GENERAL NOTES

1. APPLICABLE FEES AND PERMITS:
   OWNER/CONTRACTOR WILL PAY FOR THE BUILDING PERMIT AND OBTAIN IT. IT IS THE RESPONSIBILITY OF THE OWNER TO OBTAIN AND PAY FOR ALL TRADE PERMITS, MISCELLANEOUS FEES, INSPECTIONS, AND TAXES.
2. CONSTRUCTION DOCUMENTS:
   THE CONSTRUCTION DOCUMENTS CONSIST OF THESE DRAWINGS AND THE PROJECT MANUAL FOR THIS ISSUANCE. DRAWINGS REPRESENT THE QUANTITY AND LOCATION OF THE WORK. THE PROJECT MANUAL INDICATES THE QUALITY OF THE WORK. ALL TRADES SHALL BE REQUIRED TO MEET THE REQUIREMENTS OF THESE DOCUMENTS AND SUBSEQUENT INFORMATION PROVIDED FOR THIS PROJECT.
3. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, MATERIALS, AND SERVICES NECESSARY FOR COMPLETION OF ALL WORK SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS.
4. ALL WORK SHALL CONFORM TO ALL APPLICABLE BUILDING CODES, ORDINANCES, AND REGULATIONS AS ADOPTED BY LOCAL AUTHORITIES HAVING JURISDICTION, INCLUDING THE:
   - 2022 CALIFORNIA GREEN BUILDING CODE
   - 2022 CALIFORNIA RESIDENTIAL CODE
   - 2022 CALIFORNIA PLUMBING CODE
   - 2022 CALIFORNIA MECHANICAL CODE
   - 2022 CALIFORNIA ELECTRIC CODE
   - 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
   - 2022 CALIFORNIA ENERGY CODE
   - 2022 CALIFORNIA FIRE CODE
5. DIMENSIONS ON DRAWINGS ARE SHOWN TO CENTER LINE OF COLUMNS AND TO FACE OF OR CENTER OF STUD AT WALLS AND PARTITIONS UNLESS NOTED OTHERWISE.
6. DO NOT SCALE DRAWINGS.
7. STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, CIVIL, AND LANDSCAPE DRAWINGS ARE SUPPLEMENTAL TO THE DRAWINGS. THE CONTRACTOR SHALL REVIEW ALL PLANS AND DRAWINGS IN THE EVENT OF CONFLICTING STATEMENTS, INSUFFICIENT INFORMATION OR ERRORS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DESIGNER AND OBTAIN CLARIFICATION BEFORE ANY WORK IS BEGUN. WORK INSTALLED WHERE CONFLICTING CONDITIONS EXIST SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE.
8. DIMENSIONS, DETAILS, NOTES, AND/OR SYMBOLS THAT APPLY TO ONE UNIT, APPLY TO ALL UNITS IN LIKE SITUATIONS UNLESS NOTED OTHERWISE.
9. DETAILS NOTED AS 'TYPICAL' SHALL APPLY IN ALL LIKE CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE NO SPECIFIC DETAIL IS SHOWN, THE FRAMING OR CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION OF THIS PROJECT.
10. THE GENERAL CONTRACTOR AND ALL SUBCONTRACTORS SHALL VERIFY ALL DIMENSIONS AND CONDITIONS ON THE JOB SITE PRIOR TO BEGINNING CONSTRUCTION AND SHALL REPORT ANY DISCREPANCIES OR UNIDENTIFIED CONDITIONS TO THE DESIGNER FOR RESOLUTION BEFORE ANY WORK IS BEGUN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES AND PROCEDURES EMPLOYED IN THE PERFORMANCE OF WORK IN, ON OR ABOUT THE JOB SITE: THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL WORK PERFORMED BY SUBCONTRACTORS.
12. ALL CONTRACTORS AND SUBCONTRACTORS PERFORMING WORK ON, OR RELATED TO THIS PROJECT SHALL CONDUCT THEIR OPERATIONS SO THAT ALL EMPLOYEES ARE PROVIDED A SAFE PLACE TO WORK AND THE PUBLIC IS PROTECTED, AND SHALL COMPLY WITH THE "OCCUPATIONAL SAFETY AND HEALTH REGULATION" OF THE U.S. DEPARTMENT OF LABOR AND WITH ANY AND ALL OTHER APPLICABLE STATE AND/OR LOCAL SAFETY REGULATIONS. THE CONTRACTOR AGREES TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE SAFETY CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS THE OWNER AND ARCHITECT FROM ANY AND ALL LIABILITY REAL OR ALLEGED, IN CONNECTION WITH PERFORMANCE OF WORK ON THIS PROJECT.
13. THE STRUCTURE IS DESIGNED AS A STABLE UNIT AFTER ALL COMPONENTS ARE IN PLACE. THE CONTRACTOR SHALL PROVIDE ALL SHORING AND BRACING NECESSARY TO ENSURE THE STABILITY OF ANY AND ALL PARTS OF THE BUILDING DURING CONSTRUCTION.
14. UNLESS SPECIFICALLY SHOWN OR NOTED ON THE DRAWINGS, NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, BORED, OR OTHERWISE MODIFIED WITHOUT PERMISSION OF THE DESIGNER.
15. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL STIFFENERS, BRACING, PLATES AND SUPPORTS, WHETHER OR NOT DETAILED ON THE DRAWINGS, FOR MECHANICAL, ELECTRICAL, OR MISCELLANEOUS EQUIPMENT.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING APPROVAL AND PERMITS FOR ALL DESIGN/BUILD SYSTEMS. HE SHALL ALSO BE RESPONSIBLE THAT THE SYSTEMS MEET ALL APPLICABLE CODE REQUIREMENTS.
17. ANY MODIFICATIONS TO THE BUILDING SHELL RESULTING FROM DESIGN/BUILD REQUIREMENTS SHALL BE REPORTED TO THE OWNER AND DESIGNER ALONG WITH ANY REQUIRED COSTS OR SAVINGS PRIOR TO CONSTRUCTION. ANY MODIFICATIONS NOT REPORTED WILL BE THE CONTRACTOR'S RESPONSIBILITY FOR COORDINATION, CODE CONFORMANCE AND COST.
18. IF NECESSARY THE CONTRACTOR SHALL SUBMIT A SOIL REPORT AND A COMPACTION REPORT TO THE BUILDING DEPARTMENT FOR APPROVAL PRIOR TO FOUNDATION INSPECTIONS.
19. THE CONTRACTOR IS RESPONSIBLE TO VERIFY LOCATION OF ALL SITE UTILITIES AND TO COORDINATE AND AVOID CONFLICT IN THE LOCATIONS OF NEW UNDERGROUND AND SITE UTILITIES. THE CONTRACTOR SHALL INCLUDE ALL NECESSARY FEES, METERS/AND CONNECTIONS IN HIS BID.
20. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND DESIGNER SHOULD UNIDENTIFIED FIELD CONDITIONS BE DISCOVERED.

APPLICABLE CODES

THE CITY OF NATIONAL CITY USES THE:

2022 CALIFORNIA BUILDING, ELECTRICAL, MECHANICAL, PLUMBING, ENERGY, FIRE, RESIDENTIAL AND GREEN CODES.

THIS PROJECT WILL BE IN COMPLIANCE WITH THE CURRENT EDITIONS OF NFPA, CFC, TITLE 19 AND LOCAL CITY OF NATIONAL CITY MINICIPAL CODE

1

DEFERRED SUBMITTALS

1. NONE

1

ENERGY EFFICIENCY -TITLE 24 NOTES

SEE TITLE - 24 SHEETS:

GRADING AND DRAINAGE NOTE

GRADING IS LIMITED TO THE EXCAVATION REQUIRED FOR THE FOUNDATION AND FOOTINGS AND DOES NOT EXCEEDED 50 CUBIC YARDS OF MATERIAL.

REFER TO REVISED SITE PLAN SHEET A2.1.1 FOR NOTES AND FURTHER MUNICIPAL CODE REQUIREMENTS.

HISTORICAL REVIEW

1. NONE

FIRE DEPARTMENT NOTES

SMOKE DETECTORS SHALL BE INSTALLED (IF NOT ALREADY IN PLACE) IN ALL SLEEPING ROOMS AND ADJOINING HALLWAYS.

CO DETECTORS SHALL BE INSTALLED AS SHOWN ON A4.0 PLAN AND SHALL BE INTERCONNECTED SUCH THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL.

SOILS REPORT

A SOILS INVESTIGATION WAS NOT PERFORMED AND BEARING PRESSURES ASSUMED ARE CODE MIN. ALLOWABLE OF 1500 PSF PER TABLE 1806.2, 2022 CBC.
THIS SOIL WILL BE LOCATED ENTIRELY ON NATIVE/UNDISTURBED SOILS
IF THE BUILDING INSPECTOR SUSPECTS FILL, EXPANSIVE SOILS OR ANY GEOLOGIC INSTABILITY BASED UPON OBSERVATION OF THE FOUNDATION EXCAVATION, A SOILS OR GEOLOGICAL REPORT, AND RESUBMITTAL OF THE PLANS TO PLAN CHECK WILL OCCUR TO VERIFY THAT THE REPORT RECOMMENDATIONS HAVE BEEN INCORPORATED, MAY BE REQUIRED.

CAL GREEN BUILDING STANDARDS

THE SITE SHALL BE PLANNED AND DEVELOPED TO KEEP WATER AWAY FROM THE BUILDING. PLANS SHALL BE PROVIDED AND APPROVED BY THE CITY ENGINEER THAT SHOW SITE SHADING AND PROVIDE FOR STORM WATER RETENTION AND DRAINAGE DURING CONSTRUCTION. BMPS THAT ARE CAREFULLY ENFORCED BY THE CITY ENGINEER MUST BE IMPLEMENTED PRIOR TO INITIAL INSPECTION BY THE BUILDING DEPARTMENT.

A MINIMUM OF 50% OF CONSTRUCTION WASTE GENERATED AT THE SITE SHALL BE DIVERTED TO RECYCLE OR SALVAGE PER CGSBSC SECTION 4.408.1 AND CITY ORDINANCE.

THE BUILDER IS TO PROVIDE A COMPLETE OPERATION MANUAL CONTAINING INFORMATION FOR MAINTAINING APPLIANCES, ETC. FOR THE OWNER AT THE TIME OF FINAL INSPECTION. CONTRACTOR OR OWNER SHALL SUBMIT AN AFFIDAVIT THAT CONFIRMS THE DELIVERY OF THE MAINTENANCE MANUAL (CGSBSC 4.410.1)

DURING CONSTRUCTION DUCT OPENINGS AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED, (CGSBSC 4.504.1)

ADHESIVES, SEALANTS, AND CAULKS SHALL BE COMPLIANT WITH VOC AND OTHER TOXIC COMPOUND LIMITS, (CGSBSC 4504..2.1)

PAINTS, STAINS, AND OTHER COATINGS SHALL BE COMPLIANT WITH VOC LIMITS (CGSBSC 4.504.2.2)

AEROSOL PAINTS AND COATINGS SHALL BE COMPLIANT WITH PRODUCT WEIGHED MIR LIMITS FOR VOC AND OTHER TOXIC COMPOUNDS (CGSBSC 4.504.2.3)

DOCUMENTATION SHALL BE PROVIDED TO VERIFY THAT COMPLIANT VOC LIMIT FINISH MATERIALS HAVE BEEN USED. A LETTER FROM THE CONTRACTOR AND OR THE BUILDING OWNER CERTIFYING WHAT MATERIAL HAS BEEN USED AND ITS COMPLIANCE WITH CODE MUST BE SUBMITTED TO THE BUILDING INSPECTOR (CGSBSC 45042.4)

CARPET AND CARPET SYSTEMS SHALL BE COMPLIANT WITH VOC LIMITS. A LETTER FROM THE CONTACTOR OR THE BUILDING OWNER CERTIFYING WHAT MATERIAL HAS BEEN USED AND ITS COMPLIANCE WITH THE CODE MUST BE SUBMITTED TO THE BUILDING INSPECTOR (CGSBSC 4504.3)

50% OF THE FLOOR AREA RECEIVING RESILIENT FLOORING SHALL COMPLY WITH THE VOC EMISSION LIMITS DEFINED IN THE COLLABORATIVE FOR HIGH PERFORMANCE SCHOOLS LOW EMITTING MATERIALS LISTOR BE CERTIFIED UNDER RESILIENT FLOOR COVERING INSTITUTE FLOOR SCORE PROGRAM (CGSBSC 4504.4)

PARTICLEBOARD, MEDIUMDENSITY FIBERBOARD (MDF), AND HARDWOOD PLYWOOD USED IN INTERIOR FINISH SYSTEMS SHALL COMPLY WITH LOW FORMALDEHYDE EMISSION STANDARDS. A LETTER FROM THE INSTALLER AND OR THE BUILDING OWNER CERTIFYING WHAT MATERIAL HAS BEEN USED AND ITS COMPLIANCE WITH THE CODE MUST BE SUBMITTED TO THE BUILDING INSPECTOR. (CGSBSC 4504.5)

INTERIOR MOISTURE CONTROL AT THE SLAB ON GRADE FLOORS SHALL BE PROVIDED BY THE SOIL ENGINEER RESPONSIBLE FOR THE PROJECT SOIL REPORT PER CSC SECTION 4.504.2.1, ITEM 3. IF A SOIL ENGINEER HAS NOT PREPARED A SOIL REPORT FOR THIS PROJECT, THE FOLLOWING IS REQUIRED: A 4" THICK BASE OF ½ " ROCK OR LARGER CLEAN AGGREGATE SHALL BE PROVIDED WITH VAPOR BARRIER IN DIRECT CONTACT WITH THE CONCRETE WITH A MIX DESIGN WHICH ADDRESS BLEEDING, SHRINKAGE, AND CURING SHALL BE USED.

AUTOMATIC IRRIGATION SYSTEMS CONTROLLERS INSTALLED AT THE TIME OF FINAL INSPECTION SHALL BE WEATHER OR SOIL MOISTURE BASED CONTROLLERS THAT AUTOMATICALLY ADJUST IRRIGATION IN RESPONSES TO CHANGES IN THE PLANTS NEEDS AS WEATHER CONDITIONS CHANGE.

WEATHER BASED CONTROLLERS WITHOUT RAIN SENSORS OR COMMUNICATON SYSTEMS THAT ACCOUNT FOR LOCAL RAINFALL SHALL HAVE A SEPARATE WIRED OR WIRELESS RAIN SENSOR. BASED. (CGSBSC 304.1)

JOINTS AND OPENINGS, ANNULAR SPACES AROUND PIPES, ELECTIRC CABLES, CONDUITS OR OTHER OPENINGS IN PLATES AT THE EXTERIOR WALLS SHALL BE PROTECTED AGAINST THE PASSAGE OF RODENTS BY CLOSING SUCH OPENINGS WITH CEMENT MORTAR, CONCRETE MASONRY OR SIMILAR METHODS AS ACCEPTABLE TO THE ENFORCING AGENCY. (CGSBSC 4,406.1)

MOISTURE CONTENT OF WOOD SHALL BE EXCEED 19% BEFORE IT IS ENCLOSED IN CONSTRUCTIN. BOUILDING MATERIALS WITH VISIBLE SIGNS OF WATER DANAGE SHOULD NOT BE USED IN CONSTRUCTION.

THE MOISTURE CONTENT OF BUILDING MATERIALS USED IN WALL AND FLOOR FRAMING IS CHECKED BEFORE ENCLOSURE. MOISTURE CONTENT SHALL BE VERIFIED BY EITHER A PROBE TYPE OR CONTACT TYPE MOISTURE METER. A CERTIFICATE OF COMPLIANCE INDICATING DATE OF TEST, LOCATION AND RESULTS ISSUED BY THE FRAMING SUBCONTRACTOR OR GENERAL CONTRACTOR MUST BE SUBMITTED TO THE BILDING INSPECTOR (CGSBSC 4.505.3)

EXHAUST FANS WHICH TERMINATE OUTSIDE THE BUILDING ARE PROVIDED IN EVERY BATHROOM THAT CONTAINS A SHOWER OR TUB UNLESS FUNCTIONS AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDISTAT WHICH CAN ADJUST BETWEEN 50 AND 80 PERCENT. FANS SHALL BE ENERGY STAR COMPLIANT AND DUCTED TO TERMINATE OUTSIDE THE BUILDING.

THE HEATING AND AC SHALL BE SIZED AND SELECTED BY ACCA MANUAL J OR ASHRAE HANDBOOD OR EQUIVALENT. THE DUCTS SHALL BE USED IN ACCORDANCE WITH ONE OF THE ACCA METHODS LISTED IN CGC SECTION 4.501.2

APPLICABLE FEES AND PERMITS:
OWNER/CONTRACTOR WILL PAY FOR THE BUILDING PERMIT AND OBTAIN IT. IT IS THE RESPONSIBILITY OF THE OWNER TO OBTAIN AND PAY FOR ALL TRADE PERMITS, MISCELLANEOUS FEES, INSPECTIONS, AND TAXES.

CONSTRUCTION DOCUMENTS:
THE CONSTRUCTION DOCUMENTS CONSIST OF THESE DRAWINGS AND THE PROJECT MANUAL FOR THIS ISSUANCE. DRAWINGS REPRESENT THE QUANTITY AND LOCATION OF THE WORK. THE PROJECT MANUAL INDICATES THE QUALITY OF THE WORK. ALL TRADES SHALL BE REQUIRED TO MEET THE REQUIREMENTS OF THESE DOCUMENTS AND SUBSEQUENT INFORMATION PROVIDED FOR THIS PROJECT.

PLUMBING NOTES

*ALL PLUMBING FIXTURES AND FITTINGS SHALL BE WATER CONSERVING AND WILL COMPLY WITH THE CPC SECTION 407, 408,411 & 412
*PERMANENT VACUUM BREAKERS SHALL BE INSTALLED ON NEW HOSE BIBBS
*ALL TOILETS/WATER CLOSETS SHALL BE ULTRA LOW FLUSH TYPE WITH A MAXIMUM OF 1.28 GALLONS PER FLUSH (GPF).
*ALL LAVATORY FAUCETS SHALL BE LOW FLOW TYPE WITH A MAXIMUM OF 1.2 GALLONS PER MINUTE (GPM) FLOW RATE.
*KITCHEN FAUCETS MAY NOT EXCEED 1.8 GALLONS PER MINUTE
*ALL SHOWER HEADS SHALL BE LOW FLOW TYPE WITH A MAXIMUM OF 1.8 GALLONS PER MINUTE (GPM) FLOW RATE. SHOWER CONTROLS SHALL BE PRESSURE BALANCED OR HAVE THERMOSTATIC MIXING VALVES.

1

HERS FEATURES NOTES

REQUIRED SPECIAL FEATURES
The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.
- Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)

HERS FEATURE SUMMARY
The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry
- Indoor air quality ventilation
- Kitchen range hood
- Verified Refrigerant Charge
- Airflow in habitable rooms (SC3.1.4.1.7)
- Verified heat pump rated heating capacity
- Wall-mounted thermostat in zones greater than 150 ft2 (SC3.4.5)
- Ductless indoor units located entirely in conditioned space (SC3.1.4.1.8)

MECHANICAL & ELECTRICAL NOTES

PER 2022 GREEN CODE, MECHANICAL EXHAUST FANS WHICH EXHAUST DIRECTLY FROM BATHROOMS SHALL COMPLY WITH THE FOLLOWING:

1. FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE THE BUILDING.
2. UNLESS FUNTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDISTAT WHICH SHALL BE READILY ACCESSIBLE. HUMIDISTAT CONTROLS SHALL BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY RANGE OF 50 TO 80%

-ELECTRICAL OUTLETS SHALL COMPLY WITH NEC. ART. 210.52(a)
-BATHROOM RECEPTACLE OUTLETS SHALL BE SERVED BY A MINIMUM OF (1) 20 AMP BRANCH CIRCUIT. MORE THAN 1 BATHROOM MAY BE SERVED BY THIS CIRCUIT. SUCH CIRCUITS SHALL SERVE NO OTHER SPACES.
-THE PRIMARY SOURCE OF LIGHTING IN THE BATHROOM SHALL BE LED.
-HARD-WIRED SMOKE DETECTORS SHALL BE PLACED IN ALL BEDROOMS AND HALLWAYS LEADING TO BEDROOMS. DETECTORS SHALL HAVE BATTERY BACK-UP. IF THERE ARE EXISTING DETECTORS OVER 10 YEARS OLD, THEY SHALL BE REPLACED.
-HARD-WIRED SMOKE CARBON MONOXIDE DETECTORS SHALL BE PLACED OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOM(S) ON EVERY LEVEL OF THE DWELLING. DETECTORS SHALL HAVE BATTERY BACK-UP.
-BEDROOM BRANCH CIRCUITS SHALL BE ARC-FAULT PROTECTED.
-ALL 12O V, SINGLE PHASE 15 OR 20 a RECEPTACLES AT ALL KITCHEN COUNTERS SHALL COMPLY WITH GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTIONS AS SPECIFIED IN NEC ART. 210-8.

