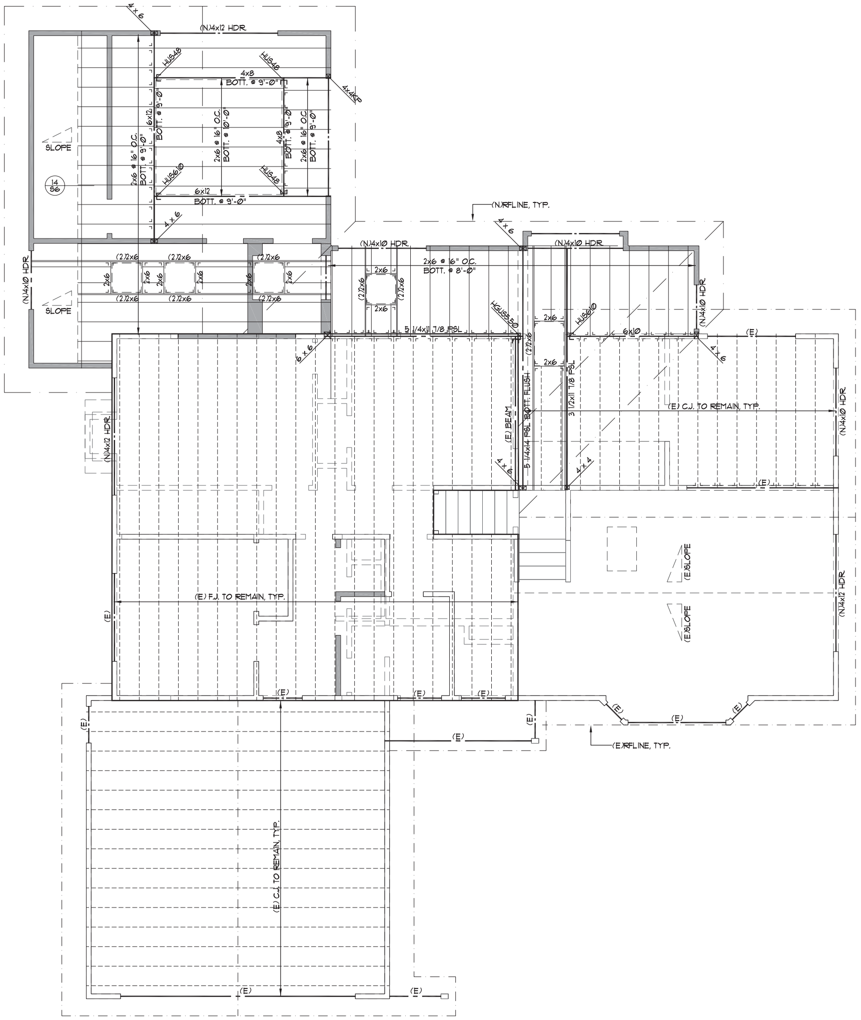
4 x 6
(N)4x12 HDR.
HUS48
4x8
BOTT. @ 9'-0"
4x4KP
SLOPE
14
S6
2x6 @ 16" O.C.
BOTT. @ 9'-0"
6x12
BOTT. @ 9'-0"
2x6 @ 16" O.C.
BOTT. @ 10'-0"
4x8
BOTT. @ 9'-0"
2x6 @ 16" O.C.
BOTT. @ 9'-0"
HUS610
HUS48
6x12
BOTT. @ 9'-0"
4 x 6
(N)RFLINE, TYP.
(N)4x10 HDR.
(2)2x6
2x6
(N)4x10 HDR.
SLOPE
(N)4x10 HDR.
2x6 @ 16" O.C.
BOTT. @ 8'-0"
(N)4x10 HDR.
HGUS5.50
5 1/4x11 7/8 PSL
HUS610
6x10
(E)
4 x 6
6 x 6
(N)4x10 HDR.
(N)4x12 HDR.
(E) BEAM
5 1/4x14 PSL BOTT. FLUSH
3 1/2x11 7/8 PSL
(E) C.J. TO REMAIN, TYP.
(N)4x10 HDR.
4 x 6
4 x 4
(E)
(E)SLOPE
(E) F.J. TO REMAIN, TYP.
(E)SLOPE
(N)4x12 HDR.
(E)
(E)RFLINE, TYP.
(E) C.J. TO REMAIN, TYP.

CEILING FRAMING PLAN

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

ADDITION AND REMODELING:

1. EXISTING CONSTRUCTION SHOWN ON DRAWINGS WAS OBTAINED FROM EXISTING DRAWINGS, OR BY FIELD MEASUREMENTS, OR BASED ON BEST ASSUMPTION SINCE EXISTING STRUCTURE IS NOT EXPOSED FOR OBSERVATION.
2. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS AND DIMENSIONS PRIOR TO STARTING CONSTRUCTION.
3. CUTTING, DRILLING, REMOVAL...ETC. OF THE EXISTING CONSTRUCTION SHALL BE PERFORMED IN A GREAT CARE NOT TO DAMAGE THE INTEGRITY OF THE BUILD'G.
4. NO EXISTING MEMBERS MAY BE REMOVED UNLESS THE STRUCTURAL PLANS INDICATES OTHERWISE.
5. IF STRUCTURAL MEMBERS NOT INDICATED FOR REMOVAL ARE INTERFERING WITH THE NEW WORK, THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED.
6. CONTRACTOR SHALL SAFELY SHORE THE EXISTING CONSTRUCTION WHEREVER THE EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF THE NEW WORKS.
7. ALL LOCATIONS WHERE NEW STRUCTURE IS ATTACHED TO EXISTING STRUCTURAL SHALL BE WATERPROOF AND DAMPPROOF.
8. OWNER OR HIS CONTRACTOR TO ENSURE THAT THE NEW ALTERATION WORKS SHALL NOT CAUSE ANY EXISTING MECHANICAL, ELECTRICAL, PLUMBING ETC. SYSTEMS UNOPERATIONAL.
9. EXISTING STUD WALL CAN BE REUSED. HOWEVER, NEW STUD WALL SHALL BE USED IF THE NEW PLATE HEIGHT IS HIGHER. IT IS NOT ACCEPTABLE TO CONSTRUCT A CRIPPLE WALL ON TOP OF THE EXISTING WALL UNLESS BRACES (KICKERS) AT THE HINGE POINT ARE PROVIDED.
10. MEMBERS WITH FIRE DAMAGE, WATER DAMAGE(DECAY) OR MOLD SHALL BE REPLACED WITH SAME SIZE MEMBER.

