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SUSPENDED GYP BOARD CEILING GENERAL NOTES

- 1. CONSTRUCTION, WORKMANSHIP AND MATERIAL SHALL CONFORM TO THE 2013 CALIFORNIA BUILDING STANDARDS CODE (CBCS 2013).
2. THE CONTRACTOR SHALL NOTIFY OSHPD AND THE REGISTERED DESIGN PROFESSIONAL (RDP) IN RESPONSIBLE CHARGE WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THE CONSTRUCTION DRAWINGS AND ANY OTHER PORTION OF THE CONSTRUCTION DOCUMENTS, FIELD CONDITIONS, OR WHERE ANY CONDITIONS ARISE NOT COVERED BY THESE DOCUMENTS WHEREIN WORK WILL NOT COMPLY WITH CODE REQUIREMENTS.

METAL STUDS AND TRACKS SHALL BE OF SIZE, THICKNESS AND SECTION PROPERTIES SHOWN ON TABLES 1.1, 1-2 AND 1-3 OF THE AISI MANUAL, COLD-FORMED STEEL DESIGN, 2008 EDITION. THE RDP IN RESPONSIBLE CHARGE SHALL OBTAIN OSHPD APPROVAL FOR ANY SUBSTITUTIONS.

ELECTRICAL METALLIC TUBE (EMT) SHALL BE ANSI C80.3/JUL 797 CARBON STEEL WITH G90 GALVANIZING. EMT SHALL HAVE MINIMUM YIELD STRENGTH OF (Fy = ) 30 KSI AND MINIMUM ULTIMATE STRENGTH OF (Fu = ) 48 KSI.

THESE OPD REFER TO FASTENER TYPE AND SIZE BUT DO NOT SPECIFY OR ENDORSE A SPECIFIC MANUFACTURER. THE RDP IN RESPONSIBLE CHARGE SHALL SELECT A MANUFACTURER AND SELECTED FASTENER CAPACITIES SHALL MATCH OR EXCEED THE STRENGTHS LISTED HEREIN. THE FOLLOWING REQUIREMENTS SHALL ALSO BE MET:

SHEET METAL SCREWS SHALL COMPLY WITH ASTM C 1513-10, ASME B18.6.4-98 (R2005) AND ICC-ES AC 118 AND ALLOWABLE STRENGTH SHALL BE BASED ON INFORMATION PROVIDED IN CG1.31 AND CG1.32. PENETRATION OF SCREWS THROUGH JOINED MATERIAL SHALL NOT BE LESS THAN THREE EXPOSED THREADS.

WELDING SHALL BE IN ACCORDANCE WITH AWS D1.3 USING E60XX SERIES ELECTRODES. FIELD WELDING SHALL HAVE SPECIAL INSPECTION IN ACCORDANCE WITH 2013 CBC SECTION 1705A.2.

POST-INSTALLED ANCHORS (E.G. EXPANSION ANCHORS, SCREW ANCHORS AND POWER ACTUATED FASTENERS) SHALL HAVE SPECIAL INSPECTION AND TESTING IN ACCORDANCE WITH THE 2013 CBC SECTIONS 1705A.3 & 1913A.7. FOR QUALIFICATION, DESIGN AND USE OF POST-INSTALLED ANCHORS IN CONCRETE SEE THE 2013 CBC SECTIONS 1616A.1.19 AND 1908A.1.1. LISTING OF CURRENT ICC-ES EVALUATION REPORTS (OR REPORTS FROM OTHER TESTING AGENCIES ACCEPTABLE TO OSHPD) SHALL BE REQUIRED FOR FASTENER USED.

POWER-ACTUATED FASTENERS (PAF), POWDER DRIVEN FASTENERS (PDF), POWER DRIVEN PINS (PDP) AND SHOT PINS ALL REPRESENT THE SAME FASTENER AND WILL HEREAFTER BE REFERRED TO AS POWER ACTUATED FASTENERS (PAF). PAF SHALL SATISFY THE CURRENT A/C70 ACCEPTANCE CRITERIA FOR FASTENERS POWER-DRIVEN INTO CONCRETE, STEEL AND MASONRY ELEMENTS AND THE 2013 CBC SECTIONS 1908A.1.1. LISTING OF CURRENT ICC-ES EVALUATION REPORTS (OR REPORTS FROM OTHER TESTING AGENCIES ACCEPTABLE TO OSHPD) SHALL BE REQUIRED FOR FASTENERS USED.

FOR PAF INSTALLED IN STEEL THE FASTENER PENETRATION SHALL HAVE THE ENTIRE POINTED END OF THE FASTENER DRIVEN THROUGH THE STEEL MEMBER, EXCEPT AS NOTED IN CURRENT REPORTS FROM TESTING AGENCIES ACCEPTABLE TO OSHPD.

Table with 2 columns: Section Title, OPD No. and Sheet Title, CGO.00. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: GYP-BOARD SUSPENDED CEILING PAGE 1 OF 5.

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12. EXPANSION JOINTS, SEISMIC SEPARATIONS, AND PENETRATIONS

- a. EXPANSION JOINTS SHALL BE PROVIDED IN THE CEILING AT INTERSECTIONS OF CORRIDORS AND AT JUNCTIONS OF CORRIDORS WITH LOBBIES OR OTHER SIMILAR AREAS.
b. FOR CEILING AREAS EXCEEDING 2500 SQUARE FEET, A SEISMIC SEPARATION JOINT SHALL BE PROVIDED TO DIVIDE THE CEILING INTO AREAS NOT EXCEEDING 2500 SQ. FT.
c. PENETRATIONS THROUGH THE CEILING FOR SPRINKLER HEADS AND OTHER SIMILAR DEVICES THAT ARE NOT INTEGRALLY TIED TO THE CEILING SYSTEM IN THE LATERAL DIRECTION SHALL HAVE A TWO (2) INCH OVERSIZED RING, SLEEVE OR ADAPTER THROUGH THE CEILING TILE TO ALLOW FREE MOVEMENT OF ONE (1) INCH IN ALL HORIZONTAL DIRECTIONS. A FLEXIBLE SPRINKLER HOSE FITTING THAT CAN ACCOMMODATE ONE (1) INCH OF CEILING MOVEMENT SHALL BE PERMITTED TO BE USED IN LIEU OF THE OVERSIZED RING, SLEEVE OR ADAPTER. SUCH FLEXIBLE SPRINKLER HOSE SHALL BE ADEQUATELY SUPPORTED FROM SOFFIT SO AS NOT TO EXCEED THE MAXIMUM TRIBUTARY WEIGHT OF THE CEILING.