DRAWING INDEX

ARCHITECTURAL INDEX

VICINITY MAP

SCALE: N.T.S.

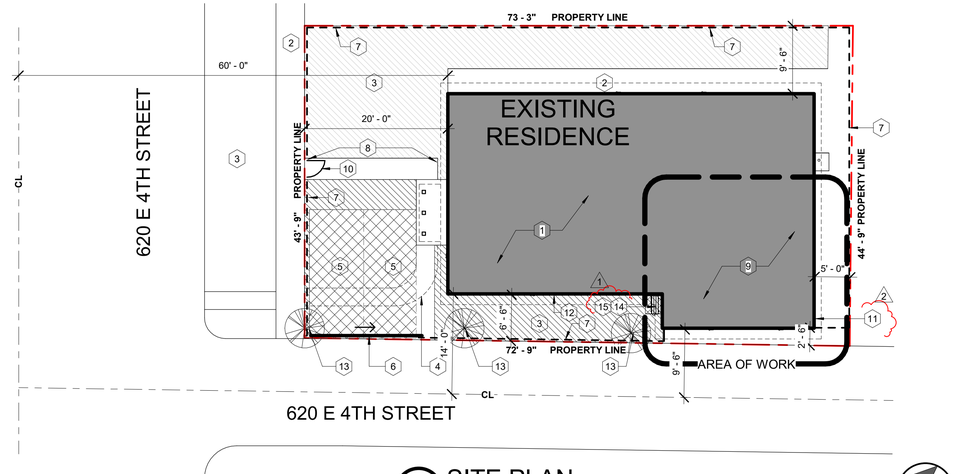
SITE KEY NOTES

KEY #	DESCRIPTION	KEY #	DESCRIPTION	KEY #	DESCRIPTION
1	EXISTING RESIDENCE	7	EXISTING PERIMETER FENCE	13	EXISTING 24-INCH BOX CERCIS OCCIDENTALIS TO REMAIN, *RAIN BIRDRWS-M-B-C-P, MINI ROOT WATERING SYSTEM WITH 4" DIAMETER x 18" LONG WITH LOCKING GRATE, SEMI-RIGID MESH TUBE AND RAIN BIRD 1404 (1.00 gpm; 3.8 l/m) BUBBLER (WITH CHECK VALVE AND GRATE) 30 PSI *HUNTER PROS-PRS30-04-CV-R-MSBN, MULTI-STREAM BUBBLER, 4" POP-UP, FACTORY INSTALLED DRAIN CHECK VALVE, 1 GPM, 30 PSI
2	EXISTING WALKWAY	8	NEW CONCRETE WALK		
3	EXISTING LANDSCAPE	9	AREA OF WORK		
4	EXISTING CONCRETE TO BE DEMOLISHED	10	GATE (RELOCATE FROM EXISTING LOCATION)	14	COMPRESSOR / CONDENSER
5	PROPOSED LOCATION OF PARKING - 8'-0" x 18'-0"	11	EXISTING ELECTRICAL METER, 200 AMP SERVICE	15	220-VOLT DISCONNECT BOX FOR THE AIR CONDITIONING COMPRESSOR UNIT. DISCONNECTING MEAND SHALL BE LOCATED WITHIN SIGH FROM AND READILY ACCESSIBLE FROM THE AIR-CONDITIONING. THE WIDTH OF THE WORKING SPACE INFRONT OF THE ELECTRICAL EQUIPMENT SHALL BE WIDTH OF THE EQUIPMENT 30-INCHES.
6	NEW MOTOR SLIDDING GATE	12	EXISTING GAS METER		

2

NOTES:
1. NEW AND EXISTING BUILDINGS SHALL HAVE APPROVED ADDRESS NUMBERS, BUILDING NUMBERS OR APPROVED BUILDING IDENTIFICATION PLACED IN A POSITION THAT PLAINLY LEGIBLE AND VISIBLE FROM STREET OR ROAD FRONTING THE PROPERTY. THESE NUMBERS SHALL CONSTRAST IN COLOR BACKGROUND. NUMBERS SHALL BE A MINIMUM OF 4" HIGH WITH A MINIMUM STROKE WIDTH OF 1/2 INCH
2. REQUEST FOR INSPECTIONS SHALL BE MADE 48 HOURS IN ADVANCE. INSPECTIONS SHALL BE MADE ONCE WORK IS COMPLETE, UTILIZING APPROVED AND STAMPED PLANS. CONTRACTOR SHALL BE REQUIRED TO HAVE THE APPROVED PLANS ON SITE PER CODE
3. COMPLIANCE WITH THE DOCUMENTATIONS REQUIREMENTS OF THE 2022 ENERGY EFFICIENCY STANDARDS IS NECESSARY FOR THIS PROJECT. REDISTER, SIGNED, AND DATE COPIES OF THE APPROPIATE CF1R, CF2R AND CF3R FORMS SHALL BE MADE AVAILABLE AT NECESSARY INTERVALS FOR BUILDING INSPECTOR REVIEW.
4. PRIOR TO FINAL INSPECTION THE LICENSED CONTRACTOR, ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE OF THE OVERALL CONSTRUCTION MUST PROVIDE TO THE BUILDING DEPARTMENT OFFICIAL WRITTEN VERIFICATION THAT ALL APPLICABLE PROVISIONS FROM THE GREEN BUILDING STANDARDS CODE HAVE BEEN IMPLEMENTED AS PART OF THE CONSTRUCTION. CGC 102.3.

1



1 SITE PLAN
1" = 10'-0"

No.	Description	Date
1	PC#1	03/20/24
2	PC#3	04/29/24

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

DRAWN Y BY: ____

DATE: Issue Date

SCALE: As indicated

DRAWING TITLE:
PROJECT DATA & SITE PLAN

SHEET NUMBER:
A1.0

PROJECT INFORMATION

PROJECT ADDRESS:
620 E 4TH STREET
NATIONAL CITY, CA

PROPERTY OWNERS:
RICARDO H PEREZ

4275 EXECUTIVE SQUARE SUITE 200
LA JOLLA, CALIFORNIA 92037
619 274-2838

DRAFTING:
SERGIO JARAMILLO

970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

SCOPE OF WORK:
CONVERSION OF A 376 SF EXISTING GARAGE TO ADU

ZONING: SINGLE FAMILY RESIDENCE

ACCESSOR'S PARCEL NUMBER: 5562331400

LEGAL DESCRIPTION:
BLK 3*LOTS 18 THRU 20*W 40 FT*

YEAR BUILT: 2005

LOT: 3,279 SF (0.075 AC)

FIRE SPRINKLERS:
EXISTING = NO
PROPOSED= NO

TYPE OF CONSTRUCTION: V-B

BUILDING AREA SUMMARY

EXISTING BUILDING:	1,020 SF
BUILDING HEIGHT:	Existing: 13' - 4" Max

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 1 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

GENERAL INFORMATION

01	Project Name	Garage Conversion			
02	Run Title	Title 24 Analysis			
03	Project Location	620 E 4th St.			
04	City	National City	05	Standards Version	2022
06	Zip code	91950	07	Software Version	EnergyPro 9.2
08	Climate Zone	7	09	Front Orientation (deg/ Cardinal)	140
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Newly Constructed Addition	13	Number of Bedrooms	4
14	Addition Cond. Floor Area (ft²)	400	15	Number of Stories	1
16	Existing Cond. Floor Area (ft²)	1020	17	Fenestration Average U-factor	0.3
18	Total Cond. Floor Area (ft²)	1420	19	Glazing Percentage (%)	12.58%
20	ADU Bedroom Count	1	21	ADU Conditioned Floor Area	400
22	Fuel Type	Natural gas	23	Occupancy Id	No

ADDITION ALONE - Project Analysis Parameters

01	02	03	04	05	06
Existing Area (excl. new addition) (ft2)	Addition Area (excl. existing) (ft2)	Total Area (ft2)	Existing Bedrooms	Addition Bedrooms	Total Bedrooms
1020	400	1420	3	1	4

ADDITION ALONE - ACCESSORY DWELLING UNIT (ADU) PROJECT ANALYSIS PARAMETERS

01	02	03	04	05	06	07	08
Zone Name	Existing Area (excl. new addition) (ft²)	ADU Area (excl. existing) (ft²)	Total Area (ft²)	Existing Bedrooms	Addition Bedrooms	Total Bedrooms	Attached vs. Detached
Garage Conversion Zone	1020	400	1420	3	1	4	Attached

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 2 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

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

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 3 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

ENERGY USE SUMMARY

Energy Use	Standard Design Source Energy (EDR1) (kBtu/ft²-yr)	Standard Design TDV Energy (EDR2) (kTDV/ft²-yr)	Proposed Design Source Energy (EDR1) (kBtu/ft²-yr)	Proposed Design TDV Energy (EDR2) (kTDV/ft²-yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0	0.22	0	0.41	0	-0.19
Space Cooling	0	20.79	0	18.2	0	2.59
IAQ Ventilation	0	5.6	0	5.6	0	0
Water Heating	0	108.91	0	104.91	0	0
Self Utilization/Flexibility Credit						
Efficiency Compliance Total	0	135.52	0	133.12	0	2.4
Photovoltaics		0		0		
Battery		0		0		
Flexibility						
Indoor Lighting	0	7.9	0	7.9		
Appl. & Cooking	0	77.82	0	77.79		
Plug Loads	0	95.08	0	95.08		
Outdoor Lighting	0	6.48	0	6.48		
TOTAL COMPLIANCE	0	322.8	0	320.37		

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 4 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

ENERGY USE INTENSITY

	Standard Design (kBtu/ft² - yr)	Proposed Design (kBtu/ft² - yr)	Compliance Margin (kBtu/ft² - yr)	Margin Percentage
Gross EUI[1]	60.57	60.52	0.05	0.08
Net EUI[2]	60.57	60.52	0.05	0.08

Notes
1. Gross EUI is Energy Use Total (not including PV) / Total Building Area.
2. Net EUI is Energy Use Total (including PV) / Total Building Area.

REQUIRED SPECIAL FEATURES

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

- Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)

HERS FEATURE SUMMARY

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

- Indoor air quality ventilation
- Kitchen range hood
- Verified Refrigerant Charge
- Airflow in habitable rooms (3C3.1.4.1.7)
- Verified heat pump rated heating capacity
- Wall-mounted thermostat in zones greater than 150 ft2 (3C1.4.1)
- Ductless indoor units located entirely in conditioned space (3C3.1.4.1.8)

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft²)	Avg. Ceiling Height	Water Heating System 1	Status
Garage Conversion Zone	Conditioned	New Minisplit1	400	9	DHW Sys 1	New

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 5 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft²)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status
Front Wall	Garage Conversion Zone	R-15 Wall	160	Front	180	16.6	90	Extension	New
Left Wall	Garage Conversion Zone	R-15 Wall	250	Left	180	50	90	Extension	New
Rear Wall	Garage Conversion Zone	R-15 Wall	340	Back	180	0	90	Extension	New
Interior Wall	Garage Conversion Zone	R-15 Wall1	n/a	n/a	180	0	n/a		New
Roof	Garage Conversion Zone	R-30 Roof Attic	n/a	n/a	400	n/a	n/a		New

ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic Garage Conversion Zone	Attic RoofGarage Conversion Zone	Ventilated	4	0.08	0.75	No	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading
Window A	Window	Left Wall	Left	250			1	25	0.3	NFRC	0.23	NFRC	Bug Screen
Window A	Window	Left Wall	Left	250			1	25	0.3	NFRC	0.23	NFRC	Bug Screen

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 6 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

OPAQUE DOORS

01	02	03	04
Name	Side of Building	Area (ft²)	U-factor
Door E	Front Wall	16.6	0.2

SLAB FLOORS

01	02	03	04	05	06	07	08
Name	Zone	Area (ft²)	Perimeter (ft)	Edge Insul, R-value and Depth	Edge Insul, R-value and Depth	Carpeted Fraction	Heated
Slab-on-Grade	Garage Conversion Zone	400	0.1	none	0	80%	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-15 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x6 Exterior Finish: 3 Coat Stucco
R-15 Wall1	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-15	None / None	0.089	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x6 Other Side Finish: Gypsum Board
Attic Roof/Garage Conversion Zone	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / 0	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/Sheathing/Decking Cavity / Frame: no insul, / 2x4
R-30 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 7 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04	05
Quality Insulation Installation (QII)	High R-value Spray Foam Insulation	Building Envelope Air Leakage	CFM50	CFM50
Not Required	Not Required	N/A	n/a	n/a

WATER HEATING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Distribution Type	Water Heater Name	Number of Units	Solar Heating System	Compact Distribution	HERS Verification	Water Heater Name (#)
DHW Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1	1	n/a	None	n/a	DHW Heater 1 (1)

WATER HEATERS

01	02	03	04	05	06	07	08	09	10	11	12	13
Name	Heating Element Type	Tank Type	# of Units	Tank Vol. (gal)	Heating Efficiency Type	Efficiency	Rated Input Type	Input Rating or Pilot	Tank Insulation R-value (hr•ft²•F/Btu)	Standby Loss or Recovery Eff	1st Hr. Rating or Flow Rate	Tank Location
DHW Heater 1	Gas	Small Storage	1	50	EF	0.59	Btu/hr	75000	0	74	n/a	

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Shower Drain Water Heat Recovery
DHW Syt 1 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 8 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type
New Minisplit1	Heat pump heating cooling	Heat Pump System 1	1	Heat Pump System 1	1	n/a	n/a	Setback

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11	12	13
			Heating			Cooling						
Name	System Type	Number of Units	Efficiency Type	HSPF / HSPF2 / COP	Cap 47	Cap 17	Efficiency Type	SEER / SEER2	EER / EER / CEER	Zonally Controlled	Compressor Type	HERS Verification
Heat Pump System 1	VCHP-ductless	1	HSPF	9.2	12000	10000	EKKH18	14	11.5	Not Zonal	Single Speed	Heat Pump System 1-hers-hpsetup

HVAC HEAT PUMPS - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER/EER2	Verified SEER/SEER2	Verified Refrigerant Charge	Verified HSPF/HSPF2	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump System 1-hers-hpsetup	Not Required	0	Not Required	Not Required	Yes	No	Yes	Yes

VARIABLE CAPACITY HEAT PUMP COMPLIANCE OPTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09	10
Name	Certified Low-Static VCHP System	Airflow to Habitable Rooms	Ductless Units in Conditioned Space	Wall Mount Thermostat	Air Filter Sizing &Amp; Pressure Drop Rating	Low Leakage Ducts in Conditioned Space	Minimum Airflow per RA3.3 and SCS.3.3.4.1	Certified non-continuous Fan	Indoor Fan not Running Continuously
Heat Pump System 1	Not required	Required	Required	Required	Not required	Not required	Not required	Not required	Not required

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 9 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

INDOOR AIR QUALITY (IAQ) FANS

01	02	03	04	05	06	07	08	09
Dwelling Unit	Airflow (CFM)	Fan Efficacy (W/CFM)	IAQ Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SRE	Includes Fault Indicator Display?	HERS Verification	Status
SFam ADU IAQfanMpt	27	0.35	Exhaust	No	n/a / n/a	No	Yes	

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD — CF1R-PRF-01E

Project Name: Garage Conversion — **Calculation Date/Time:** 2023-09-28T16:09:59-07:00 — **(Page 10 of 10)**

Calculation Description: Title 24 Analysis — **Input File Name:** 620 E 4th St. - Garage Conversion.ribd22x

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Ricardo Perez	Documentation Author Signature: Ricardo Perez
Company: Estudio75	Signature Date: 2023-09-29 09:03:19
Address: 4275 Executive Square #200	CEA/ HERS Certification Identification (If applicable): R19-19-30062
City/State/Zip: La Jolla, CA 92037	Phone: 619-274-2838

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: Ricardo Perez	Responsible Designer Signature: Ricardo Perez
Company: Estudio75	Date Signed: 2023-09-29 09:04:15
Address: 4275 Executive Square #200	License: R19-19-30062
City/State/Zip: La Jolla, CA 92037	Phone: 619-274-2838

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.

Registration Number: 225-P091934262A-000-000-0000000-0000 — Registration Date/Time: 2023-09-29 01:04:15 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 — Schema Version: rev 20220901 — Report Generated: 2023-09-28 16:10:11

Verify at CalCERTS.com

Estudio75
Ricardo H. Perez
4275 Executive Square Suite#200 La Jolla, CA 92037
(619) 274-2838 / t24.e75@gmail.com

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street, National City, CA

Garage Conversion
620 E 4th St.
National City, CA 91950

Project Address

T01

No.	Description	Date

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

DRAWN Y BY: ___

DATE: Issue Date

SCALE:

DRAWING TITLE: T-24

SHEET NUMBER: A1.1

RESIDENTIAL MEASURES SUMMARY — RMS-1

Project Name	Building Type		Date
Garage Conversion	☑ Single Family ☑ Addition Alone ☐ Multi Family ☐ Existing+ Addition/Alteration		9/28/2023
Project Address	**California Energy Climate Zone**	**Total Cond. Floor Area** / **Addition**	**# of Units**
620 E 4th St. National City	CA Climate Zone 07	400 / 400	1

INSULATION

Construction	Type	Cavity	Area (ft^2)	Special Features	Status
Wall	Wood Framed	R 15	163		New
Door	Opaque Door	R-5	17		Altered
Wall	Wood Framed	R 15	130		New
Wall	Wood Framed	R 15	180		New
Slab	Unheated Slab-on-Grade	– no insulation	400	Perim = 0'	Existing
Roof	Wood Framed Attic	R 30	400	Cool Roof	New
Demising	Wood Framed	R 15	180		Altered

FENESTRATION — Total Area: 50 | Glazing Percentage: 12.5% | New/Altered Average U-Factor: 0.30

Orientation	Area(ft^2)	U-Fac	SHGC	Overhang	Sidefins	Exterior Shades	Status
Left (W)	50.0	0.300	0.23	none	none	N/A	New

HVAC SYSTEMS

Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Electric Heat Pump	8.20 HSPF	Split Heat Pump	14.0 SEER	Setback	New

HVAC DISTRIBUTION

Location	Heating	Cooling	Duct Location	Duct R-Value	Status
New Minisplit	Ductless / No Fan	Ductless	n/a	n/a	New

WATER HEATING

Qty.	Type	Gallons	Min. Eff	Distribution	Status

2022 Single-Family Residential Mandatory Requirements Summary

§ 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.
§ 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:	**Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.** All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code. *
§ 150.0(j)2:	**Insulation Protection.** Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by §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 designate a space at least 2.5' x 2.5' x 7' suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location, and a condensate drain no more than 2' higher than the base of the water heater.
§ 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:

§ 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 CMC §§ 601.0-605.0 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 R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. 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 UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than ¼". If mastic or tape is used. Building cavities, air handler support platforms, 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 these spaces must not be compressed. *
§ 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 due tosunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or painted with a water retardant and solar radiation-resistant coating.
§ 150.0(m)10:	**Porous Inner Core Flex Duct.** Porous inner cores of flex ducts must have a non-porous layer or air barrier 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 Reference Residential Appendix RA3.1.
§ 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. Clean-filter pressure drop and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter. *

2022 Single-Family Residential Mandatory Requirements Summary

§ 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 autonetically 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)2A:	**Accessible Controls**. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off. *
§ 150.0(k)2B:	**Multiple Controls.** Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	**Mandatory Requirements.** Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	**Energy Management Control Systems.** An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	**Automatic Shutoff Controls.** In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic-off functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	**Dimmers.** Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	**Independent controls.** Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 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 have a manual on/off switch and either a photocell and motion sensor or automatic time switch control) or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	**Internally illuminated address signs.** Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 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 §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.

Solar Readiness:

§ 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)-(e).
§110.10(b)1A:	**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. *
§ 110.10(b)2:	**Azimuth.** All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° 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 horizontal distance 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)-(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."