CEILING FRAMING NOTES:

1. 2x8 DF#2 @ 16"O.C. MAXIMUM SPAN 18'–0"
2. 2x6 DF#2 @ 16"O.C. MAXIMUM SPAN 14'–0"
3. REFER TO SHEAR WALL SCHEDULE FOR SHEAR WALL BLOCK NAILINGS AT CEILING LEVEL.
4. U.O.N. ALL EXTERIOR WALL HEADERS SHALL BE 4x12 DF#2 @ 2x4 WALLS OR 6x8 DF#1 AT 2x6 WALLS.
5. U.O.N. ALL EXTERIOR WALL EXCEED 10 FEET IN HEIGHT SHALL BE 2x6 @ 16"O.C.
6. U.O.N. FOR NON–BEARING WALL, 2x4 STUD @ 16"O.C. CAN BE UP TO 14 FEET AND 2x6 STUD @ 16"O.C. CAN BE UP TO 20 FEET HEIGHT.
7. U.O.N. SHEAR MATERIAL (PLYWOOD) SHALL BE APPLIED UP TO ROOF.
8. ALL EXTERIOR WALL AND ALONG THE INTERIOR SHEAR WALL SHALL HAVE CONTINUOUS TOP PLATES PER DETAIL 1/S5
9. SEE ALL PERTINENT INFORMATION IN STRUCTURAL NOTES ON SHEET S0.

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WESLEY W. LIU
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Wesley Liu

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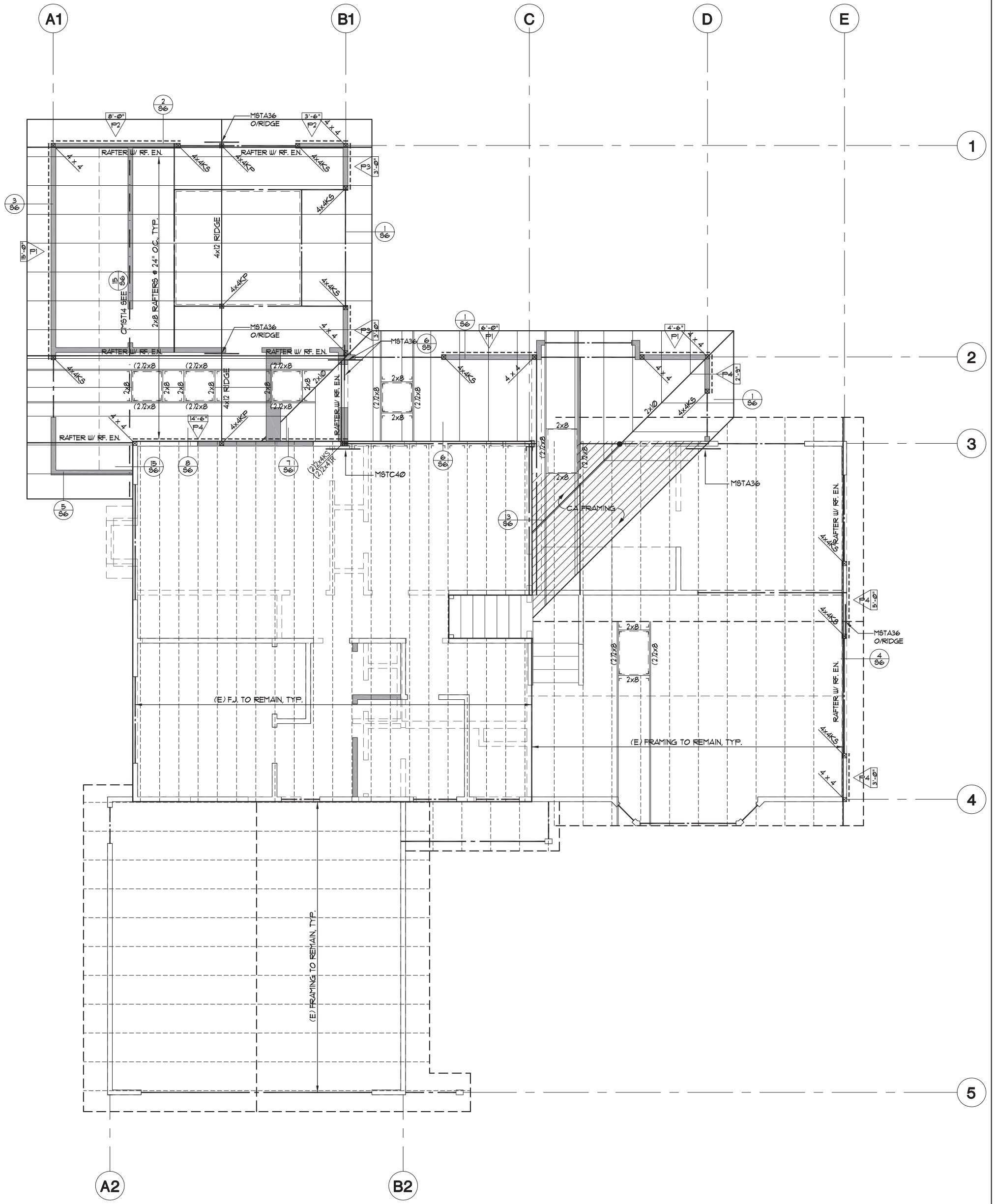