LATERAL FORCE BRACING IS REQUIRED IN ACCORDANCE WITH THIS SECTION FOR ALL CEILING AREAS, UNLESS EXCEPTED. LATERAL FORCE BRACING MAY BE OMITTED FOR SUSPENDED ACOUSTICAL CEILING SYSTEMS WITH A CEILING AREA OF 144 SQ. FT. OR LESS WHEN PERIMETER SUPPORT ARE PROVIDED AND PERIMETER WALLS ARE DESIGNED TO CARRY THE CEILING LATERAL FORCES.

PROVIDE LATERAL FORCE BRACING ASSEMBLIES CONSISTING OF A STRUT AND FOUR (4) #12 GAGE BRACING WIRES ORIENTED 90 DEGREES FROM EACH OTHER.

LATERAL FORCE BRACING ASSEMBLIES SHALL BE SPACED IN ACCORDANCE WITH CG2.20 THROUGH CG2.22 AND CG2.30 FROM EACH WALL AND AT THE EDGES OF ANY CHANGE OF ELEVATION OF THE CEILING.

THE SLOPE OF BRACING WIRES MAY BE FROM 10 TO 45 DEGREES BUT MAY NOT EXCEED 45 DEGREES FROM THE PLANE OF THE CEILING AND WIRES SHALL BE TAUT.

STRUTS SHALL BE ADEQUATE TO RESIST THE VERTICAL COMPONENT INDUCED BY THE BRACING WIRES, AND SHALL NOT BE MORE THAN 1 (HORIZONTAL) IN 6 (VERTICAL) OUT OF PLUMB.

14. ATTACHMENT OF HANGER AND BRACING WIRES

FASTEN #12 HANGER WIRES WITH NOT LESS THAN THREE (3) TIGHT TURNS IN 3 INCHES. HANGER WIRE LOOPS SHALL BE TIGHTLY WRAPPED AND SHARPLY BENT TO PREVENT ANY VERTICAL MOVEMENT OR ROTATION OF THE MEMBER WITHIN THE LOOPS.

FASTEN #12 BRACING WIRES WITH FOUR (4) TIGHT TURNS. MAKE ALL TIGHT TURNS WITHIN A DISTANCE OF 1 1/2" INCHES.

HANGER OR BRACING WIRE ANCHORED TO THE STRUCTURE SHOULD BE INSTALLED IN SUCH A MANNER THAT THE DIRECTION OF THE ANCHOR ALIGNS AS CLOSELY AS POSSIBLE WITH THE DIRECTION OF THE WIRE.

SEPARATE ALL CEILING HANGER AND BRACING WIRES AT LEAST SIX (6) INCHES FROM ALL UNBRACED DUCTS, PIPES CONDUITS, ETC.

HANGER WIRES SHALL NOT BE ATTACHED TO OR BEND AROUND INTERFERING MATERIAL OR EQUIPMENT. PROVIDE TRAPEZOID OR OTHER SUPPORT MEMBERS AT OBSTRUCTIONS TO TYPICAL HANGER SPACING. PROVIDE ADDITIONAL HANGERS, STRUTS OR BRACES AS REQUIRED AT ALL CEILING BREAKS, SOFFITS, OR DISCONTINUOUS AREAS.

HANGER WIRES THAT ARE MORE THAN 1 (HORIZONTAL) IN 6 (VERTICAL) OUT OF PLUMB SHALL REQUIRE PROJECT SPECIFIC DESIGN.

WHEN DRILLED-IN CONCRETE ANCHORS OR PAF ARE USED IN REINFORCED CONCRETE FOR HANGER WIRES, 1 OUT OF 10 WIREANCHOR ASSEMBLIES SHALL BE FIELD TESTED FOR 200 LBS. IN TENSION. WHEN DRILLED-IN CONCRETE ANCHORS ARE USED FOR BRACING WIRES, 1 OUT OF 2 WIRE ANCHOR ASSEMBLIES SHALL BE FIELD TESTED FOR 440 LBS. IN TENSION IN THE DIRECTION OF THE WIRE. PAF IN CONCRETE ARE NOT PERMITTED FOR BRACING WIRES.

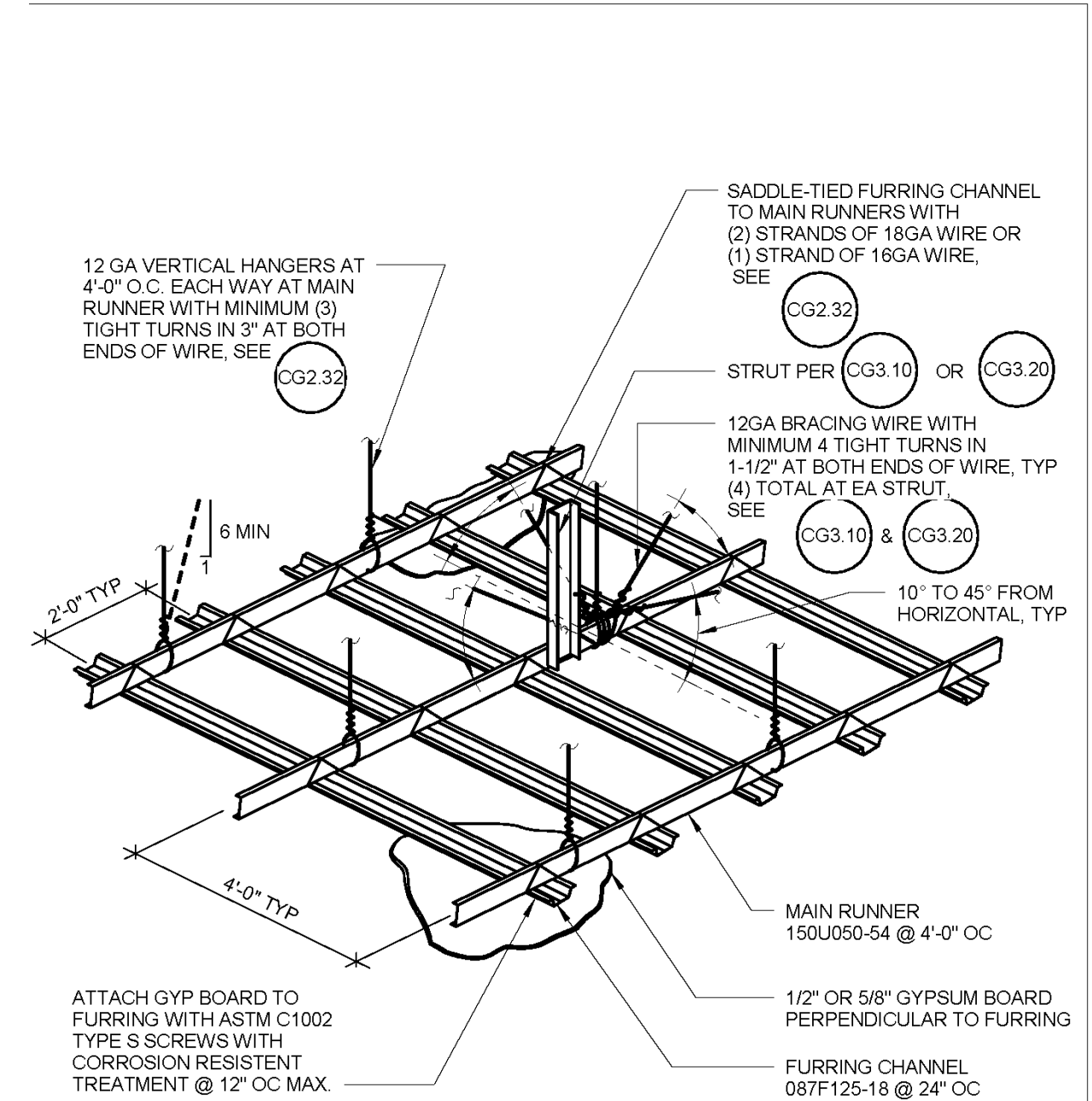
Table with 2 columns: Section Title, OPD No. and Sheet Title, CGO.02. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: GYP-BOARD SUSPENDED CEILING PAGE 3 OF 5.

