TITLE 24 COMPLIANCE SUMMARY

MINIMUM INSULATION R-VALUES:

ATTIC - R-38 AT CEILING PLUS R-19 AT UNDERSIDE OF THE ROOF DECK

SLOPED CEILING - R-22 CLOSED CELL INSUL. BETWEEN (E) 2x6 RAFTERS AT 24"o.c.

EXTERIOR 2x4 WALL - R-15 BETWEEN STUDS, NON STUCCO SIDING

2x4 WALLS TO ATTIC - R-13 BETWEEN STUDS,

FLOOR OVER GARAGE - R-19

SOLA-TUBE WALLS TO ATTIC: R-13

WINDOWS: DUAL PANE, NON-METAL FRAME

	U-FACTOR MAXIMUM	SHGC MAXIMUM
OPERABLE/FIXED:	0.30	0.23
SKYLITE:	0.44	0.21
SOLA-TUBE:	0.84	0.67

WATER HEATING:
ELECTRIC HEAT PUMP WATER HEATER,
RHEEM XE40T10H22U0, 40 GALLON,
ALL HOT WATER PIPES INSULATED (NO HERS)

HEATING:
VARIABLE CAPACITY HEAT PUMP SYSTEM. MINIMUM 7.5 HSPF HEATING RATING, MINIMUM 14.3 SEER/9 EER COOLING RATINGS.

DUCTS: NONE

INDOOR AIR QUALITY:
MINIMUM 33 CFM, MAXIMUM 1 SONE

KITCHEN FAN:
MINIMUM 100 CFM, 3 SONES MAXIMUM

HERS REQUIREMENTS (3rd PARTY VERIFICATION)

COOLING SYSTEM VERIFICATIONS:
- AIRFLOW IN HABITABLE ROOMS (§C3.1.4.1.7)
- REFRIGERANT CHARGE
- FAN EFFICACY/CFM

HEATING SYSTEM VERIFICATIONS:
- VERIFIED HEAT PUMP RATED HEATING CAPACITY (12,000 MINIMUM BTU/H AT 47 DEGREES/8,800 MINIMUM BTU/H AT 17 DEGREES.) PER AHRI CERTIFICATE # 20115429
- DUCTLESS INDOOR UNITS LOCATED ENTIRELY IN CONDITIONED SPACE (§C3.1.4.1.8)
- WALL MOUNTED THERMOSTAT IN ZONES GREATER THAN 150 S.F. (§C3.4.5)

VENTILATION: INSTALLED FANS MUST BE LISTED IN THE HVI.org DIRECTORY AND MEET THE SYSTEM REQUIREMENTS.
- INDOOR AIR QUALITY (IAQ): HERS VERIFIED EXHAUST FAN.
- KITCHEN FAN: HERS VERIFIED EXHAUST FAN.

DESIGN CRITERIA

RISK CATEGORY - II
SIESMIC IMP. - I
Ss = 0.5
SITE CLASS - 'D' DEFAULT
Sds = 0.52
DESIGN CATEGORY - D
V = 0.69 W
Cs = 0.449
R = 6.5
SIMPLIFIED ALTERNATIVE STRUCTUAL DESIGN

MATERIAL SPEC'S.

WOOD FRAMING: DF CONSTRUCTION OR DF #2
CONCRETE: 2500psi - STANDARD CONST. MIX
REBAR - #4 - GRADE 60 - NEW STRIP FOOTING
SHEAR PANELS - 3/8" CDX OR OSB
FLOOR SHEATHING - 3/4" CDX OR OSB T&G

APPLICABLE CODES

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
2022CALIFORNIA BUILDING STANDARDS CODE (CBC)
2022CALIFORNIA RESIDENTIAL CODE (CRC)
2022 ENERGY EFFICIENCY STANDARDS
2022 CALIFORNIA ELECTRICAL CODE (CEC)
2022 CALIFORNIA MECHANICAL CODE (CMC)
2022 CALIFORNIA PLUMBING CODE (CPC)

CITY OF FOLSOM

Accessory Dwelling Unit Application Checklist

Please complete the three questions below:

1. Is your ADU 800 square feet of living space or less? ☒ Yes ☐ No
2. Is your ADU 16 feet tall or less?[1] ☐ Yes ☒ No
3. Is your ADU located at least 4 feet from the side and rear property line?[2] ☒ Yes ☐ No

If you answered "Yes" to ALL three questions, please proceed to the ePermit Center and you can email a completed Building Permit Application to EPC@folsom.ca.us to start the building review process. No further review by the Planning Division is required.

If you answered "No" to any question above, your ADU will need to be reviewed by the Planning Division prior to submitting for a building permit. Please go to the Planning section of the ePermit Center submit a completed Design Review Application by email to PlanningEPC@folsom.ca.us.

If your ADU is larger than 800 square feet and/or taller than 16 feet, your ADU will need to satisfy the requirements of the City's ADU Ordinance. These requirements may include:

- ✓ Design standards
- ✓ Height limits
- ✓ Lot coverage
- ✓ Privacy
- ✓ Building materials
- ✓ Scale and massing

If your ADU is taller than 16 feet, Director-level or Historic District Commission design review and approval will be required prior to submitting for a building permit.

For more information, visit: www.folsom.ca.us/adu

Questions: Contact the Planning Division at (916) 461-6202 or PlanningCounter@folsom.ca.us

[1] Building height is measured from the finished grade to the peak of the roof.
[2] Buildings located less than 5 feet from the property line may be subject to additional building code requirements.

SCOPE OF WORK

CONSTRUCT AN ATTACHED ACCESSORY DWELLING UNIT ON THE SECOND STORY. INCLUDING ELECTRICAL, HVAC AND PLUMBING.

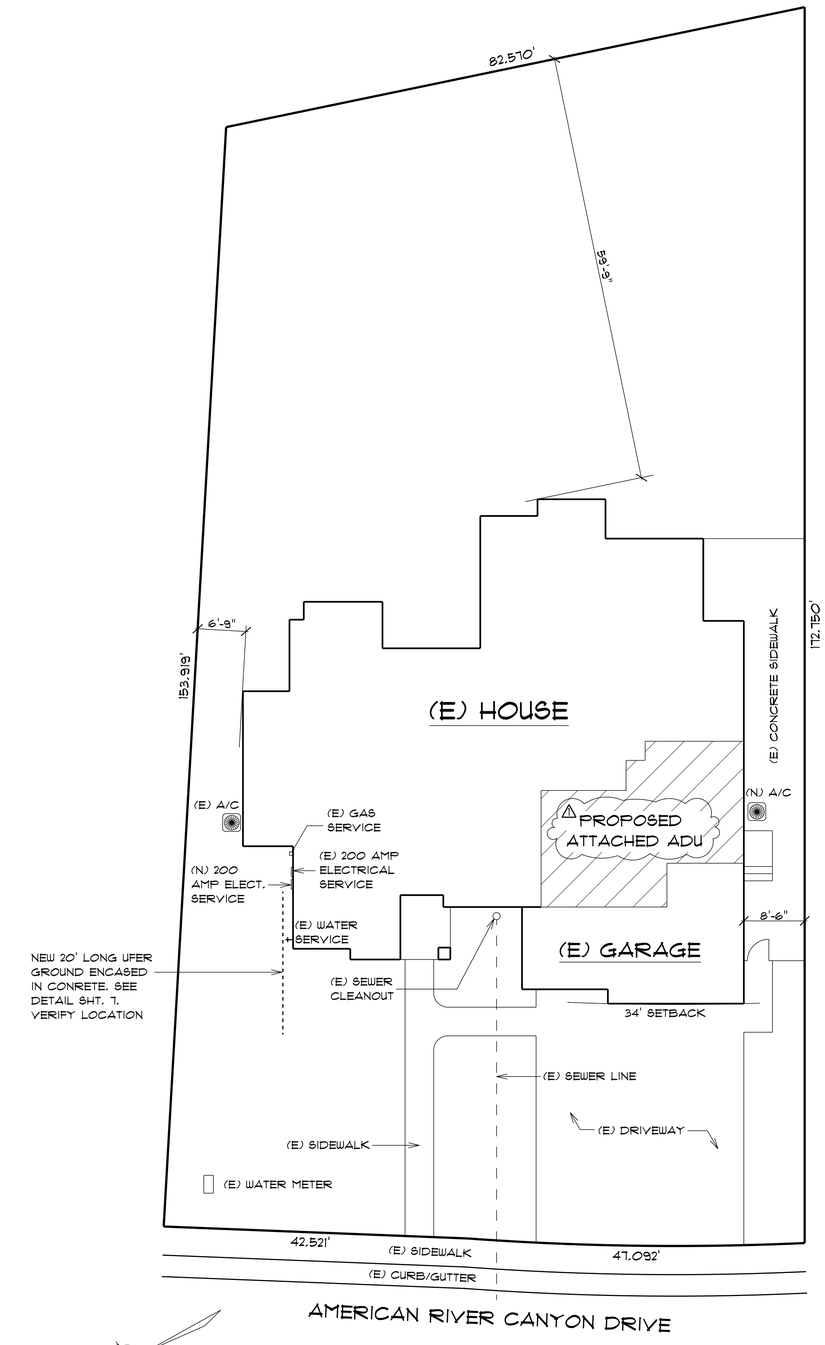
PROJECT SUMMARY

154 AMERICAN RIVER CANYON DR.
FOLSOM, CA 95630
A.P.N. 227-0320-028-000

TYPE OF CONSTRUCTION - V B
OCCUPANCY GROUP - R3
TWO STORY
NO FIRE SPRINKLERS

(E) HABITABLE SPACE = 2924 S.F.
(N) ATTACHED ACCESSORY DWELLING UNIT = 460 S.F.
TOTAL HABITABLE SPACE = 3384 S.F.
(N) UNCONDITIONED STAIRWAY = 61 S.F.
(E) GARAGE = 614 S.F.

SHEET INDEX



PLOT PLAN

SCALE: 1" = 10'-0"

154 AMERICAN RIVER DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

REVISIONS	BY
⚠ PLANNING 6-7-2024	GM

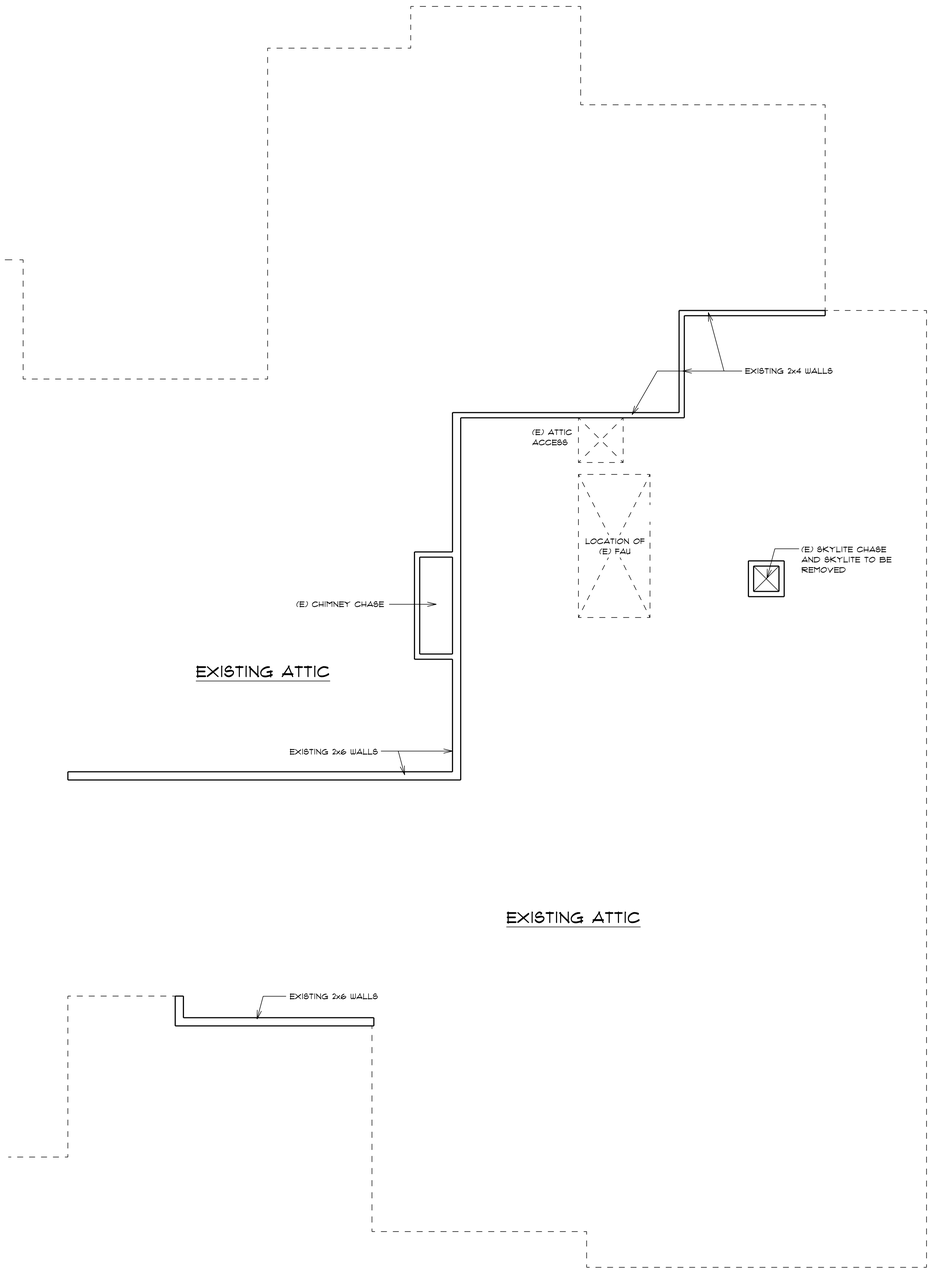
GORDON MALM
gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-7685

ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF GORDON MALM FOR CLARIFICATION OR CORRECTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

PLOT PLAN, GREEN CODE & PROJECT INFORMATION

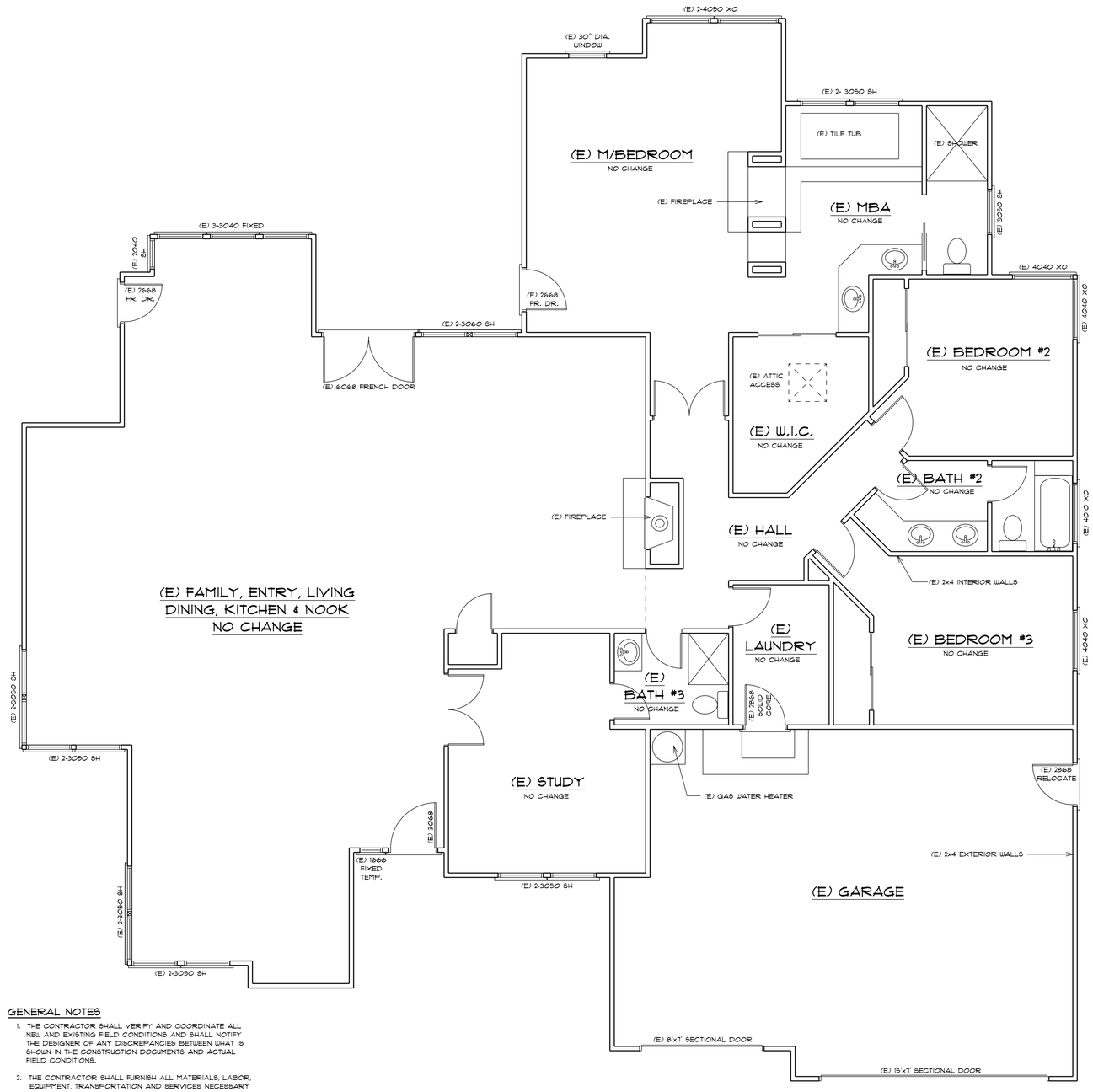
CARRIE BLACK
154 AMERICAN RIVER CANYON DR.
FOLSOM, CA 95630
A.P.N. 227-0320-028-000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET SP
OF SHEETS



(E) ATTIC PLAN

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



(E) FLOOR PLAN

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

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY AND COORDINATE ALL NEW AND EXISTING FIELD CONDITIONS AND SHALL NOTIFY THE DESIGNER OF ANY DISCREPANCIES BETWEEN WHAT IS SHOWN IN THE CONSTRUCTION DOCUMENTS AND ACTUAL FIELD CONDITIONS.
2. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR, EQUIPMENT, TRANSPORTATION AND SERVICES NECESSARY FOR COMPLETION OF THE WORK. ALL MATERIAL AND WORK PROVIDED SHALL COMPLY WITH APPLICABLE CODES AND REGULATIONS OF STATE AND COUNTY HAVING JURISDICTION.
3. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH THE APPROVAL OF THE OWNER TO NOT DISRUPT NORMAL OPERATION OF THE BUILDING.
4. ALL DUST, NOISE AND ODORS CAUSED BY THE WORK SHALL BE KEPT TO A MINIMUM. PROVIDE TEMPORARY DUST PROOF BARRIERS TO POSITIVELY CONTROL THE SPREAD OF DUST AND DEBRIS OUTSIDE THE IMMEDIATE WORK AREA.
5. DEMOLITION DRAWINGS AND NOTES DO NOT NECESSARILY DESCRIBE THE EXACT EXTENT OF ALL DEMOLITION REQUIRED. THE CONTRACTOR SHALL REMOVE ALL EXISTING ARCHITECTURAL, MECHANICAL AND ELECTRICAL WORK THAT IS NECESSARY TO ALLOW FOR THE PLACEMENT OF NEW WORK TO ACHIEVE THE FINISHED PLANS.
6. PATCH AND MATCH FINISHES WHERE NEW WORK ABUTS EXISTING WHERE NECESSARY.
7. DEMOLITION/AS BUILT DRAWINGS ARE SHOWN FOR REFERENCE INFORMATION ONLY. IT IS NOT THE INTENT OF THE DESIGNER TO SHOW FREEZE DEMOLITION INVOLVED. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE FLOOR PLAN AND AND DEMOLITION PLAN TO IDENTIFY ALL WORK NECESSARY TO COMPLETE THE JOB.