ROOF FRAMING PLAN

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

ADDITION AND REMODELING:

1. EXISTING CONSTRUCTION SHOWN ON DRAWINGS WAS OBTAINED FROM EXISTING DRAWINGS, OR BY FIELD MEASUREMENTS, OR BASED ON BEST ASSUMPTION SINCE EXISTING STRUCTURE IS NOT EXPOSED FOR OBSERVATION.
2. CONTRACTOR SHALL VERIFY ALL EXISTING FIELD CONDITIONS AND DIMENSIONS PRIOR TO STARTING CONSTRUCTION.
3. CUTTING, DRILLING, REMOVAL...ETC. OF THE EXISTING CONSTRUCTION SHALL BE PERFORMED IN A GREAT CARE NOT TO DAMAGE THE INTEGRITY OF THE BUILD'G.
4. NO EXISTING MEMBERS MAY BE REMOVED UNLESS THE STRUCTURAL PLANS INDICATES OTHERWISE.
5. IF STRUCTURAL MEMBERS NOT INDICATED FOR REMOVAL ARE INTERFERING WITH THE NEW WORK, THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED.
6. CONTRACTOR SHALL SAFELY SHORE THE EXISTING CONSTRUCTION WHEREVER THE EXISTING SUPPORTS ARE REMOVED TO ALLOW THE INSTALLATION OF THE NEW WORKS.
7. ALL LOCATIONS WHERE NEW STRUCTURE IS ATTACHED TO EXISTING STRUCTURAL SHALL BE WATERPROOF AND DAMPPROOF.
8. OWNER OR HIS CONTRACTOR TO ENSURE THAT THE NEW ALTERATION WORKS SHALL NOT CAUSE ANY EXISTING MECHANICAL, ELECTRICAL, PLUMBING ETC. SYSTEMS UNOPERATIONAL.
9. EXISTING STUD WALL CAN BE REUSED. HOWEVER, NEW STUD WALL SHALL BE USED IF THE NEW PLATE HEIGHT IS HIGHER. IT IS NOT ACCEPTABLE TO CONSTRUCT A CRIPPLE WALL ON TOP OF THE EXISTING WALL UNLESS BRACES (KICKERS) AT THE HINGE POINT ARE PROVIDED.
10. MEMBERS WITH FIRE DAMAGE, WATER DAMAGE(DECAY) OR MOLD SHALL BE REPLACED WITH SAME SIZE MEMBER.

ROOF FRAMING NOTES:

1. ROOF SHEATHING TO BE 1/2" CDX NAILED & PLACED PER STRUCTURAL NOTES ON SHEET S0.
2. U.O.N. ROOF RAFTER SHALL BE 2x8 @ 24"O.C.
3. U.O.N. ALL HIPS, VALLEYS & RIDGES SHALL BE 2x10.
4. U.O.N. PURLIN SHALL BE 2x8 W/2x6 KICKERS @ 48"O.C. TO BEAM/BEARING WALL BELOW.
5. ALL CALIFORNIA ROOF FRAMING SHALL HAVE ROOF CDX AT BOTH UPPER AND LOWER ROOFS.
6. PROVIDE 2x6 COLLAR TIES AT 48"O.C. WITH 5-16D AT EACH END TO RAFTER.
7. ALL EXTERIOR WALLS AND STRUCTURAL WALLS SHALL REFER TO DETAIL 1/S5 FOR TOP PLATE CONTINUITY.
8. U.O.N. ALL EXTERIOR WALL HEADERS SHALL BE 4x12 DF#2 @ 2x4 WALLS OR 6x8 DF#1 AT 2x6 WALLS.
9. U.O.N. ALL EXTERIOR WALL EXCEED 10 FEET IN HEIGHT SHALL BE 2x6 @ 16"O.C.
10. U.O.N. FOR NON-BEARING WALL, 2x4 STUD @ 16"O.C. CAN BE UP TO 14 FEET AND 2x6 STUD @ 16"O.C. CAN BE UP TO 20 FEET HEIGHT.
11. U.O.N. SHEAR MATERIAL (PLYWOOD) SHALL BE APPLIED UP TO ROOF.
12. SEE DETAILS 13,14,15/S6 FOR TYPICAL KICKER DETAIL.
13. SEE ALL PERTINENT INFORMATION IN STRUCTURAL NOTES ON SHEET S0.
14. RAFTER SPAN MORE THAN 8'-0" SHALL HAVE LUS26 HANGER TO RIDGE/HIP/VALLEY.
15. KICKERS SHALL BE 2x6. USE (2)2x4 WHERE KICKER LONGER THAN 6'-0".
16. (2)2x10 HIP/VALLEY CAN BE REPLACED WITH 1 3/4x11 7/8 LVL
17. WRAP ALL NEW EXTERIOR WALLS WITH CDX OR OSB.
18. CONTRACTOR SHALL REVIEW ALL TYPICAL FRAMING DETAILS (e.q. TOP PLATE SPLICE. WALL CORNER CONNECTIONS, SHEAR PANEL NAILING, etc.), SILL NAILING AND BLOCK REQUIREMENTS PER FOOTNOTES IN SHEAR WALL SCHEDULE PRIOR TO STARTING ANY FRAME WORK,

ROOF IS DESIGNED FOR CONCRETE TILE (10psf MAX.)