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17. GYPSUM BOARD INSTALLATION SHALL COMPLY WITH ASTM C840-11:

- a. GYPSUM BOARD SHALL CONSIST OF SINGLE-PLY 1/2" OR 5/8" THICK IN ACCORDANCE WITH ASTM C11-10a.
b. GYPSUM BOARD SHALL BE INSTALLED PERPENDICULAR TO FURRING WITH SCREWS AT 12" ON CENTER MAXIMUM, IN ACCORDANCE WITH ASTM C840-11.
c. GYPSUM BOARD SHALL BE ATTACHED TO FURRING FRAMING WITH ASTM C1002-07 TYPE S (ASTM A568-11b GRADES 1015 TO 1022) SCREWS (NOT LESS THAN, NO. 6, WITH MAJOR DIAMETER NOT LESS THAN 0.136 IN).

Table with 2 columns: Section Title, OPD No. and Sheet Title, CGO.04. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: GYP-BOARD SUSPENDED CEILING PAGE 5 OF 5.



- NOTES:
1. SEE GENERAL NOTES #13 & #14 ON CG0.02
2. STRUTS SHALL NOT REPLACE HANGER WIRES
3. FOR CONDITIONS AT CORRIDOR SEE DRAWING NO. CG2.30
4. FOR MAIN RUNNER AND FURRING CHANNEL SPLICE CONNECTIONS, SEE CG2.31

Table with 2 columns: Section Title, OPD No. and Sheet Title, CG2.10. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: SUSPENDED CEILING BRACING ASSEMBLY.

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7. DESIGN CRITERIA

BUILDING CODE, 2013 CALIFORNIA BUILDING CODE (2013 CBC), ASCE 7-10, AISI S100-07/02-10, AND ASTM C754-11, FOR LOAD COMBINATIONS, ALLOWABLE STRESS DESIGN SHALL BE IN ACCORDANCE WITH 2013 CBC SECTION 1605A.3.1.

FASTENER CAPACITIES TABLES WERE DEVELOPED BASED ON ICC REPORTS BY SEVERAL MANUFACTURERS.

THE DESIGN ASSUMES THAT BUILDING ELEMENTS AND SUPPORTS, TO WHICH THE COMPONENTS ADDRESSED IN THIS DOCUMENT ARE ANCHORED, HAVE SUFFICIENT CAPACITY TO CARRY THE LOADS IMPOSED BY THE COMPONENTS IN COMBINATION WITH ALL OTHER LOADS. EVALUATION OF THE CAPACITY OF THESE SUPPORTING BUILDING ELEMENTS IS BEYOND THE SCOPE OF THE OPD.

THIS OPD IS LIMITED TO CEILING ASSEMBLIES HAVING MAXIMUM DEAD WEIGHT OF 4 PSF, INCLUDING LIGHTING FIXTURES (LUMINAIRES) AND MECHANICAL SERVICES, EACH WEIGHING LESS THAN 56 LBS AND ATTACHED TO CEILING FRAMING SYSTEM. HEAVIER SYSTEM AND THOSE SUPPORTING LATERAL FORCES FROM PARTITION WALLS ARE OUTSIDE THE SCOPE OF THIS OPD AND WILL REQUIRE PROJECT SPECIFIC DESIGN.

THE RDP IN RESPONSIBLE CHARGE SHALL VERIFY THE FIRE RESISTANCE AND ACOUSTICAL RATINGS FOR ALL CEILING ASSEMBLIES.

"CEILING WIRE" SHALL CONFORM WITH GALVANIZED SOFT ANNEALED MILD STEEL WIRE AS DEFINED IN ASTM A641 (CLASS 1 COATING) WITH 70 KSI MINIMUM TENSILE STRENGTH.

FOUR (4) TWISTS OF WIRE WITHIN 1 1/2" DEVELOPS THE ALLOWABLE LOAD FOR THE WIRE.

THREE (3) TWISTS WITHIN 3" MAY BE USED TO DEVELOP THE MAXIMUM 50% OF ALLOWABLE LOAD.

SUSPENSION SYSTEM COMPONENTS SHALL COMPLY WITH ASTM C754.

MAIN RUNNERS SHALL CONSIST OF 18 GAGE 1-1/2" COLD ROLLED U CHANNEL 150U050-54 SPACED AT 4'-0" OC MAX. MAIN RUNNERS SHALL BE SUPPORTED BY HANGER WIRES AT 4'-0" OC MAX AND WITHIN 6" FROM EA END.

FURRING CHANNEL SHALL CONSIST OF 25 GAGE 7/8" (HAT) FURRING CHANNELS (087F125-18) AT 2'-0" OC MAX. FURRING CHANNELS SHALL BE SADDLE TIED TO MAIN RUNNERS WITH 16 GAGE TIE WIRE OR A DOUBLE STRAND OF 18 GAGE TIE WIRE.