REVISION	BY
1	GM

GORDON MALM
Gordon Malm
DESIGNER
5424 SHIRE COURT FAIR OAKS, CA 95628
(916) 390-1685

EXISTING FLOOR PLAN & ATTIC PLAN

CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

DATE: 2-26-2024

SCALE: NOTED

DRAWN: GM

JOB:

SHEET 1 OF SHEETS

TUB/SHOWER NOTES

1. SHOWER COMPARTMENTS TO HAVE A MINIMUM FLOOR AREA OF 1024 SQ.IN. AND CAPABLE OF ENCOMPASSING A 30" DIA. CIRCLE.
2. THE FINISHED FLOOR OF THE SHOWER SHALL SLOPE UNIFORMLY FROM THE SIDES TOWARD THE DRAIN NOT LESS THAN 1/4" PER FOOT AND NOT MORE THAN 1/2" PER FOOT.
3. SHOWER DOORS SHALL BE SIZED AND OPEN SO AS TO MAINTAIN NOT LESS THAN A 22" UNOBSTRUCTED OPENING. DOORS AND PANELS OF SHOWER AND A BATHTUB ENCLOSURES SHALL BE FULLY TEMPERED, LAMINATED SAFETY GLASS OR APPROVED PLASTIC.
4. SHOWERS AND TUB/SHOWERS ARE TO BE PROVIDED WITH PRESSURE BALANCE OR THERMOSTATIC MIXING VALVE CONTROLS.
5. SHOWER AND TUB/SHOWER WALLS TO HAVE A SMOOTH, HARD, NONABSORBENT SURFACE OVER AN APPROVED MOISTURE RESISTANT UNDERLAYMENT TO A MIN. HEIGHT OF 72" ABOVE THE DRAIN INLET.
6. SHOWER VALVE TO POSITIONED SO THAT IT CAN BE ADJUSTED AND THE SHOWERHEAD TO NOT SPRAY DIRECTLY AT THE ENTRANCE TO THE COMPARTMENT TO ALLOW THE BATHER TO ADJUST THE VALVES PRIOR TO STEPPING IN.

TUB & SHOWER WALL COVERING

1. WATER-RESISTANT GYPSUM BOARD SHALL NOT BE INSTALLED OVER A CLASS I OR II VAPOR RETARDER IN A SHOWER OR TUB COMPARTMENT. (R702.3.7) WATER RESISTANT GYPSUM BACKING BOARD SHALL NOT BE USED WHERE THERE WILL BE DIRECT EXPOSURE TO WOATER, OR IN AREAS SUBJECT TO CONTINUOS HIGH HUMIDITY. (R702.3.7.1)
2. MATERIALS USED AS BACKERS FOR WALL TILE IN TUB AND SHOWER AREAS AND WALL PANELS IN SHOWER AREQAS SHALL BE GLASS MAT GYPSUM PANEL, FIBER-REINFORCED GYPSUM PANELS, NON-ASBESTOS FIBER-CEMENT REINFORCED CEMENTITIOUS BACKER UNITS INSTALLED IN ACCORDNCE WITH MANUFACTURERS' RECOMMENDATIONS. (702.4.2)

TOILETS

1. THE TOILET SHALL NOT BE INSTALLED CLOSER THAN 15" FROM THE CENTER TO ANY WALL OR OBSTRUCTION NOR CLOSER THAN 30" CENTER TO CENTER OF ANY WALL OR OBSTRUCTION, WITH A MINIMUM OF 24" CLEAR FLOOR SPACE IN FRONT OF THE TOILET.

PLUMBING WASTE VENT

PLUMBING WASTE VENTS SHALL TERMINATE NOT LESS THAN 10 FEET FROM, OR NOT LESS THAN 3 FEET ABOVE AN OPENABLE WINDOW, DOOR OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED. CPC 906.2

THE GRADE OF HORIZONTAL DRAINAGE PIPE SHALL NOT BE LESS THAN 1/4" PER FOOT. CPC 708.1

A TWO-WAY SANITARY CLEAN-OUT WILL BE REQUIRED WITH A MINIMUM HORIZONTAL DISTANCE OF TWO FEET FROM THE PERIMETER OF THE FOUNDATION. (TABLE 721.1) CPC

STAIRS: R311.7

1. WIDTH: STAIRWAYS SHALL NOT BE LESS THAN 36 INCHES IN CLEAR WIDTH AT ALL POINTS ABOVE THE PERMITTED HANDRAIL HEIGHT AND BELOW THE REQUIRED HEADROOM HEIGHT. THE CLEAR WIDTH OF STAIRWAYS AT AND BELOW THE HANDRAIL HEIGHT, INCLUDING TREADS AND LANDINGS, SHALL NOT BE LESS THAN 31-1/2 INCHES WHERE A HANDRAIL IS INSTALLED ON ONE SIDE AND 27 INCHES WHERE HANDRAILS ARE INSTALLED ON BOTH SIDES. R311.7.1
2. RISERS: THE RISER HEIGHT SHALL BE NOT MORE THAN 7-3/4 INCHES. THE RISER HEIGHT SHALL BE MEASURED VERTICALLY BETWEEN LEADING EDGES OF ADJACENT TREADS. THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH. RISERS SHALL BE VERTICAL OR SLOPED FROM THE UNDERSIDE OF THE NOSING OF THE TREAD ABOVE AT AN ANGLE NOT MORE THAN 30 DEGREES FROM THE VERTICAL. AT OPEN RISERS, OPENINGS LOCATED MORE THAN 30 INCHES AS MEASURED VERTICALLY, TO THE FLOOR OR GRADE BELOW SHALL NOT PERMIT THE PASSAGE OF A 4 INCH DIAMETER SPHERE. R311.7.5.1
3. TREADS: THE TREAD DEPTH SHALL BE NOT LESS THAN 10 INCHES. THE TREAD DEPTH SHALL BE MEASURED HORIZONATLLY BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AND AT A RIGHT ANGLE TO THE TREAD'S LEADING EDGE. THE GREATEST DEPTH WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH. R311.7.5.2
4. NOSINGS: NOSINGS AT TREADS, LANDINGS AND FLOORS OF THE STAIRWAY SHALL HAVE A RADIUS OF CURVATURE AT THE NOSING NOT GREATER THAN 9/16 INCH OR A BEVEL NOT GREATER THAN 1/2 INCH. A NOSING PROJECTION NOT LESS THAN 3/4 INCH AND NOT MORE THAN 1-1/4 INCHES SHALL BE PROVIDED ON STAIRWAY. THE GREATEST NOSING PROJECTION SHALL NOT EXCEED THE SMALLEST NOSING PROJECTION BY MORE THAN 3/8 INCH WITHIN A STAIRWAY. R311.7.5.3
5. LANDINGS FOR STAIRWAYS: THERE SHALL BE A LANDING OR FLOOR ON EACH SIDE OF EACH EXTERIOR DOOR. THE WIDTH OF EACH LANDING SHALL NOT BE LESS THAN THE DOOR SERVED. LANDINGS SHALL HAVE A DIMENSION OF NOT LESS THAN 36 INCHES MEASURED IN THE DIRECTION OF TRAVEL. THE SLOPE EXTERIOR LANDINGS SHALL NOT EXCEED 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2 PER CENT.) R311.7.6

HANDRAILS: R311.7.8

1. HEIGHT: HANDRAIL HEIGHT, MEASURED VERTICALLY FROM THE SLOPED PLANE ADJOINING THE TREAD NOSING, OR FINISH SURFACE OF RAMP SLOPE, SHALL NOT BE LESS THAN 34 INCHES AND NOT MORE THAN 38 INCHES. R311.7.8.1
2. PROJECTION: HANDRAILS SHALL NOT PROJECT MORE THAN 4-1/2 INCHES ON EITHER SIDE OF THE STAIRWAY. R311.7.8.2
3. CLEARANCE: HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 1-1/2 INCHES BETWEEN THE WALL AND THE HANDRAILS. R311.7.8.3
4. CONTINUITY: HANDRAILS SHALL BE CONTINUOS FOR THE FULL LENGTH OF THE FLIGHT, FROM A POINT DIRECTLY ABOVE THE TOP RISER OF THE FLIGHT TO A POINT DIRECTLY ABOVE THE LOWEST RISER OF THE FLIGHT. HANDRAIL ENDS SHALL BE RETURNED TOWARD A WALL, GUARD WALKING SURFACE CONTINUOUS TO ITSELF, OR TERMINATE TO A POST. R311.7.8.4
5. GRIP SIZE: HANDRAILS SHALL BE GRASPABLE. HANDRAIL SHALL EITHER BE CIRCULAR WITH AN OUTSIDE DIAMETER OF 1-1/4 INCH TO 2 INCHES, OR WITH A PERIMETER GREATER THAN 6-1/4 INCH WITH GRASPABLE FINGER RECESS AREA ON BOTH SIDES OF THE PROFILE. R311.7.8.5
6. CONNECTION: HANDRAIL CONNECTION SHALL BE DESIGNED TO WITHSTAND A 200 POUND LOAD APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP OF THE RAIL.

LANDINGS

R311.3 FLOORS AND LANDINGS AT EXTERIOR DOORS. THERE SHALL BE A LANDING OR FLOOR ON EACH SIDE OF EACH EXTERIOR DOOR. THE WIDTH OF EACH LANDING SHALL NOT BE LESS THAN THE DOOR SERVED. LANDINGS SHALL HAVE A DIMENSION OF NOT LESS THAN 36 INCHES MEASURED IN THE DIRECTION OF TRAVEL. THE SLOPE AT EXTERIOR LANDINGS SHALL NOT EXCEED 1/4 UNIT VERTICAL IN 12 UNTS HORIZONTAL (2 PER CENT.)

R311.3.2 FLOOR ELEVATION AT OTHER EXTERIOR DOORS. DOORS OTHER THAN REQUIRED EGRESS DOOR SHALL BE PROVIDED WITH LANDINGS OR FLOORS NOT MORE THAN 7-3/4 INCHES BELOW THE TOP OF THE THRESHOLD.

EVERY DUELLING UNIT AND ADDITION AREA SHALL BE PROVIDED WITH HEATING FACILITIES CAPABLE OF MAINTAINING A MINIMUM ROOM TEMPERATURE OF 68 DEGREES FAHRENHEIT AT A POINT 3 FEET ABOVE THE FLOOR AND 2 FEET FROM TEMPERATURE. CRC R303.9.

PROVIDE FIRE BLOCKING TO CUT OFF ALL CONCEALED DRAFT OPENINGS (VERTICAL AND HORIZONTAL) TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES AND BETWEEN A TOP STORY AND THE ROOF SPACE. CRC R302.11

PLUMBING WASTE VENTS SHALL TERMINATE NOT LESS THAN 10 FEET FROM, OR NOT LESS THAN 3 FEET ABOVE AN OPENABLE WINDOW, DOOR OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED. CPC 906.2

THE GRADE OF HORIZONTAL DRAINAGE PIPE SHALL NOT BE LESS THAN 1/4" PER FOOT. CPC 708.1

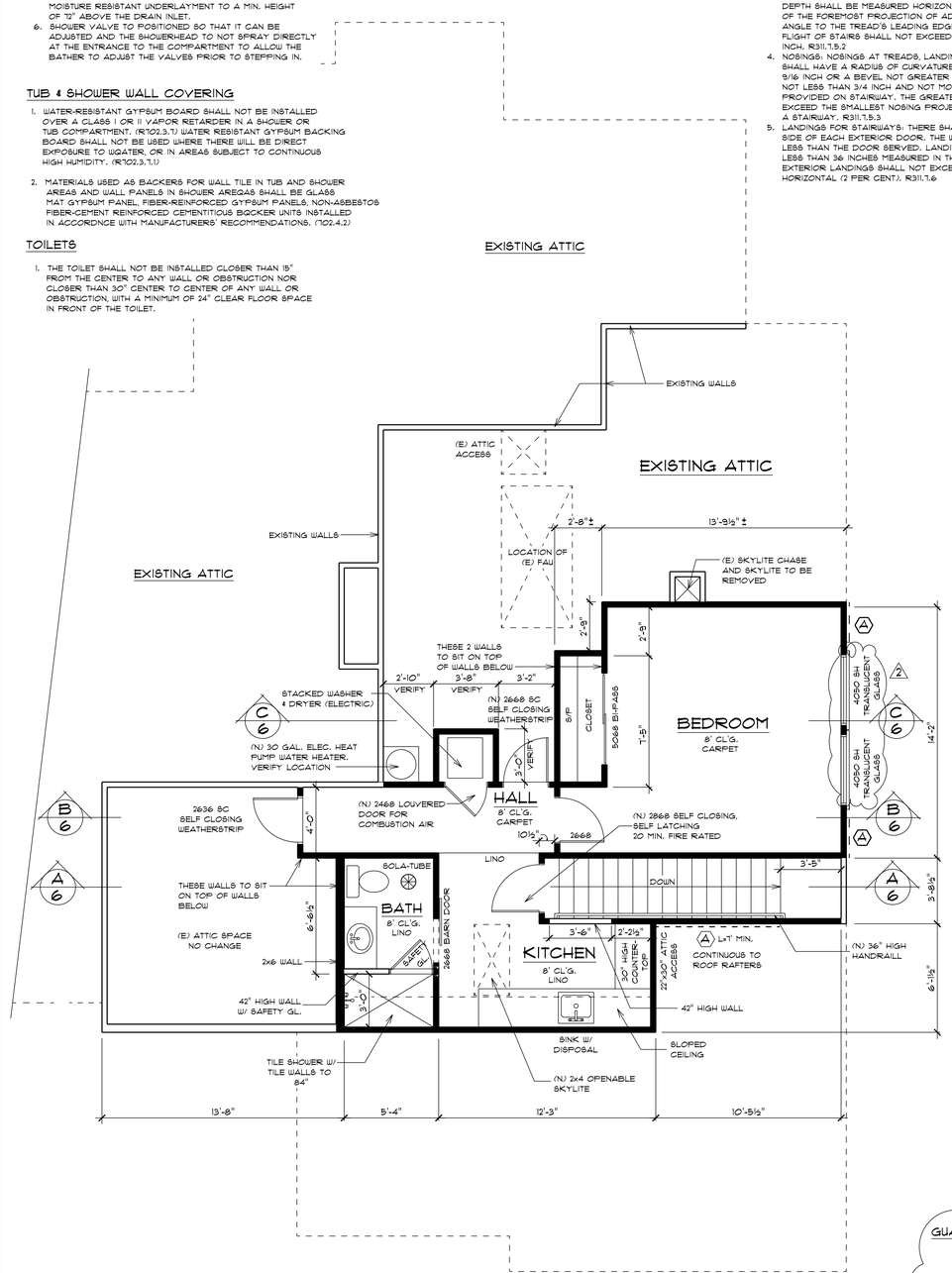
SHEARWALL SCHEDULE

(A) 3/8" CDX OR OSB w/ 8d @ 6"o.c. EDGES, 8d @ 12"o.c. FIELD, CONTINOUS TO RAFTERS.