Electric and Energy Storage Ready:

2022 Single-Family Residential Mandatory Requirements Summary

NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information.
(04/2022)

Building Envelope:

§ 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):	**Roof Deck, Ceiling and Rafter Roof Insulation.** Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-framе ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. 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 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 0.45, or area-weighted average U-factor of all fenestration must not exceed 0.45. *

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 110.5(e)	**Pilot Light.** Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(o)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(o)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(o)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:

§ 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-N. *
§ 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)3:	**Insulation.** Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 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.

2022 Single-Family Residential Mandatory Requirements Summary

§ 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. *

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)1B:	**Central Fan Integrated (CFI) Ventilation Systems.** Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per §150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed andcontrolled per §150.0(o)1Biiikliv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with §150.0(o)1C.
§ 150.0(o)1C:	**Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and townhouses** . 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 specified in § 150.0(o)1Ci-iii.
§ 150.0(o)1G:	**Local Mechanical Exhaust.** Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of §150.0(o)1Giiienclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting §150.0(o)1Giii-iv. Airflow must be measured by the installer per §150.0(o)1Gv, and rated for sound per §150.0(o)1Gvi. *
§ 150.0(o)1H&I:	**Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems.** The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-Dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 §7.2 at no less than the minimum airflow rate required by §150.0(o)1C.
§ 150.0(o)2:	**Field Verification and Diagnostic Testing.** Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficacy must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3.to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per §150.0(o)1G

Pool and Spa Systems and Equipment:

§ 110.4(a):	**Certification by Manufacturers.** Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDbS, 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:

§ 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, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openors; navigation lighting less than 5 watts; and lighting internal to drawers, cabinets, and linen closets with an efficacy of at least 45 lumens per watt.
§ 150.0(k)1B:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1C:	**Recessed Downlight Luminaires in Ceilings.** Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	**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)1E:	**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 shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 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). *

2022 Single-Family Residential Mandatory Requirements Summary

§ 150.0(s)	**Energy Storage System (ESS) Ready.** All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, or a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(s). at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator, one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.
§ 150.0(t)	**Heat Pump Space Heater Ready.** Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(u)	**Electric Cooktop Ready.** Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 150.0(v)	**Electric Clothes Dryer Ready.** Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready," and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."

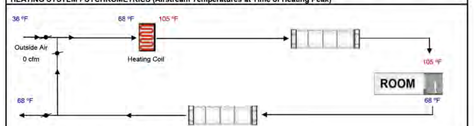
*Exceptions may apply.

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

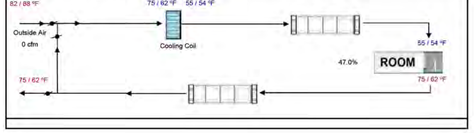
Project Name		Date
Garage Conversion		9/28/2023
System Name		Floor Area
New Minisplit		400

ENGINEERING CHECKS		SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK	
			CFM	Sensible	Latent	CFM	Sensible
Number of Systems	1						
Heating System							
Output per System	12,000	Total Room Loads	267	5,766	287	80	3,186
Total Output (Btuh)	12,000	Return Vented Lighting		0			0
Output (Btuh/sqft)	30.0	Return Air Ducts		0			0
Cooling System		Return Fan		0			0
Output per System	12,000	Ventilation	0	0	0	0	0
Total Output (Btuh)	12,000	Supply Fan		0			0
Total Output (Tons)	1.0	Supply Air Ducts		0			0
Total Output (Btuh/sqft)	30.0						
Total Output (sqft/Ton)	400.0	TOTAL SYSTEM LOAD		5,766	287		3,186
Air System							
CFM per System	0	**HVAC EQUIPMENT SELECTION**					
Airflow (cfm)	0	Minisplit 1 Ton		11,746	0		9,611
Airflow (cfm/sqft)	0.00						
Airflow (cfm/Ton)	0.0						
Outside Air (%)	0.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		11,746	0		9,611
Outside Air (cfm/sqft)	0.00						
Note: values above given at ARI conditions		TIME OF SYSTEM PEAK		Aug 3 PM			Jan 1 AM

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



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



No.	Description	Date

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

Estudio75
Ricardo H. Perez
4275 Executive Square Suite#200 La Jolla, CA 92037
(619) 274-2838 / t24.e75@gmail.com

Garage Conversion
620 E 4th St.
National City, CA 91950

Project Address

T02

DRAWN Y BY: ____
DATE: Issue Date
SCALE:
DRAWING TITLE:
T-24
SHEET NUMBER:
A1.2

INSULATION AT EXTERIOR WALL

INSULATION AT ROOF ATTIC

Table 150.0-G Kitchen Range Hood Airflow Rates (cfm) and ASTM E3087 Capture Efficiency (CE) Ratings According to Dwelling Unit Floor Area and Kitchen Range Fuel Type

Dwelling Unit Floor Area (ft^2)	Hood Over Electric Range	Hood Over Natural Gas Range
>1500	50% CE or 110 cfm	70% CE or 180 cfm
>1000 - 1500	50% CE or 110 cfm	80% CE or 250 cfm
750 - 1000	55% CE or 130 cfm	85% CE or 280 cfm
<750	65% CE or 160 cfm	85% CE or 280 cfm

KITCHEN RANGE HOOD CFM

PANASONIC FV-0511VH1

Specification Submittal Data / Panasonic Ventilation Fan/Heater

Description:
Ventilating fan/heater shall be low noise ceiling mount type rated for continuous run. Fan/heater shall be certified by the Home Ventilating Institute (HVI). Heating elements shall be included. Evaluated by Underwriters Laboratories and conform to both UL and cUL safety standards. Fan/heater is not intended for installation over a tub/shower enclosure.

Motor/Blower:
-Enclosed brushless ECM motor technology rated for continuous run.
-Fan ventilation rates shall be manually adjustable for 50-80-110 CFM.
-Power rating shall be 120 volts and 60 Hz.
-Motor equipped with thermal-cutoff fuse.
-Removable with permanently lubricated plug-in motor.
-Minimum 20 Amp dedicated circuit required.

Housing:
-26 gauge Zinc-Aluminum-Magnesium (ZAM) housing.
-Integrated dual 4" or 6" diameter duct adapter.
-Built-in back draft damper.
-Built-in metal flange provides blocking for penetrations through drywall as an Air Barrier, and assists with the decrease in leakage in the building envelope during blower door testing.
-Building Envelope during blower door testing.
-Suitable for installation in ceilings insulated up to R60.
-Articulating and expandable installation bracket up to 24".

Grille:
-Attractive design using Poly Pro material.
-Attaches directly to housing with torsion springs.
-Circulation grille with built-in diffuser for higher output velocity and directional heat throw.

Heater:
-1600W Positive Temperature Coefficient (PTC) heater for greater safety and reliability.
-Heater is self-limiting. As it approaches designed operating temperature, the electrical consumption automatically decreases, which prevents overheating..

Warranty:
-5 years ECM Motor, 5 years LED, 3 years all other parts.

Architectural Specifications:
Ventilation fan/heater combination shall be ceiling mount, with built-in speed selector. Select from 50/80/110 CFM and no more than +0.3/+0.3/0.7 sone as certified by the Home Ventilating Institute (HVI) at 0.1 static pressure in inches water gauge (w.g.), with 51/82/112 CFM and no more than 0.8/1.0/1.5 sone as certified by HVI at 0.25 w.g., and no less than 53/82/110 CFM at 0.375 w.g. Power Consumption shall be no greater than 4.7/7.7/12 watts at 0.1 w.g., 8.6/13.3/19.0 watts at 0.25 w.g., and 12.3/18.2/26.0 watts at 0.375 w.g. Energy efficiency shall be no less than 10.6/10.4/9.2 CFM/watt at 0.1 w.g, 5.9/6.2/5.9 CFM/watt at 0.25, and 4.3/4.5/4.0 CFM/Watt at 0.375 w.g. Power rating shall be 120v/60Hz. Minimum 20 Amp dedicated circuit required. Duct diameter shall be inclusive of an integrated dual 4" or 6" duct adapter. Also suitable for installation in ceilings insulated up to R60. Fan/heater is not intended for installation over a tub/shower enclosure. Fan/heater can be used to comply with ASHRAE 62.2. Heating element power consumption shall be no less than 1600 watts. Fan/Heater shall also include a circulation grille that incorporates a diffuser for higher output velocity and directional heat throw.

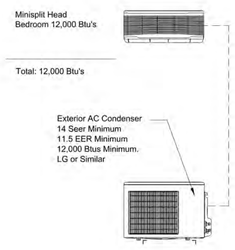
WhisperWarm DC FV-0511VH1		4"			4"			4"		
Characteristics (HVI tested data with 4" Duct)	Static Pressure in inches w.g.	0.1	0.25	0.375	0.1	0.25	0.375	0.1	0.25	0.375
	Air Volume (CFM)	110	112	115	80	82	82	50	51	53
	Noise (sones)	0.7	1.5	-	<0.3	1.0	-	<0.3	0.8	-
	Power Consumption (watts)	12	19.0	26.0	7.7	13.3	18.2	4.7	8.6	12.3
	Energy Efficiency (CFM/Watt)	9.2	5.9	4	10.4	6.2	4.5	10.6	5.9	4.3
	Speed (RPM)	861	1090	1249	736	1008	1173	638	930	1112
	Current (amps)	0.24	0.37	0.49	0.16	0.28	0.35	0.10	0.18	0.25
	MAX. Current (amps)	0.50								
	Power Rating (V/Hz)	120/60								
	Motor Type	ECM								
	ENERGY STAR rated	N/A - No ESTAR category for fan/heater								

-Industry research indicates static pressure in typical installations ranges from 0.20" to 0.375".
—HVI testing and certification based on 4" duct.

Continuous exhaust system:
IAQ fan shall run continuously and has max 1 sone noise level. Continuous exhaust systems require HERS blower door testing to show no more than 0.3 cfm/sq ft leakage base upon the envelope surface area per section 150.0(o)1E BEES. Please note on plans accordingly

ECM Motor Technology:
When the fan senses static pressure, its speed is automatically increased to ensure that the desired CFM is not compromised, which allows the fan to perform as rated.

IAQ FAN (HERS VERIFICATION REQUIRED)



MINISPLIT DETAIL

REQUIRED SPECIAL FEATURES
The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.
• Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)

HERS FEATURE SUMMARY
The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry
• Indoor air quality ventilation • Kitchen range hood • Verified Refrigerant Charge • Airflow in habitable rooms (SC3.1.4.1.7) • Verified heat pump rated heating capacity • Wall-mounted thermostat in zones greater than 150 ft2 (SC3.4.5) • Ductless indoor units located entirely in conditioned space (SC3.1.4.1.8)

PROPERLY COMPLETED AND SIGNED CERTIFICATES OF INSTALLATION (CF2R FORMS) SHALL BE PROVIDED TO THE INSPECTOR IN THE FIELD. FOR PROJECTS REQUIRING HERS VERIFICATION, THE CF2R FORMS SHALL BE REGISTERED WITH A CALIFORNIA-APPROVED HERS PROVIDER DATA REGISTRY.

PROPERLY COMPLETED CERTIFICATES OF VERIFICATION (CF3R FORMS) SHALL BE PROVIDED TO THE INSPECTOR IN THE FIELD FOR ITEMS REQUIRING HERS VERIFICATION. CF3R FORMS SHALL BE REGISTERED WITH A CALIFORNIA-APPROVED HERS PROVIDER DATA REGISTRY.

Windows:	French Door:	Folding Door:	Skylight:
U-Factor=.30	U-Factor=.30	U-Factor=.30	U-Factor=.30
SHGC=.23	SHGC=.23	SHGC=.23	SHGC=.23

ENERGY EFFICIENCY HERS VERIFICATION

Estudio75
Ricardo H. Perez
4275 Executive Square Suite#200 La Jolla, CA 92037
(619) 274-2838 / t24.e75@gmail.com

Garage Conversion
620 E 4th St.
National City, CA 91950

Project Address

T03

No.	Description	Date

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

DRAWN Y BY: ___
DATE: Issue Date
SCALE:
DRAWING TITLE: T-24
SHEET NUMBER: A1.3

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2023)

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

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

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

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

The mandatory provision of Section 4.106.4.2 may apply to additions or alterations of existing parking facilities or the addition of new parking facilities serving existing multifamily buildings. See Section 4.106.4.3 for application.

Note: Repairs including, but not limited to, resurfacing, restriping and repairing or maintaining existing lighting fixtures are not considered alterations for the purpose of this section.

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

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

SECTION 302 MIXED OCCUPANCY BUILDINGS

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

Exceptions:
1. [HCD] Accessory structures and accessory occupancies serving residential buildings shall comply with Chapter 4 and Appendix A4, as applicable.
2. [HCD] For purposes of CALGreen, live/work units, complying with Section 419 of the *California Building Code*, shall not be considered mixed occupancies. Live/Work units shall comply with Chapter 4 and Appendix A4, as applicable.

DIVISION 4.1 PLANNING AND DESIGN

ABBREVIATION DEFINITIONS:

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

CHAPTER 4
RESIDENTIAL MANDATORY MEASURES

SECTION 4.102 DEFINITIONS

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

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

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

4.106 SITE DEVELOPMENT

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

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

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

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

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

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

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

Exception: Additions and alterations not altering the drainage path.

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

Exceptions:
1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   1.1 Where there is no local utility power supply or the local utility is unable to supply adequate power.
   1.2 Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 4.106.4, may adversely impact the construction cost of the project.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

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

Exemption: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger at the time of original construction in accordance with the *California Electrical Code.*

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

4.106.4.2 New multifamily dwellings, hotels and motels and new residential parking facilities.
When parking is provided, parking spaces for new multifamily dwellings, hotels and motels shall meet the requirements of Sections 4.106.4.2.1 and 4.106.4.2.2. Calculations for spaces shall be rounded up to the nearest whole number. A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by a local jurisdiction. See Vehicle Code Section 22511.2 for further details.

4.106.4.2.1Multifamily development projects with less than 20 dwelling units; and hotels and motels with less than 20 sleeping units or guest rooms.
The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1.EV Capable. Ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

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

Exceptions:

1.When EV chargers (Level 2 EVSE) are installed in a number equal to or greater than the required number of EV capable spaces.

2.When EV chargers (Level 2 EVSE) are installed in a number less than the required number of EV capable spaces, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed.

Notes:

a.Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.

b.There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or EV chargers are installed for use.

2.EV Ready. Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit.

Exception: Areas of parking facilities served by parking lifts.

4.106.4.2.2 Multifamily development projects with 20 or more dwelling units, hotels and motels with 20 or more sleeping units or guest rooms.
The number of dwelling units, sleeping units or guest rooms shall be based on all buildings on a project site subject to this section.

1.EV Capable. Ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE. Electrical load calculations shall demonstrate that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at a minimum of 40 amperes.

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

Exception: When EV chargers (Level 2 EVSE) are installed in a number greater than five (5) percent of parking spaces required by Section 4.106.4.2.2, Item 3, the number of EV capable spaces required may be reduced by a number equal to the number of EV chargers installed over the five (5) percent required.

Notes:

a.Construction documents shall show locations of future EV spaces.

b.There is no requirement for EV spaces to be constructed or available until receptacles for EV charging or EV chargers are installed for use.

2.EV Ready. Twenty-five (25) percent of the total number of parking spaces shall be equipped with low power Level 2 EV charging receptacles. For multifamily parking facilities, no more than one receptacle is required per dwelling unit when more than one parking space is provided for use by a single dwelling unit.

Exception: Areas of parking facilities served by parking lifts.

3.EV Chargers. Five (5) percent of the total number of parking spaces shall be equipped with Level 2 EVSE. Where common use parking is provided, at least one EV charger shall be located in the common use parking area and shall be available for use by all residents or guests.

When low power Level 2 EV charging receptacles or Level 2 EVSE are installed beyond the minimum required, an automatic load management system (ALMS) may be used to reduce the maximum required electrical capacity to each space served by the ALMS. The electrical system and any on-site distribution transformers shall have sufficient capacity to deliver at least 3.3 kW simultaneously to each EV charging station (EVCS) served by the ALMS. The branch circuit shall have a minimum capacity of 40 amperes, and installed EVSE shall have a capacity of not less than 30 amperes. ALMS shall not be used to reduce the minimum required electrical capacity to the required EV capable spaces.

4.106.4.2.2.1 Electric vehicle charging stations (EVCS).
Electric vehicle charging stations required by Section 4.106.4.2.2, Item 3, shall comply with Section 4.106.4.2.2.1.

Exception: Electric vehicle charging stations serving public accommodations, public housing, motels and hotels shall not be required to comply with this section. See California Building Code, Chapter 11B, for applicable requirements.

4.106.4.2.2.1.1 Location.
EVCS shall comply with at least one of the following options:

1.The charging space shall be located adjacent to an accessible parking space meeting the requirements of the California Building Code, Chapter 11A, to allow use of the EV charger from the accessible parking space.

2.The charging space shall be located on an accessible route, as defined in the California Building Code, Chapter 2, to the building.

Exception: Electric vehicle charging stations designed and constructed in compliance with the California Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.2.1.1 and Section 4.106.4.2.2.1.2, Item 3.

4.106.4.2.2.1.2 Electric vehicle charging stations (EVCS) dimensions.
The charging spaces shall be designed to comply with the following:

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

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

3.One in every 25 charging spaces, but not less than one, shall also have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).

a.Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

4.106.4.2.2.1.3 Accessible EV spaces.
In addition to the requirements in Sections 4.106.4.2.2.1.1 and 4.106.4.2.2.1.2, all EVSE, when installed, shall comply with the accessibility provisions for EV chargers in the California Building Code, Chapter 11B. EV ready spaces and EVCS in multifamily developments shall comply with California Building Code, Chapter 11A, Section 1109A.

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

Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the location or the proposed location of the EV space, at the time of original construction in accordance with the California Electrical Code.

2.Multiple EV spaces required. Construction documents shall indicate the raceway termination point and the location of installed or future EV spaces, receptacles or EV chargers. Construction documents shall also provide information on amperage of installed or future receptacles or EVSE, raceway method(s), wiring schematics and electrical load calculations. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

Exception: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the location or the proposed location of the EV space at the time of original construction in accordance with the California Electrical Code.

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

4.106.4.2.5 Electric Vehicle Ready Space Signage.
Electric vehicle ready spaces shall be identified by signage or pavement markings, in compliance with Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s).

4.106.4.3 Electric vehicle charging for additions and alterations of parking facilities serving existing multifamily buildings.
When new parking facilities are added, or electrical systems or lighting of existing parking facilities are added or altered and the work requires a building permit, ten (10) percent of the total number of parking spaces added or altered shall be electric vehicle charging spaces (EV spaces) capable of supporting future Level 2 EVSE.

Notes:

1.Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.

2.There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

DIVISION 4.2 ENERGY EFFICIENCY

4.201 GENERAL

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

DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION

4.303 INDOOR WATER USE

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

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

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

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

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

4.303.1.3 Showerheads.

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

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

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

4.303.1.4 Faucets.

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

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

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

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

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

4.303.1.4.5 Pre-rinse spray valves.
When installed, shall meet the requirements in the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations), Sections 1605.1 (h)(4) Table H-2, Section 1605.3 (h)(4)(A), and Section 1607 (d)(7) and shall be equipped with an integral automatic shutoff.

FOR REFERENCE ONLY: The following table and code section have been reprinted from the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations),Section 1605.1 (h)(4) and Section 1605.3 (h)(4)(A).