MAIN RUNNERS SHALL BE SPLICED BY LAPPING IN ACCORDANCE WITH CG2.31.

FURRING CHANNELS SHALL BE SPLICED BY LAPPING IN ACCORDANCE WITH CG2.31.

MAIN RUNNERS AND FURRING CHANNELS ALONG WITH THEIR SPLICES, INTERSECTION CONNECTORS, AND EXPANSION DEVICES SHALL BE DESIGNED AND CONSTRUCTED TO CARRY A MEAN ULTIMATE TEST LOAD OF NOT LESS THAN 270 LBS. IN COMPRESSION & TENSION.

HANGER AND BRACING WIRES SHALL BE #12 GAGE (0.106" DIAMETER), SOFT ANNEALED, AND GALVANIZED STEEL WIRES WITH CLASS 1 COATING. THEY MAY BE USED FOR UP TO AND INCLUDING 4'-0" x 4'-0" GRID SPACINGS ALONG AND ATTACHED TO MAIN RUNNERS. SPLICES ARE NOT PERMITTED IN ANY HANGER WIRE.

WIRE HANGERS SHALL BE SADDLE-TIED AROUND MAIN RUNNERS SO AS TO PREVENT TURNING OR TWISTING OF THE MEMBER.

SUSPENSION SYSTEM INSTALLATION SHALL COMPLY WITH ASTM C754.

CEILING GRID MEMBERS SHALL BE ATTACHED TO TWO (2) ADJACENT WALLS. MAIN RUNNERS AND FURRING CHANNEL SHALL BE AT LEAST 1 INCH CLEAR OF OTHER WALL. IF WALLS RUN DIAGONAL TO THE CEILING GRID SYSTEM RUNNERS, ONE END OF MAIN RUNNER AND FURRING SHOULD BE FREE WITH STANDARD CLEARANCES.

THE WIDTH OF THE PERIMETER SUPPORTING CLOSURE ANGLE SHALL BE NOT LESS THAN TWO (2) INCHES. USE OF ANGLES WITH SMALLER WIDTHS IN CONJUNCTION WITH PERIMETER CLIPS SHALL REQUIRE AN ALTERNATE METHOD OF COMPLIANCE WITH ADEQUATE JUSTIFICATION AND BE OUTSIDE THE SCOPE OF THIS OPD.

Table with 2 columns: Section Title, OPD No. and Sheet Title, CGO.01. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: GYP-BOARD SUSPENDED CEILING PAGE 2 OF 5.

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15. CEILING FIXTURES, TERMINALS, AND DEVICES

ALL LIGHT FIXTURES, AIR TERMINALS, GRILLS, OR OTHER DEVICES (REFERRED TO ALL BY COMMON TERM FIXTURES HEREAFTER) SHALL BE MOUNTED IN A MANNER THAT WILL NOT COMPROMISE CEILING PERFORMANCE.

ALL FIXTURES SHALL BE SUPPORTED DIRECTLY BY MAIN RUNNERS OR BY SUPPLEMENTAL FRAMING WHICH IS SUPPORTED BY MAIN RUNNERS AND POSITIVELY ATTACHED WITH SCREWS OR OTHER APPROVED CONNECTORS.

SURFACE MOUNTED FIXTURES SHALL BE ATTACHED TO A MAIN RUNNER WITH A POSITIVE CLAMPING DEVICE MADE OF MATERIAL WITH A MINIMUM OF 14 GAGE. ROTATIONAL SPRING CLAMPS DO NOT COMPLY.

ACCESS PANELS: ACCESS TO THE SPACE BETWEEN THE CEILING AND THE FLOOR OR ROOF ABOVE SHALL NOT BE ALLOWED. SMALL ACCESS PANELS FOR THE INSPECTION, ADJUSTMENT, OR REPAIR OF UTILITY SWITCHES, VALVES, SENSORS, ETC. MAY BE ALLOWED IF THE PANEL IS LESS THAN 300 SQUARE INCHES. SUCH PANELS SHALL ALSO HAVE A PERMANENT WARNING LABEL AS FOLLOWS:

WARNING: 1. DO NOT CLIMB, WALK, OR CRAWL ON THE GYPSUM BOARD CEILING. 2. DO NOT STORE OR STOW ANYTHING ON THE GYPSUM BOARD CEILING.

ALL LIGHT FIXTURES WEIGHING LESS THAN OR EQUAL TO 10 LB. SHALL HAVE ONE NO. 12 GAUGE SAFETY WIRE CONNECTED FROM FIXTURE HOUSING TO STRUCTURE ABOVE. IT IS NOT NECESSARY FOR THESE SAFETY WIRES TO BE TAUT.

ALL FIXTURES WEIGHING GREATER THAN 10 LB BUT LESS THAN OR EQUAL TO 56 LB. SHALL HAVE TWO NO. 12 GAUGE SAFETY WIRES CONNECTED FROM FIXTURE HOUSING TO STRUCTURE ABOVE. IT IS NOT NECESSARY FOR THESE SAFETY WIRES TO BE TAUT.

ALL FIXTURES WEIGHING GREATER THAN 56 LB. SHALL BE SUPPORTED DIRECTLY FROM STRUCTURE ABOVE BY APPROVED HANGERS.