SHEAR WALLS NOTED THUSLY

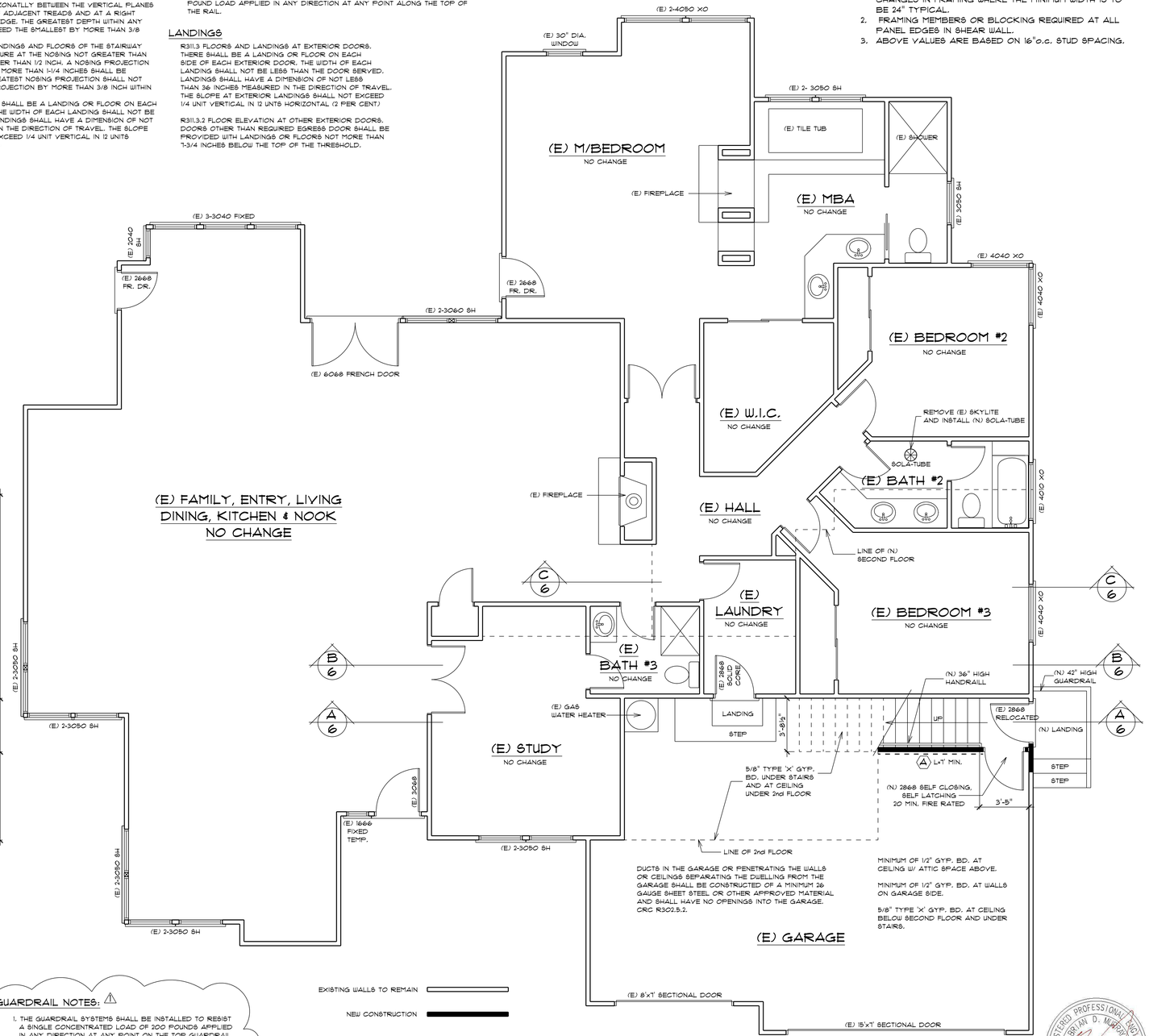
SHEARWALL NOTES

1. SHEATHING USED IN THE CONSTRUCTION OF SHEAR WALLS TO BE 4'x8' MINIMUM EXCEPT AT BOUNDARIES OR AT CHANGES IN FRAMING WHERE THE MINIMUM WIDTH IS TO BE 24" TYPICAL.
2. FRAMING MEMBERS OR BLOCKING REQUIRED AT ALL PANEL EDGES IN SHEAR WALL.
3. ABOVE VALUES ARE BASED ON 16"o.c. STUD SPACING.



(N) ATTACHED ADU FLOOR PLAN — SCALE: 1/4" = 1'-0"

597 S.F.



EXISTING WALLS TO REMAIN

NEW CONSTRUCTION

GUARDRAIL NOTES: ⚠

1. THE GUARDRAIL SYSTEMS SHALL BE INSTALLED TO RESIST A SINGLE CONCENTRATED LOAD OF 200 POUNDS APPLIED IN ANY DIRECTION AT ANY POINT ON THE TOP GUARDRAIL TO PRODUCE THE MAXIMUM LOAD EFFECT ON THE ELEMENT BEING CONSIDERED AND TO TRANSFER THIS LOAD THROUGH THE SUPPORTS TO THE STRUCTURE PER CRC, TABLE R301.5.
2. GUARDRAILS TO BE A MINIMUM OF 42" HIGH. OPEN GUARDS SHALL HAVE BALUSTERS OR AN ORNAMENTAL PATTERN SUCH THAT A SPHERE 4" IN DIAMETER CANNOT PASS THROUGH ANY OPENING AS PER CRC SECTION R312

NEW FIRST FLOOR PLAN — SCALE: 1/4" = 1'-0"

REVISION	BY
⚠1 PLAN CHECK 4-9-2024	GM
⚠2 PLANNING 6-7-2024	GM

GORDON MALM
gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-7685

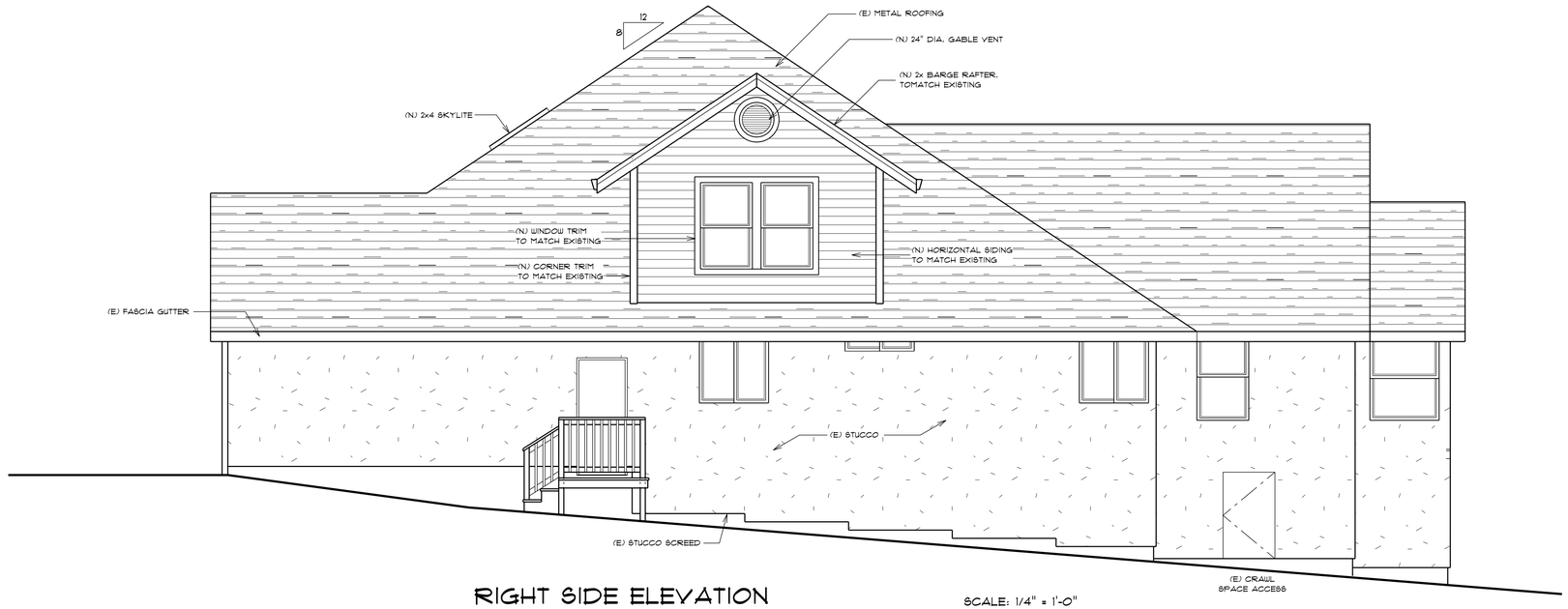
ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH CONSTRUCTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

NEW FLOOR PLANS

CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N: 227-0320-028-0000

REGISTERED PROFESSIONAL ENGINEER BRIAN D. MURRAY CE 19531 Exp. 9-30-2025 CIVIL STATE OF CALIFORNIA

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 1.1
OF SHEETS



RIGHT SIDE ELEVATION

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

WATER-RESITIVE BARRIER

EXTERIOR WALLS

ONE LAYER OF No. 15 ASPHALT FELT, FREE FROM HOLES AND BREAKS, COMPLYING WITH ASTM D226 FOR TYPE I FELT OR OTHER APPROVED WATER RESISTIVE BARRIER SHALL BE APPLIED OVER STUDS OR SHEATHING OF ALL EXTERIOR WALLS. No. 15 ASPHALT FELT SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES. WHERE JOINTS OCCUR, FELT SHALL BE LAPPED NOT LESS THAN 6 INCHES. OTHER APPROVED MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE WATER RESISTIVE BARRIER MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE NUMBER 15 ASPHALT FELT OR OTHER APPROVED WATER-RESISTIVE BARRIER MATERIAL SHALL BE CONTINUOUS TO THE TOP OF THE WALLS AND TERMINATED AT PENETRATIONS AND BUILDING APPENDAGES IN A MANNER TO MEET THE REQUIREMENTS OF THE EXTERIOR WALL ENVELOPE AS DESCRIBED IN THE 2022 CRC, SECTION R703.2

FRONT ELEVATION

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

REGISTERED PROFESSIONAL ENGINEER
BRIAN D. MORAN
CE19531
Exp. 9-30-2025
CIVIL
STATE OF CALIFORNIA

REVISION	BY
⚠	GM

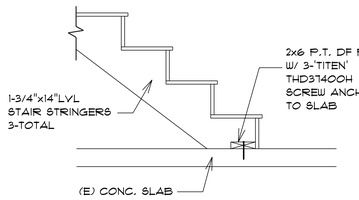
GORDON MALM
Gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1685

ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION OR CORRECTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

ELEVATIONS

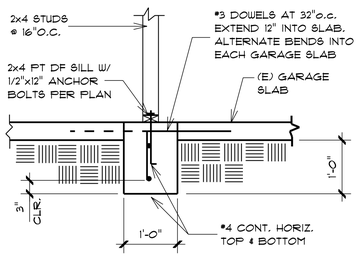
CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 2
OF SHEETS



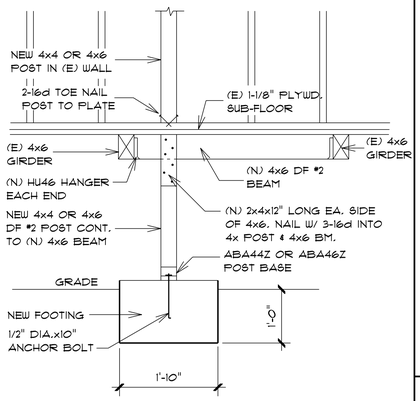
3/3 STAIR STRINGER

SCALE: 3/4"=1'-0"



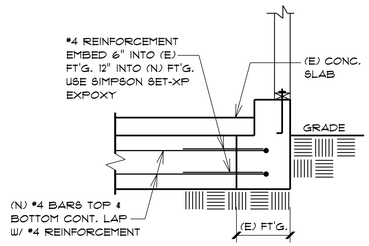
4/3 INTERIOR BEARING

SCALE: 3/4"=1'-0"



2/3 FT'G. to POST

SCALE: 3/4" = 1'-0"



5/3 (N) FT'G. TO EXISTING

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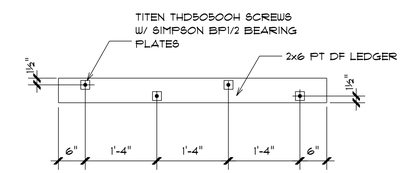
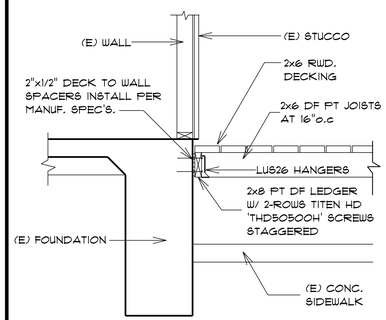


LEDGER BOLTING



1/3 LEDGER DETAIL

SCALE: 3/4"=1'-0"

HOLDOWN SCHEDULE

- HDU2-SDS2.5 HOLDOWN W/ SSTB20 ANCHOR BOLTS. MINIMUM EMBEDMENT = 16-5/8". INSTALL ON 4x4 POST W/ 6 - SDS 1/4"x2-1/2" WOOD SCREWS.

HOLDOWN NOTES

1. ALL HARDWARE TO BE SIMPSON OR EQUAL. INSTALL PER MANUFACTURERS SPECIFICATIONS.
2. CONNECT DOUBLE HOLDOWN STUDS TOGETHER WITH 24-16d SINKER NAILS MINIMUM.
3. PROVIDE 8" DIAMETER OR 8" SQUARE DEEPENED AREA AROUND HOLDOWN ANCHOR TO ACHIEVE 3" CLEAR COVER BELOW BOTTOM OF HOLDOWN ANCHORS AS REQUIRED.

DESIGN CRITERIA

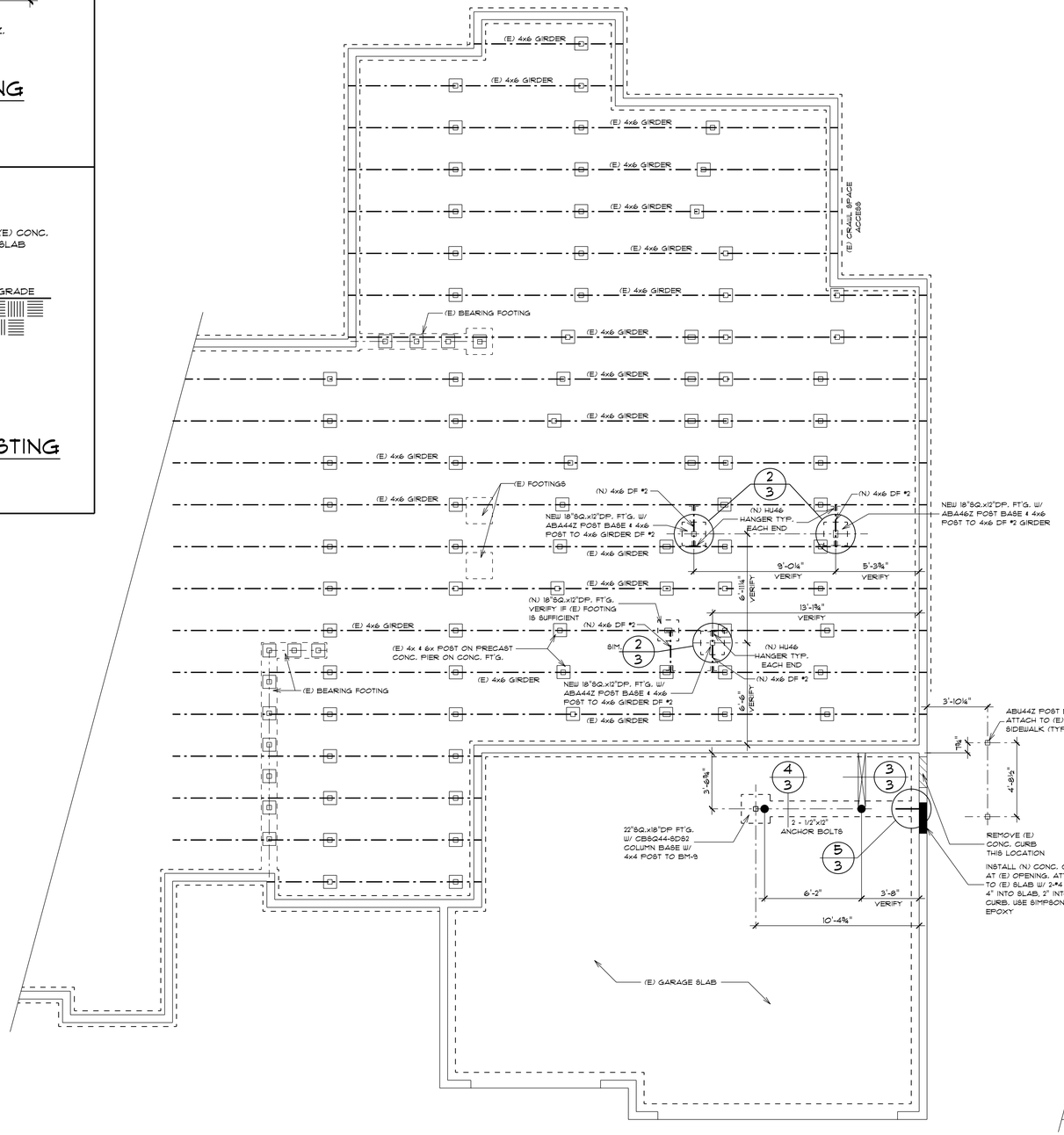
RISK CATEGORY - II
SEISMIC IMP. - I
Ss = 0.5
SITE CLASS - 'D' DEFAULT
Sds = 0.52
DESIGN CATEGORY - D
V = 0.65 W
Cs = 0.449
R = 6.5
SIMPLIFIED ALTERNATIVE STRUCTUAL DESIGN

MATERIAL SPEC'S.