TABLE H-2

STANDARDS FOR COMMERCIAL PRE-RINSE SPRAY VALVES MANUFACTURED ON OR AFTER JANUARY 28, 2019

PRODUCT CLASS [spray force in ounce force (ozf)]	MAXIMUM FLOW RATE (gpm)
Product Class 1 (≤ 5.0 ozf)	1.00
Product Class 2 (> 5.0 ozf and ≤ 8.0 ozf)	1.20
Product Class 3 (> 8.0 ozf)	1.28

Title 20 Section 1605.3 (h)(4)(A): Commercial prerinse spray values manufactured on or after January 1, 2006, shall have a minimum spray force of not less than 4.0 ounces-force (ozf)[113 grams-force(gf)]

4.303.2 Submeters for multifamily buildings and dwelling units in mixed-used residential/commercial buildings.
Submeters shall be installed to measure water usage of individual rental dwelling units in accordance with the *California Plumbing Code.*

4.303.3 Standards for plumbing fixtures and fittings. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code,* and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code.*

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

TABLE - MAXIMUM FIXTURE WATER USE

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

4.304 OUTDOOR WATER USE

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

NOTES:

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

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE

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

4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

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

Exceptions:

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

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

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

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

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

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

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

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

Notes:

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

4.410 BUILDING MAINTENANCE AND OPERATION

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

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

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY

SECTION 4.501 GENERAL

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

SECTION 4.502 DEFINITIONS

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

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

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

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

No.	Description	Date

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

DRAWN Y BY: ____
DATE: Issue Date
SCALE:
DRAWING TITLE: CALIFORNIA GREEN BUILDING STANDARDS
SHEET NUMBER: A1.4

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES, SHEET 2 (January 2023)

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

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

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

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

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

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

4.503 FIREPLACES

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

4.504 POLLUTANT CONTROL

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

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

4.504.4 RESILIENT FLOORING SYSTEMS. Where resilient flooring is installed , at least 80% of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

hhtps://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

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

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

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

4.505 INTERIOR MOISTURE CONTROL

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

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

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

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

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

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

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

4.506 INDOOR AIR QUALITY AND EXHAUST

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

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

Notes:

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

4.507 ENVIRONMENTAL COMFORT

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

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

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

CHAPTER 7
INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

702 QUALIFICATIONS

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

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

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

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

Notes:

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

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

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

703 VERIFICATIONS

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

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

No.	Description	Date

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

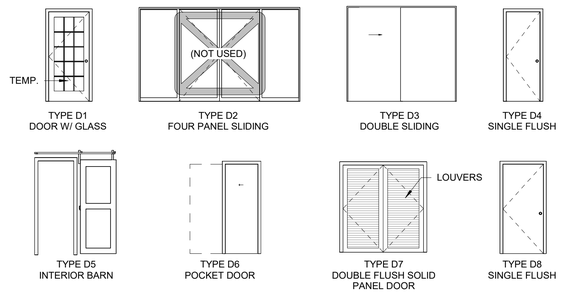
Site Address:
620 E 4th Street
National City, CA

DRAWN Y BY: ____
DATE: Issue Date
SCALE:
DRAWING TITLE:
CALIFORNIA GREEN BUILDING STANDARDS
SHEET NUMBER:
A1.5

WINDOW TYPES

NOTE: U-FACTOR 0.3

DOOR TYPES



NOTE: U-FACTOR 0.2

WINDOW SCHEDULE

WINDOW #	TYPE	COUNT	WIDTH	HEIGHT	TEMP Y/N	COMMENTS
A	W1 (4'-0" x 4'-0")	2	4' - 0"	4' - 0"		U-FACTOR: 0.3, SHGC: 0.23, BUG SCREEN

DOOR SCHEDULE

DOOR #	COUNT	TYPE	WIDTH	HEIGHT	THICKNESS	COMMENTS
1	1		2' - 6"	6' - 8"	0' - 1 3/8"	
2	1		2' - 6"	6' - 8"	0' - 1 3/8"	
3	1		4' - 0"	7' - 0"	0' - 1 3/8"	
4	1		2' - 6"	6' - 8"	0' - 1 3/8"	

1

CRC AGING IN PLACE REQUIREMENTS:
CRC R327: NEWLY CONSTRUCTED DWELLINGS SHALL BE DESIGNED AND CONSTRUCTED WITH THE FOLLOWING:

a. REINFORCEMENT FOR GRAB BARS: AT LEAST ONE BATHROOM ON THE ENTRY LEVEL SHALL BE PROVIDED WITH REINFORCEMENT INSTALLED IN ACCORDANCE WITH SECTION R327.1.1. REINFORCEMENT SHALL BE MINIMUM 2X8 SOLID LUMBER, LOCATED BETWEEN 32" AND 39-¼" ABOVE THE FINISHED FLOOR FLUSH WITH WALL FRAMING. REINFORCEMENT SHALL BE PROVIDED FOR WATER CLOSETS, SHOWERS, AND BATHTUB-SHOWER COMBINATIONS. WATER CLOSET REINFORCEMENT SHALL BE INSTALLED ON BOTH SIDE WALLS OF THE FIXTURE, OR ONE SIDE WALL AND THE BACK WALL. SHOWER REINFORCEMENT SHALL BE CONTINUOUS WHERE WALL FRAMING IS PROVIDED. BATHTUB AND COMBINATION BATHTUB-SHOWER REINFORCEMENT SHALL BE CONTINUOUS ON EACH END OF THE BATHTUB AND THE BACK WALL. ADDITIONALLY, BACK WALL REINFORCEMENT FOR A LOWER GRAB BAR SHALL BE PROVIDED WITH THE BOTTOM EDGE LOCATED NO MORE THAN SIX INCHES ABOVE THE BATHTUB RIM.

b. ELECTRICAL OUTLETS, SWITCH, AND CONTROL HEIGHTS SHALL BE LOCATED NO MORE THAN 48" MEASURED FROM THE TOP OF THE OUTLET BOX AND NOT LESS THAN 15" MEASURED FROM THE BOTTOM OF THE OUTLET BOX ABOVE THE FINISHED FLOOR (SECTION R327.1.2). SHOW DIMENSION ON ELEVATION.

c. DOORBELL BUTTONS SHALL NOT EXCEED 48" ABOVE EXTERIOR FLOOR OR LANDING. (SECTION R327.1.4). SHOW DIMENSION ON ELEVATION.

d. INTERIOR DOORS. EFFECTIVE JULY 1, 2024, AT LEAST ONE BATHROOM AND ONE BEDROOM ON THE ENTRY LEVEL SHALL PROVIDE A DOORWAY WITH A NET CLEAR OPENING OF NOT LESS THAN 32 INCHES, MEASURED WITH THE DOOR POSITIONED AT AN ANGLE OF 90 DEGREES FROM THE CLOSED POSITION; OR, IN THE CASE OF A TWO OR THREE STORY SINGLE FAMILY DWELLING, ON THE SECOND OR THIRD FLOOR OF THE DWELLING IF A BATHROOM OR BEDROOM IS NOT LOCATED ON THE ENTRY LEVEL.

FLOOR PLAN NOTES

PROPOSED WALL LEGEND

NEW WOOD STUD WALL

INTERIOR WALLS:
2 X 4 STUDS WITH MIN. 1/2" GYP.BD. FINISH, EACH SIDE

EXTERIOR WALLS:
2 X 6 STUDS WITH MIN. 1/2" GYP. BD. FINISH, AT INTERIOR WITH 5/8" EXT. PLY OR OSB PER STRUCT. OV / 7/8" STUCCO LATH. COLOR AND FINISH TO MATCH EXISITING RESIDENCE.

PROVIDE R-15 BATT INSULATION AT ALL NEW EXTERIOR WALLS PER TITLE 24.

FLOOR PLAN GENERAL NOTES

TEMPERED SAFETY GLASS IS REQUIRED PER SECTION 2406.3:

1. GLAZING IN DOORS AND ENCLOSURES FOR BATHTUBS AND SHOWERS. GLAZING IN ANY PORTION OF A BUILDING WALL ENCLOSING THESE COMPARTMENTS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAT 60" ABOVE A STANDING SURFACE.

2. GLAZING IN FIXED OR OPERABLE PANELS ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLAZONG IS WITHIN A 24-INCH ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60" ABOVE THE WALKING SURFACE.

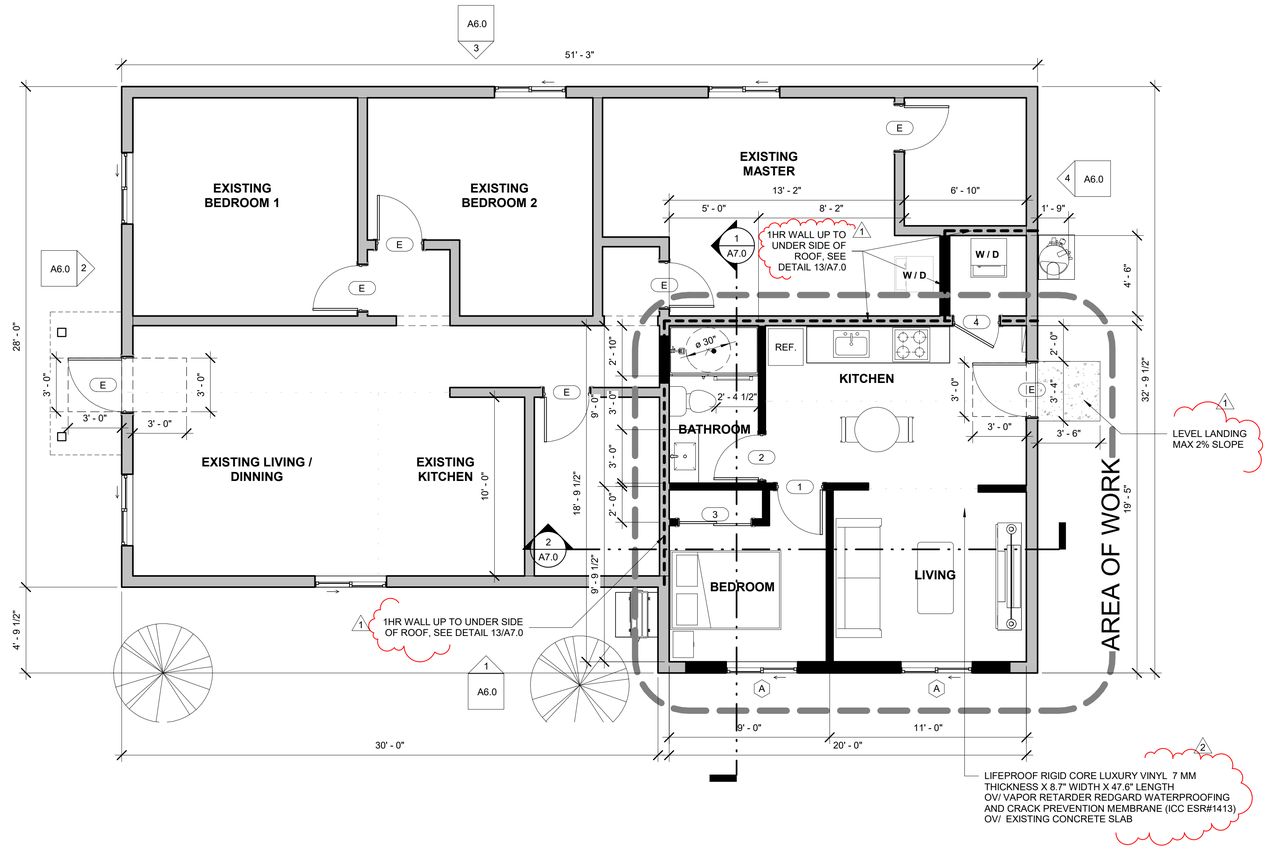
3. GLAZING ADJACENT TO STAIRWAYS, LANDINGS AND RAMPS WITHIN 36" HORIZONTALLY OF A WALKING SURFACE, THEN THE EXPOSED SURFACE OF THE GLASS IS LESS THAN 60" ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE.

4. SHOWER DOOR THRESHOLDS SHALL BE WIDE ENOUGH FOR A MINIMUM 22" WIDE DOOR AND 22" WIDE MAINTAINED EGRESS UPC SECTION 411.6.

1 5. PENETRATIONS OF FIRE RESISTIVE WALLS, FLOOR-CEILING AND ROOF CEILING D=SHALL BE PROTECTED AS REQUIRED IN CRC SECTION R302.4

GENERAL NOTES:

1. EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE WINDOW OR DOOR FOR EMERGENCY ESCAPE OR RESCUE THAT OPENS DIRECTLY INTO A PUBLIC WAY OR TO A YARD OR COURT THAT OPENS TO A PUBLIC WAY. THE EMERGENCY DOOR OR WINDOW SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF TOOLS AND SHALL HAVE A MINIMUM NET CLEAR OPENABLE AREA OF 5.7 SQUARE FEET, 5.0 SQUARE FEET FOR GROUND FLOOR OPENINGS. THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24" AND THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20". THE BOTTOM OF THE CLEAR OPENING SHALL BE NO MORE THAN 44" MEASURED FROM THE FLOOR. (SEC. R310.1).
2. IN SHOWERS AND TUB-SHOWER COMBINATIONS, CONTROL VALVES MUST BE PRESSURE BALANCED OR THERMOSTATIC MIXING VALVES. UPC SEC. 420.0.
3. MINIMUM FINISHED INTERIOR OF 1024 SQ.IN. ENCOMPASSING A 30" DIAMETER CIRCLE MAINTAINED TO A HEIGHT OF 70" ABOVE THE SHOWER DRAIN INLET. UPC 412.7.
4. SEISMIC STRAPS REQUIRED AT WATER HEATER. ONE STRAP IS REQUIRED AT THE UPPER 1/3 AND ONE STRAP REQUIRED AT THE LOWER 1/3 OF THE TANK. UPC 510.0
5. RECEPTACLES SHALL BE TAMPER RESISTANT TYPE
6. AN ELECTRICAL CIRCUIT CARD SHALL BE COMPLETED PRIOR TO REQUESTING ROUGH FRAME, ELECTRICAL INSPECTION. (CARD IS AVAILABLE AT THE BUILDING DIVISION COUNTER).
7. RECEPTACLES SHALL NOT BE INSTALLED BELOW THE COUNTERTOP WHEN IT EXTENDS 6" BEYOND THE SUPPORT BASE.
8. KITCHEN SMALL APPLIANCE CIRCUITS SHALL SERVE ONLY ONE KITCHEN.
9. KITCHEN AND DINING COUNTERTOP RECEPTACLES REQUIRED AT EACH WALL COUNTER SPACE 12" OR WIDER. RECEPTACLE OUTLETS SHALL BE INSTALLED SO THAT NO POINT ALONG THE WALL LINE IS MORE THAN 24" MEASURED HORIZONTALLY FROM A RECEPTACLE OUTLET IN THAT SPACE.
10. A RECEPTACLE OUTLET SHALL BE INSTALLED AT EACH ISLAND OR PENINSULAR COUNTERTOP WITH A LONG DIMENSION OF 24" OR GREATER AND A SHORT DIMENSION OF 12" OR GREATER. RECEPTACLE OUTLETS TO SERVE ISLAND OR PENINSULAR COUNTERTOPS SHALL BE INSTALLED ABOVE OR WITHIN 12" BELOW THE COUNTERTOP. RECEPTACLE OUTLETS SHALL BE INSTALLED SO THAT NO POINT ALONG THE CENTERLINE OF THE LONG DIMENSION IS MORE THAN 24" MEASURED HORIZONTALLY FROM A RECEPTACLE OUTLET IN THAT SPACE. A PENINSULAR COUNTERTOP IS MEASURED FROM THE CONNECTING EDGE.
11. RECEPTACLE OUTLETS SHALL BE LOCATED ABOVE AND NOT MORE THAN 20" ABOVE THE COUNTERTOP. FACE-UP INSTALLATION IS NOT PERMITTED.RECEPTACLE OUTLETS MAY BE PERMITTED TO BE INSTALLED NOT MORE THAN 12" BELOW THE COUNTERTOP ONLY IF: a) CONSTRUCTION FOR THE PHYSICALLY IMPAIRED, OR b)ISLAND AND PENINSULAR COUNTERTOPS WHERE THE COUNTERTOP IS FLAT ACROSS THE ENTIRE SURFACE (NO BACK SPLASH, ETC.), AND/OR c)NO MEANS TO MOUNT RECEPTACLE ABOVE.
12. PROVIDE MAKE-UP AIR AT THE LAUNDRY ROOM DOOR OF AT LEAST 100 SQUARE INCHES OR PROVIDE A SUPPLY DUCT FROM THE HVAC SYSTEM
13. AN ELECTRICAL CIRCUIT CARD SHALL BE COMPLETED PRIOR TO REQUESTING ROUGH FRAME, ELECTRICAL INSPECTION.
14. ALL DIMENSIONS TO FINISH UNLESS NOTED OTHERWISE
15. DOMESTIC CLOTHES DRYER VENTS SHALL BE A MINIMUM OF 4" DIA. AND MUST TERMINATE OUTSIDE THE BUILDING AND BE EQUIPPED WITH A BACKDRAFT DAMPER. DUCT MUST BE OF METAL WITH SMOOTH INTERIOR SURFACES. SCREWS OR OTHER FASTENERS THAT WILL OBSTRUCT THE FLOW OF AIR ARE PROHIBITED.
16. PROVIDE A FLOOR OR LANDING ON EACH SIDE OF EVERY EXTERIOR DOOR. LANDING SHALL HAVE A WIDTH NOT LESS THAN THE DOOR AND BE A MINIMUM OF 36 IN LENGTH (R311.3 CRC).
    A. THE LANDING AT REQUIRED OUT-SWINGING DOOR SHALL NOT BE MORE THAN 1 1/2 INCH LOWER THAN THE TOP OF THE THRESHOLD.
    B. THE LANDING AT IN-SWINGING DOORS AND DOORS OTHER THAN THE REQUIRED EGRESS SHALL NOT BE MORE THAN 7 3/4 INCHES BELOW THE TOP OF THE THRESHOLD.
17. SMOKE ALARMS (R314.3 CRC): SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS.
    A. IN EACH SLEEPING ROOM.
    B. OUTSIDE EACH SEPARATE SLEEPING AREAS IN THE IMMEDIATE VICINITY OF BEDROOMS.
    C. ALARMS SHALL BE INTERCONNECTED SUCH THAT THE ACTUATION OF ONE ALARM SHALL ACTIVATE ALL ALARMS.
    D. ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WITH BATTERY BACKUP.
    E. APPROVED COMBINED SMOKE ALARMS AND CARBON MONOXIDE ALARMS SHALL BE ACCEPTABLE.
18. CARBON MONOXIDE ALARMS (R315.3 CRC): ALARM LOCATION REQUIREMENTS
    A. OUTSIDE OF EACH SEPARATE DWELLING UNIT SLEEPING AREAS IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
    B. ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WITH BATTERY BACKUP.
    C. ALARMS SHALL BE INTERCONNECTED SUCH THAT THE ACTUATION OF ONE ALARM SHALL ACTIVATE ALL ALARMS.
    D. APPROVED COMBINED SMOKE ALARMS AND CARBON MONOXIDE ALARMS SHALL BE ACCEPTABLE.
19. WATER CLOSETS SHALL HAVE AN AVERAGE WATER CONSUMPTION OF NOT MORE THAN 1.28 GALLONS OF WATER PER FLUSH.
20. SHOWER HEADS SHALL HAVE A WATER FLOW NOT TO EXCEED 1.8 GALLONS PER MINUTE
21. FAUCETS IN KITCHENS, WET BARS, LABORATORIES, LAUNDRY SINKS, ETC. SHALL HAVE A WATER FLOW NOT TO EXCEED 1.8 GALLONS PER MINUTE
22. WATER PIPING MATERIALS WITHIN A BUILDING SHALL BE IN ACCORDANCE WITH SECTION 604.1 OF THE CALIFORNIA PLUMBING CODE. PEX, CPVC AND OTHER PLASTIC WATER PIPING SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 604 OF THE CPC, INSTALLATION STANDARDS OF APPENDIX 1 OF THE CPC AND MANUFACTURER'S RECOMMENDED INSTALLATION STANDARDS. CPVC WATER PIPING REQUIRES A CERTIFICATION OF COMPLIANCE AS SPECIFIED IN SECTION 604.1.1 OF THE CPC PRIOR TO PERMIT ISSUANCE
23. A DOMESTIC CLOTHES DRYER DUCT SHALL BE OF METAL AND A MINIMUM OF 4 INCHES IN DIAMETER. THE EXHAUST DUCT SHALL NOT EXCEED A TOTAL COMBINED HORIZONTAL AND VERTICAL LENGTH OF 14 FT, INCLUDING TWO 90-DEGREE ELBOWS. 2 FT SHALL BE DEDUCTED FOR EACH 90 DEGREE ELBOW IN EXCESS OF TWO (504.4.2 CMC)
24. ELECTRIC BOXES SHALL HAVE DRYWALL, PLASTER, OR PLASTERBOARD SURFACES FINISHED SO THERE WILL BE NO GAPS OR OPEN SPACES GREATER THAN 1/8" OF THE EDGE OF THE BOX PER ARTICLE 314.21. (CEC) . IN WELLS OR CELLING BOXES SHALL BE INSTALLED SO THE FRONT EDGE OF THE BOX OR PLASTER RING SHALL NOT BE RECESSED MORE THAN 1/4" FROM NON-COMBUSTIBLE FINISH SURFACES AND SHALL BE FLUSH WITH A COMBUSTIBLE SURFACE PER ARTICLE 314.20(CEC)
25. ALL 125V 15-AMPERE AND 20-AMPERE RECEPTACLES IN AREAS SPECIFIED IN ARTICLE 210.52 (CEC) SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES (406.12 CEC)
26. NEW BOXES USE AT LUMINAIRES OR LAMPHOLDER OUTLETS IN A CEILING SHALL BE REQUIRED TO SUPPORT LUMINAIRE WEIGHING A MINIMUM OF 50 LBS. BOXES USE AT LUMINAIRE OUTLETS IN WALLS SHALL BE DESIGNED FOR THE PURPOSE AND SHALL BE MARKED ON THE INTERIOR INDICATING THE MAXIMUM WEIGHT OF THE LUMINAIRE PERMITTED, IF OTHER THAN 50 LB. OUTLET BOXES OR SYSTEMS USED AS THE SOLE SUPPORT OF CEILING FANS SHALL BE LISTED AND MARKED BY THE MANUFACTURER AS SUITABLE FOR THIS PURPOSE (314.27 CEC)