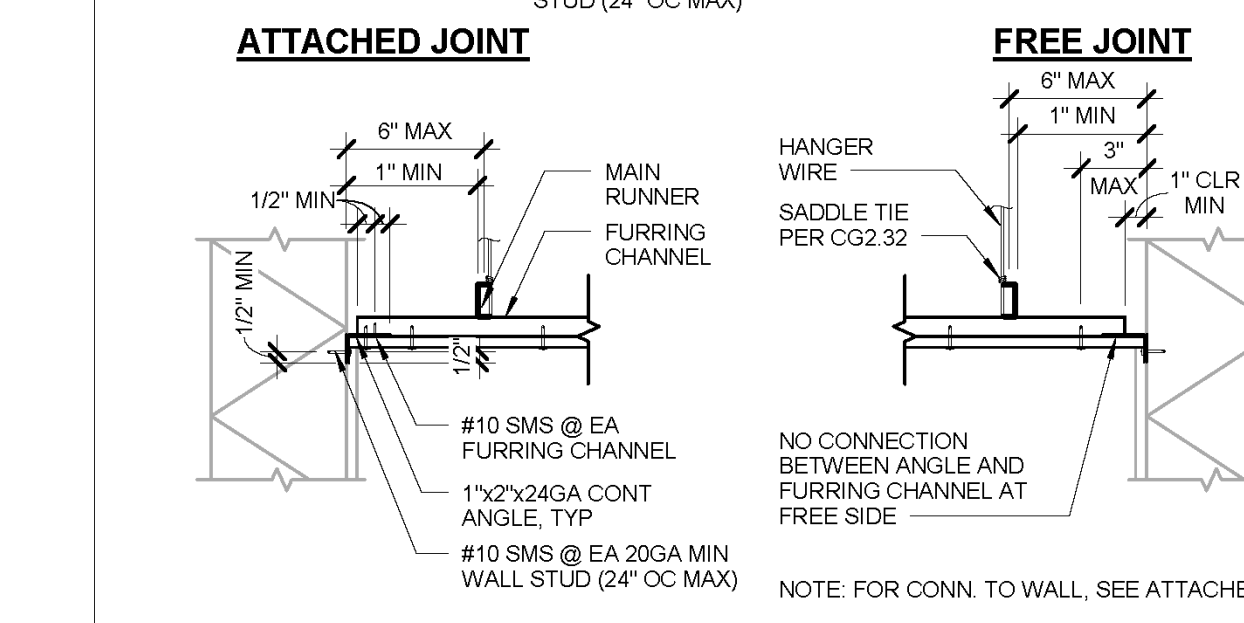
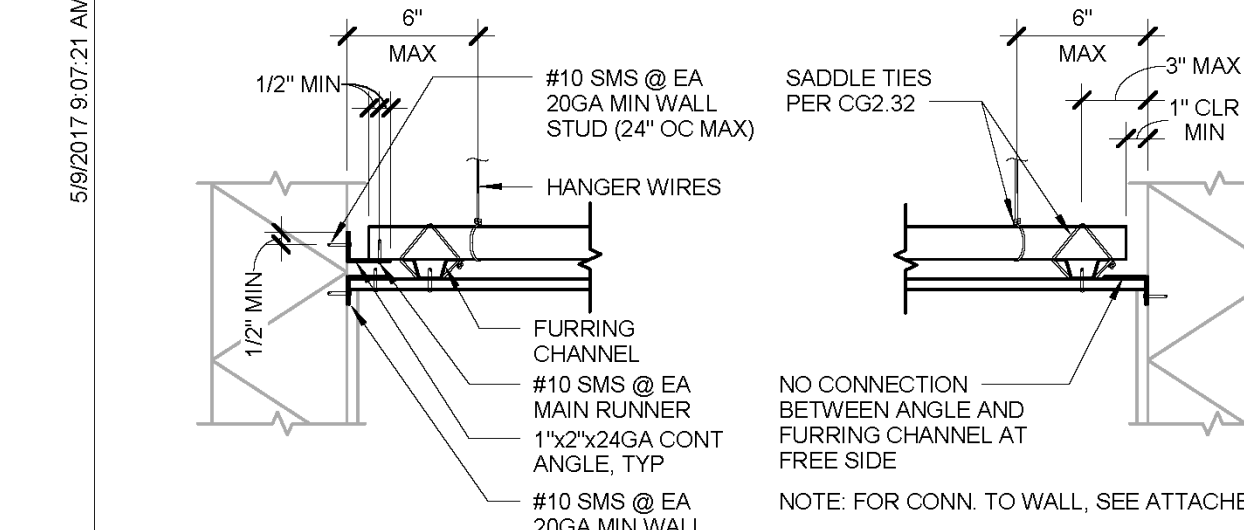
PENDENT-HUNG FIXTURES SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE USING NO LESS THAN NO. 9-GAUGE WIRE OR AN APPROVED ALTERNATE SUPPORT. THE CEILING SUSPENSION SYSTEM SHALL NOT PROVIDE ANY DIRECT SUPPORT.

ALL RECESSED OR DROP-IN FIXTURES SHALL BE SUPPORTED DIRECTLY FROM FIXTURE HOUSING TO THE STRUCTURE ABOVE WITH A MINIMUM OF TWO NO. 12 GAUGE WIRES LOCATED AT DIAGONALLY OPPOSITE CORNERS. LEVELLING OR POSITIONING OF FIXTURES MAY BE PROVIDED BY CEILING GRID. FIXTURE SUPPORT WIRES MAY BE SLIGHTLY LOOSE TO ALLOW THE FIXTURE TO SEAT IN THE GRID SYSTEM. FIXTURES SHALL NOT BE SUPPORTED FROM MAIN RUNNERS OR FURRING CHANNELS IF THE WEIGHT OF THE FIXTURES CAUSES TOTAL DEAD LOAD TO EXCEED THE DEFLECTION CAPABILITY OF THE CEILING SUSPENSION SYSTEM.

CEILING DETAILS THAT ARE PART OF A FIRE RATED ASSEMBLY: PROVIDE A DETAIL AND DESIGN NUMBER FOR RATED CEILING ASSEMBLIES FROM AN APPROVED TESTING AGENCY. THE COMPONENTS AND INSTALLATION DETAILS SHALL CONFORM IN EVERY RESPECT WITH THE LISTED DETAIL AND NUMBER. DETAILS SHALL CLEARLY DEPICT ALL COMPONENTS, INCLUDING INSULATION MATERIALS, FRAMING AND ATTACHMENT OF THE DESIGN, SO THAT THE ASSEMBLY CAN BE CONSTRUCTED AND INSPECTED ACCORDINGLY. POP RIVETS, SCREWS, OR OTHER ATTACHMENTS ARE NOT ACCEPTABLE UNLESS SPECIFICALLY DETAILED ON THE DRAWINGS AND APPROVED BY OSHPD.

Table with 2 columns: Section Title, OPD No. and Sheet Title, CGO.03. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: GYP-BOARD SUSPENDED CEILING PAGE 4 OF 5.