REVISIONS	BY
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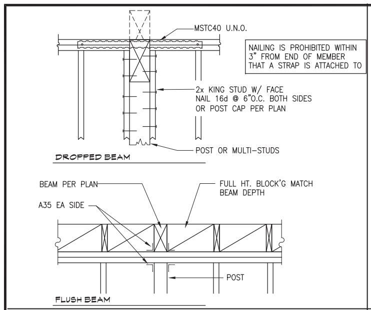
Stamp

WESLEY W. LIU
C 60570
EXP. 12/31/22

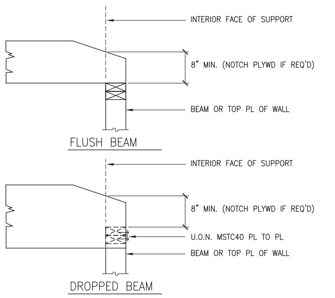
Addition and Remodel
2826 Toyon Drive
Santa Clara, California 95051

Date 06/21/2021
Scale 1/4" = 1'-0"
Drawn By W.L.
Checked
Job No. 210526
Sheet S4

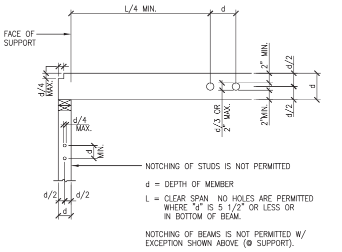

MSTC40 U.N.O.
2x KING STUD W/ FACE NAIL 16d @ 6"O.C. BOTH SIDES OR POST CAP PER PLAN
POST OR MULTI-STUDS
DROPPED BEAM
BEAM PER PLAN
A35 EA SIDE
FULL HT. BLOCK'G MATCH BEAM DEPTH
POST
FLUSH BEAM

NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

17 TYP. BEAM AT SUPPORT


INTERIOR FACE OF SUPPORT
8" MIN. (NOTCH PLYWD IF REQ'D)
BEAM OR TOP PL OF WALL
FLUSH BEAM
INTERIOR FACE OF SUPPORT
8" MIN. (NOTCH PLYWD IF REQ'D)
U.O.N. MSTC40 PL TO PL
BEAM OR TOP PL OF WALL
DROPPED BEAM

13 CLIPPED BEAM AT HIP ROOF


L/4 MIN.
d
FACE OF SUPPORT
2" MIN.
d/2
d
d/4 MAX.
d/3 OR 2" MAX.
2"MIN.
d/2
d/4 MAX.
d MIN.
d/2
d/2
d

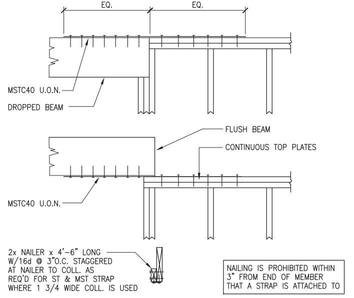
NOTCHING OF STUDS IS NOT PERMITTED

d = DEPTH OF MEMBER

L = CLEAR SPAN NO HOLES ARE PERMITTED WHERE "d" IS 5 1/2" OR LESS OR IN BOTTOM OF BEAM.

NOTCHING OF BEAMS IS NOT PERMITTED W/ EXCEPTION SHOWN ABOVE (@ SUPPORT).

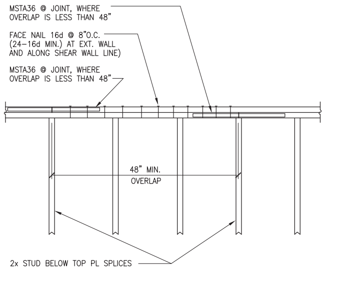
9 HOLES/NOTCHES IN JST & BEAM


EQ.
EQ.
MSTC40 U.O.N.
DROPPED BEAM
FLUSH BEAM
CONTINUOUS TOP PLATES
MSTC40 U.O.N.

2x NAILER x 4'-6" LONG W/16d @ 3"O.C. STAGGERED AT NAILER TO COLL. AS REQ'D FOR ST & MST STRAP WHERE 1 3/4 WIDE COLL. IS USED

NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

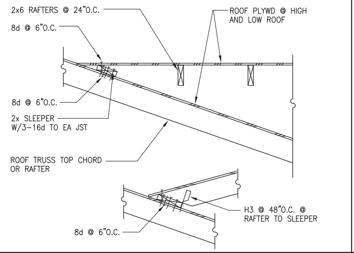
5 BEAM-TOP PL STRAP


MSTA36 @ JOINT, WHERE OVERLAP IS LESS THAN 48"
FACE NAIL 16d @ 8"O.C. (24-16d MIN.) AT EXT. WALL AND ALONG SHEAR WALL LINE)
MSTA36 @ JOINT, WHERE OVERLAP IS LESS THAN 48"
48" MIN. OVERLAP
2x STUD BELOW TOP PL SPLICES