1 FLOOR PLAN - PROPOSED
1/4" = 1'-0"

No.	Description	Date
1	PC#1	03/20/24
2	PC#3	04/29/24

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

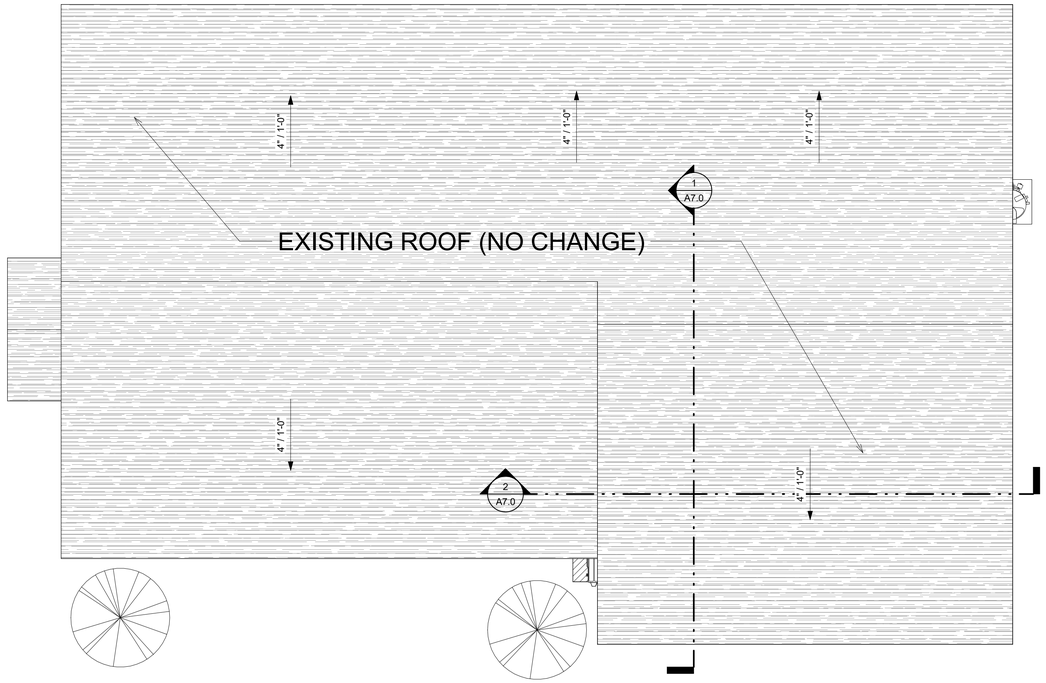
DRAWN Y BY: ____

DATE: Issue Date

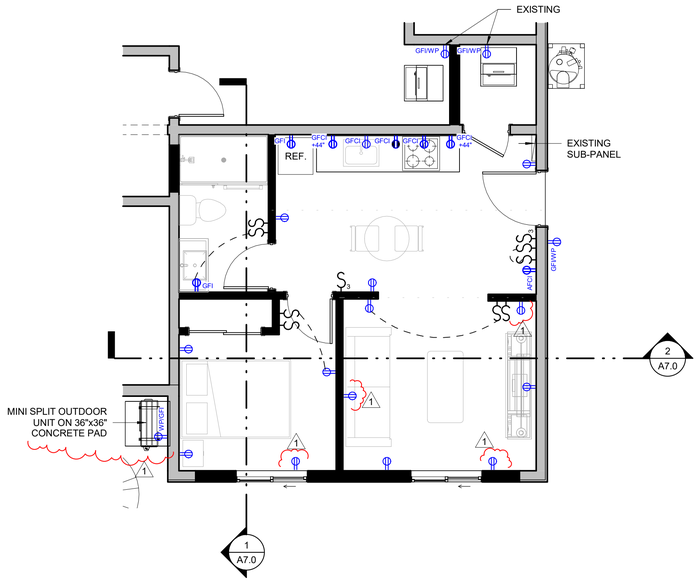
SCALE: As indicated

DRAWING TITLE:
FLOOR PLAN

SHEET NUMBER:
A3.1



1 EXISTING ROOF PLAN
1/4" = 1'-0"



2 POWER FLOOR PLAN
1/4" = 1'-0"

POWER & CEILING LEGEND

- NEW WALL, 2x4 STUDS @ 16" O.C.
- LIGHT SWITCH
- NEW WALL MOUNT LIGHT
- 4" ROUND RECESSED LED
- PENDANT LIGHT FIXTURE
- UNDER CABINET LIGHT
- LED LINEAR COVE LIGHTING
- ELECTRICAL PANEL, 200 AMP #2/0 AWG COPPER WIRE, MIN CONDUIT SIZE 1.5 INCH
- AFCI — DUPLEX OUTLET AT +12" U.N.O. (TAMPER RESISTANT TYPE AND AFCI PROTECTED)
- GFCI — DUPLEX OUTLET AT +12" U.N.O. TAMPER RESISTANT TYPE AND GFCI (GROUND-FOULT CIRCUIT-INTERRUPTED) PROTECTED
- GFI / WP — DUPLEX OUTLET AT +12" U.N.O. (TAMPER RESISTANT TYPE AND GFI PROTECTED) / WATER PROOF
- 20 AMP BRANCH CIRCUIT (TAMPER RESISTANT TYPE)
- NEW IONIZATION SMOKE ALARM
- CARBON MONOXIDE DETECTOR
- CEILING MOUNTED EXHAUST FAN. BROAN MODEL AE80B INVENT SERIES VENT THRU ROOF SHALL BE LOCATED A MIN. 10' DISTANCE FROM HVAC AIR INTAKE, OR ANY OPENING INTO BUILDING
- CEILING FAN - MINIMUM VENTILATION RATE OF 80 CFM PER MINUTE IS REQUIRED NOTE: THE DISCHARGE POINT FOR EXHAUST AIR WILL BE AT LEAST 3 FEET FROM OPENINGS INTO THE BUILDING AND 3' FROM THE PROPERTY LINE. CMC SECTION 504.5

NOTE:
PROVIDE A 220-VOLT DISCONECT BOX FOR THE AIR CONDITIONING COMPRESOR UNIT. DISCONECT MEANS SHALL BE LOCATED WITHING SIGHT FROM AND READILY ACCESSIBLE FROM THE AIR CONDITIONING. THE WIDHT OF THE WORKIGN SPACE IN FRONT OF THE ELECTRIC EQUIPMENT SHALL BE THE WIDTH OF THE EQUIPMENT OF 30 INCHES.

POWER NOTES

1. PROVIDE ARC-FAULT CIRCUIT INTERRUPTER PROTECTOIN FOR ALL PROPOSED OUTLETS. ALL 120-VOLT, SIGLE PHASE, 15 AND 20 AMP BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINNING ROOMS, LIVING ROOMS, KITCHEN, LAUNDRY PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTION OF THE BRANCH CIRCTUIT.
2. AT LEAST ONE 20-AMPERE BRACH CIRCUIT SHALL BE PROVIDED TO SUPPLY BATHROOM RECEPTACLE OUTLETS, SUCH CIRCUIT SHALL HAVE NO OTHER OUTLETS
3. AT LEAST ONE 20-AMP BRACH CIRCUIT SHALL BE PROVIDED TO SUPPLY LAUNDRY RECEPTACLE OUTLETS
4. WEATHER RESISTANT TYPE FOR RECEPTACLES INSTALLED IN DAMP OR WET LOCATIONS (OUTSIDE). 406.4(D)(6).
5. RECEPTACLE OUTLET LOCATIONS WILL COMPLY WITH CEC ARTICLE 210.52

CEILING KEYNOTES

1. (N) TYPE 'X' 1/2" GYP. BOARD CEILING A.F.F. AS NOTED. TO BE TAPE AND TEXTURED W/ SMOOTH TROWEL FINISH TO MATCH EXISTING.
2. EXISTING CEILING (NO CHANGE)
3. LOW-AMBIENT 12,000 BTU 1 TON 14 SEER DUCTLESS MINI SPLIT WALL MOUNTED INVERTER AIR CONDITIONER WITH HEAT PUMP 110/120V.
4. <NOT USED>

NOTE: SYMBOLS INDICATED ABOVE MAY NOT NECESSARILY APPEAR AS PART OF THESE DRAWINGS IF NOT REQUIRED.

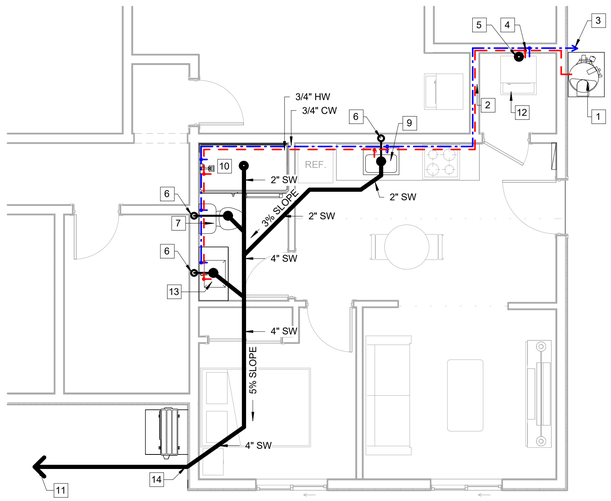
LIGHTING NOTES

1. ALL LUMINARES SHALL EITHER BE HIGH EFFICACY OR SHALL BY A VACANCY SENSOR OR DIMMER. CLOSETS THAT ARE LESS THAN 70 SQUARE FEET ARE EXEMPT FROM THIS REQUIREMENT.
2. ALL DUPLEX AND FOURPLEX OUTLETS INDICATED TO BE PROVIDED. OUTLETS INDICATED IN EXISTING AREAS TO BE INSTALLED UNLESS ALREADY IN IMMEDIATE VICINITY OF FURNITURE AREA.
3. CONTRACTOR TO VERIFY IN SCOPE OF WORK AREA AN OUTLET IS SPACED AT A MINIMUM OF EVERY 12 FT OF WALL SPACE UNLESS 2 FT OR LESS IN LENGTH PER THE CRC 2022.
4. ALL EXISTING LIGHTING IN KITCHEN LED 4 INCH RETROFIT LIGHTS LED 5000K & IN GREAT ROOM, 3000K. ALL DIMMABLE LIGHTING
5. LUMINARIES MUST HAVE A LABEL CERTIFIED FOR AIRTIGHT CONSTRUCTION.
6. LIGHT SOURCES THAT ARE NOT MARKED "JA8-E" SHALL NOT BE INSTALLED IN ENCLOSED LUMINAIRES. ES 150.0(K).
7. RECESSED CAN LIGHT FIXTURES SHALL BE IC LISTED, AIR-TIGHT LABELED, AND NOT BE EQUIPPED WITH A STANDARD MEDIUM BASE SCREW SHELL LAMP HOLDER. ES 150.0(K).
8. SFD OUTDOOR LIGHTING FIXTURES THAT ARE ATTACHED TO A BUILDING ARE REQUIRED TO BE HIGH EFFICACY, BE MANUALLY ON/OFF SWITCH CONTROLLED, AND HAVE BOTH MOTION SENSOR AND PHOTOCELL CONTROL. SEE ES 150.0(K) 3 FOR ADDITIONAL CONTROL OPTIONS.

GENERAL NOTES

1. PROVIDE FIRE BLOCKING AT ALL CONCEALED OR FURRED AREAS AND WALLS AT 10'-0" INTERVALS BOTH VERTICAL AND HORIZONTAL. (PER U.B.C. SECTION 708.2.1)
2. PROVIDE 1 SQUARE INCH ATTIC VENTILATION FOR EACH 10 SQUARE FEET OF ATTIC AREA. (PER U.B.C. SECTION 1505.3)
3. ATTICS OR SIMILAR CONCEALED SPACE MUST BE PARTITIONED BY DRAFT STOPS INTO AREAS NOT EXCEEDING 3000 SF. IN AREA AND 60 FT. IN LENGTH. (EVERY 9000 SF. AND 100 FT. IN SPRINKLERED BUILDINGS). (PER SEC. 708.3.1.2)
4. DRAFT STOPS MUST BE INSTALLED IN FLOOR-CEILING ASSEMBLIES SO THAT THE CONCEALED SPACE DOES NOT EXCEED 1000 SF. IN AREA AND 60 FT IN LENGTH. (EVERY 3000 SF. AND 100 FT. IN SPRINKLERED BUILDINGS) (PER SEC. 708.3.1.1)
5. EXTENSION OF PLENUM AND REQUIRED SIZING OF REGISTERS AT MINIMUM TO EQUAL EXISTING CFM OUTPUT OF REGISTERS TO BE REPLACED BY HVAC CONTRACT IN FAMILY ROOM.

NOTE: CFM OUTPUT TO MATCH EXISTING CFM DIFFUSERS TO BE REPLACED CONTRACTOR TO SPECIFY SIZING.



4 PLUMBING PLAN
1/4" = 1'-0"

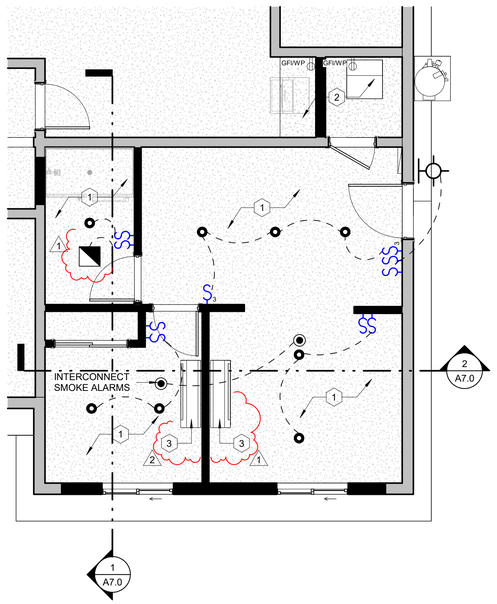
KEYNOTES

1. EXISTING WATER HEATER, 40 US GAL, 34,000 (BTU/HR), NATURAL GAS
2. EXISTRING WASHER / DRYER
3. CONNECT TO EXISTING COLD WATER LINE
4. CONNECT TO EXISTING HOT WATER LINE
5. EXISTING 2" DRAIN
6. 2" VENT - UP WALL
7. WC
8. <NOT USED>
9. SINK
10. SHOWER
11. CONNECT TO EXISTING MAIN SEWER LINE
12. STACKED WASHER/DRYER
13. LAVATORY
14. PROVIDE CLEANOUT

NOTES:

SYSTEMS USING GAS OR PROPANE WATER HEATERS TO SERVE INDIVIDUAL DWELLING UNITS SHALL BE PROVIDED WITH THE FOLLOWING:

1. A DEDICATED 125V, 20A ELECTRICAL RECEPTACLE THAT IS CONNECTED TO THE ELETRICAL PANEL WITH A 120/240 COLT 3 CONDUCTOR, 10 AWG COPPER BRANCH CIRCUIT, WITHING 3FT FROM THE WATER HEATER AND ACCESSIBLE WITH NO OBSTRUCTIONS.
2. A GAS SUPPLY LINE WITH AT LEAST 200,000 BTU/HR CAPACITY
3. SERVICES TO BE BRANCHED FROM AND TO EXISTING LINES ON PROPERTY.



3 CEILING PLAN
1/4" = 1'-0"

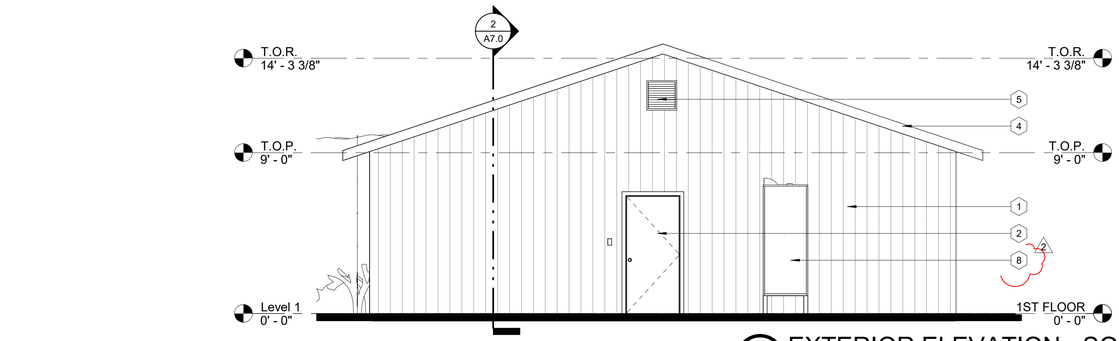
No.	Description	Date
1	PC#1	03/20/24
2	PC#3	04/29/24

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

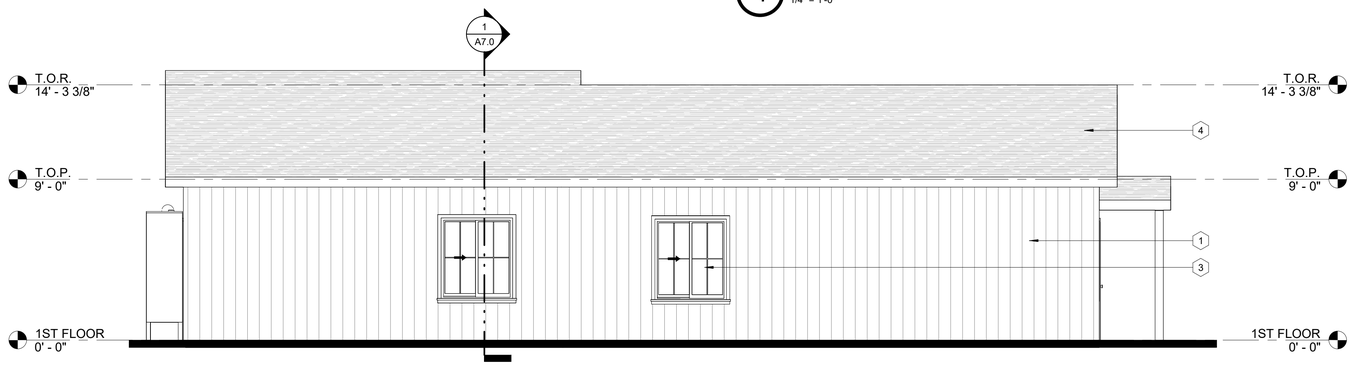
620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

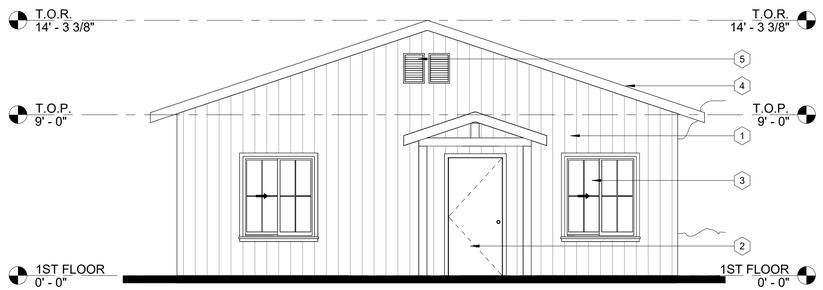
DRAWN Y BY: ____
DATE: Issue Date
SCALE: As indicated
DRAWING TITLE: ROOF, POWER, CEILING & PLUMBING PLAN
SHEET NUMBER: A4.0