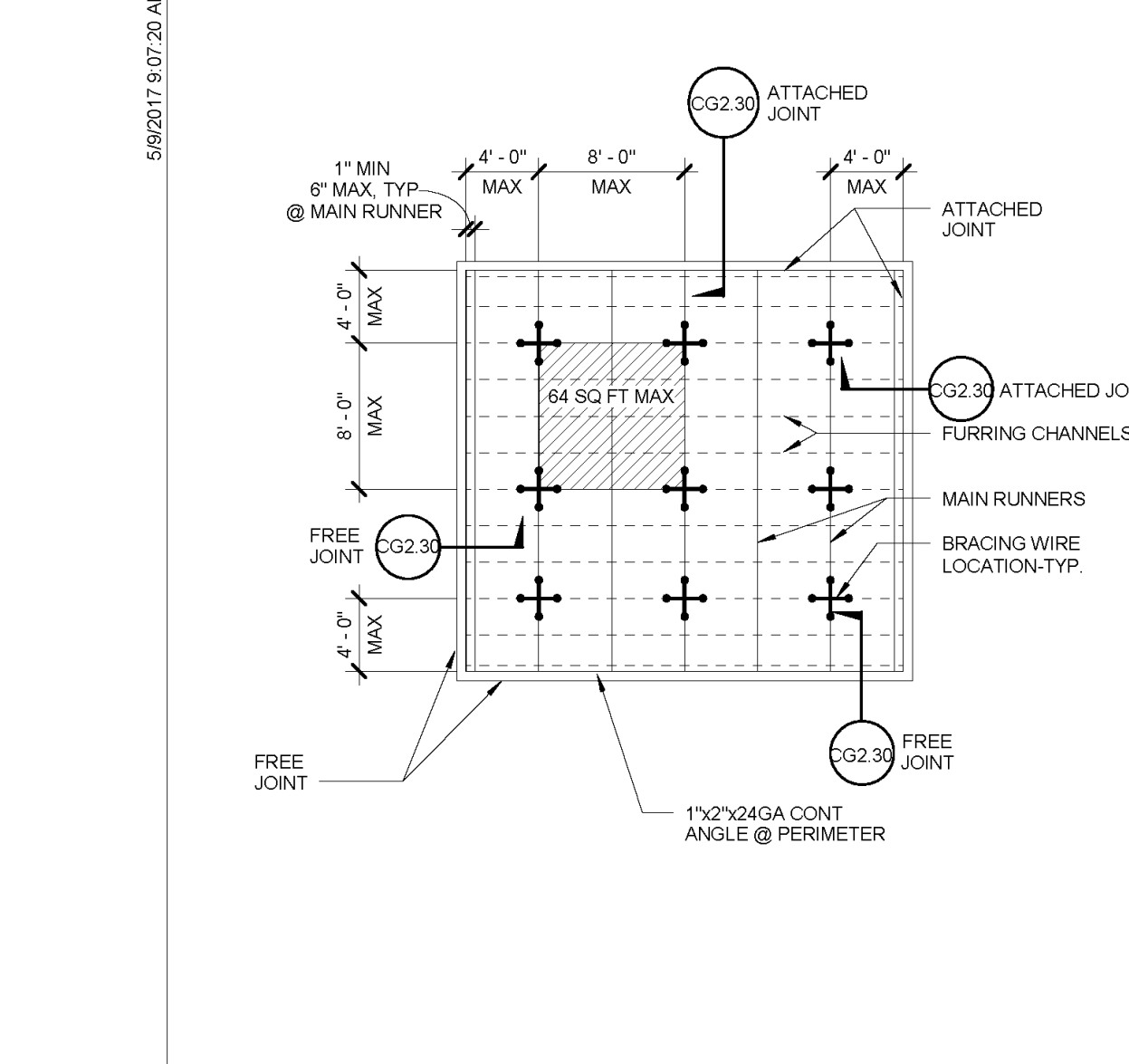
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- NOTES:
1. PERIMETER WALLS SHALL BE DESIGNED TO CARRY TRIBUTARY LATERAL FORCES PER TABLE BELOW. RDP TO VERIFY RDP TO SPECIFY CONNECTION OF BACKING TO STUDS.
2. WHEN GYPSUM BOARD IS TO BE APPLIED TO BOTH CEILING AND WALLS, GYPSUM BOARD SHALL BE APPLIED FIRST TO THE CEILING AND THEN TO WALLS IN ACCORDANCE WITH ASTM C840.

Table with 2 columns: Section Title, OPD No. and Sheet Title, CG2.30. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: CEILING PERIMETER.

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- NOTES:
1. BRACING WIRES AND COMP. STRUT SHALL OCCUR AT EVERY 64 SQ. FT. MAX. IN ROOMS OVER 64 SQ. FT.
2. RDP MAY ELECT TO SPECIFY TIGHTER SPACING BETWEEN BRACING WIRES AND COMP. STRUTS TO ALLOW SMALLER ANCHORS PER SCHEDULES ON SHEETS CG4.31 & CG6.80.

Table with 2 columns: Section Title, OPD No. and Sheet Title, CG2.20. Section Title: OSHPD STANDARD GYPSUM BOARD CEILING DETAILS. Sheet Title: TYPICAL CEILING PLAN FOR 1.73 < S\_{rel} <= 2.50 AND z/h <= 1.0.

PROJECT MANAGEMENT

ALAMEIDA ARCHITECTURE

CONSTRUCTION MANAGEMENT

555 S. MAIN STREET, SUITE 2 SEBASTOPOL, CA 95472 (707) 824-1219 WWW.ALAMEIDA.COM



PROJECT TENANT IMPROVEMENTS FOR ECONOMIC DEVELOPMENT AND CHILD SUPPORT SERVICES

2420 6TH STREET EUREKA, CA

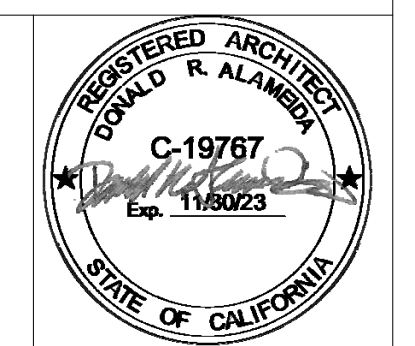


Table with 3 columns: No., Description, Date. Row 1: PLAN CHECK COMMENTS, 12/12/22.

SUSPENDED DRYWALL LAYOUT

Table with 2 columns: Field, Value. Project number: 2108, Date: 5/8/22, Drawn by: Author, Checked by: Checker.

A-7.2

Scale





















# 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

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

Y	N/A	RESPON. PARTY
X	G.C.	

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

- 5.504.4.1 Adhesives, sealants and caulks.** Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:
- 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 SCAGMD Rule 1168 VOC limits, as shown in Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.
  - Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.