WOOD FRAMING: DF CONSTRUCTION OR DF #2
CONCRETE: 2500psi - STANDARD CONST. MIX
REBAR - #4 - GRADE 60 - NEW STRIP FOOTING
SHEAR PANELS - 3/8" CDX OR OSB
FLOOR SHEATHING - 3/4" CDX OR OSB T&G

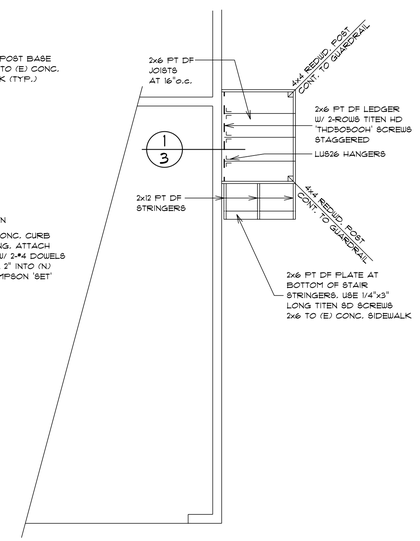
PROTECTION OF WOOD AND WOOD-BASED PRODUCTS

PROVIDE PROTECTION OF WOOD AND WOOD-BASED PRODUCTS FROM DECAY IN THE UNDER-FLOOR AREA PER CRC R317.1. PROVIDE NATURALLY DURABLE WOOD OR WOOD THAT IS PRESERVATIVE-TREATED IN ACCORDANCE WITH AWPA U1 FOR THE SPECIES, PRODUCT, PRESERVATIVE AND END USE. PRESERVATIVES SHALL BE LISTED IN SECTION 4 OF AWPA U1.



PARTIAL FOUNDATION PLAN

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



STAIR/LANDING FRAMING

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

REGISTERED PROFESSIONAL ENGINEER BRIAN D. MURPHY C21953 Exp. 9-30-2025 CIVIL STATE OF CALIFORNIA

REVISION	BY
1	GM

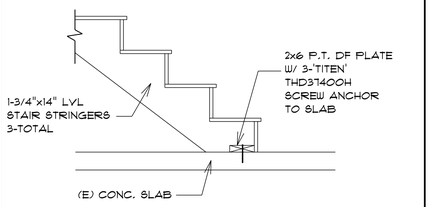
GORDON MALM
Gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1685

ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF GORDON MALM BEFORE CONSTRUCTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

FOUNDATION PLAN & DETAILS

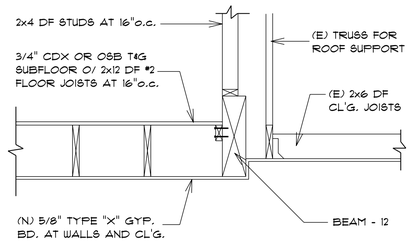
CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 3
OF SHEETS



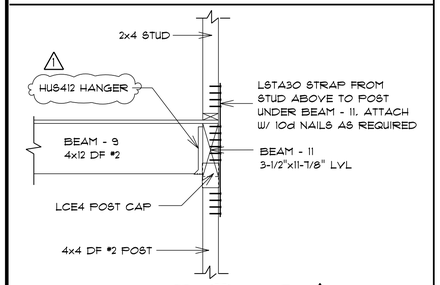
4/4 STAIR STRINGER

SCALE: 3/4"=1'-0"



3/4 BEAM DETAIL

SCALE: 3/4"=1'-0"



2/4 BEAM to POST

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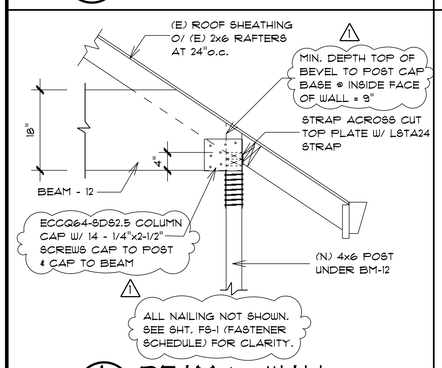
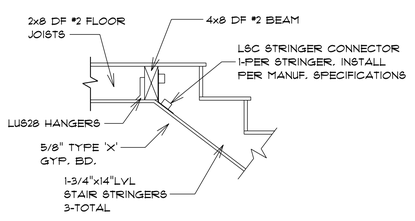


1/4 BEAM to WALL

SCALE: 3/4"=1'-0"



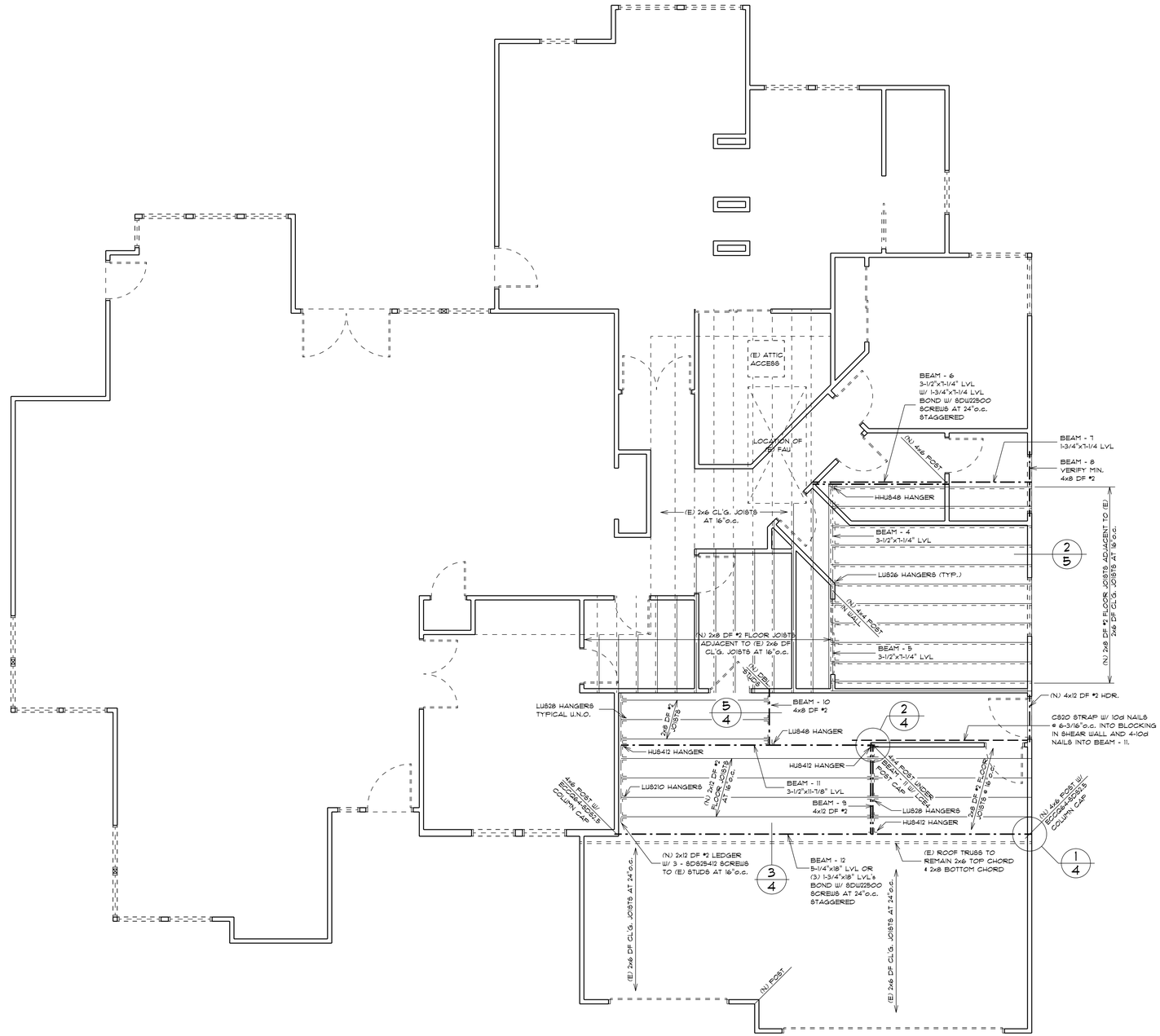
5/4 STAIR STRINGER

SCALE: 3/4"=1'-0"

FIRE BLOCKING

PROVIDE FIRE BLOCKING TO CUT OFF ALL CONCEALED DRAFT OPENINGS (VERTICAL AND HORIZONTAL) TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES AND BETWEEN A TOP STORY AND THE ROOF SPACE. CRC R302.11

REGISTERED PROFESSIONAL ENGINEER
BRIAN D. MEARNS
CE 19531
Exp. 9-30-2025
CIVIL
STATE OF CALIFORNIA



SECOND FLOOR FRAMING

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

REVISION	BY
1	GM

GORDON MALM
Gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1685

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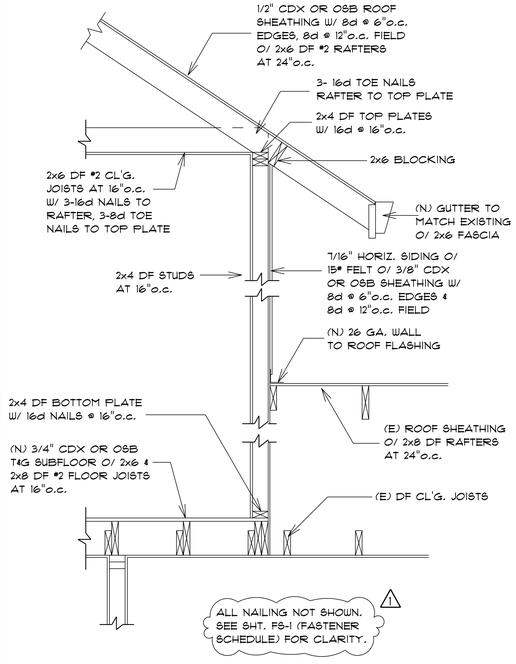
FLOOR FRAMING PLAN

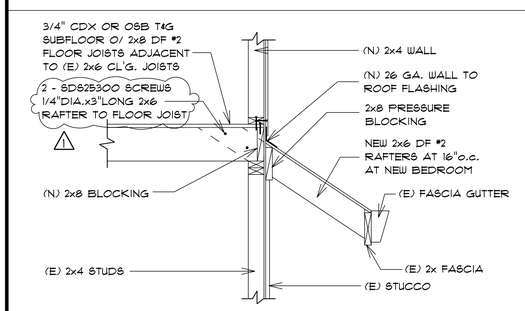
CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 4
OF SHEETS



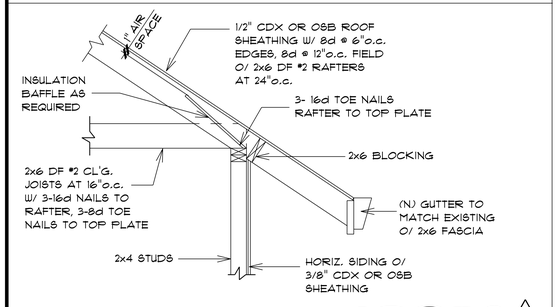
3/5 WALL DETAIL

SCALE: 3/4"=1'-0"



2/5 RAFTER DETAIL

SCALE: 3/4"=1'-0"



1/5 OVERHANG DETAIL

SCALE: 3/4"=1'-0"

WATER-REGITIVE BARRIER

EXTERIOR WALLS

ONE LAYER OF No. 15 ASPHALT FELT, FREE FROM HOLES AND BREAKS, COMPLYING WITH ASTM D226 FOR TYPE I FELT OR OTHER APPROVED WATER RESISTIVE BARRIER SHALL BE APPLIED OVER STUDS OR SHEATHING OF ALL EXTERIOR WALLS. No. 15 ASPHALT FELT SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES. WHERE JOINTS OCCUR, FELT SHALL BE LAPPED NOT LESS THAN 6 INCHES. OTHER APPROVED MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE WATER RESISTIVE BARRIER MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE NUMBER 15 ASPHALT FELT OR OTHER APPROVED WATER-RESISTIVE BARRIER MATERIAL SHALL BE CONTINUOUS TO THE TOP OF THE WALLS AND TERMINATED AT PENETRATIONS AND BUILDING APPENDAGES IN A MANNER TO MEET THE REQUIREMENTS OF THE EXTERIOR WALL ENVELOPE AS DESCRIBED IN THE 2022 CRC, SECTION R703.2

UNVENTED ATTIC & UNVENTED ENCLOSED RAFTER ASSEMBLIES (2022 CRC, R806.5)

UNVENTED ATTICS AND UNVENTED ENCLOSED ROOF FRAMING ASSEMBLIES CREATED BY CEILINGS THAT ARE APPLIED DIRECTLY TO THE UNDERSIDE OF THE ROOF FRAMING MEMBERS AND STRUCTURAL ROOF SHEATHING APPLIED DIRECTLY TO THE TOP OF THE ROOF FRAMING MEMBERS/RAFTERS, SHALL BE PERMITTED WHERE ALL OF THE FOLLOWING CONDITIONS ARE MET.

1. THE UNVENTED ATTIC SPACE IS COMPLETELY WITHIN THE BUILDING THERMAL ENVELOPE.
2. INTERIOR CLASS I VAPOR RETARDERS ARE NOT INSTALLED ON THE CEILING SIDE (ATTIC FLOOR) OF THE UNVENTED ATTIC ASSEMBLY OR ON THE CEILING SIDE OF THE UNVENTED ENCLOSED ROOF FRAMING ASSEMBLY.
3. PROVIDE A 1/4 INCH MINIMUM VENTED AIRSPACE THAT SEPARATES THE SHINGLES OR SHAKES AND THE ROOFING UNDERLAYMENT ABOVE THE STRUCTURAL SHEATHING.

FIRE BLOCKING

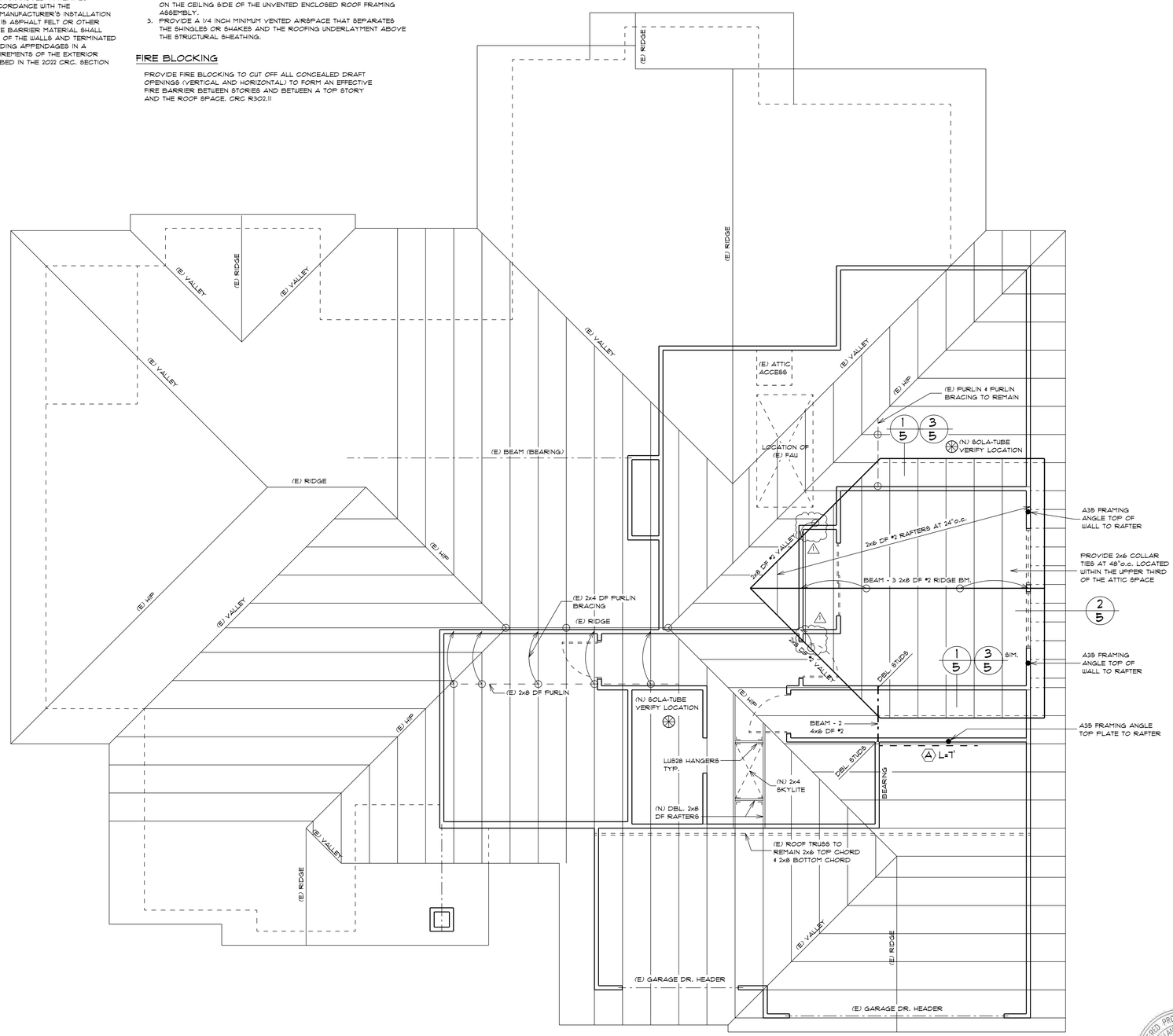
PROVIDE FIRE BLOCKING TO CUT OFF ALL CONCEALED DRAFT OPENINGS (VERTICAL AND HORIZONTAL) TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES AND BETWEEN A TOP STORY AND THE ROOF SPACE. CRC R302.11

NON VENTED ATTIC 2022CRC SECTION 806.5.1.3

WHERE BOTH AIR-IMPERMEABLE AND AIR-PERMEABLE INSULATION ARE PROVIDED, THE AIR IMPERMEABLE INSULATION SHALL BE APPLIED IN DIRECT CONTACT WITH THE UNDERSIDE OF THE STRUCTURAL ROOF SHEATHING AND SHALL BE IN ACCORDANCE WITH THE R VALUES IN TABLE R806.5 FOR CONDENSATION CONTROL. THE AIR PERMEABLE INSULATION SHALL BE INSTALLED DIRECTLY UNDER THE AIR IMPERMEABLE INSULATION.