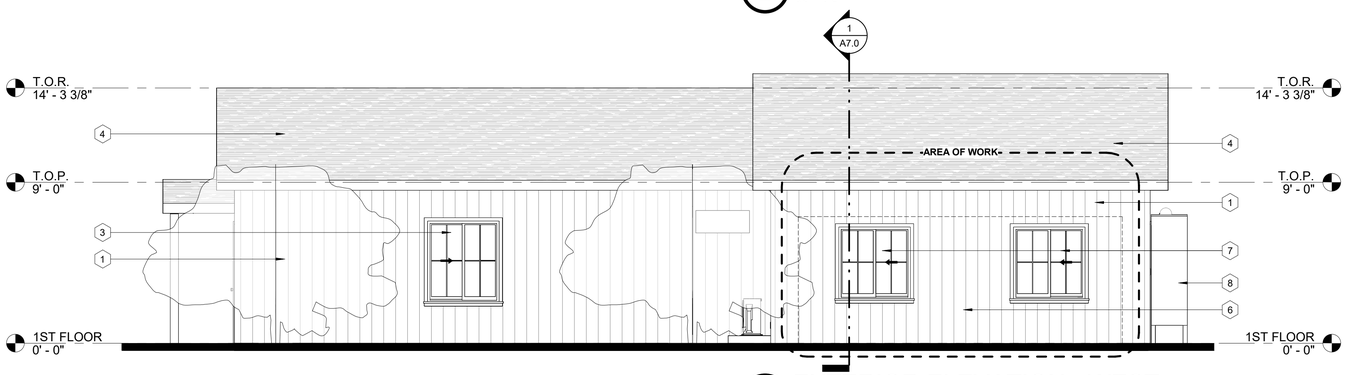
4 EXTERIOR ELEVATION - SOUTH
1/4" = 1'-0"



3 EXTERIOR ELEVATION - EAST
1/4" = 1'-0"



2 EXTERIOR ELEVATION - NORTH
1/4" = 1'-0"



1 EXTERIOR ELEVATION - WEST
1/4" = 1'-0"

ELEVATION NOTES

ELEVATION KEY

SYMBOL	DESCRIPTION
1	EXISTING WOOD SIDDING
2	EXISTING DOOR
3	EXISTING WINDOW
4	EXISTING ROOF
5	EXISTING WALL VENT
6	WALL INFILL - TO MATCH ADJASCENT FINISH AND COLOR
7	NEW WINDOW
8	WATER HEATER GALVANIZED STEEL ENCLOSURE HOLDRITE QUICK SHED ON TOP OF GALVANIZED STEEL SQUARE WATER HEATER STAND
9	<NOT USED>
10	<NOT USED>
11	<NOT USED>
12	<NOT USED>
13	<NOT USED>
14	<NOT USED>
15	<NOT USED>
16	<NOT USED>

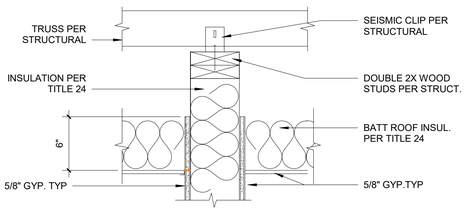
No.	Description	Date
2	PC#3	04/29/24

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

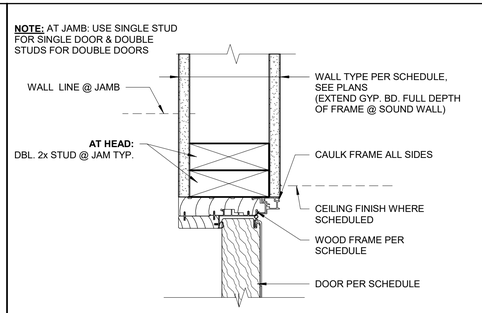
620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

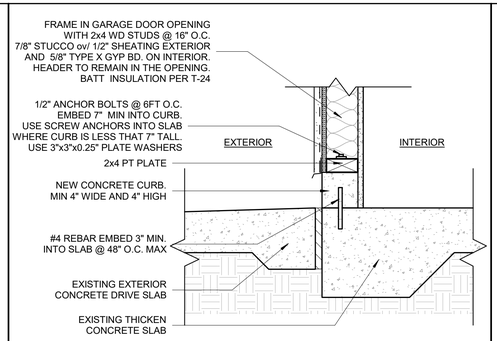
DRAWN Y BY: ___
DATE: Issue Date
SCALE: As indicated
DRAWING TITLE: ELEVATIONS
SHEET NUMBER: A6.0



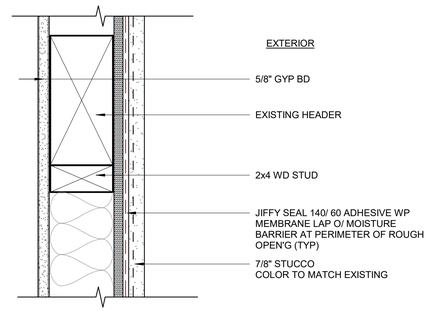
4 INTERIOR PARTITION @ CEILING
1 1/2" = 1'-0"



9 TYP. INT. HEAD/JAMB @ WD. STUD
3" = 1'-0"



11 NEW CURB DETAIL @ INFILL
1 1/2" = 1'-0"

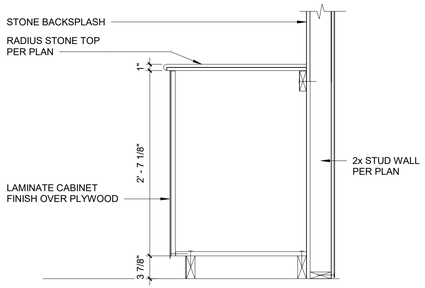


12 WALL INFILL
3" = 1'-0"

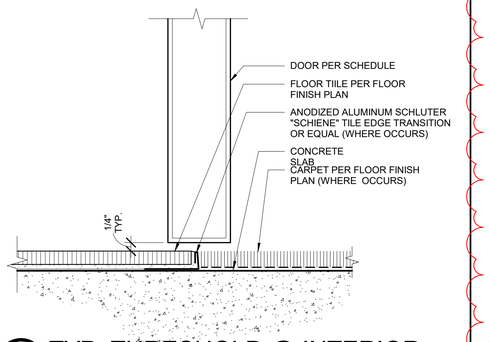
SECTION NOTES

SECTIONS KEY

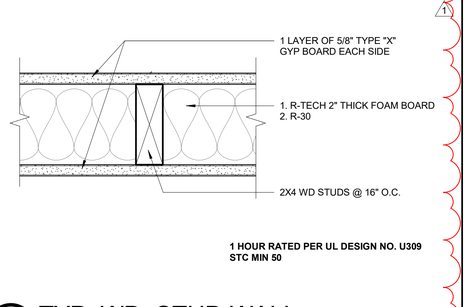
SYMBOL	DESCRIPTION
1	EXISTING CONCRETE SLAB
2	EXISTING GYP BD CEILING
3	EXISTING WALL
4	EXISTING WINDOW
5	NEW GYP BD CEILING
6	NEW WINDOW
7	EXISTING DOOR
8	EXISTING ROOF FRAMING
9	WALL INFILL - TO MATCH ADJASCENT FINISH AND COLOR
10	R-15 INSULATION
11	R-30 INSULATION
12	<NOT USED>
13	<NOT USED>
14	<NOT USED>
15	<NOT USED>
16	<NOT USED>



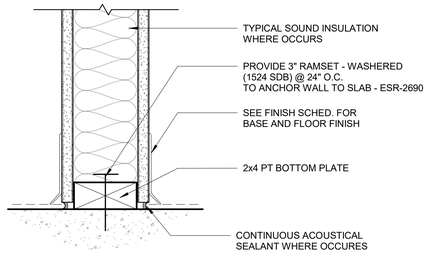
5 CASEWORK, TYP.
1" = 1'-0"



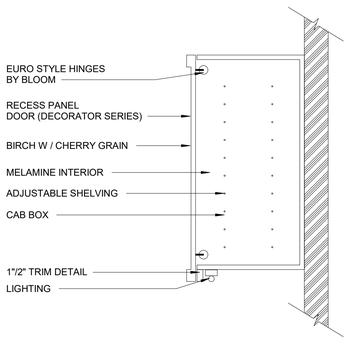
8 TYP. THRESHOLD @ INTERIOR
6" = 1'-0"



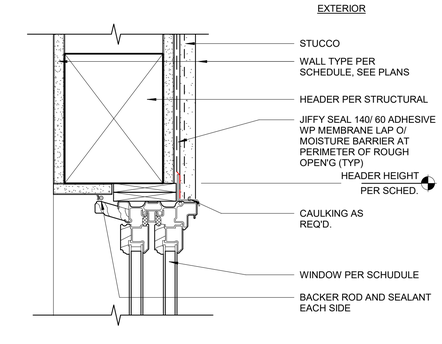
13 TYP. WD. STUD WALL
3" = 1'-0"



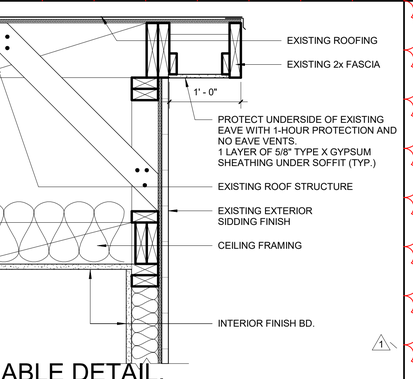
14 INTERIOR WALL BASE DETAIL
3" = 1'-0"



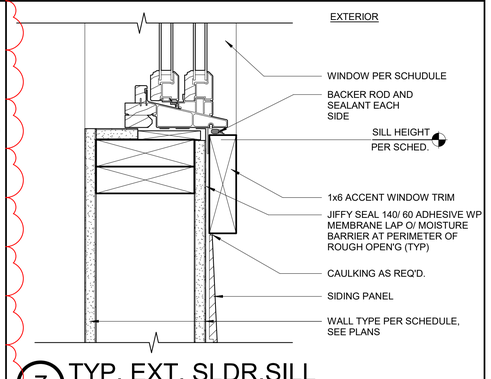
6 TYP. UPPER GAB. DETAIL
1" = 1'-0"



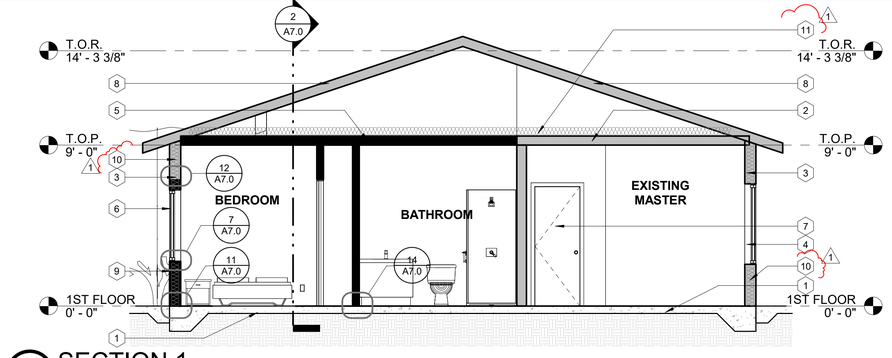
3 TYP. EXT. SLDR. HEAD/JAMB
3" = 1'-0"



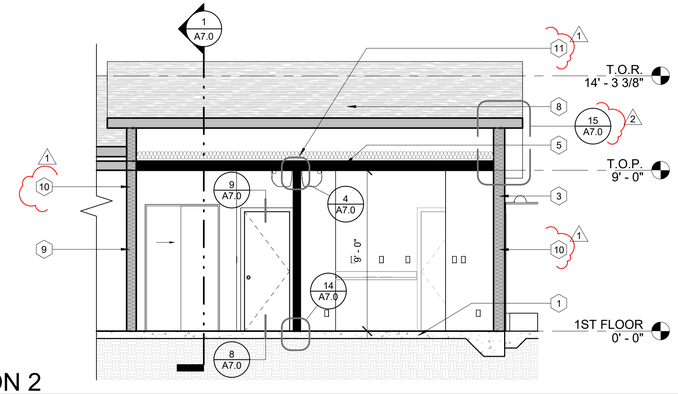
15 GABLE DETAIL.
1" = 1'-0"



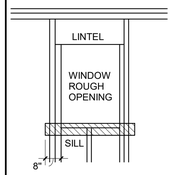
7 TYP. EXT. SLDR.SILL
3" = 1'-0"



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

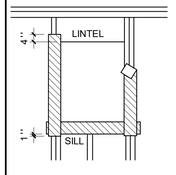


2 SECTION 2
1/4" = 1'-0"



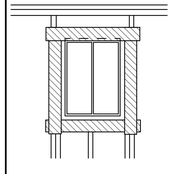
ATTACH SILL STRIP w/ TOP EDGE LEVEL w/ ROUGH SILL, EXTEND BEYOND EDGE OF ROUGH OPENING AT LEAST 8".
SECURE ALL JIFFYSEAL FLASHING MATERIAL WITH GALVANIZED NAILS OR PER DRIVEN STAPLES

NOTE: JIFFYSEAL HEAD & JAMB FLASHING TO BE 9" WIDE. JIFFYSEAL SILL STRIPS TO BE 12" WIDE



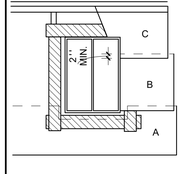
ATTACH JAMB STRIPS w/ SIDE EDGE EVEN w/ ROUGH JAMB FRAMING. START STIP 1" BELOW LOWER EDGE OF SILL & EXTEND 4" ABOVE LOWER EDGE OF LINTEL

PROVIDE A CONTINUOUS BEAD OF APROVED SEALANT ON TOP OF JAMB & STILL FLASHING WHERE WINDOW FLANGE WILL MAKE CONTACT



INSTALL WINDOW INTO ROUGH OPENING WITH SILL AND JAMB FLASHING OVER PREVIOUSLY INSTALLED FLASHING & SEALANT
PROVIDE A CONTINUOUS BEAD OF SEALANT ON TOP OF WINDOW FLANGE & ATTACH HEAD FLASHING INTO & ON TOP OF SEALANT

COMMENCING AT THE BOTTOM (BOTTOM PLATE) OF THE WALL, LAY BUILDING PAPER UNDER STILL STRIP.



NOTE: CUT ANY EXCESS BUILDING PAPER THAT MAY EXTEND ABOVE THE STILL FLANGE LINE ON EACH SIDE OF OPENING (SHOWN AS SHORT DASHED LINES)

DO NOT SLICE BUILDING PAPER HORIZONTALLY SO THAT THE PAPER WILL OVER LAP OVER THE JAMB STRIPS. INSTALL SUCCESSIVE LINES OF BUILDING PAPER OVER JAMB & COURSE A MIN OF 2"

PRE-HANG BLDG. PAPER 'A' BEFORE INSTALLING JIFFYSEAL

10 TYP. OPENING FLASHING
1" = 1'-0"

No.	Description	Date
1	PC#1	03/20/24
2	PC#3	04/29/24

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address: 620 E 4th Street
National City, CA

DRAWN Y BY: ____

DATE: Issue Date

SCALE: As indicated

DRAWING TITLE:

SECTIONS

SHEET NUMBER:

A7.0

A. General

Applicable codes. All projects will comply with the following building codes

2022 California Building Code (CBC) and/or California Residential Code (CRC)
2022 California Green Building Standards Code (CalGreen)
2022 California Electrical Code (CEC)
2022 California Mechanical Code (CMC)
2022 California Plumbing Code (CPC)
2022 California Fire Code (CFC)
2022 California Building Energy Efficiency Standards (CBEES)

B. Electrical, Plumbing, and Mechanical

1. Exterior lighting. All projects shall comply with the local lighting ordinance.
2. GFCI outlets. Ground Fault Circuit Interrupter (GFCI) outlets are required in bathrooms, at kitchen countertops, at laundry and wet bar sinks, in garages, in crawlspaces, in unfinished basements, and outdoors. (CEC 210.8)
3. AFCI outlets. Electrical circuits in bedrooms, living rooms, dining rooms, dens, closets, hallways, or similar rooms must be protected by Arc Fault Circuit Interrupters (AFCI). (CEC 210.12)
4. Luminaire requirements. Installed luminaires shall meet the efficacy and fixture requirements of CBEES 150.0(k).
5. Smoke detectors in building remodels. Smoke detectors are required in each existing sleeping room, outside each separate sleeping area in the immediate vicinity of sleeping rooms, and on each story of a dwelling including basements. Battery-operated detectors are acceptable in existing areas with no construction taking place and in alterations not resulting in removal of interior wall or ceiling finishes and without access via an attic, crawl space, or basement. (CRC R314.3)
6. **Carbon monoxide detectors in building remodels. Carbon monoxide detectors are required** outside each separate sleeping area in the immediate vicinity of sleeping rooms and on each story of a dwelling including basements. Battery-operated detectors are acceptable in existing areas with no construction taking place and in alterations not resulting in removal of interior wall or ceiling finishes and without access via an attic, crawl space, or basement. (CRC R315.3)
7. Water heater seismic strapping. Minimum two 3/4-inch-by-24-gauge straps required around water heaters, with 1/4-inch-by-3-inch lag bolts attached directly to framing. Straps shall be at points within upper third and lower third of water heater vertical dimension. Lower connection shall occur minimum 4 inches above controls. (CPC 507.2)
8. Gas appliances in garages. Water heaters and heating/cooling equipment capable of igniting flammable vapors shall be placed on minimum 18-inch-high platform unless listing report number provided showing ignition-resistant appliance. (CPC 507.13 and CMC 305.1)
9. Impact protection of appliances. Water heaters and heating/cooling equipment subject to vehicular impact shall be protected by bollards or an equivalent measure. (CPC 507.13.1 and CMC 305.11)
10. Water closet clearance. Minimum 30-inch-wide by 24-inch-deep clearance required at front of water closets. (CPC 402.5)
11. Shower size. Shower compartments shall have minimum area of 1024 square inches and be able to encompass a 30-inch-diameter circle. Shower doors shall have a minimum 22-inch unobstructed width. (CPC 408.5 and CPC 408.6)
12. Fireplace appliances. Fireplaces with gas appliances are required to have the flue damper permanently fixed in the open position and fireplaces with LPG appliances are to have no 'pit' or 'sump' configurations. (CMC 303.7.1)
13. Chimney clearance. Minimum 2-foot chimney clearance required above building within 10-foot horizontally of chimney. The chimney shall extend minimum 3 feet above highest point where chimney passes through roof. (CRC R1003.9)

C. Mechanical Ventilation and Indoor Air Quality (ASHRAE 62.2-2010)

1. Transfer air. Ventilation air shall be provided directly from the outdoors and not as transfer air from adjacent dwelling units or other spaces, such as garages, unconditioned crawlspaces, or unconditioned attics. (CBEES 150.0(o))
2. Instructions and labeling. Ventilation system controls shall be labeled, and the homeowner shall be provided with instructions on how to operate the system. (CBEES 150.0(o))
3. **Combustion and solid-fuel burning appliances. Combustion appliances shall be properly** vented and air systems shall be designed to prevent back drafting. (CBEES 150.0(o))
4. Garages. The wall and openings between occupiable spaces and the garage shall be sealed. HVAC systems that include air handlers or return ducts located in garages shall have total air leakage of no more than 6% of total fan flow when measured at 0.1 in. w.c. using California Title 24 or equivalents. (CBEES 150.0(o))
5. Minimum filtration. Mechanical systems supplying air to occupiable space through ductwork shall be provided with a filter having a minimum efficiency of MERV 6 or better. (CBEES 150.0(o))
6. Air inlets. Air inlets (not exhaust) shall be located away from known contaminants. (CBEES 150.0(o))
7. Air moving equipment. Air moving equipment used to meet either the whole-building ventilation requirement or the local ventilation exhaust requirement shall be rated in terms of airflow and sound. (CBEES 150.0(o))
   - a. All continuously operating fans shall be rated at a maximum of 1.0 sone.
   - b. Intermittently operated whole-building ventilation fans shall be rated at a maximum of 1.0 sone.
   - c. Intermittently operated local exhaust fans shall be rated at maximum of 3.0 sone.
   - d. Remotely located air-moving equipment (mounted outside of habitable spaces) need not meet sound requirements if at least 4 feet of ductwork between fan and intake grill.