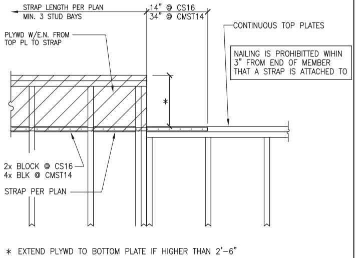
1 TYP. CONTINUOUS TOP PL

18

CA FRAME HIGH ROOF SHALL BE FRAMED WITH 2x6 RAFTER @ 24"O.C. PROVIDE 2x6 PURLIN @ 6 FT ON CENTER W/ 2x4 KICKER @ 48"O.C. TO SLEEPER BELOW. SLEEPER SHALL BE 2x6 LAID FLAT ON CALIFORNIA LOW ROOF W/ (2)-16d TO EACH RAFTER.


2x6 RAFTERS @ 24"O.C.
8d @ 6"O.C.
ROOF PLYWD @ HIGH AND LOW ROOF
8d @ 6"O.C.
2x SLEEPER W/3-16d TO EA JST
ROOF TRUSS TOP CHORD OR RAFTER
H3 @ 48"O.C. @ RAFTER TO SLEEPER
8d @ 6"O.C.

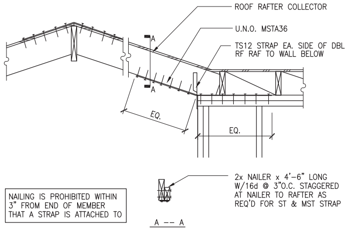
14 TYP. CA FRAME VALLEY


STRAP LENGTH PER PLAN MIN. 3 STUD BAYS
14" @ CS16
34" @ CMST14
CONTINUOUS TOP PLATES
PLYWD W/E.N. FROM TOP PL TO STRAP
*
2x BLOCK @ CS16
4x BLK @ CMST14
STRAP PER PLAN

NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

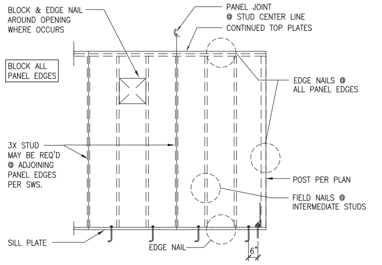
* EXTEND PLYWD TO BOTTOM PLATE IF HIGHER THAN 2'-6"

10 LOW WALL PL-HIGH WALL STRAP


ROOF RAFTER COLLECTOR
U.N.O. MSTA36
TS12 STRAP EA. SIDE OF DBL RF RAF TO WALL BELOW
A
A
EQ.
EQ.
2x NAILER x 4'-6" LONG W/16d @ 3"O.C. STAGGERED AT NAILER TO RAFTER AS REQ'D FOR ST & MST STRAP
A -- A

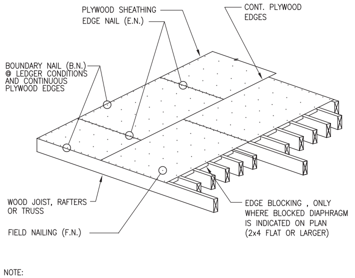
NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

6 STRAP RAF TO TOP PL


BLOCK & EDGE NAIL AROUND OPENING WHERE OCCURS
PANEL JOINT @ STUD CENTER LINE
CONTINUED TOP PLATES
BLOCK ALL PANEL EDGES
EDGE NAILS @ ALL PANEL EDGES
3X STUD MAY BE REQ'D @ ADJOINING PANEL EDGES PER SWS.
POST PER PLAN
FIELD NAILS @ INTERMEDIATE STUDS
SILL PLATE
EDGE NAIL
6"

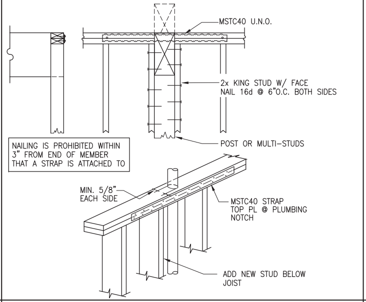
2 TYP. SHEAR WALL

19


PLYWOOD SHEATHING EDGE NAIL (E.N.)
CONT. PLYWOOD EDGES
BOUNDARY NAIL (B.N.) @ LEDGER CONDITIONS AND CONTINUOUS PLYWOOD EDGES
WOOD JOIST, RAFTERS OR TRUSS
FIELD NAILING (F.N.)
EDGE BLOCKING , ONLY WHERE BLOCKED DIAPHRAGM IS INDICATED ON PLAN (2x4 FLAT OR LARGER)

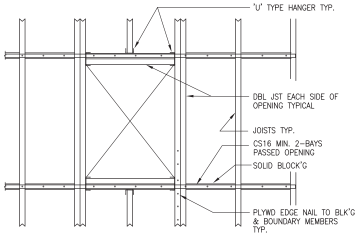
NOTE:
PLYWOOD DIAPHRAGM IS UNBLOCKED , UNLESS NOTED ON PLAN OR G.S.N.