VALLEY FLASHING R905.3.8

VALLEY FLASHING SHALL NOT BE LESS THAN 0.019 INCH (No. 26 GAGE) CORROSION-RESISTANT METAL. THE VALLEY FLASHING SHALL EXTEND NOT LESS THAN 11 INCHES FROM THE CENTER-LINE EACH WAY AND HAVE A SPLASH DIVERTER RIB NOT LESS THAN 1 INCH IN HEIGHT AT THE FLOW LINE FORMED AS PART OF THE FLASHING. SECTIONS OF FLASHING SHALL HAVE AN END LAP OF NOT LESS THAN 4 INCHES. FOR ROOF SLOPES OF 3 UNITS VERTICAL IN 12 UNITS HORIZONTAL (25-PERCENT SLOPE) AND GREATER, VALLEY FLASHING SHALL HAVE A 36 INCH WIDE UNDERLAYMENT OF ONE LAYER OF TYPE I UNDERLAYMENT RUNNING THE FULL LENGTH OF THE VALLEY, IN ADDITION TO OTHER REQUIRED UNDERLAYMENT.



ROOF FRAMING PLAN

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

REGISTERED PROFESSIONAL ENGINEER BRIAN D. MURPHY CE19531 Exp. 9-30-2025 CIVIL STATE OF CALIFORNIA

REVISION	BY
⚠1 PLAN CHECK 4-9-2024	GM

GORDON MALM
DRAFTSMAN
Gordon Malm
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1688

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ROOF FRAMING PLAN

CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 5 OF SHEETS

WATER-RESITIVE BARRIER

EXTERIOR WALLS (SIDING)

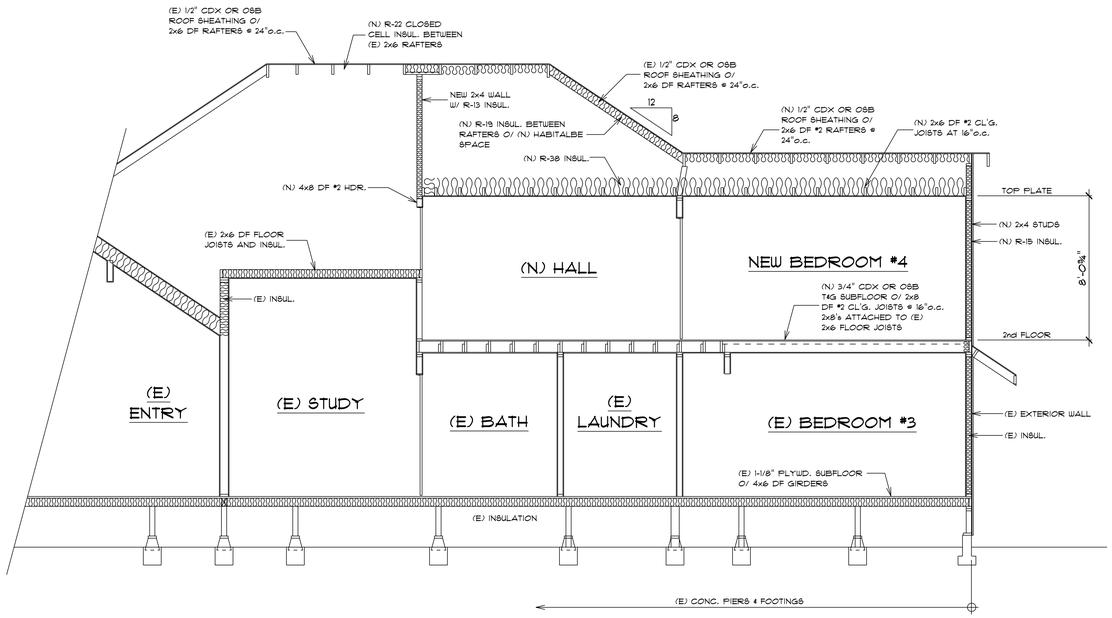
ONE LAYER OF No. 15 ASPHALT FELT, FREE FROM HOLES AND BREAKS, COMPLYING WITH ASTM D226 FOR TYPE I FELT OR OTHER APPROVED WATER RESISTIVE BARRIER SHALL BE APPLIED OVER STUDS OR SHEATHING OF ALL EXTERIOR WALLS. No. 15 ASPHALT FELT SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES. WHERE JOINTS OCCUR, FELT SHALL BE LAPPED NOT LESS THAN 6 INCHES. OTHER APPROVED MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH THE WATERRESISTIVE BARRIER MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE NUMBER 15 ASPHALT FELT OR OTHER APPROVED WATER-RESISTIVE BARRIER MATERIAL SHALL BE CONTINUOUS TO THE TOP OF THE WALLS AND TERMINATED AT PENETRATIONS AND BUILDING APPENDAGES IN A MANNER TO MEET THE REQUIREMENTS OF THE EXTERIOR WALL ENVELOPE AS DESCRIBED IN THE 2022 CRC. SECTION R703.1.

3-COAT STUCCO

LATH, 2022 CRC, SECTION 703.7.1
LATH AND LATH ATTACHMENT SHALL BE OF CORROSION-RESISTANT MATERIALS. EXPANDED METAL OR WOVEN WIRE LATH SHALL BE ATTACHED WITH 1-1/2 INCH LONG, 11 GAUGE NAILS HAVING A 7/16 INCH HEAD, OR 7/8 INCH LONG, 16 GAUGE STAPLES, SPACED NOT MORE THAN 6 INCHES OR AS OTHERWISE APPROVED.

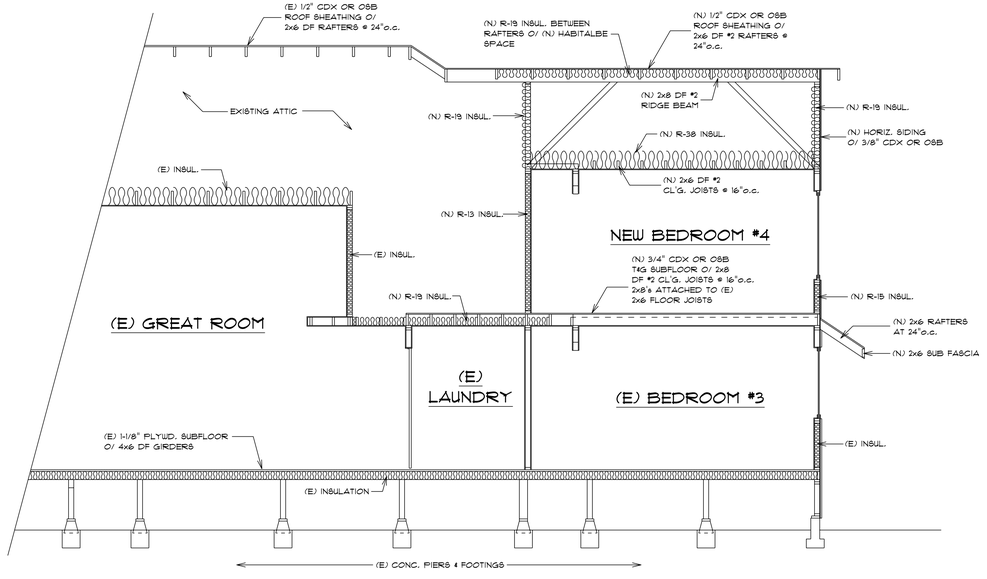
PLASTER, 2022 CRC, SECTION 703.7.2
PLASTER SHALL NOT BE LESS THAN 3-COATS WHERE APPLIED OVER METAL LATH OR WIRE LATH.

WATER RESISTIVE BARRIERS, 2022 CRC, SECTION 703.7.3
WATER RESISTIVE BARRIERS SHALL BE INSTALLED AS REQUIRED IN SECTION 703.2, 2022 CRC, AND WHERE APPLIED OVER WOOD-BASED SHEATHING, SHALL INCLUDE A WATER-RESISTIVE, VAPOR-PERMEABLE BARRIER WITH A PERFORMANCE AT LEAST EQUIVALENT TO TWO LAYERS OF GRADE 'D' PAPER. THE INDIVIDUAL LAYERS SHALL BE INSTALLED INDEPENDENTLY SUCH THAT EACH LAYER PROVIDES A SEPARATE CONTINOUS PLANE AND ANY FLASHING, INSTALLED IN ACCORDANCE WITH SECTION R703.4, 2022 CRC AND INTENDED TO DRAIN THE WATER-RESISTIVE BARRIER, IS DIRECTED BETWEEN LAYERS.



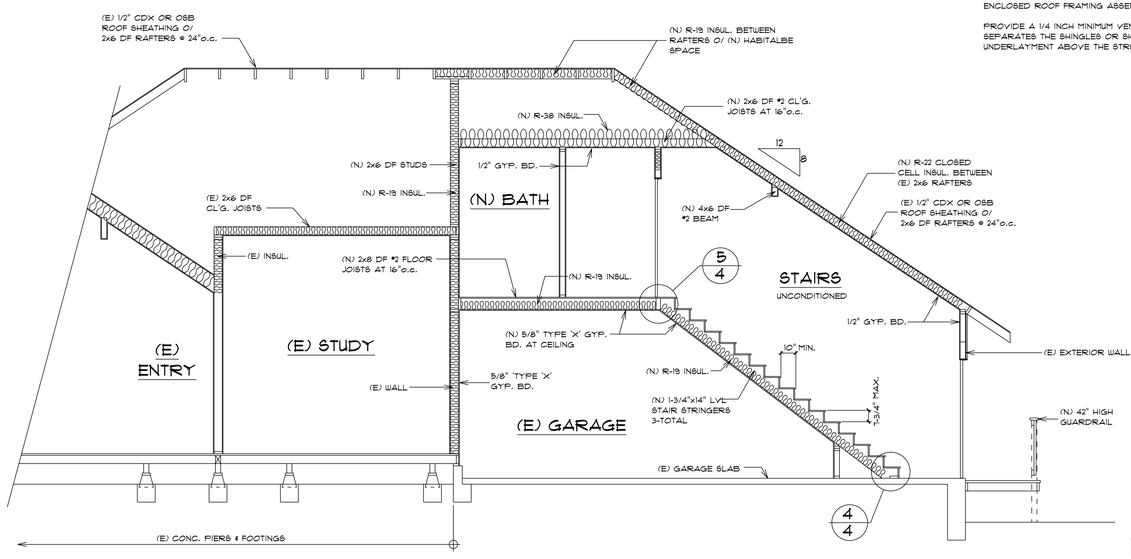
B/6 SECTION

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



C/6 SECTION

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



A/6 SECTION

FIRE BLOCKING

PROVIDE FIRE BLOCKING TO CUT OFF ALL CONCEALED DRAFT OPENINGS (VERTICAL AND HORIZONTAL) TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES AND BETWEEN A TOP STORY AND THE ROOF SPACE. CRC R302.11

NON VENTED ATTIC
2022 CRC SECTION 806.5.1.3

WHERE BOTH AIR-IMPERMEABLE AND AIR-PERMEABLE INSULATION ARE PROVIDED, THE AIR IMPERMEABLE INSULATION SHALL BE APPLIED IN DIRECT CONTACT WITH THE UNDERSIDE OF THE STRUCTURAL ROOF SHEATHING AND SHALL BE IN ACCORDANCE WITH THE R VALUES IN TABLE R806.5 FOR CONDENSATION CONTROL. THE AIR PERMEABLE INSULATION SHALL BE INSTALLED DIRECTLY UNDER THE AIR IMPERMEABLE INSULATION.

UNVENTED ATTIC SPACE IS COMPLETELY WITHIN THE BUILDING THERMAL ENVELOPE.

INTERIOR CLASS I VAPOR RETARDERS ARE NOT INSTALLED ON THE CEILING SIDE (ATTIC FLOOR) OF THE UNVENTED ATTIC ASSEMBLY OR ON THE CEILING SIDE OF THE UNVENTED ENCLOSED ROOF FRAMING ASSEMBLY.

PROVIDE A 1/4 INCH MINIMUM VENTED AIRSPACE THAT SEPARATES THE SHINGLES OR SHAKES AND THE ROOFING UNDERLAYMENT ABOVE THE STRUCTURAL SHEATHING.

REVISION	BY
1	GM

GORDON MALM
Gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1685

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SECTIONS

CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N. 227-0320-028-0000

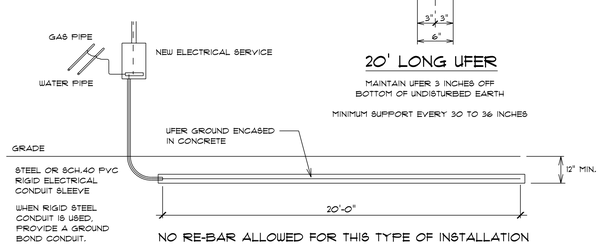
DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 6
OF SHEETS

REGISTERED PROFESSIONAL ENGINEER
BRIAN D. MUNSON
CE19531
Exp. 9-30-2025
CIVIL
STATE OF CALIFORNIA

ELECTRICAL NOTES

1) BOND METALLIC GAS PIPE AND WATER PIPES TO THE SERVICE GROUND.
2) PROVIDE TWO OR MORE 20 AMPERE SMALL APPLIANCE BRANCH CIRCUITS EVENLY PROPORTIONED IN THE KITCHEN, PANTRY, BREAKFAST ROOM, DINING ROOM OR SIMILAR AREA. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS
3) FIXTURES, HOLDERS AND RECEPTACLES SHALL BE SECURELY SUPPORTED. A FIXTURE THAT WEIGHS MORE THAN 6 POUNDS OR EXCEEDS 16" IN ANY DIMENSION SHALL NOT BE SUPPORTED BY THE SCREW SHELL OF A LAMP HOLDER
OUTLET BOXES SHALL NOT BE USED AS THE SOLE SUPPORT FOR CEILING FANS
4) CONDUCTOR WIRES WITH AN INSULATED NEUTRAL AND A FOUR-PRONG OUTLET IS REQUIRED FOR DRYERS.
5) PROVIDE ARC FAULT PROTECTION AT ALL BEDROOM OUTLETS, SMOKE DETECTORS, FANS AND FAN LIGHT COMBINATIONS.
6) BATHROOM RECEPTACLES SHALL BE SUPPLIED BY AT LEAST ONE 20 AMPERE BRANCH CIRCUIT. SUCH CIRCUITS SHALL HAVE NO OTHER OUTLETS.
7) ALL RECESSED CAN LIGHTS TO BE AIR TIGHT AND RATED FOR ZERO CLEARANCE.
8) PROVIDE A 125 - VOLT, SINGLE PHASE, 15 - 20 AMPERE-RATED RECEPTACLE OUTLET AT AN ACCESSIBLE LOCATION WITHIN 25' OF THE HVAC EQUIPMENT. CEC 210.63. PROVIDE A LIGHT WITHIN 25' OF HVAC EQUIPMENT, SWITCHED AT ATTIC ACCESS.
9) SMOKE DETECTORS AND CARBON MONOXIDE ALARMS TO BE HARD WIRED WITH A BATTERY BACKUP AND INTERCONNECTED.
10) CARBON MONOXIDE ALARMS SHALL BE LISTED AS COMPLYING WITH THE REQUIREMENTS OF UL 2034 AND CARBON MONOXIDE DETECTORS SHALL BE LISTED AS COMPLYING WITH THE REQUIREMENTS OF UL 2075.
11) BATHROOM FANS TO HAVE A BACK DRAFT DAMPER PER 2022 CGBSC SECTION 4.506.1, TO BE CONTROLLED BY A HUMIDISTAT AND TO BE AN "ENERGY STAR" RATED APPLIANCE PER CGBSC SECTION 4.506.
12) ALL 15 AND 20 AMP RECEPTACLES FOR THIS DWELLING UNIT, INCLUDING THE GARAGE SHALL BE "TAMPER RESISTANT RECEPTACLES " PER 2022 CEC
13) AN ARC-FAULT CIRCUIT INTERRUPTER SHALL PROTECT ALL RECEPTACLE OUTLETS.
14) PROVIDE ARC-FAULT PROTECTION AT KITCHEN RECEPTACLES.
15) GFCI PROTECTION IS REQUIRED FOR ALL 15A AND 20A, 125V RECEPTACLES INSTALLED IN THE FOLLOWING LOCATIONS:
    1) SINKS - GFCI PROTECTION FOR RECEPTACLES IS REQUIRED WITHIN AN ARC MEASUREMENT OF 6 FEET FROM THE OUTSIDE EDGE OF SINK.
    2) BATH TUBS OR SHOWER STALLS - GFCI PROTECTION IS REQUIRED FOR RECEPTACLES LOCATED WITHIN 6 FEET OF THE OUTSIDE EDGE OF A BATHTUB OR SHOWER STALL.
    3) LAUNDRY AREAS - RECEPTACLES INSTALLED IN LAUNDRY AREAS OF A DWELLING UNIT SHALL BE GFCI PROTECTED.
    4) DISHWASHERS - OUTLETS (NOT FOR A HARDWIRED APPLIANCE) SUPPLYING DISHWASHERS IN A DWELLING UNIT MUST BE GFIC PROTECTED. 2022 CEC
16) LIGHT FIXTURES IN EXTERIOR APPLICATIONS SHALL BE LABLED "SUITABLE FOR DAMP LOCATION" PER 2022 CEC
17) OUTDOOR RECEPTACLES SHALL BE:
    1) WEATHERPROOF WHETHER THE ATTACHMENT PLUG CAP IS/OR IS NOT INSERTED.
    2) SHALL BE TESTED AND LISTED FOR THIS USE.
    3) SHALL BE IDENTIFIED AS "EXTRA DUTY". PER 2022 CEC
18) EVERY CIRCUIT AND CIRCUIT MODIFICATION SHALL BE LEGIBLY IDENTIFIED AS TO ITS CLEAR, EVIDENT, AND SPECIFIC PURPOSE OR USE. THE IDENTIFICATION SHALL INCLUDE AN APPROVED DEGREE OF DETAIL THAT ALLOWS EACH CIRCUIT TO BE DISTINGUISHED FROM ALL OTHERS. SPARE POSITIONS THAT CONTAIN UNUSED OVERCURRENT DEVICES OR SWITCHES SHALL BE DESCRIBED ACCORDINGLY. THE IDENTIFICATION SHALL BE INCLUDED IN A CIRCUIT DIRETORY THAT IS LOCATED ON THE FACE OR INSIDE OF THE PANEL DOOR IN THE CASE OF A PANELBOARD. PER 2022 CEC
19) WHERE A GROUNDING ELECTRODE CONDUCTOR OR BONDING JUMPER IS CONNECTED TO A REBAR EXTENDED FROM A REBAR-TYPE CONCRETE-ENCASED ELECTRODE INSTALLED IN ACCORDANCE WITH CEC 250.68(A)(3), THE POINT OF CONNECTION TO THE REBAR EXTENSION SHALL BE IN AN ACCESSIBLE LOCATION, NOT SUBJECT TO CORROSION OF THE REBAR. PER 2022 CEC.
20) RECEPTACLE OUTLETS, SWITCHES AND ANY LIGHTING CONTROL SHALL BE PLACED NO MORE THAN 48 INCHES A.F.F AND NO LESS THAN 15 INCHES A.F.F.
21) DOORBELL BUTTONS, WHEN INSTALLED, SHALL NOT EXCEED MORE THAN 48 INCHES ABOVE THE EXTERIOR FLOOR OR LANDING.
22) INDOOR AIR QUALITY SWITCH: PROVIDE A LABEL CLEARLY DISPLAYING THE FOLLOWING OR EQUIVALENT TEXT. " THIS SWITCH CONTROLS THE INDOOR AIR QUALITY VENTILATION FOR THE HOME. LEAVE IT ON UNLESS THE OUTDOOR AIR QUALITY IS VERY POOR".