D. Foundation and Underfloor

1. Foundation reinforcement. Continuous footings and stem walls shall be provided with a minimum two longitudinal No. 4 bars, one at the top and one at the bottom of the footing. (CRC R403.1.3.3)
2. Shear wall foundation support. Shear walls shall be supported by continuous foundations. (CRC 403.1.2)
3. Concrete slabs-on-grade. Slabs-on-grade shall be minimum 3-1/2-inches thick. (CRC R506.1)
4. Vapor retarder. A 10-mil polyethylene or approved vapor retarder with joints lapped minimum 6 inches shall be placed between a concrete slab-on-grade and the base course or subgrade. (CRC 506.2.3)
5. Anchor bolts and sills. Foundation plates or sills shall be bolted or anchored to the foundation or foundation wall per the following (CRC R403.1.6 and CRC R602.11.1):
   - a. Minimum 1/2-inch-diameter steel bolts
   - b. Bolts embedded at least 7 inches into concrete or masonry
   - c. Bolts spaced maximum 6 feet on center
   - d. Minimum two bolts per plate/sill piece with one bolt located maximum 12 inches and minimum 7 bolt diameters from each end of each sill plate/piece
   - e. Minimum 3-inch by 3-inch by 0.299-inch steel plate washer between sill and nut on each bolt
6. Hold-downs. All hold-downs must be tied in place prior to foundation inspection.
7. Protection of wood against decay. Naturally durable or preservative-treated wood shall be provided in the following locations (CRC R317.1):
   - a. All wood in contact with ground, embedded in concrete in direct contact with ground, or embedded in concrete exposed to weather
   - b. Wood joists within 18 inches and wood girders within 12 inches of the exposed ground in crawl spaces shall be of naturally durable or preservative-treated wood
   - c. Wood framing members that rest on concrete or masonry exterior foundation walls and are less than 8 inches from exposed earth shall be of naturally durable or preservative-treated wood
   - d. Wood framing, sheathing, and siding on the exterior of the building and having clearance less than 6 inches from the exposed ground or less than 2 inches vertically from concrete steps, porch slabs, patio slabs, and similar horizontal surface exposed to weather
   - e. Sills and sleepers on concrete or masonry slab in direct contact with ground unless separated from such slab by impervious moisture barrier
   - f. Ends of wood girders entering masonry or concrete walls with clearances less than 1/2 inch on tops, sides, and ends
   - g. Wood structural members supporting moisture-permeable floors or roofs exposed to weather, such as concrete or masonry slabs, unless separated from such floors or roofs by an impervious moisture barrier
   - h. Wood furring strips or other wood framing members attached directly to interior of exterior concrete or masonry walls below grade except where vapor retarder applied between wall and furring strips or framing members

walls or exterior walls, with minimum net area of ventilation openings of 1 square foot for each 150 square feet of underfloor area. On such ventilating opening shall be within 3 feet of each corner of the building. (CRC R408.1)

9. Underfloor access. Underfloor areas shall be provided with a minimum 18-inch by 24-inch access opening. (CRC R408.4)

E. Wood Framing

1. Fastener requirements. The number, size, and spacing of fasteners connecting wood members/elements shall not be less than that set forth in CRC Table R602.3(1). (CRC R502.9, CRC R602.3, and CRC R802.2)
2. Stud size, height, and spacing. The size, height, and spacing of studs shall be in accordance with CRC Table R602.3(5). (CRC R602.3.1)

E. Wood Framing (Continued)

3. Sill plate. Studs shall have full bearing on nominal 2-inch thick or larger sill plate with width at least equal to stud width. (CRC R602.3.4)
4. Bearing studs. Where joists, trusses, or rafters are spaced more than 16 inches on center and the bearing studs below are spaced 24 inches on center, such members shall bear within 5 inches of the studs beneath. (CRC R602.3.3)
5. Drilling and notching of studs. Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25% of its width. Studs in nonbearing partitions may be notched to a depth not to exceed 40% of a single stud width. Any stud may be bored or drilled, provided the diameter of the resulting hole is no more than 60% of the stud width, the edge of the hole is no more than 5/8 inch to the edge of the stud, and the hole is not located in the same section as a cut or notch. Studs located in exterior wall or bearing partitions drilled over 40% and up to 60% shall also be doubled with no more than two successive studs bored. (CRC R602.6)
6. Top plate. Wood stud walls shall be capped with a double top plate installed to provide overlapping at corners and at intersections with other partitions. End joints in double top plates shall be offset at least 24 inches. Joints in plates need not occur over studs. Plates shall be minimum nominal 2 inches thick and have width at least equal to width of studs. (CRC R602.3.2)
7. Top plate splices. Top plate lap splices shall be face-nailed with minimum 8 16d nails on each side of splice. (CRC R602.10.8.1)
8. Drilling and notching of top plate. When piping or ductwork is placed in or partly in an exterior wall or interior load-bearing wall, necessitating cutting, drilling, or notching of the top plate by more than 50% of its width, a galvanized metal tie not less than 0.054-inch thick and 1-1/2-inches wide shall be fastened across and to the plate at each side of the opening with not less than 8 10d nails having a minimum length of 1-1/2 inches at each side or equivalent. The metal tie must extend minimum 6 inches past the opening. (CRC R602.6.1)
9. Cripple walls. Foundation cripple walls shall be framed of studs not less in size than the studding above. Cripple walls more than 4 feet in height shall have studs sized as required for an additional story. Cripple walls with stud height less than 14 inches shall be sheathed on at least one side with a wood structural panel fastened to both the top and bottom plates in accordance with Table R602.3(1), or the cripple walls shall be constructed of solid blocking. Cripple walls shall be supported on continuous foundations. (CRC R602.9)
10. Wall bracing. Buildings shall be braced in accordance with the methods allowed per CRC R602.10.2, CRC R602.10.4, and/or CRC R602.10.5.
11. Braced wall line spacing. Spacing between braced wall lines shall not exceed 20 feet or alternate provisions of CRC R602.10.1.3.
12. Shear wall cumulative length. The cumulative length of shear walls within each braced wall line shall meet the provisions of CRC Table R602.10.3(1) for wind loads and CRC Table R602.10.3(2) for seismic loads. (CRC R602.10.1.1)
13. Shear wall spacing. Shear walls shall be located not more than 25 feet on center. (CRC R602.10.2.2)
14. Shear wall offset. Shear walls may be offset out-of-plan not more than 4 feet from the designated braced wall line and not more than 8 feet from any other offset wall considered part of the same braced wall line. (CRC R602.10.1.2)
15. Shear wall location. Shear walls shall be located at the ends of each braced wall line or meet the alternate provisions of CRC R602.10.2.2.
16. Individual shear wall length. Shear walls shall meet minimum length requirements of CRC R602.10.6.5.1.
17. Cripple wall bracing. Cripple walls shall be braced per CRC R602.10.11.
18. Shear wall and diaphragm nailing. All shear walls, roof diaphragms, and floor diaphragms shall be nailed to supporting construction per CRC Table R602.3(1). (CRC R604.3)
19. Shear wall joints. All vertical joints in shear wall sheathing shall occur over, and be fastened to, common studs. Horizontal joints in shear walls shall occur over, and be fastened to, minimum 1-1/2-inch-thick blocking. (CRC R602.10.10)
20. Framing over openings. Headers, double joists, or trusses of adequate size to transfer loads to vertical members shall be provided over window and door openings in load-bearing walls and partitions. (CBC 2304.3.2)
21. Joists under bearing partitions. Joists under parallel bearing partitions shall be of adequate size to support the load. Double joists, sized to adequately support the load, that are separated to permit the installation of piping or vents shall be full-depth solid-blocked with minimum 2-inch nominal lumber spaced at maximum 4 feet on center. Bearing partitions perpendicular to joists shall not be offset from supporting girders, walls, or partitions more than the joist depth unless such joists are of sufficient size to carry the additional load. (CRC R502.4)
22. Joists above or below shear walls. Where joists are perpendicular to a shear wall above or below, a rim joist, band joist, or blocking shall be provided along the entire length of the shear wall. Where joists are parallel to a shear wall above or below, a rim joist, end joist, or other parallel framing shall be provided directly above and/or below the shear wall. Where a parallel framing member cannot be located directly above and/or below the shear wall, full-depth blocking at 16-inch spacing shall be provided between the parallel framing members to each side of the shear wall. (CRC R602.10.8)
23. Floor member bearing. The ends of each floor joist, beam, or girder shall have minimum 1-1/2 inches of bearing on wood or metal and minimum 3 inches of bearing on masonry or concrete except where supported on a 1-inch-by-4-inch ribbon strip and nailed to the adjoining stud or by the use of approved joist hangers. (CRC R502.6)
24. Floor joist lap. Floor joists framing opposite sides over a bearing support shall lap minimum 3 inches and shall be nailed together within minimum 3 10d face nails. A wood or metal splice with strength equal to or greater than that provided by the lap is permitted. (CRC R502.6.1)
25. Floor joist-to-girder support. Floor joists framing into the side of a wood girder shall be supported by approved framing anchors or on ledger strips minimum nominal 2 inches by 2 inches. (CRC R502.6.2)
26. Floor joist lateral restraint. Floor joists shall be supported laterally at ends and each intermediate support by minimum 2-inch full-depth blocking, by attachment to full-depth header, band joist, or rim joist, to an adjoining stud, or shall be otherwise provided with lateral support to prevent rotation. (CRC R502.7)
27. Floor joist bridging. Floor joists exceeding nominal 2 inches by 12 inches shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch strip nailed across the bottom of joists perpendicular to joists at maximum 8-foot intervals. (CRC R502.7.1)
28. Framing of floor openings. Openings in floor framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist may be a single member the same size as the floor joist. Single trimmer joists may be used to carry a single header joist located within 3 feet of the trimmer joist bearing. When the header joist span exceeds 4 feet, the trimmer joists and header joist shall be doubled and of sufficient cross section to support the floor joists framing into the header. Approved hangers shall be used for the header-joist-to-trimmer-joist connections when the header joist span exceeds 6 feet. Tail joists over 12 feet long shall be supported at the header by framing anchors or on ledger strips minimum 2 inches by 2 inches. (CRC R502.10)
29. Girders. Girders for single-story construction or girders supporting loads from a single floor shall not be less than 4 inches by 6 inches for spans 6 feet or less, provided that girders are spaced not more than 8 feet on center. Other girders shall be designed to support the loads specified in the CBC. Girder end joints shall occur over supports. When a girder is spliced over a support, an adequate tie shall be provided. The ends of beams or girders supported on masonry or concrete shall not have less than 3 inches of bearing. (CBC 2308.7)
30. Ridges, hips, and valleys. Rafters shall be framed to a ridge board or to each other with a gusset plate as a tie. Ridge boards shall be minimum 1-inch nominal thickness and not less in depth than the cut end of the rafter. At all valley and hips, there shall be a valley or hip rafter not less than 2-inch nominal thickness and not less in depth than the cut end of the rafter. Hip and valley rafters shall be supported at the ridge by a brace to a bearing partition or be designed to carry and distribute the specific load at that point. Where the roof pitch is less than 3:12 slope (25% gradient), structural members that support rafters and ceilings joists, such as ridges, hips, and valleys, shall be designed as beams. (CRC R802.3)
31. Ceiling joist and rafter connections. Ceiling joists and rafters shall be nailed to each other per CRC Table R802.5.1(9), and the rafter shall be nailed to the wall top plate per CRC Table R602.3(1). Ceiling joists shall be continuous or securely joined per CRC Table R802.5.1(9) where they meet over interior partitions and are nailed to adjacent rafters to provide a continuous tie across the building when such joists are parallel to rafters. Where ceiling joists are not connected to the rafters at the wall top plate, joists connected higher in the attic shall be installed as rafter ties, or rafter ties shall be installed to provide a continuous tie. Where ceiling joists are not parallel to rafters, rafter ties shall be installed. Rafter ties shall be minimum 2 inches by 4 inches nominal, installed per CRC Table R802.5.1(9), or connections of equivalent capacities shall be provided. Where ceilings joists or rafter ties are not provided, the ridge formed by these rafters shall be supported by a wall or engineer-designed girder. (CRC R802.3.1)
32. Ceiling joists lapped. Ends of ceiling joists shall be lapped minimum 3 inches or butted overbearing partitions or beams and toenailed to the bearing element. Where ceiling joists provide resistance to rafter thrust, lapped joists shall be nailed together per CRC Table R602.3(1) and butted joists shall be tied together in a manner to resist such thrust. (CRC R802.3.2)
33. Collar ties. Collar ties or ridge straps to resist wind uplift shall be connected in the upper third of the attic space. Collar ties shall be a minimum 1 inch by 4 inches nominal and spaced at maximum 4 feet on center. (CRC R802.3.1)
34. Purlins. Purlins installed to reduce the span of rafters shall be sized not less than the required size of the rafters they support. Purlins shall be continuous and shall be supported by 2-inch-by-4-inch nominal braces installed to bearing walls at a minimum 45-degree slope from horizontal. The braces shall be spaced maximum 4 feet on center with a maximum 8-foot unbraced length. (CRC R802.5.1)
35. Roof/ceiling member bearing. The ends of each rafter or ceiling joist shall have not less than 1-1/2 inches of bearing on wood or metal and not less than 3 inches of bearing on masonry or concrete. (CRC R802.6)
36. Roof/ceiling member lateral support. Roof framing members and ceiling joists with a nominal depth-to-thickness ratio exceeding 5:1 shall be provided with lateral support at points of bearing to prevent rotation. (CRC R802.8)
37. Roof/ceiling bridging. Rafters and ceiling joists with a nominal depth-to-thickness ratio exceeding 6:1 shall be supported laterally by solid blocking, diagonal bridging (wood or metal), or a continuous 1-inch-by-3-inch wood strip nailed across the rafters or ceiling joists at maximum 8-foot intervals. (CRC R802.8.1)

E. Wood Framing (Continued)

38. Framing of roof/ceiling openings. Openings in roof and ceiling framing shall be framed with a header and trimmer joists. When the header joist span does not exceed 4 feet, the header joist may be a single member the same size as the ceiling joist or rafter. Single trimmer joists may be used to carry a single header joist located within 3 feet of the trimmer joist bearing. When the header joist span exceeds 4 feet, the trimmer joists and header joist shall be doubled and of sufficient cross section to support the ceiling joists or rafters framing into the header. Approved hangers shall be used for the header-joist-to-trimmer-joist connections when the header joist span exceeds 6 feet. Tail joists over 12 feet long shall be supported at the header by framing anchors or on ledger strips minimum 2 inches by 2 inches. (CRC R502.10)
39. Roof framing above shear walls. Rafters or roof trusses shall be connected to top plates of shear walls with blocking between the rafters or trusses. (CRC R602.10.8)
40. Roof diaphragm under fill framing. Roof plywood shall be continuous under California fill framing.
41. Roof diaphragm at ridges. Minimum 2-inch nominal blocking required for roof diaphragm nailing at ridges.
42. Blocking of roof trusses. Minimum 2-inch nominal blocking required between trusses at ridge lines and at points of bearing at exterior walls.
43. Truss clearance. Minimum 1/2-inch clearance required between top plates of interior non-bearing partitions and bottom chords of trusses.
44. **Drilling, cutting, and notching of roof/floor framing. Notches in solid lumber joists, rafters,** blocking, and beams shall not exceed one-sixth the member depth, shall be not longer than one-third the member depth, and shall not be located in the middle one-third of the span. Notches at member ends shall not exceed one-fourth the member depth. The tension side of members 4 inches or greater in nominal thickness shall not be notched except at member ends. The diameter of holes bored or cut into members shall not exceed one-third the member depth. Holes shall not be closer than 2 inches to the top or bottom of the member or to any other hole located in the member. Where the member is also notched, the hole shall not be closer than 2 inches to the notch. (CRC R502.8.1)
45. **Exterior landings, decks, balconies, and stairs. Such elements shall be positively anchored** to the primary structure to resist both vertical and lateral forces or shall be designed to be self-supporting. Attachment shall not be accomplished by use of toenails or nails subject to withdrawal. (CRC R311.3)
46. Fireblocking. Fireblocking shall be provided in the following locations (CRC R302.11 and CRC R1003.19):
   - a. In concealed spaces of stud walls and partitions, including furred spaces, and parallel rows of studs or staggered studs, as follows:
     - I. Vertically at the ceiling and floor levels
     - II. Horizontally at intervals not exceeding 10 feet
   - b. At all interconnections between concealed vertical and horizontal spaces such as occur at soffits, drop ceilings, and cove ceilings
   - c. In concealed spaces between stair stringers at the top and bottom of the run
   - d. At openings around vents, pipes, ducts, cables and wires at ceiling and floor level, with an approved material to resist the free passage of flame and products of combustion
   - e. At chimneys and fireplaces per item E.49
   - f. Cornices of a two-family dwelling at the line of dwelling-unit separation
47. Fireblocking materials. Except as otherwise specified in items E.48 and E.49, fireblocking shall consist of the following materials with the integrity maintained (CRC R302.11.1):
   - a. Two-inch nominal lumber
   - b. Two thicknesses of one-inch nominal lumber with broken lap joints
   - c. One thickness of 23/32-inch wood structural panel with joints backed by 23/32-inch wood structural panel
   - d. One thickness of 3/4-inch particleboard with joints backed by 3/4-inch particleboard
   - e. 1/2-inch gypsum board
   - f. 1/4-inch cement-based millboard
   - g. Batts or blankets of mineral or glass fiber of other approved materials installed in such a manner as to be securely retained in place. Batts or blankets of mineral or glass fiber or other approved non-rigid materials shall be permitted for compliance with the 10-foot horizontal fireblocking in walls constructed using parallel rows of studs or staggered studs. Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross-section of the wall cavity to a minimum height of 16 inches measured vertically. When piping, conduit, or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction. Loose-fill insulation material shall not be used as a fireblock unless specifically tested in the form and manner intended for use to demonstrate its ability to remain in place and to retard the spread of fire and hot gases.
48. **Fireblocking at openings around vents, pipes, ducts, cables, and wires at ceiling and floor** level. Such openings shall be fireblocked with an approved material to resist the free passage of flame and products of combustion. (CRC R302.11)
49. Fireblocking of chimneys and fireplaces. All spaces between chimneys and floors and ceilings through which chimneys pass shall be fireblocked with noncombustible material securely fastened in place. The fireblocking of spaces between chimneys and wood joists, beams, or headers shall be self-supporting or be placed on strips of metal or metal lath laid across the spaces between combustible material and the chimney. (CRC R1003.19)
50. Draftstopping. In combustible construction where there is usable space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1000 square feet. Draftstopping shall divide the concealed space into approximately equal areas. Where the assembly is enclosed by a floor membrane above and a ceiling membrane below, draftstopping shall be provided in floor/ceiling assemblies under the following circumstances (CRC R302.12):
   - a. Ceiling is suspended under the floor framing
   - b. Floor framing is constructed of truss-type open-web or perforated members
51. Draftstopping materials. Draftstopping shall not be less than 1/2-inch gypsum board, 3/8-inch wood structural panels, or other approved materials adequately supported. Draftstopping shall be installed parallel to the floor framing members unless otherwise approved by the building official. The integrity of draftstops shall be maintained. (CRC R302.12.1)
52. Combustible insulation clearance. Combustible insulation shall be separated minimum 3 inches from recessed luminaires, fan motors, and other heat-producing devices. (CRC R302.14)

F. General Material Specifications

1. Lumber. All joists, rafters, beams, and posts 2-inches to 4-inches thick shall be No. 2 grade Douglas Fir-Larch or better. All posts and beams 5 inches and thicker shall be No. 1 grade Douglas Fir-Larch or better. Studs not more than 8 feet long shall be stud-grade Douglas Fir-Larch or better when supporting not more than one floor, roof, and ceiling. Studs longer than 8 feet shall be No. 2 grade Douglas Fir-Larch or better.
2. Concrete. Concrete shall have a minimum compressive strength of 2,500 psi at 28 days and shall consist of 1 part cement, 3 parts sand, 4 parts 1-inch maximum size rock, and not more than 7-1/2 gallons of water per sack of cement. (CRC R402.2)
3. Mortar. Mortar used in construction of masonry walls, foundation walls, and retaining walls shall conform to ASTM C 270 and shall consist of 1 part portland cement, 2-1/4 to 3 parts sand, and 1/4 to 1/2 part hydrated lime. (CBC 2103.2)
4. Grout. Grout shall conform to ASTM C 476 and shall consist of 1 part portland cement, 1/10 part hydrated lime, 2-1/4 to 3 parts sand, and 1 to 2 parts gravel. Grout shall attain a minimum compressive strength of 2,000 psi at 28 days. (CBC 2103.3)
5. Masonry. Masonry units shall comply with ASTM C 90 for load-bearing concrete masonry units. (CBC 2103.1)
6. Reinforcing steel. Reinforcing steel used in construction of reinforced masonry or concrete structures shall be deformed and comply with ASTM A 615. (CBC 2103.4)
7. Structural steel. Steel used as structural shapes such as wide-flange sections, channels, plates, and angles shall comply with ASTM A36. Pipe columns shall comply with ASTM A53. Structural tubes shall comply with ASTM A500, Grade B.
8. Fasteners for preservative-treated wood. Fasteners for preservative-treated and fire-retardant-treated wood - including nuts and washers -- shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper. (CRC R317.3.1)