15 TYPICAL PLYWOOD LAYOUT


MSTC40 U.N.O.
2x KING STUD W/ FACE NAIL 16d @ 6"O.C. BOTH SIDES
POST OR MULTI-STUDS
MIN. 5/8" EACH SIDE
MSTC40 STRAP TOP PL @ PLUMBING NOTCH
ADD NEW STUD BELOW JOIST

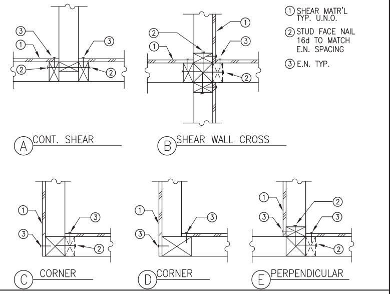
NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

11 STRAP AT TOP PL BREAK


'U' TYPE HANGER TYP.
DBL JST EACH SIDE OF OPENING TYPICAL
JOISTS TYP.
CS16 MIN. 2-BAYS PASSED OPENING
SOLID BLOCK'G
PLYWD EDGE NAIL TO BLK'G & BOUNDARY MEMBERS TYP.

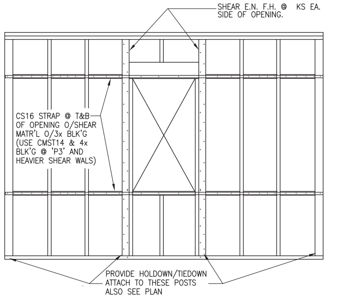
NOTE: THIS DETAIL IS FOR TYPICAL CONDITION AND SHALL BE APPLIED U.O.N. OR SHOWN ON PLANS.

7 TYP OPNG AT FLOOR / ROOF

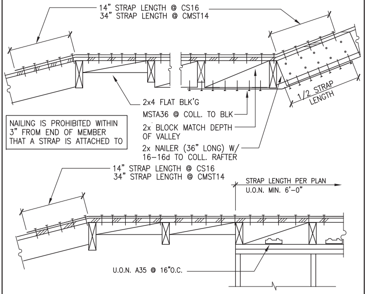

① SHEAR MATR'L TYP. U.N.O.
② STUD FACE NAIL 16d TO MATCH E.N. SPACING
③ E.N. TYP.
A CONT. SHEAR
B SHEAR WALL CROSS
C CORNER
D CORNER
E PERPENDICULAR

3 TYP. CORNER SHEAR

20

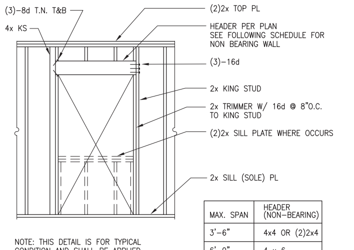

SHEAR E.N. F.H. @ KS EA. SIDE OF OPENING.
CS16 STRAP @ T&B OF OPENING O/SHEAR MATR'L O/3x BLK'G (USE CMST14 & 4x BLK'G @ "P3" AND HEAVIER SHEAR WALS)
PROVIDE HOLDOWN/TIEDOWN ATTACH TO THESE POSTS ALSO SEE PLAN

16 STRAP AT SHEAR WALL OPENING


14" STRAP LENGTH @ CS16
34" STRAP LENGTH @ CMST14
1/2 STRAP LENGTH
2x4 FLAT BLK'G
MSTA36 @ COLL. TO BLK
2x BLOCK MATCH DEPTH OF VALLEY
2x NAILER (36" LONG) W/ 16-16d TO COLL. RAFTER
14" STRAP LENGTH @ CS16
34" STRAP LENGTH @ CMST14
STRAP LENGTH PER PLAN U.O.N. MIN. 6'-0"
U.O.N. A35 @ 16"O.C.

NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

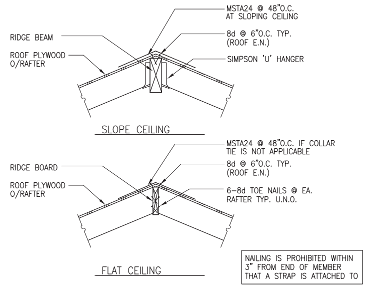
12 STRAP ON ROOF


(3)-8d T.N. T&B
4x KS
(2)2x TOP PL
HEADER PER PLAN SEE FOLLOWING SCHEDULE FOR NON BEARING WALL
(3)-16d
2x KING STUD
2x TRIMMER W/ 16d @ 8"O.C. TO KING STUD
(2)2x SILL PLATE WHERE OCCURS
2x SILL (SOLE) PL

MAX. SPAN	HEADER (NON-BEARING)
3'-6"	4x4 OR (2)2x4
6'-0"	4 x 6
8'-0"	4 x 8

NOTE: THIS DETAIL IS FOR TYPICAL CONDITION AND SHALL BE APPLIED U.O.N. OR SHOWN ON PLANS.

8 TYPICAL OPENING IN WALL


MSTA24 @ 48"O.C. AT SLOPING CEILING
RIDGE BEAM
8d @ 6"O.C. TYP. (ROOF E.N.)
ROOF PLYWOOD O/RAFTER
SIMPSON 'U' HANGER
SLOPE CEILING
MSTA24 @ 48"O.C. IF COLLAR TIE IS NOT APPLICABLE
RIDGE BOARD
8d @ 6"O.C. TYP. (ROOF E.N.)
ROOF PLYWOOD O/RAFTER
6-8d TOE NAILS @ EA. RAFTER TYP. U.N.O.
FLAT CEILING