APPLIANCES IN ATTICS SHALL BE ACCESSIBLE THROUGH AN OPENING AND PASSAGEWAY LARGE ENOUGH TO ACCOMMODATE THE LARGEST COMPONENT OF EQUIPMENT. THE DISTANCE FROM THE PASSAGEWAY ACCESS TO THE APPLIANCE SHALL NOT EXCEED 20-FEET WHEN THE HEADROOM CLEARANCE IS LESS THAN 6-FEET AND SHALL BE MEASURED ALONG THE CENTERLINE OF THE PASSAGE-WAY. THE PASSAGEWAY SHALL BE UNOBSTRUCTED AND SHALL HAVE CONTINUOUS SOLID FLOORING NOT LESS THAN 24-INCHES WIDE FROM THE ENTRANCE OPENING TO THE APPLIANCE. A LEVEL WORKING PLATFORM NOT LESS THAN 30-INCHES IN DEPTH AND WIDTH SHALL BE PROVIDED IN FRONT OF THE SERVICE SIDE OF THE APPLIANCE.



20' LONG UFER

MAINTAIN UFER 3 INCHES OFF BOTTOM OF UNDISTURBED EARTH

MINIMUM SUPPORT EVERY 30 TO 36 INCHES

NO RE-BAR ALLOWED FOR THIS TYPE OF INSTALLATION

COPPER CONDUCTOR ONLY
SIZE PER NEC TABLE 250-66

UFER GROUND INSTALLATION OUTSIDE OF FOUNDATION

(FOR EXISTING BUILDING ONLY)

DRYER EXHAUST VENT

A) EXHAUST DUCT TERMINATION IS AS FOLLOWS PER CMC 502.2
   1. 3 FEET FROM A PROPERTY LINE.
   2. 10 FEET FROM A FORCED AIR INLET.
   3. 3 FEET FROM OPENINGS INTO THE BUILDING.
B) EXHAUST DUCTS SHALL TERMINATE ON THE OUTSIDE OF THE BUILDING AND EQUIPPED WITH A BACK DRAFT DAMPER. CMC 504.4
   EXHAUST DUCT SHALL NOT DISCHARGE ONTO A PUBLIC WAY. CMC 502.2
C) UNLESS OTHERWISE PERMITTED OR REQUIRED BY THE DRYER MANUFACTURER'S INSTALLATION INSTRUCTIONS AND APPROVED BY THE CITY, DOMESTIC DRYER MOISTURE EXHAUST DUCTS SHALL NOT EXCEED A TOTAL COMBINED HORIZONTAL AND VERTICAL LENGTH OF 14 FEET, INCLUDING TWO 90 DEGREE ELBOWS. 2 FEET SHALL BE DEDUCTED FJOR EACH 90 DEGREE ELBOW IN ECXESS OF TWO. CMC 504.4.2.
D) DRYER EXHAUST VENT WILL MAINTAIN A MINIMUM 5 FOOT DISTANCE FROM AN AC CONDENSER. SECTION 150.3.A.
E) PROVIDE AT LEAST 100 SQ. INCHES OF MAKE UP AIR FOR THE CLOTHES DRYER IN THE CLOSET. CMC 504.4.1.

ALL EXHAUST DUCTS SHALL BE SMOOTH INTERIOR SURFACE AND TERMINATE OUTSIDE THE BUILDING AND SHALL BE EQUIPPED WITH WITH A BACK DRAFT DAMPER. CMC 504.1

MINI SPLIT SYSTEM

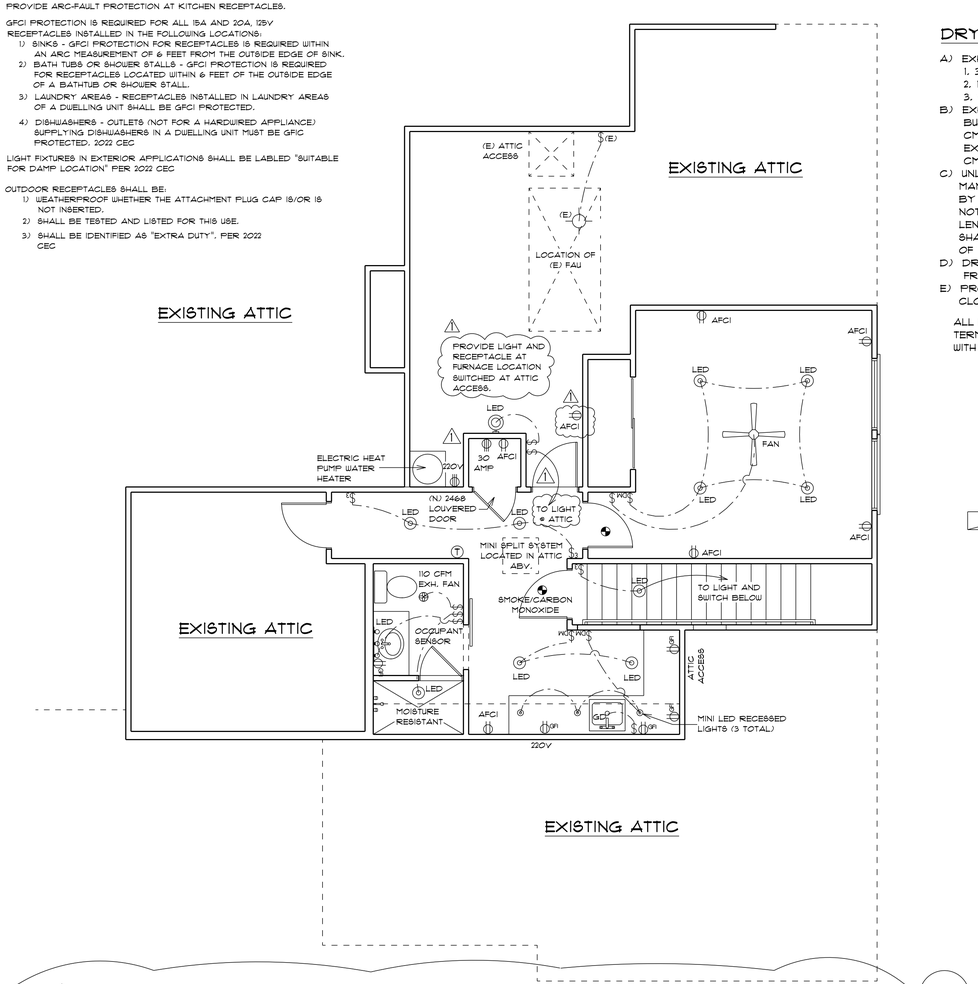
1) INSULATION ON THE SUCTION LINE (COOLING REFRIGERANT LINE) SHALL BE PROTECTED FROM PHYSICAL DAMAGE OR SUNLIGHT, MOISTURE, WIND AND EQUIPMENT MAINTENANCE BY A METAL SHROUD, PAINTED CANVAS OR PLASTIC COVER. ENERGY 150.0(m) 9.
2) THE REFRIGERANT CIRCUIT ACCESS PORT FOR THE CONDENSER SHALL BE PROTECTED FROM UNAUTHORIZED ACCESS WITH A LOCKING TYPE TAMPER RESISTANT CAP. CMC 1105.11 C.
3) THE CONDENSER UNIT SHALL REST ON A CONCRETE OR OTHER APPROVED BASE EXTENDING NOT LESS THAN 3 INCHES ABOVE THE ADJOINING GROUND LEVEL. CMC 1105.2

PLUMBING WASTE VENTS SHALL TERMINATE NOT LESS THAN 10 FEET FROM, OR NOT LESS THAN 3 FEET ABOVE AN OPENABLE WINDOW, DOOR OPENING, AIR INTAKE, OR VENT SHAFT, OR NOT LESS THAN 3 FEET IN EVERY DIRECTION FROM A LOT LINE, ALLEY AND STREET EXCEPTED. CPC 906.2

THE GRADE OF HORIZONTAL DRAINAGE PIPE SHALL NOT BE LESS THAN 1/4" PER FOOT. CPC 708.1

LIGHTING REQUIREMENTS (2022 CEC)

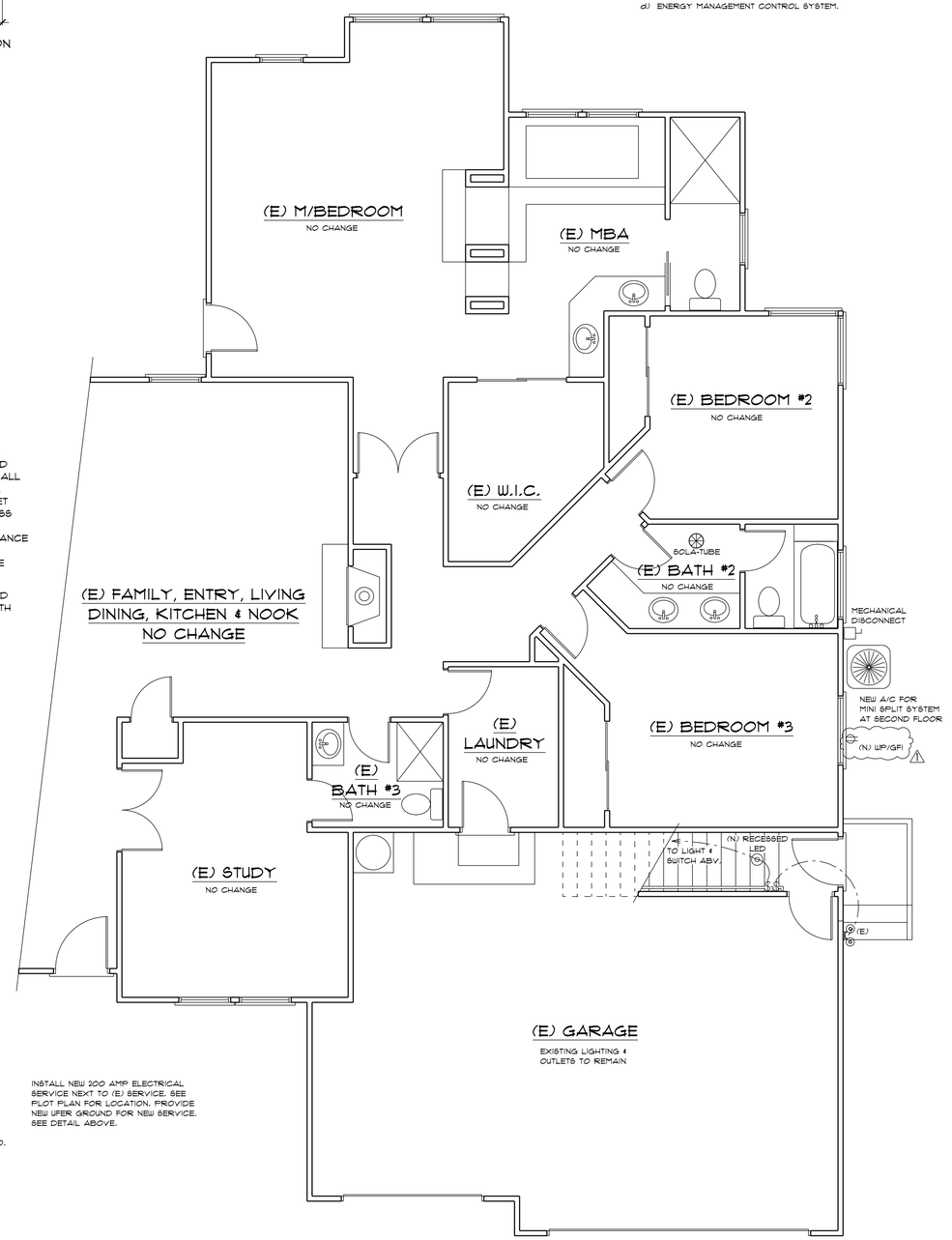
1. ALL NEW LIGHTING SHALL BE HIGH EFFICACY. DIMMERS OR VACANCY SENSORS SHALL CONTROL ALL NEW LIGHT FIXTURES OTHER THAN FOR CLOSETS LESS THAN 70 S.F. AND HALLWAYS.
2. AT LEAST ONE LUMINAIRE IN THE BATHROOMS, GARAGES, LAUNDRY ROOMS AND UTILITY ROOMS SHALL BE CONTROLLED BY A VACANCY SENSOR.
3. ALL RECESSED LUMINAIRES SHALL MEET ALL OF THE FOLLOWING.
   a) LISTED FOR ZERO CLEARANCE INSULATION.
   b) CERTIFIED AIRTIGHT LUMINAIRES WITH AIR LEAKAGE LESS THAN 2.0 CFM A 75 PASCAL'S
   c) SEALED WITH A GASKET OR CAULK.
   d) WILL ALLOW REPLACEMENT AND MAINTENANCE TO BE READILY ACCESSIBLE FROM BELOW THE CEILING WITHOUT CUTTING HOLES IN THE CEILING.
   e) SHALL NOT CONTAIN SCREW BASE SOCKETS AND SHALL CONTAIN LIGHT SOURCES THAT COMPLY WITH JA8.
4) ALL OUTDOOR (HIGH EFFICACY) LIGHTING SHALL BE CONTROLLED BY A MANUAL ON AND OFF SWITCH THAT DOES NOT OVERRIDE TO ON AND ONE OF THE FOLLOWING.
   a) CONTROLLED BY PHOTOCELL AND MOTION SENSOR.
   b) PHOTO CONTROL AND AUTOMATIC SWITCH CONTROL.
   c) ASTRONOMICAL TIME CLOCK.
   d) ENERGY MANAGEMENT CONTROL SYSTEM.



(N) ATTACHED ADU ELECTRICAL FLOOR PLAN

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

	CEILING FAN
	CEILING MOUNTED (LED)
	WALL MOUNTED (LED)
	FLUORESCENT
	RECESSED CAN (LED)
FL	RECESSED CAN - FLUORESCENT
	SINGLE-SURFACE MOUNTED DIRECTIONAL CAN (LED)
	DUAL-SURFACE MOUNTED DIRECTIONAL CAN (LED)
F	FAN-LIGHT COMBINATION
	FAN
T	THERMOSTAT
	CHIMES
	DOORBELL BUTTON
TV	TELEVISION
	TELEPHONE
$	SINGLE POLE SWITCH
$DM	SINGLE POLE SWITCH W/ DIMMER
$3	THREE WAY SWITCH
$4	FOUR WAY SWITCH
	SMOKE DETECTOR-DIRECT WIRE
	DUPLEX RECEPTACLE - MTD. 12" A.F.F. - U.N.O.
	DUPLEX RECEPTACLE - MTD. 48" A.F.F. - U.N.O.
	1/2 SWITCHED DUPLEX RECEPTACLE - MTD. 12" A.F.F. - U.N.O.
	220V RECEPTACLE
WP	WATER PROOF
GFI	GROUND FAULT INTERUPTER
	RECESSED ELECTRICAL SERVICE
J	JUNCTION BOX
	BAR LIGHT - WALL MOUNT AT +80"
	MECHANICAL DISCONNECT
	ALARM KEYPAD
	GARAGE DOOR OPENER
C	ALARM CONTROL BOX
PL	PATH LIGHT
AFCI	ARC FAULT CIRCUIT INTERRUPTER



INSTALL NEW 200 AMP ELECTRICAL SERVICE NEXT TO (E) SERVICE. SEE PLOT PLAN FOR LOCATION. PROVIDE NEW UFER GROUND FOR NEW SERVICE. SEE DETAIL ABOVE.