   Exception: 1/2-inch diameter or greater steel bolts

   Exception: Fasteners other than nails and timber rivets may be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum

   Exception: Plain carbon steel fasteners acceptable in SBX/DOT and zinc borate preservative-treated wood in an interior, dry environment
9. Fasteners for fire-retardant-treated wood. Fasteners for fire-retardant-treated wood used in exterior applications or wet or damp locations shall be of hot dipped zinc-coated galvanized steel, stainless steel, silicon bronze, or copper. (CRC R317.3.3)

G. Roofing and Weatherproofing

1. Roof covering. All roof covering shall be installed per applicable requirements of CBC 1507. Roof coverings shall be at least Class A rated in accordance with ASTM E 108 or UL 790. (County Building Code 92.1.1505.1)
2. Roof flashing. Flashing shall be installed at wall and roof intersections, at gutters, wherever there is a change in roof slope or direction, and around roof openings. Where flashing is of metal, the metal shall be corrosion-resistant with a thickness of not less than 0.019 inch (No. 26 galvanized sheet). (CRC R903.2.1)
3. Crickets and saddles. A cricket or saddle shall be installed on the ridge side of any chimney or penetration more than 30 inches wide as measured perpendicular to the slope. Cricket or saddle covering shall be sheet metal or the same material as the roof covering. (CRC R903.2.2)

G. Roofing and Weatherproofing (Continued)

4. Water-resistive barrier. A minimum of one layer of No. 15 asphalt felt shall be attached to studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer minimum 2 inches. Where joints occur, felt shall be lapped minimum 6 inches. The felt shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to maintain a weather-resistant exterior wall envelope. (CRC R703.2)
5. Wall flashing. Approved corrosion-resistant flashing shall be applied shingle fashion at the following locations to prevent entry of water into the wall cavity or penetration of water to the building structural framing components (CRC R703.8):
   - a. Exterior door and window openings, extending to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage
   - b. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings
   - c. Under and at the ends of masonry, wood, or metal copings and sills
   - d. Continuously above all projecting wood trim
   - e. Where exterior porches, decks, or stairs attach to a wall or floor assembly of wood-frame construction
   - f. At wall and roof intersections
   - g. At built-in gutters
6. Damp proofing. Damp proofing materials for foundation walls enclosing usable space below grade shall be installed on the exterior surface of the wall and shall extend from the top of the footing to finished grade. (CRC R406.1)
7. Weep screed. A minimum 0.019-inch (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed with a minimum vertical attachment flange of 3-1/2 inches shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 92. The weep screed shall be placed a minimum 4 inches above the earth or 2 inches above paved areas and shall be of a type allowing trapped water to drain to the exterior of the building. (CRC R703.7.2.1)

H. Grading and soils

1. Grading permit. Grading permit required if volume of earth moved exceeds 200 cubic yards or if any cuts or fills exceed 8 feet in height/depth. (County Grading Ordinance 202)
2. Compaction report. Compaction report required for fill material 12 inches or more in depth. (CBC 1803.5.8)

I. Green Building Standards Code (CALGreen) Requirements

1. Applicability. CalGreen residential mandatory measures shall apply to every newly constructed building or structure and within any addition or alteration increasing a building's conditioned area, volume, or size. (CalGreen 101.3, CalGreen 301.1.1)

   Exception: All residential buildings undergoing permitted alterations, additions, or improvements shall replace noncompliant plumbing fixtures with water-conserving plumbing fixtures per CalGreen 301.1.1 and CalGreen 4.303.1
2. Water conserving plumbing fixtures and fittings. Plumbing fixtures and fittings shall comply with the following per CalGreen 4.303.1:
   - a. Water closets: Maximum 1.28 gallons per flush
   - b. Urinals: Maximum 0.5 gallons per flush
   - c. Single showerheads: Maximum flow rate of 1.8 gallons per minute at 80 psi
   - d. Multiple showerheads serving one shower: Maximum combined flow rate of 1.8 gallons per minute at 80 psi
   - e. Lavatory faucets: Maximum flow rate of 1.2 gallons per minute at 60 psi, minimum flow rate of 0.8 gallons per minute at 20 psi
   - f. Kitchen faucets: Maximum flow rate of 1.5 gallons per minute at 60 psi (County Green Building Code 97.1.4.303.1.4.4)

     Exception: Temporary increase allowed to maximum 2.2 gallons per minute at 60 psi if faucet defaults back to maximum 1.5 gallons per minute at 60 psi
   - g. Appliances: At least one qualified ENERGY STAR dishwasher or clothes washer shall be installed in each dwelling unit. (County Green Building Code 97.1.4.303.3)
3. **Outdoor potable water uses in landscape areas. Residential developments shall comply with** local water efficient landscape ordinance or the current California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent. (CalGreen 4.304.1)
4. Joints and openings. Openings in the building envelope separating conditioned space from unconditioned space needed to accommodate utility and other penetrations must be sealed in compliance with the California Energy Code. (CALGreen 4.406.1)

   Exception: Annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such opening with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency.
5. **Construction waste reduction, disposal, and recycling. Recycle and/or salvage for reuse a** minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3, or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance. (CalGreen 4.408.1)

   Exception: Excavated soil and land-clearing debris.

   Exception: Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite

   Exception: The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.
6. Construction waste management plan. A construction waste management plan in conformance with Items 1-5 shall be completed and available on the job site. The construction waste management plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency. (CalGreen 4.408.2)
   - a. Identify the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale.
   - b. Specify if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
   - c. Identify diversion facilities where the construction and demolition waste materials will be taken.
   - d. Identify construction methods employed to reduce the amount of construction and demolition waste generated.
   - e. Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.
7. Waste management company. Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1. (CalGreen 4.408.3)

   Note: The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste company.
8. Waste stream reduction alternative [LR]. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 3.4 pounds per square foot of the building area shall meet the 65 percent construction waste reduction requirement in Section 4.408.1. (CalGreen 4.408.4)

   4.408.4.1 Waste stream reduction alternative. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 2 pounds per square foot of the building area shall meet the 65 percent construction waste reduction requirement in Section 4.408.1.
9. Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, Items 1-5, Section 4.408.3, or Section 4.408.4.
10. Operation and maintenance manual. Prior to final inspection, a manual, compact disc, web-based reference, or other acceptable media which includes all of the following shall be placed in the building (CALGreen 4.410.1):
    - a. Directions to owner or occupant that manual shall remain with the building throughout the life cycle of the structure.
    - b. Operation and maintenance instructions for the following:
      - I. Equipment and appliances, including water-saving devices and systems, HVAC system, photovoltaic systems, water-heating systems and other major appliances and equipment.
      - II. Roof and yard drainage, including gutters and downspouts.
      - III. Space conditioning systems, including condensers and air filters.
      - IV. Landscape irrigation systems.
      - V. Water reuse systems.
    - c. Information from local utility, water, and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
    - d. Public transportation and/or carpool options available in the area.
    - e. Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain the relative humidity level in that range.
    - f. Information about water-conserving landscape and irrigation design and controllers which conserve water.
    - g. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.

I. (CalGreen) Requirements (Continued)

- h. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
- i. Information about state solar energy and incentive programs available.
- j. A copy of all special inspection verifications required by the enforcing agency or code.
- k. Information from the Department of Forestry and Fire Protection on maintenance of defensible space around residential structures.
- l. Information and/or drawings identifying the location of grab bar reinforcements.

11. **Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, Sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system. (CALGreen 4.504.1)
12. **Adhesives, sealants, caulks, paints, and coatings pollutant control. Adhesives (including** carpet adhesives), sealants, caulks, paints, and coatings shall comply with VOC limits per CALGreen 4.504.2. Verification of compliance shall be provided at the request of the enforcing agency. (CALGreen 4.504.2.1)
13. Carpet systems. All carpet installed in the building interior shall meet the testing and product requirements of one of the following (CALGreen 4.504.3):
    - a. Carpet and Rug Institute's Green Label Plus Program (all carpet cushions must meet the requirements of this program).
    - b. California Department of Public Health Standard Practice for the testing of VOCs (Specification 01350).
    - c. NSF/ANSI 140 at the Gold level.
    - d. Scientific Certifications Systems Indoor Advantage™ Gold.
14. Resilient flooring systems. At least 80 percent of the floor area receiving resilient flooring shall comply with one of or more of the following (CALGreen 4.504.4):
    - a. VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) High Performance Products Database
    - b. Products compliant with CHPS criteria certified under the Greenguard Children & Schools program.
    - c. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
    - d. Meet the currently adopted version of California Department of Public Health, “Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," (also known as Specification 01350)
15. Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.) by or before the dates specified in those sections, as shown in CalGreen Table 4.504.5. The following limits are in parts per million (CALGreen 4.504.5):

a. Hardwood plywood veneer core	0.05
b. Hardwood plywood composite core	0.05
c. Particle board	0.09
d. Medium-density fiberboard (MDF)	0.11
e. Thin MDF (5/16 inch or less)	0.13

16. Moisture content of building materials. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following (CALGreen 4.505.3):
    - a. Moisture content shall be determined with either a probe-type or contact-type moisture meter.
    - b. Moisture readings shall be taken at a point 2 feet to 4 feet from the grade stamped end of each piece to be verified.
    - c. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

      Insulation products which are visibly wet or have high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.
17. Bathrooms with a bathtub and/or shower shall be mechanically ventilated per the following (CalGreen 4.506.1):
    - a. Fans shall be ENERGY STAR compliant and ducted to terminate outside building
    - b. Unless functioning as a component of a whole-house ventilation system, fans shall have humidity controls capable of adjustment - manually or automatically -- between a relative humidity range of 50% to 80%.
18. Heating and air-conditioning system design. Heating and air-conditioning systems shall be sized, designed, and have their equipment selected using the following methods (CALGreen 4.507.2):
    - a. The heat loss and heat gain are established according to the currently adopted version of ANSI/ACCA 2 Manual J, ASHRAE handbooks, or other equivalent design software or methods.
    - b. Duct systems are sized according to the currently adopted version of ANSI/ACCA 1 Manual D, ASHRAE handbooks, or other equivalent design software or methods.
    - c. Select heating and cooling equipment according to the currently adopted version of ACCA 36-S Manual S or other equivalent design software or methods.

TABLE R602.3(1)
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

TABLE R602.3(1)
FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENERa, b, c	SPACING AND LOCATION
	Roof		
1	Blocking between ceiling joists, rafters or trusses to top plate or other framing below	4-8d box (21/2″ × 0.113″); or 3-8d common (21/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
	Blocking between rafters or truss not at the wall top plates, to rafter or truss	2-8d common (21/2″ × 0.131″); or 2-3″ × 0.131″ nails	Each end toe nail
		2-16d common (31/2″ × 0.162″); or 3-3″ × 0.131″ nails	End nail
	Flat blocking to truss and web filler	16d common (31/2″ × 0.162″); or 3″ × 0.131″ nails	6″ o.c. face nail
2	Ceiling joists to top plate	4-8d box (21/2″ × 0.113″); or 3-8d common (21/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Per joist, toe nail
3	Ceiling joist not attached to parallel rafter, laps over partitions [see Section R802.5.2 and Table R802.5.2(1)]	4-10d box (3″ × 0.128″); or 3-16d common (31/2″ × 0.162″); or 4-3″ × 0.131″ nails	Face nail
4	Ceiling joist attached to parallel rafter (heel joint) [see Section R802.5.2 and Table R802.5.2(1)]	Table R802.5.2(1)	Face nail
5	Collar tie to rafter, face nail	4-10d box (3″ × 0.128″); or 3-10d common (3″ × 0.148″); or 4-3″ × 0.131″ nails	Face nail each rafter
6	Rafter or roof truss to plate	3-16d box (31/2″ × 0.135″); or 3-10d common (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	2 toe nails on one side and 1 toe nail on opposite side of each rafter or trussi
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2″ ridge beam	4-16d box (31/2″ × 0.135″); or 3-10d common (3″ × 0.148″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box (31/2″ × 0.135″); or 2-16d common (31/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
	Wall		
8	Stud to stud (not at braced wall panels)	16d common (31/2″ × 0.162″)	24″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	16″ o.c. face nail
9	Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d box (31/2″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
		16d common (31/2″ × 0.162″)	16″ o.c. face nail
10	Built-up header (2″ to 2″ header with 1/2″ spacer)	16d common (31/2″ × 0.162″)	16″ o.c. each edge face nail
		16d box (31/2″ × 0.135″)	12″ o.c. each edge face nail
11	Continuous header to stud 31/2”	5-8d box (21/2″ × 0.113″); or 4-8d common (21/2″ × 0.131″); or 4-10d box (3″ × 0.128″)	Toe nail
12	Adjacent full-height stud to end of header	4-16d box (31/2″× 0.135″); or 3-16d common (31/2″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	End nail
13	Top plate to top plate	16d common (31/2″ × 0.162″)	16″ o.c. face nail
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	12″ o.c. face nail
14	Double top plate splice	8-16d common (31/2″ × 0.162″); or 12-16d box (31/2″ × 0.135″); or 12-10d box (3″ × 0.128″); or 12-3″ × 0.131″ nails	Face nail on each side of end joint (minimum 24″ lap splice length each side of end joint)
15	Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (31/2″ × 0.162″)	16″ o.c. face nail
		16d box (31/2″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
	Roof		
16	Bottom plate to joist, rim joist, band joist or blocking (at braced wall panel)	3-16d box (31/2″ × 0.135″); or 2-16d common (31/2″ × 0.162″); or 4-3″ × 0.131″ nails	16″ o.c. face nail
17	Top or bottom plate to stud	4-8d box (21/2″ × 0.113″); or 3-16d box (31/2″ × 0.135″); or 4-8d common (21/2″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box (31/2″ × 0.135″); or 2-16d common (31/2″ × 0.162″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	End nail
18	Top plates, laps at corners and intersections	3-10d box (3″ × 0.128″); or 2-16d common (31/2″ × 0.162″); or 3-3″ × 0.131″ nails	Face nail
19	1″ brace to each stud and plate	3-8d box (21/2″ × 0.113″); or 2-8d common (21/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples 13/4″	Face nail
20	1″ × 6″ sheathing to each bearing	3-8d box (21/2″ × 0.113″); or 2-8d common (21/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 13/4″ long	Face nail
21	1″ × 8″ and wider sheathing to each bearing	3-8d box (21/2″ × 0.113″); or 3-8d common (21/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3 staples, 1″ crown, 16 ga., 13/4″ long	Face nail
		Wider than 1″ × 8″ 4-8d box (21/2″ × 0.113″); or 3-8d common (21/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 4 staples, 1″ crown, 16 ga., 13/4″ long	
	Floor		
22	Joist to sill, top plate or girder	4-8d box (21/2″ × 0.113″); or 3-8d common (21/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Toe nail
23	Rim joist, band joist or blocking to sill or top plate (roof applications also)	8d box (21/2″ × 0.113″)	4″ o.c. toe nail
		8d common (21/2″ × 0.131″); or 10d box (3″ × 0.128″); or 3″ × 0.131″ nails	6″ o.c. toe nail
24	1″ × 6″ subfloor or less to each joist	3-8d box (21/2″ × 0.113″); or 2-8d common (21/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 13/4″ long	Face nail
25	2″ subfloor to joist or girder	3-16d box (31/2″ × 0.135″); or 2-16d common (31/2″ × 0.162″)	Blind and face nail
26	2″ planks (plank & beam—floor & roof)	3-16d box (31/2″ × 0.135″); or 2-16d common (31/2″ × 0.162″)	At each bearing, face nail
27	Band or rim joist to joist	3-16d common (31/2″ × 0.162″); or 4-10 box (3″ × 0.128″); or 4-3″ × 0.131″ nails; or 4-3″ × 14 ga. staples, 7/16″ crown	End nail
28	Built-up girders and beams, 2-inch lumber layers	20d common (4″ × 0.192″); or	Nail each layer as follows: 32″ o.c. at top and bottom and staggered.
		10d box (3″ × 0.128″); or 3″ × 0.131″ nails	24″ o.c. face nail at top and bottom staggered on opposite sides
		And: 2-20d common (4″ × 0.192″); or 3-10d box (3″ × 0.128″); or 3-3″ × 0.131″ nails	Face nail at ends and at each splice
29	Ledger strip supporting joists or rafters	4-16d box (31/2″ × 0.135″); or 3-16d common (31/2″ × 0.162″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	At each joist or rafter, face nail
30	Bridging or blocking to joist, rafter or truss	2-10d box (3″ × 0.128″); or 2-8d common (21/2″ × 0.131″); or 2-3″ × 0.131″ nails	Each end, toe nail

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENERa, b, c	SPACING OF FASTENERS	
			Edgesh (inches)	Intermediate supportsc, e (inches)
	Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing [see Table R602.3(3) for wood structural panel exterior wall sheathing to wall framing]			
31	3/8″ – 1/2″	6d common or deformed (2″ × 0.113″× 0.266″ head); or 23/8″ × 0.113″ × 0.266″ head nail (subfloor, wall)i 6 6f		
		8d common (21/2″ × 0.131″) nail (roof); or RSRS-01 (23/8″ × 0.113″) nail (roof)b	6 6f	
32	19/32″ – 3/4″	8d common (2-21/2″ × 0.131″) nail (subfloor, wall)	6	12
		8d common (21/2″ × 0.131″) nail (roof); or RSRS-01; (23/8″ × 0.113″) nail (roof)b	6 6f	
		Deformed 23/8″ × 0.113″ × 0.266″ head (wall or subfloor)	6	12
33	7/8″ – 11/4″	10d common (3″ × 0.148″) nail; or (21/2″ × 0.131 × 0.281″ head) deformed nail	6 12	
	Other wall sheathingg			
34	1/2″ structural cellulosic fiberboard sheathing	11/2″ × 0.120″ galvanized roofing nail,7/16″ head diameter; or 11/4″ long 16 ga. staple with 7/16″ or 1″ crown	3 6	
35	25/32″ structural cellulosic fiberboard sheathing	13/4″ × 0.120″ galvanized roofing nail, 7/16″ head diameter; or 11/4″ long 16 ga. staple with 7/16″ or 1″ crown	3 6	
36	1/2″ gypsum sheathingd	11/2″ × 0.120″ galvanized roofing nail, 7/16″ head diameter, or 11/4″long 16 ga.; staple galvanized, 11/2″ long; 7/16″ or 1″ crown or 11/4″ screws, Type W or S	7 7	
37	5/8″ gypsum sheathingd	13/4″ × 0.120″ galvanized roofing nail, 7/16″ head diameter, or 11/4″ long 16 ga.; staple galvanized, 11/2″ long; 7/16″ or 1″crown or 11/4″ screws, Type W or S	7 7	
	Wood structural panels, combination subfloor underlayment to framing			
38	3/4″ and less	Deformed (2″× 0.113″) or Deformed (2″ × 0.120″) nail; or 8d common (21/2″ × 0.131″) nail	6 12	
39	7/8″ – 1"	8d common (21/2″ × 0.131″) nail; or Deformed (2″ × 0.113″); or Deformed (21/2″ × 0.120″) nail	6 12	
40	11/8″ – 11/4″	10d common (3″ × 0.148″) nail; or Deformed (2″ × 0.113″);or Deformed (21/2″ × 0.120″) nail	6 12	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 ksi = 6.895 MPa.

- a. Nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections are carbon steel and shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less. Connections using nails and staples of other materials, such as stainless steel, shall be designed by accepted engineering practice or approved under Section R104.11.
- b. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.
- c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
- d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
- e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
- f. For wood structural panel roof sheathing attached to gable end roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 4 inches on center where the ultimate design wind speed is greater than 130 mph in Exposure B or greater than 110 mph in Exposure C.
- g. Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with ASTM C1280 or GA 253. Fiberboard sheathing shall conform to ASTM C208.
- h. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
- i. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.

THERE ARE MINIMUM REQUIREMENTS AND SHALL NOT SUPERSEDE MORE RESTRICTIVE SPECIFICATIONS ON THE PLANS OR AS REQUIRED BY APPLICABLE CODE

No.	Description	Date

DRAFTER:
SERGIO JARAMILLO
970 W VALLEY PRWY
ESCONDIDO, CA 92025
619 378 0075

620 E 4th Street - Garage Conversion

Site Address:
620 E 4th Street
National City, CA

DRAWN BY: ____
DATE: Issue Date
SCALE:
DRAWING TITLE:

MINIMUM CONSTRUCTION SPECIFICATIONS

SHEET NUMBER:

A10.0