NAILING IS PROHIBITED WITHIN 3" FROM END OF MEMBER THAT A STRAP IS ATTACHED TO

4 TYP. RIDGE

REVISIONS	BY
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Stamp

WESLEY W. LIU
C 60570
EXP. 12/31/22
CIVIL

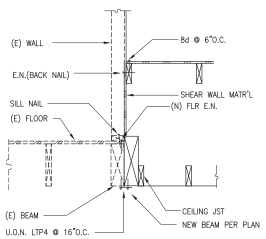
Addition and Remodel

2826 Toyon Drive
Santa Clara, California 95051

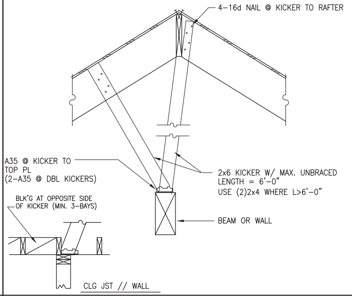
Date 06/21/2021
Scale 3/4" = 1'-0"
Drawn By W.L.
Checked
Job No. 210526
Sheet

S5

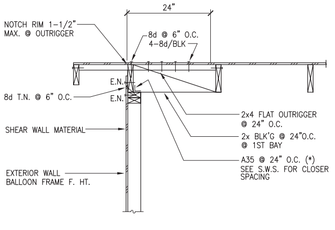
17


(E) WALL
8d @ 6"O.C.
E.N.(BACK NAIL)
SHEAR WALL MATR'L
SILL NAIL
(N) FLR E.N.
(E) FLOOR
CEILING JST
(E) BEAM
NEW BEAM PER PLAN
U.O.N. LTP4 @ 16"O.C.

13

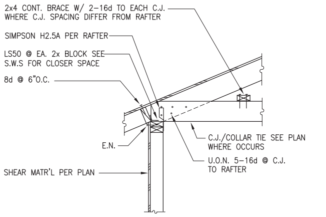

4-16d NAIL @ KICKER TO RAFTER
A35 @ KICKER TO TOP PL (2-A35 @ DBL KICKERS)
2x6 KICKER W/ MAX. UNBRACED LENGTH = 6'-0" USE (2)2x4 WHERE L>6'-0"
BLK'G AT OPPOSITE SIDE OF KICKER (MIN. 3-BAYS)
BEAM OR WALL
CLG JST // WALL

9 TYPICAL KICKER


24"
NOTCH RIM 1-1/2" MAX. @ OUTRIGGER
8d @ 6" O.C.
4-8d/BLK
E.N.
8d T.N. @ 6" O.C.
E.N.
2x4 FLAT OUTRIGGER @ 24" O.C.
2x BLK'G @ 24"O.C. @ 1ST BAY
SHEAR WALL MATERIAL
A35 @ 24" O.C. (*) SEE S.W.S. FOR CLOSER SPACING
EXTERIOR WALL BALLOON FRAME F. HT.

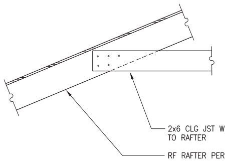
* A35 IS NOT REQ'D WHERE PLYWOOD LAPPED

5 BALLOON FRAMING GABLE END

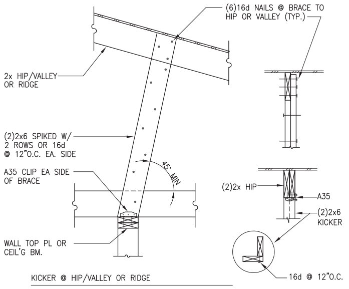

2x4 CONT. BRACE W/ 2-16d TO EACH C.J. WHERE C.J. SPACING DIFFER FROM RAFTER
SIMPSON H2.5A PER RAFTER
LS50 @ EA. 2x BLOCK SEE S.W.S FOR CLOSER SPACE
8d @ 6"O.C.
C.J./COLLAR TIE SEE PLAN WHERE OCCURS
E.N.
U.O.N. 5-16d @ C.J. TO RAFTER
SHEAR MATR'L PER PLAN

1 ROOF EAVE

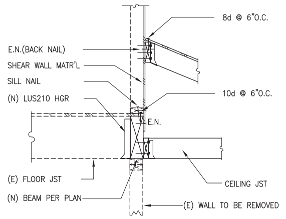
18


2x6 CLG JST W/ 5-16d TO RAFTER
RF RAFTER PER PLAN

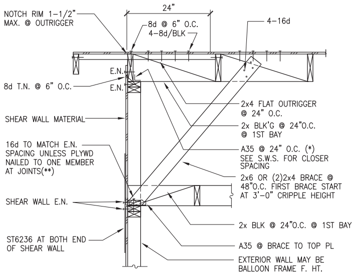
14


(6)16d NAILS @ BRACE TO HIP OR VALLEY (TYP.)
2x HIP/VALLEY OR RIDGE
(2)2x6 SPIKED W/ 2 ROWS OR 16d @ 12"O.C. EA. SIDE
45° MIN
A35 CLIP EA SIDE OF BRACE
(2)2x HIP
A35
(2)2x6 KICKER
WALL TOP PL OR CEIL'G BM.
16d @ 12"O.C.
KICKER @ HIP/VALLEY OR RIDGE

10 TYPICAL KICKER


8d @ 6"O.C.
E.N.(BACK NAIL)
SHEAR WALL MATR'L
SILL NAIL
10d @ 6"O.C.
(N) LUS210 HGR
E.N.
(E) FLOOR JST
CEILING JST
(N) BEAM PER PLAN
(E) WALL TO BE REMOVED