(N) FIRST ELECTRICAL FLOOR PLAN

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

REVISION	BY
1 PLAN CHECK 4-9-2024	GM
2 PLANNING 6-7-2024	GM

GORDON MALM
Gordon Malm
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1685

ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE DESIGNER BEFORE PROCEEDING WITH CONSTRUCTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

ELECTRICAL FLOOR PLANS

CARRIE BLACK
154 AMERICAN RIVER CANYON DRIVE
FOLSOM, CA 95630
A.P.N: 227-0320-028-0000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET 1
OF SHEETS

TABLE R602.3(1)
FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION
	Roof		
1	Blocking between ceiling joists, rafters or trusses to top plate or other framing below	4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 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 (2 1/2″ × 0.131″); or 2-3″ × 0.131″ nails	Each end toe nail
		2-16d common (3 1/2″ × 0.162″); or 3-3″ × 0.131″ nails	End nail
	Flat blocking to truss and web filler	16d common (3 1/2″ × 0.162″); or 3″ × 0.131″ nails	6″ o.c. face nail
2	Ceiling joists to top plate	4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 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 (3 1/2″ × 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 (3 1/2″ × 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 truss[i]
7	Roof rafters to ridge, valley or hip rafters or roof rafter to minimum 2″ ridge beam	4-16d box (3 1/2″ × 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 (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 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 (3 1/2″ × 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 (3 1/2″ × 0.135″); or 3″ × 0.131″ nails	12″ o.c. face nail
		16d common (3 1/2″ × 0.162″)	16″ o.c. face nail
10	Built-up header (2″ to 2″ header with 1/2″ spacer)	16d common (3 1/2″ × 0.162″)	16″ o.c. each edge face nail
		16d box (3 1/2″ × 0.135″)	12″ o.c. each edge face nail
11	Continuous header to stud	5-8d box (2 1/2″ × 0.113″); or 4-8d common (2 1/2″ × 0.131″); or 4-10d box (3″ × 0.128″)	Toe nail

(continued)

TABLE R602.3(1)—continued
FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION
	Wall		
12	Adjacent full-height stud to end of header	4-16d box (3 1/2″ × 0.135″); or 3-16d common (3 1/2″ × 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 (3 1/2″ × 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 (3 1/2″ × 0.162″); or 12-16d box (3 1/2″ × 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 (3 1/2″ × 0.162″)	16″ o.c. face nail
		16d box (3 1/2″ × 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 (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 0.162″); or 4-3″ × 0.131″ nails	16″ o.c. face nail
17	Top or bottom plate to stud	4-8d box (2 1/2″ × 0.113″); or 3-16d box (3 1/2″ × 0.135″); or 4-8d common (2 1/2″ × 0.131″); or 4-10d box (3″ × 0.128″); or 4-3″ × 0.131″ nails	Toe nail
		3-16d box (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 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 (3 1/2″ × 0.162″); or 3-3″ × 0.131″ nails	Face nail
19	1″ brace to each stud and plate	3-8d box (2 1/2″ × 0.113″); or 2-8d common (2 1/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples 1 3/4″	Face nail
20	1″ × 6″ sheathing to each bearing	3-8d box (2 1/2″ × 0.113″); or 2-8d common (2 1/2″ × 0.131″); or 2-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 1 3/4″ long	Face nail
21	1″ × 8″ and wider sheathing to each bearing	3-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 3 staples, 1″ crown, 16 ga., 1 3/4″ long	Face nail
		Wider than 1″ × 8″ 4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 4 staples, 1″ crown, 16 ga., 1 3/4″ long	

(continued)

TABLE R602.3(1)—continued
FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION	
	Floor			
22	Joist to sill, top plate or girder	4-8d box (2 1/2″ × 0.113″); or 3-8d common (2 1/2″ × 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 (2 1/2″ × 0.113″)	4″ o.c. toe nail	
		8d common (2 1/2″ × 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 (2 1/2″ × 0.113″); or 2-8d common (2 1/2″ × 0.131″); or 3-10d box (3″ × 0.128″); or 2 staples, 1″ crown, 16 ga., 1 3/4″ long	Face nail	
25	2″ subfloor to joist or girder	3-16d box (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 0.162″)	Blind and face nail	
26	2″ planks (plank & beam—floor & roof)	3-16d box (3 1/2″ × 0.135″); or 2-16d common (3 1/2″ × 0.162″)	At each bearing, face nail	
27	Band or rim joist to joist	3-16d common (3 1/2″ × 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 (3 1/2″ × 0.135″); or 3-16d common (3 1/2″ × 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 (2 1/2″ × 0.131″); or 2-3″ × 0.131″ nails	Each end, toe nail	
ITEM	**DESCRIPTION OF BUILDING ELEMENTS**	**NUMBER AND TYPE OF FASTENER[a, b, c]**	**SPACING OF FASTENERS**	
			Edges[h] (inches)	**Intermediate supports[c, 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 2 3/8″ × 0.113″ × 0.266″ head nail (subfloor, wall)[i]	6	6[f]
		8d common (2 1/2″ × 0.131″) nail (roof); or RSRS-01 (2 3/8″ × 0.113″) nail (roof)[b]	6	6[f]
32	19/32″ – 3/4″	8d common (2-2 1/2″ × 0.131″) nail (subfloor, wall)	6	12
		8d common (2 1/2″ × 0.131″) nail (roof); or RSRS-01; (2 3/8″ × 0.113″) nail (roof)[b]	6	6[f]
		Deformed 2 3/8″ × 0.113″ × 0.266″ head (wall or subfloor)	6	12
33	7/8″ – 1 1/4″	10d common (3″ × 0.148″) nail; or (2 1/2″ × 0.131 × 0.281″ head) deformed nail	6	12

(continued)

TABLE R602.3(1)—continued
FASTENING SCHEDULE

ITEM	DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER[a, b, c]	SPACING AND LOCATION	
	Other wall sheathing[g]			
34	1/2″ structural cellulosic fiberboard sheathing	1 1/2″ × 0.120″ galvanized roofing nail, 7/16″ head diameter; or 1 1/4″ long 16 ga. staple with 7/16″ or 1″ crown	3	6
35	25/32″ structural cellulosic fiberboard sheathing	1 3/4″ × 0.120″ galvanized roofing nail, 7/16″ head diameter; or 1 1/4″ long 16 ga. staple with 7/16″ or 1″ crown	3	6
36	1/2″ gypsum sheathing[d]	1 1/2″ × 0.120″ galvanized roofing nail, 7/16″ head diameter, or 1 1/4″ long 16 ga.; staple galvanized, 1 1/2″ long; 7/16″ or 1″ crown or 1 1/4″ screws, Type W or S	7	7
37	5/8″ gypsum sheathing[d]	1 3/4″ × 0.120″ galvanized roofing nail, 7/16″ head diameter, or 1 1/4″ long 16 ga.; staple galvanized, 1 1/2″ long; 7/16″ or 1″ crown or 1 1/4″ 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 (2 1/2″ × 0.131″) nail	6	12
39	7/8″ – 1"	8d common (2 1/2″ × 0.131″) nail; or Deformed (2″ × 0.113″); or Deformed (2 1/2″ × 0.120″) nail	6	12
40	1 1/8″ – 1 1/4″	10d common (3″ × 0.148″) nail; or Deformed (2″ × 0.113″); or Deformed (2 1/2″ × 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.

TABLE R602.3(2)
ALTERNATE ATTACHMENTS TO TABLE R602.3(1)

NOMINAL MATERIAL THICKNESS (inches)	DESCRIPTION[a, b] OF FASTENER AND LENGTH (inches)	SPACING[c] OF FASTENERS	
		Edges (inches)	Intermediate supports (inches)
Wood structural panels subfloor, roof[g] and wall sheathing to framing and particleboard wall sheathing to framing[f]			
Up to 1/2	Staple 15 ga. 1 3/4	4	8
	0.097–0.099 Nail 2 1/4	3	6
	Staple 16 ga. 1 3/4	3	6
19/32 and 5/8	0.113 Nail 2	3	6
	Staple 15 and 16 ga. 2	4	8
	0.097–0.099 Nail 2 1/4	4	8
23/32 and 3/4	Staple 14 ga. 2	4	8
	Staple 15 ga. 1 3/4	3	6
	0.097–0.099 Nail 2 1/4	4	8
	Staple 16 ga. 2	4	8
1	Staple 14 ga. 2 1/4	4	8
	0.113 Nail 2 1/4	3	6
	Staple 15 ga. 2 1/4	4	8
	0.097–0.099 Nail 2 1/2	4	8
NOMINAL MATERIAL THICKNESS (inches)	**DESCRIPTION[a, b] OF FASTENER AND LENGTH (inches)**	**SPACING[c] OF FASTENERS**	
		Edges (inches)	**Body of panel[d] (inches)**
Floor underlayment; plywood-hardboard-particleboard[f]-fiber-cement[h]			
Fiber-cement			
1/4	1 1/4 long × 0.099″ corrosion-resistant, ring shank nails (finished flooring other than tile)	3	6
	Staple 18 ga., 7/8 long, 1/4 crown (finished flooring other than tile)	3	6
	1 1/4 long × .121 shank × .375 head diameter corrosion-resistant (galvanized or stainless steel) roofing nails (for tile finish)	8	8
	1 1/4 long, No. 8 × .375 head diameter, ribbed wafer-head screws (for tile finish)	8	8
Plywood			
1/4 and 5/16	1 1/4 ring or screw shank nail-minimum 12 1/2 ga. (0.099″) shank diameter	3	6
	Staple 18 ga., 7/8, 3/16 crown width	2	5
11/32, 3/8, 15/32 and 1/2	1 1/4 ring or screw shank nail-minimum 12 1/2 ga. (0.099″) shank diameter	6	8[e]
19/32, 5/8, 23/32 and 3/4	1 1/2 ring or screw shank nail-minimum 12 1/2 ga. (0.099″) shank diameter	6	8
	Staple 16 ga. 1 1/2	6	8
Hardboard[f]			
0.200	1 1/2 long × 0.080″ ring-grooved shank underlayment nail	6	6
	1 3/8 long × 0.080″ polymer cement-coated sinker nail	6	6
	Staple 18 ga., 7/8 long (plastic coated)	3	6
Particleboard			
1/4	1 1/2 long × 0.099″ ring-grooved shank underlayment nail	3	6
	Staple 18 ga., 7/8 long, 3/16 crown	3	6
3/8	2 long × 0.120″ ring-grooved shank underlayment nail	6	10
	Staple 16 ga., 1 1/8 long, 3/8 crown	3	6
1/2, 5/8	2 long × 0.120″ ring-grooved shank underlayment nail	6	10
	Staple 16 ga., 1 5/8 long, 3/8 crown	3	6

(continued)

GORDON MALM
DRAFTSMAN
5424 SHIRE COURT, FAIR OAKS, CA 95628
(916) 390-1685

FASTENER SCHEDULE

DATE 4/5/2023

SHEET FS-1

GENERAL INFORMATION					
01	Project Name	Black Ex Plus ADU Add			
02	Run Title	Title 24 Analysis			
03	Project Location	154 American River Canyon Dr			
04	City	Folsom	05	Standards Version	2022
06	Zip code	95630	07	Software Version	EnergyPro 9.2
08	Climate Zone	12	09	Front Orientation (deg/ Cardinal)	300
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	Addition and/or Alteration	13	Number of Bedrooms	4
14	Addition Cond. Floor Area (ft^2)	460	15	Number of Stories	2
16	Existing Cond. Floor Area (ft^2)	2924	17	Fenestration Average U-factor	0.33
18	Total Cond. Floor Area (ft^2)	3384	19	Glazing Percentage (%)	15.29%
20	ADU Bedroom Count	1	21	ADU Conditioned Floor Area	460
22	Fuel Type	Natural gas	23	No Dwelling Unit:	No

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

ENERGY USE SUMMARY

Energy Use	Standard Design Source Energy (EDR1) ($kBtu/ft^2$-yr)	Standard Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)	Proposed Design Source Energy (EDR1) ($kBtu/ft^2$-yr)	Proposed Design TDV Energy (EDR2) ($kTDV/ft^2$-yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0	74.57	0	75.88	0	-1.31
Space Cooling	0	74.89	0	74.35	0	0.54
IAQ Ventilation	0	0.7	0	0.7	0	0
Water Heating	0	31.55	0	30.45	0	1.1
Self Utilization/Flexibility Credit						
Efficiency Compliance Total	0	181.71	0	181.38	0	0.33
Photovoltaics		0		0		
Battery				0		
Flexibility						
Indoor Lighting	0	6.77	0	6.77		
Appl. & Cooking	0	10.94	0	10.95		
Plug Loads	0	19.65	0	19.65		
Outdoor Lighting	0	1.67	0	1.67		
TOTAL COMPLIANCE	0	220.74	0	220.42		

ENERGY USE INTENSITY

	Standard Design ($kBtu/ft^2$ - yr)	Proposed Design ($kBtu/ft^2$ - yr)	Compliance Margin ($kBtu/ft^2$ - yr)	Margin Percentage
Gross EUI[1]	36.1	36.43	-0.33	-0.91
Net EUI[2]	36.1	36.43	-0.33	-0.91

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.

- Insulation below roof deck
- New ductwork added is less than 25 ft. in length
- Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)
- Northwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed

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)
- Refrigerant Charge verification required if a refrigerant containing component is altered
- 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)
- Duct Sealing required if a duct system component, plenum, or air handling unit is altered

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft^2)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Black Ex Plus ADU Add	3384	1	4	2	0	2

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Status
Existing Home	Conditioned	Res HVAC1	2924	10.8	DHW Sys 1	Existing Unchanged
Addition	Conditioned	New Ductless Mini-Split2	460	8	DHW Sys 3	New

OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Front Wall	Existing Home	R-0 Wall	300	Front	415	119.8	90	none	Existing	No
Back Wall	Existing Home	R-0 Wall	120	Back	700	204.25	90	none	Existing	No
Right Wall	Existing Home	R-0 Wall	210	Right	560	63	90	none	Existing	No
Left Wall	Existing Home	R-0 Wall	30	Left	700	101.5	90	none	Existing	No
Front Wall 2	Addition	R-15 Wall	300	Front	142	0	90	none	New	n/a
Right Wall 2	Addition	R-15 Wall	210	Right	196	40	90	none	New	n/a
Knee Walls to Attic	Existing Home>>Attic Existing Home	Existing Knee Walls to At	n/a	n/a	80	0	n/a		Existing	No
Wall to Garage	Existing Home>>__Garage__	Existing Wall to Garage	n/a	n/a	380	18	n/a		New	n/a
Front Wall to Attic	Addition>>Attic Addition	R-13 Wall	n/a	n/a	147	0	n/a		New	n/a

OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Back Wall to Attic	Addition>>Attic Addition	R-13 Wall	n/a	n/a	212	20	n/a		New	n/a
Right Wall to Attic	Addition>>Attic Addition	R-13 Wall	n/a	n/a	24	0	n/a		New	n/a
Left Wall to Attic	Addition>>Attic Addition	R-13 Wall	n/a	n/a	216	26.8	n/a		New	n/a
Attic 2	Existing Home	R-19 Roof Attic	n/a	n/a	1596	n/a	n/a		Existing	No
Attic 3	Addition	R-38 HP Attic	n/a	n/a	415.17	n/a	n/a		New	n/a
Roof	__Garage__	R-0 Roof Attic	n/a	n/a	648	n/a	n/a		Existing	No
Raised Floor	Existing Home	R-19 Floor Crawlspace	n/a	n/a	2924	n/a	n/a		New	n/a
Floor over Lower Living	Addition	R-0 Floor No Crawlspace	n/a	n/a	282	n/a	n/a		New	n/a
Floor Over Garage	Addition	R-19 Floor No Crawlspace	n/a	n/a	178	n/a	n/a		New	n/a
Front Gar	__Garage__	Garage Ext Wall	300	Front	310	161	90	none	Existing	No
Right Gar	__Garage__	Garage Ext Wall	210	Right	235	16.75	90	none	Existing	No
Left Gar	__Garage__	Garage Ext Wall	30	Left	130	0	90	none	Existing	No

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Zone	Construction	Azimuth	Orientation	Area (ft^2)	Skylight Area (ft^2)	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Cool Roof	Status	Verified Existing Condition	Existing Construction
Cathedral (1)	Existing Home	R-19 Roof Cathedral	300	Front	660	0	8	0.1	0.85	No	Existing	No	
Cathedral (2)	Existing Home	R-19 Roof Cathedral	120	Back	660	0	8	0.1	0.85	No	Existing	No	