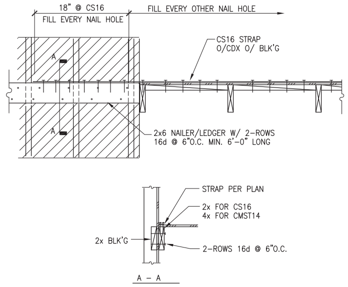
6


24"
NOTCH RIM 1-1/2" MAX. @ OUTRIGGER
8d @ 6" O.C.
4-8d/BLK
4-16d
E.N.
8d T.N. @ 6" O.C.
E.N.
2x4 FLAT OUTRIGGER @ 24" O.C.
SHEAR WALL MATERIAL
2x BLK'G @ 24"O.C. @ 1ST BAY
16d TO MATCH E.N. SPACING UNLESS PLYWD NAILED TO ONE MEMBER AT JOINTS(**)
A35 @ 24" O.C. (*) SEE S.W.S. FOR CLOSER SPACING
2x6 OR (2)2x4 BRACE @ 48"O.C. FIRST BRACE START AT 3'-0" CRIPPLE HEIGHT
SHEAR WALL E.N.
2x BLK @ 24"O.C. @ 1ST BAY
ST6236 AT BOTH END OF SHEAR WALL
A35 @ BRACE TO TOP PL
EXTERIOR WALL MAY BE BALLOON FRAME F. HT.

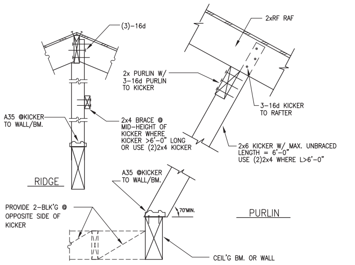
* A35 IS NOT REQ'D WHERE PLYWOOD LAPPED
** 3x MEMBER REQ'D AT PLYWD JOINT FOR P3 & HEAVIER SHEARWALL

2 GABLE END ROOF

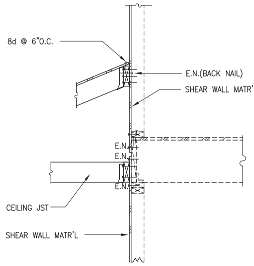
19


18" @ CS16
FILL EVERY NAIL HOLE
FILL EVERY OTHER NAIL HOLE
CS16 STRAP O/CDX O/ BLK'G
A
A
2x6 NAILER/LEDGER W/ 2-ROWS 16d @ 6"O.C. MIN. 6'-0" LONG
STRAP PER PLAN
2x FOR CS16
4x FOR CMST14
2x BLK'G
2-ROWS 16d @ 6"O.C.
A - A

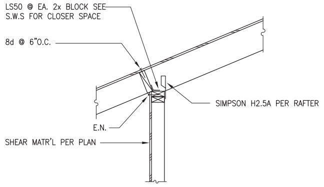
15


(3)-16d
2xRF RAF
2x PURLIN W/ 3-16d PURLIN TO KICKER
3-16d KICKER TO RAFTER
A35 @KICKER TO WALL/BM.
2x4 BRACE @ MID-HEIGHT OF KICKER WHERE KICKER >6'-0" LONG OR USE (2)2x4 KICKER
2x6 KICKER W/ MAX. UNBRACED LENGTH = 6'-0" USE (2)2x4 WHERE L>6'-0"
RIDGE
A35 @KICKER TO WALL/BM.
70° MIN.
PURLIN
PROVIDE 2-BLK'G @ OPPOSITE SIDE OF KICKER
CEIL'G BM. OR WALL

11 TYPICAL KICKER


8d @ 6"O.C.
E.N.(BACK NAIL)
SHEAR WALL MATR'L
E.N.
E.N.
E.N.
CEILING JST
SHEAR WALL MATR'L

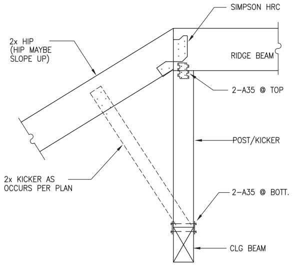
7


LS50 @ EA. 2x BLOCK SEE S.W.S FOR CLOSER SPACE
8d @ 6"O.C.
SIMPSON H2.5A PER RAFTER
E.N.
SHEAR MATR'L PER PLAN

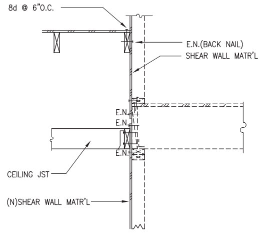
3 ROOF EAVE

20

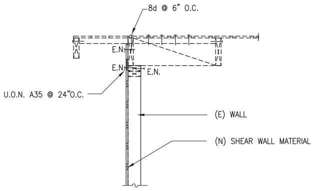
16


SIMPSON HRC
2x HIP (HIP MAYBE SLOPE UP)
RIDGE BEAM
2-A35 @ TOP
POST/KICKER
2x KICKER AS OCCURS PER PLAN
2-A35 @ BOTT.
CLG BEAM

12 TYPICAL KICKER


8d @ 6"O.C.
E.N.(BACK NAIL)
SHEAR WALL MATR'L
E.N.
E.N.
E.N.
CEILING JST
(N)SHEAR WALL MATR'L

8


8d @ 6" O.C.
E.N.
E.N.
E.N.
U.O.N. A35 @ 24"O.C.
(E) WALL
(N) SHEAR WALL MATERIAL

4 (N) PLYWD @ (E) WALL

REVISIONS	BY
△	
△	
△	
△	
△	
△	
△	
△	

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Stamp

Wesley W. Liu
C 60570
EXP. 12/31/22

Addition and Remodel
2826 Toyon Drive
Santa Clara, California 95051

Date 06/21/2021
Scale 3/4" = 1'-0"
Drawn By W.L.
Checked
Job No. 210526
Sheet S6