OPAQUE SURFACES - CATHEDRAL CEILINGS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Zone	Construction	Azimuth	Orientation	Area (ft^2)	Skylight Area (ft^2)	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Cool Roof	Status	Verified Existing Condition	Existing Construction
Cathedral (3)	Existing Home	R-19 Roof Cathedral	210	Right	138	0	8	0.1	0.85	No	Existing	No	
Cathedral (4)	Existing Home	R-19 Roof Cathedral	30	Left	138	0	8	0.1	0.85	No	Existing	No	
Attic	Addition	R-38 HP Attic1	300	Front	8.93	8.83	8	0.1	0.85	No	New	n/a	
Sloped Ceiling	Addition	R-22 Roof Cathedral	300	Front	43	0	8	0.1	0.85	No	New	n/a	

ATTIC

01	02	03	04	05	06	07	08	09	10
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition
Attic __Garage__	Attic Garage Roof Cons	Ventilated	8	0.1	0.85	No	No	Existing	No
Attic Existing Home	Attic RoofExisting Home	Ventilated	8	0.1	0.85	No	No	Existing	No
Attic Addition	Attic RoofAddition	Ventilated	8	0.1	0.85	No	No	New	n/a

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
F1 (2) 3050	Window	Front Wall	Front	300			1	30	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
F2 (2) 3050	Window	Front Wall	Front	300			1	30	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
F3 1666	Window	Front Wall	Front	300			1	9.8	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
F4 (2) 3050	Window	Front Wall	Front	300			1	30	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B1 (3) 3040	Window	Back Wall	Back	120			1	36	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B2 6068	Window	Back Wall	Back	120			1	40	0.53	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B3 (2) 3060	Window	Back Wall	Back	120			1	36	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B4 30 Inch diameter	Window	Back Wall	Back	120			1	6.25	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B5 (2) 4050	Window	Back Wall	Back	120			1	40	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B6 (2) 3050	Window	Back Wall	Back	120			1	30	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
B7 4040	Window	Back Wall	Back	120			1	16	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
R1 4040	Window	Right Wall	Right	210			1	16	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
R2 4040	Window	Right Wall	Right	210			1	16	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
R3 4040	Window	Right Wall	Right	210			1	16	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
R4 3050	Window	Right Wall	Right	210			1	15	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No

FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft^2)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
L1 (2) 3050	Window	Left Wall	Left	30			1	30	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
L2 (2) 3050	Window	Left Wall	Left	30			1	30	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
L3 2668	Window	Left Wall	Left	30			1	16.75	0.53	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
L4 2040	Window	Left Wall	Left	30			1	8	0.58	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
L4 2668	Window	Left Wall	Left	30			1	16.75	0.53	Table 110.6-A	0.65	Table 110.6-B	Bug Screen	Existing	No
R1 (2) 4050	Window	Right Wall 2	Right	210			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
1 Solotube	Skylight	Attic	Front	300			1	0.83	0.84	Table 110.6-A	0.67	Table 110.6-B		New	NA
2040 Skylight	Skylight	Attic	Front	300			1	8	0.44	NFRC	0.27	NFRC		New	NA

OPAQUE DOORS

01	02	03	04	05	06
Name	Side of Building	Area (ft^2)	U-factor	Status	Verified Existing Condition
Entry	Front Wall	20	0.5	Existing	No
Door	Wall to Garage	18	0.5	Existing	No
Door 2	Back Wall to Attic	20	0.5	New	n/a
Door 3	Left Wall to Attic	26.8	0.5	New	n/a
Garage Doors	Front Gar	161	1	Existing	No

OPAQUE DOORS

01	02	03	04	05	06
Name	Side of Building	Area (ft^2)	U-factor	Status	Verified Existing Condition
Man Door	Right Gar	16.75	0.5	Existing	No

SLAB FLOORS

01	02	03	04	05	06	07	08	09	10
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated	Status	Verified Existing Condition
Slab-on-Grade	__Garage__	678	68	none	0	0%	No	Existing	No

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.302	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: Wood Siding/sheathing/decking
R-0 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.361	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: 3 Coat Stucco
R-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.089	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Exterior Finish: Wood Siding/sheathing/decking

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-19 Roof Cathedral	Cathedral Ceilings	Wood Framed Ceiling	2x8 @ 16 in. O. C.	R-19	None / None	0.054	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x8 Inside Finish: Gypsum Board
R-38 HP Attic1	Cathedral Ceilings	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	19 / None	0.019	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-38 / 2x4 Sheathing / Insulation: R-19 Sheathing Inside Finish: Gypsum Board
R-22 Roof Cathedral	Cathedral Ceilings	Wood Framed Ceiling	2x6 @ 16 in. O. C.	R-22	None / None	0.051	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-22 / 2x6 Inside Finish: Gypsum Board
Existing Knee Walls to At	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-13	None / None	0.092	Inside Finish: Gypsum Board Cavity / Frame: R-13 / 2x4 Other Side Finish: Gypsum Board
Existing Wall to Garage	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.277	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Other Side Finish: Gypsum Board
R-13 Wall	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-13	None / None	0.092	Inside Finish: Gypsum Board Cavity / Frame: R-13 / 2x4 Other Side Finish: Gypsum Board

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
Attic Garage Roof Cons	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / 0	0.4	Roofing: 10 PSF (RoofTileAirGap) Tile Gap: present Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Attic RoofExisting Home	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
Attic RoofAddition	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / 0	0.059	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-6.0 insul.
R-19 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x6 @ 16 in. O. C.	R-19	None / None	0.05	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 in 5-1/2 in. (R-18) / 2x6
R-0 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.481	Cavity / Frame: no insul. / 2x4 Inside Finish: Gypsum Board
R-19 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / None	0.049	Over Ceiling Joists: R-9.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board
R-38 HP Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-28.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-0 Floor No Crawlspace	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O. C.	R-0	None / None	0.196	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x12 Ceiling Below Finish: Gypsum Board
R-19 Floor No Crawlspace	Interior Floors	Wood Framed Floor	2x6 @ 16 in. O. C.	R-19	None / None	0.049	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 in 5-1/2 in. (R-18) / 2x6 Ceiling Below Finish: Gypsum Board

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	10	11	12
Name	System Type	Distribution Type	Water Heater Name	Number of Units	Solar Heating System	Compact Distribution	HERS Verification	Water Heater Name (#)	Status	Verified Existing Condition	Existing Water Heating System
DHW Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1	1	n/a	None	n/a	DHW Heater 1 (1)	Existing	No	
DHW Sys 3	Domestic Hot Water (DHW)	Standard	DHW Heater 3	1	n/a	None	n/a	DHW Heater 3 (1)	New	NA	

REVISIONS

△	GM

GORDON MALM
Gordon Malm
DESIGNER
5424 SHIRE COURT FAIR OAKS, CA 95628
916 390-7685

ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF GORDON MALM FOR CLARIFICATION OR CORRECTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

2022, TITLE 24, PART 6
ENERGY CODE

CARRIE BLACK
154 AMERICAN RIVER CANYON DR.
FOLSOM, CA 95630
A.P.N. 227-0320-028-000

DATE: 2-26-2024
SCALE: NOTED
DRAWN: GM
JOB:
SHEET
T24-1
OF SHEETS

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

Project Name: Black Ex Plus ADU Add — Calculation Date/Time: 2024-03-05T07:21:53-08:00 — (Page 13 of 17)

Calculation Description: Title 24 Analysis — Input File Name: Black Ex Plus ADU Add 154 American River Canyon Dr Folsom Rev EP 9 3-5-24.ribd22x

WATER HEATERS

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
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 (Int/Ext)	Standby Loss or Recovery Eff	1st Hr. Rating or Flow Rate	Tank Location	Status	Verified Existing Condition
DHW Heater 1	Gas	Small Storage	1	50	EF	0.6	Btu/Hr	75000	0	80	n/a		Existing	No

WATER HEATERS - NEEA HEAT PUMP

01	02	03	04	05	06	07	08
Name	# of Units	Tank Vol. (gal)	NEEA Heat Pump Brand	NEEA Heat Pump Model	Tank Location	Duct Inlet Air Source	Duct Outlet Air Source
DHW Heater 3	1	40	Rheem	XE40T10H22U0 (40 gal, JA13)	TankZone	__Garage__	__Garage__

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 Sys 1 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required
DHW Sys 3 - 1/1	Not Required	Not Required	Not Required	None	Not Required	Not Required

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Existing HVAC System
Res HVAC1	Heating and cooling system other	Heating Component 1	1	Cooling Component 1	1	HVAC Fan 1	Air Distribution System 1	n/a	Existing	No	

Registration Number: 224-P010029409A-000-000-0000000-0000 — Registration Date/Time: 2024-03-06 10:58:05 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220901 — Report Generated: 2024-03-05 07:22:32

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

Project Name: Black Ex Plus ADU Add — Calculation Date/Time: 2024-03-05T07:21:53-08:00 — (Page 14 of 17)

Calculation Description: Title 24 Analysis — Input File Name: Black Ex Plus ADU Add 154 American River Canyon Dr Folsom Rev EP 9 3-5-24.ribd22x

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
Name	System Type	Heating Unit Name	Heating Equipment Count	Cooling Unit Name	Cooling Equipment Count	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Existing HVAC System
New Ductless Mini-Split2	Heat pump heating cooling	Heat Pump System 2	1	Heat Pump System 2	1	n/a	n/a	Setback	New	No	

HVAC - HEATING UNIT TYPES

01	02	03	04	05
Name	System Type	Number of Units	Heating Efficiency	Heating Unit Brand
Heating Component 1	Central gas furnace	1	AFUE - 80	n/a

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07	08	09
Name	System Type	Number of Units	Efficiency Metric	Efficiency EER/EER2/CEER	Efficiency SEER/SEER2	Zonally Controlled	Mulit-speed Compressor	HERS Verification
Cooling Component 1	Central split AC	1	EER/SEER	12.2	14	Not Zonal	Single Speed	Cooling Component 1-hers-cool

HVAC - HEAT PUMPS

01	02	03	04	05	06	07	08	09	10	11	12	13
			Heating				Cooling					
Name	System Type	Number of Units	Heating Efficiency Type	HSPF/HSPF2/COP	Cap 47	Cap 17	Cooling Efficiency Type	SEER/SEER2	EER/EER2/CEER	Zonally Controlled	Compressor Type	HERS Verification
Heat Pump System 2	VCHP-ductless	1	HSPF2	7.5	13000	8880	EER2SEER2	14.3	9	Not Zonal	Single Speed	Heat Pump System 2-hers-htpump

Registration Number: 224-P010029409A-000-000-0000000-0000 — Registration Date/Time: 2024-03-06 10:58:05 — HERS Provider: CalCERTS Inc.

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

Project Name: Black Ex Plus ADU Add — Calculation Date/Time: 2024-03-05T07:21:53-08:00 — (Page 15 of 17)

Calculation Description: Title 24 Analysis — Input File Name: Black Ex Plus ADU Add 154 American River Canyon Dr Folsom Rev EP 9 3-5-24.ribd22x

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 2-hers-htpump	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 & Pressure Drop Rating	Low Leakage Ducts in Conditioned Space	Minimum Airflow per RA3.3 and SC3.3.3.4.1	Certified non-continuous Fan	Indoor Fan not Running Continuously
Heat Pump System 2	Not required	Required	Required	Required	Not required	Not required	Not required	Not required	Not required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
			Duct Ins. R-value		Duct Location		Surface Area								
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts >= 25 ft
Air Distribution System 1	Unconditioned attic	Non-Verified	R-4.2	R-4.2	Attic	Attic	n/a	n/a	No Bypass Duct	Existing (not specified)	Air Distribution System 1-hers-dist	Existing + New	No		No

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
HVAC Fan 1	HVAC Fan	0.45	HVAC Fan 1-hers-fan

Registration Number: 224-P010029409A-000-000-0000000-0000 — Registration Date/Time: 2024-03-06 10:58:05 — HERS Provider: CalCERTS Inc.

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Project Name: Black Ex Plus ADU Add — Calculation Date/Time: 2024-03-05T07:21:53-08:00 — (Page 16 of 17)

Calculation Description: Title 24 Analysis — Input File Name: Black Ex Plus ADU Add 154 American River Canyon Dr Folsom Rev EP 9 3-5-24.ribd22x

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficacy (Watts/CFM)
HVAC Fan 1-hers-fan	Not Required	0

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/ASRE	Includes Fault Indicator Display?	HERS Verification	Status
SFam ADU IAQVentRpt	29	0.35	Exhaust	No	n/a / n/a	No	Yes	

HERS RATER VERIFICATION OF EXISTING CONDITIONS

INDOOR AIR QUALITY (IAQ) FANS - VERIFIED AND ALTERED

01	02	03	04	05	06	07
Name	Airflow (CFM)	Fan Efficacy (W/CFM)	IAQ Fan Type	Includes Heat/Energy Recovery?	IAQ Recovery Effectiveness - SREIAQ Recovery Effectiveness - SRE	IAQ Recovery Effectiveness - ASREIAQ Recovery Effectiveness - ASRE
Dwelling Unit 1/0	29	0.35	Exhaust	No	n/a	n/a

Registration Number: 224-P010029409A-000-000-0000000-0000 — Registration Date/Time: 2024-03-06 10:58:05 — HERS Provider: CalCERTS Inc.

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Calculation Description: Title 24 Analysis — Input File Name: Black Ex Plus ADU Add 154 American River Canyon Dr Folsom Rev EP 9 3-5-24.ribd22x

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name: Jeff Travis	Documentation Author Signature: Jeff Travis
Company: CompuCalc	Signature Date: 2024-03-06 10:46:36
Address: 5201 Coventry Dr.,	CEA/ HERS Certification Identification (If applicable): R19-22-30127
City/State/Zip: Riverside, CA 92506	Phone: 951-902-2660

CABEC CERTIFIED ENERGY ANALYST

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: Gordon Malm	Responsible Designer Signature: Gordon Malm
Company: Gordon Malm	Date Signed: 2024-03-06 10:58:05
Address: 5424 Shire Court	License: NA
City/State/Zip: Fair Oaks, CA 95628	Phone: 916-791-1414

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.

Easy to Verify at CalCERTS.com

Registration Number: 224-P010029409A-000-000-0000000-0000 — Registration Date/Time: 2024-03-06 10:58:05 — HERS Provider: CalCERTS Inc.

CA Building Energy Efficiency Standards - 2022 Residential Compliance — Report Version: 2022.0.000 Schema Version: rev 20220901 — Report Generated: 2024-03-05 07:22:32

REVISIONS

GM

GORDON MALM

Gordon Malm

DESIGNER

5424 SHIRE COURT FAIR OAKS, CA 95628

916 390-7685

ALL ERRORS, OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF GORDON MALM FOR CLARIFICATION OR CORRECTION. IF NOTIFICATION IS NOT MADE AND WORK IS CONTINUED, RESPONSIBILITY FOR ANY FUTURE PROBLEMS CREATED WILL BE BORNE BY THE CONTRACTOR OR SUBCONTRACTOR INVOLVED.

2022, TITLE 24, PART 6 ENERGY CODE

CARRIE BLACK

154 AMERICAN RIVER CANYON DR.
FOLSOM, CA 95630
A.P.N. 227-0320-028-000

DATE: 2-26-2024

SCALE: NOTED

DRAWN: GM

JOB:

SHEET T24-2

OF SHEETS

AIA California 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.)

Y | N/A | RESPON. PARTY

CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

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

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

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".

Y | N/A | RESPON. PARTY

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.

Y | N/A | RESPON. PARTY

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

Y | N/A | RESPON. PARTY

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.

GORDON MALM
DRAFTSMAN
5424 SHIRE COURT FAIR OAKS, CA 95628
(916) 791-1414

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES

JANUARY 2023
SCALE: NOTED
DRAWN: GM
JOB:
SHEET
GBC-1
OF SHEETS

AIA California 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 O³/g ROC).
Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

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

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

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

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

4.503 FIREPLACES

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

4.504 POLLUTANT CONTROL

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

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

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

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

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

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

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

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

TABLE 4.504.1 - ADHESIVE VOC LIMIT[1,2]

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

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

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

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

TABLE 4.504.2 - SEALANT VOC LIMIT

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

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

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

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

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

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

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

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

TABLE 4.504.5 - FORMALDEHYDE LIMITS[1]

MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

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

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

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

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the 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.

https://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.

GORDON MALM
DRAFTSMAN
5424 SHIRE COURT FAIR OAKS, CA 95628
(916) 791-1414

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE
RESIDENTIAL MANDATORY MEASURES

JANUARY 2023
SCALE: NOTED
DRAWN: GM
JOB:
SHEET
GBC-2
OF SHEETS

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-frame 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(e)1:	**Closable Doors.** Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	**Combustion Intake.** Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device. *
§ 150.0(e)3:	**Flue Damper.** Masonry or factory-built fireplaces must have a flue damper with a readily accessible control. *

Space Conditioning, Water Heating, and Plumbing System:

§ 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.

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§ 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. *

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§ 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)1Biii&iv. 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)1C-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)1Giii,enclosed 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 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 openers; 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). *

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§ 150.0(k)1G:	**Screw based luminaires.** Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. *
§ 150.0(k)1H:	**Light Sources in Enclosed or Recessed Luminaires.** Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)1I:	**Light Sources in Drawers, Cabinets, and Linen Closets.** Light sources internal to drawers, cabinetry or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more than 5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed.
§ 150.0(k)2A:	**Interior Switches and Controls.** All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	**Interior Switches and Controls.** Exhaust fans must be controlled separately from lighting systems. *
§ 150.0(k)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:

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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.

5/6/22

GORDON MALM
DRAFTSMAN
5424 SHIRE COURT FAIR OAKS, CA 95628
(916) 791-1414

SINGLE-FAMILY RESIDENTIAL MANDATORY MEASURES
2022 TITLE 24, PART 6, CALIFORNIA ENERGY CODE

DATE: 01-2023
SCALE: NOTED
DRAWN: GM
JOB:
SHEET
RMM-1
OF SHEETS