TABLE 5.504.4.1 - ADHESIVE VOC LIMIT<sub>1,2</sub>

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

- IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.
- FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168, [www.arb.ca.gov/DRDB/SCUR/HTMLR1168.PDF](http://www.arb.ca.gov/DRDB/SCUR/HTMLR1168.PDF)

TABLE 5.504.4.2 - SEALANT VOC LIMIT

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

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

**5.504.4.3 Paints and coatings.** Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

**5.504.4.3.1 Aerosol Paints and coatings.** Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of California Code of Regulations, Title 17, commencing with Section 94520, and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

Y	N/A	RESPON. PARTY

TABLE 5.504.4.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS<sub>1,2</sub>

COATING CATEGORY	CURRENT VOC LIMIT
GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS	
FLAT COATINGS	50
NONFLAT COATINGS	100
NONFLAT HIGH GLOSS COATINGS	150
<b>SPECIALTY COATINGS</b>	
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
FALX 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 <sub>1</sub>	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
<b>SPECIALTY PRIMERS, SEALERS &amp; UNDERCOATERS</b>	
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

- GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
- THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
- VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

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

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

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

- Carpet and Rug Institute's Green Label Plus Program.
- Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, Version 1.1, February 2010 (also known as CDPH Standard Method V1.1 or Specification 01350).
- NSF/ANSI 140 at the Gold level or higher.
- Scientific Certifications Systems Sustainable Choice; or
- Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria listed in the CHPS High Performance Product Database.

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

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

**5.504.4.5 Composite wood products.** Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.

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

- Product certifications and specifications.
- Chain of custody certifications.
- Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
- Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2289 or European 636 3S standards.
- Other methods acceptable to the enforcing agency.

Y	N/A	RESPON. PARTY

TABLE 5.504.4.5 - FORMALDEHYDE LIMITS:

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 <sub>2</sub>	0.13

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

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

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

- Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program;
- Compliant with the VOC-emission limits and testing requirements specified in the California Department of Public Health's 2010 Standard Method for the Testing and Evaluation Chambers, Version 1.1, February 2010;
- Compliant with the Collaborative for High Performance Schools California (2014 CA-CHPS) Criteria and listed in the CHPS High Performance Product Database; or
- Products certified under UL GREENGUARD Gold (formerly the Greenguard Children's & Schools Program).

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

**5.504.5.3 Filters.** In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual.

**Exceptions:** Existing mechanical equipment.

**5.504.5.3.1 Labeling.** Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating.

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

X	G.C.
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**SECTION 5.505 INDOOR MOISTURE CONTROL**  
**5.505.1 INDOOR MOISTURE CONTROL.** Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code.

X	G.C.
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**SECTION 5.506 INDOOR AIR QUALITY**  
**5.506.1 OUTSIDE AIR DELIVERY.** For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements for Ventilation) of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8.

X	ARCH.
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**5.506.2 CARBON DIOXIDE (CO<sub>2</sub>) MONITORING.** For buildings or additions equipped with demand control ventilation, CO<sub>2</sub> sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120(c)(4).

X	ARCH.
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**SECTION 5.507 ENVIRONMENTAL COMFORT**  
**5.507.4 ACOUSTICAL CONTROL.** Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2.

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

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

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

- Within the 65 CNEL noise contour of an airport.

**Exceptions:**

- L<sub>eq</sub> or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICLUZ) plan.
- L<sub>eq</sub> or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element.

- Within the 65 CNEL or L<sub>eq</sub> noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan.

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

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

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

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

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

**Note:** Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: [www.toolbox.org/PDF/CaseStudies/stc\\_ccc\\_ratings.pdf](http://www.toolbox.org/PDF/CaseStudies/stc_ccc_ratings.pdf).

X	
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**SECTION 5.508 OUTDOOR AIR QUALITY**  
**5.508.1 Ozone depletion and greenhouse gas reductions.** Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2.

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

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

X	
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**5.508.2 Supermarket refrigerant leak reduction.** New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 5,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities.

**Exception:** Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO<sub>2</sub>), and potentially other refrigerants.

Y	N/A	RESPON. PARTY
X		

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

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

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

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

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

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

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

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

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

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

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

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

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

**5.508.2.2.2.2.1 Chain levers.** Chain levers to fit or the stem are required for valves designed to have seal caps.

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

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

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

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

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

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

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

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

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

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

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

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

### CHAPTER 7 INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

#### 702 QUALIFICATIONS

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

- State certified apprenticeship programs.
- Public utility training programs.
- Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
- Programs sponsored by manufacturing organizations.
- 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:

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

**Notes:**

- Special Inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
- 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).



































Indoor Lighting Mandatory Measures:

110.9 LIGHTING CONTROLS AND COMPONENTS
ALL LIGHTING CONTROL DEVICES AND SYSTEMS, AND ALL LIGHT SOURCES SHALL MEET THE APPLICABLE REQUIREMENTS OF 110.9.
110.12(c) DEMAND RESPONSIVE LIGHTING CONTROLS
LIGHTING CONTROLS IN NONRESIDENTIAL BUILDINGS >10,000 FT2 SHALL BE CAPABLE OF AUTOMATICALLY REDUCING LIGHTING POWER IN RESPONSE TO A DEMAND RESPONSE SIGNAL. GENERAL LIGHTING SHALL BE REDUCED PER TABLE 130.1-A. CONTROLS SHALL DEMONSTRATE A LIGHTING POWER REDUCTION OF AT LEAST 15% BELOW THE TOTAL INSTALLED LIGHTING POWER IN CONTROLLED SPACES.
130.0 GENERAL LUMINAIRE REQUIREMENTS
ALL LUMINAIRES SHALL BE FACTORY-LABELLED PER 130.0(c). ENERGY MANAGEMENT CONTROL SYSTEMS (EMCS) SHALL MEET REQUIREMENTS OF 130.0(e).
130.1(a) MANUAL AREA CONTROLS
EACH ROOM OR AREA WITH FLOOR-TO-CEILING WALLS IN THIS BUILDING SHALL HAVE LIGHTING CONTROLS THAT ALLOW LIGHTING TO BE MANUALLY TURNED ON AND OFF MANUALLY CONTROLLED SHALL:
1. BE READILY ACCESSIBLE
2. BE LOCATED IN THE SAME ENCLOSED AREA WITH THE LIGHTING IT CONTROLS.
3. PROVIDE SEPARATE CONTROL OF GENERAL, FLOOR, WALL, WINDOW CASE DISPLAY, ORNAMENTAL AND SPECIAL EFFECTS LIGHTING SO EACH TYPE CAN BE TURNED ON AND OFF SEPARATELY WITHOUT AFFECTING OTHER LIGHTING OR EQUIPMENT.
130.1(b) MULTILEVEL LIGHTING CONTROLS
GENERAL LIGHTING IN ALL ROOMS AND AREAS 100 FT2 OR GREATER AND WITH MORE THAN 0.5 WATTS PER FT2 OF LIGHTING LOAD SHALL HAVE MULTILEVEL CONTROLS THAT ALLOW LIGHT LEVELS TO BE ADJUSTED UP AND DOWN. CONTROLS SHALL PROVIDE NUMBER OF CONTROL STEPS AND UNIFORM LIGHT LEVELS PER TABLE 130.1-A.
130.1(c) SHUTOFF CONTROLS
ALL INSTALLED INDOOR LIGHTING SHALL BE EQUIPPED WITH CONTROLS TO AUTOMATICALLY REDUCE LIGHTING POWER WHEN SPACE IS TYPICALLY UNOCCUPIED.
130.1(c)(1) CONTROL REQUIREMENTS
ALL INSTALLED INDOOR LIGHTING SHALL HAVE ALL OF THE FOLLOWING:
A. CONTROL(S) CAPABLE OF AUTOMATICALLY SHUTTING OFF ALL LIGHTING IN THE SPACE WHEN TYPICALLY UNOCCUPIED (OCCUPANT SENSING CONTROL, AUTOMATIC TIME-SWITCH CONTROL, OR OTHER)
B. SEPARATE CONTROLS FOR LIGHTING ON EACH FLOOR (OTHER THAN STAIRWELLS)
C. SEPARATE CONTROLS FOR A SPACE ENCLOSED BY CEILING HEIGHT PARTITIONS NOT EXCEEDING 5,000 FT2
D. SEPARATE CONTROLS FOR GENERAL, DISPLAY, ORNAMENTAL, AND DISPLAY CASE LIGHTING
E. AUTOMATIC TIME-SWITCH CONTROLS MAY INCLUDE MANUAL-ON MODE
130.1(c)(2) COUNTDOWN TIMER SWITCHES
COUNTDOWN TIMER SWITCHES ONLY ALLOWED TO MEET SHUT-OFF REQUIREMENTS IN CLOSETS <70 FT2 AND SERVER AISLES IN SERVER ROOMS. MAXIMUM TIMER

Indoor Lighting Mandatory Measures:

130.1(c)(6) PARTIAL OR FULL-OFF OCCUPANT SENSORS
PROVIDE PARTIAL OR FULL-OFF OCCUPANT SENSORS, IN ADDITION TO SHUTOFF CONTROLS PER 130.1(c)(1) AND 130.1(c)(2), IN THE FOLLOWING SPACES:
• ASLE WAYS AND OPEN AREAS IN WAREHOUSES
• LIBRARY BOOK STACK AISLES
• CORRIDORS AND STAIRWELLS
130.1(d) AUTOMATIC DAYLIGHTING CONTROLS
ALL GENERAL LIGHTING IN THE FOLLOWING ZONES SHALL HAVE CONTROLS THAT AUTOMATICALLY ADJUST THE INSTALLED LIGHTING POWER UP AND DOWN TO KEEP TOTAL LIGHT LEVEL STABLE AS INCOMING DAYLIGHT CHANGES:
• PRIMARY SIDELIT DAYLIT ZONES
• SKYLIT DAYLIT ZONES
• COMBINED PRIMARY AND SECONDARY SIDELIT DAYLIT ZONES IN PARKING GARAGES
ALL DAYLIT ZONES MUST BE SHOWN ON PLANS.
NOTE: PARKING AREAS ON THE ROOF OF A PARKING STRUCTURE ARE NOT SKYLIT DAYLIT AREAS.
IN ADDITION, AUTOMATIC DAYLIGHTING CONTROLS SHALL PROVIDE SEPARATE CONTROL FOR LUMINAIRES IN EACH TYPE OF DAYLIT ZONE. LUMINAIRES THAT FALL IN BOTH SKYLIT AND SIDELIT DAYLIT ZONE SHALL BE CONTROLLED AS PART OF THE SKYLIT ZONE.
130.1(d)(3) THE AUTOMATIC DAYLIGHTING CONTROLS SHALL ACHIEVE ALL OF THE FOLLOWING:
A. ADJUST LIGHTING VIA CONTINUOUS DIMMING OR THE NUMBER OF CONTROL STEPS PROVIDED BY THE MULTILEVEL CONTROLS (FOR SPACES REQUIRED TO INSTALL MULTILEVEL CONTROLS UNDER SECTION 130.1(b)).
B. FOR EACH SPACE, ENSURE COMBINED ILLUMINANCE FROM CONTROLLED LIGHTING AND DAYLIGHT IS NOT LESS THAN ILLUMINANCE FROM CONTROLLED LIGHTING WHEN NO DAYLIGHT IS AVAILABLE
C. ENSURE THAT THE GENERAL LIGHTING POWER IN A DAYLIT ZONE SHALL BE REDUCED BY AT LEAST 65% WHEN DAYLIGHT ILLUMINANCE IN THAT ZONE IS GREATER THAN 150% OF DESIGN ILLUMINANCE RECEIVED FROM THE GENERAL LIGHTING SYSTEM AT FULL POWER (NOT APPLICABLE TO PARKING GARAGES).
D. (FOR PARKING GARAGES ONLY) ENSURE THAT WHEN ILLUMINANCE LEVELS MEASURED AT THE FARTHEST EDGE OF THE SECONDARY SIDELIT ZONE AWAY FROM GLAZING OR OPENING ARE GREATER THAN 150% OF THE ILLUMINANCE PROVIDED BY THE CONTROLLED LIGHTING WHEN NO DAYLIGHT IS AVAILABLE, THE CONTROLLED LIGHTING POWER CONSUMPTION IS ZERO.
130.1(d)(4) WHEN PHOTOSENSORS ARE LOCATED WITHIN THE DAYLIT ZONE, AT LEAST ONE PHOTOSENSOR SHALL BE LOCATED SO THAT IT IS NOT READILY ACCESSIBLE TO UNAUTHORIZED PERSONNEL.
130.1(d)(5) THE LOCATION WHERE CALIBRATION ADJUSTMENTS ARE MADE TO AUTOMATIC DAYLIGHTING CONTROLS SHALL BE READILY ACCESSIBLE TO AUTHORIZED PERSONNEL BUT MAY BE INSIDE A LOCKED CASE OR UNDER A COVER THAT REQUIRES A TOOL FOR ACCESS.

Indoor Lighting Mandatory Measures:

130.1(f) CONTROL INTERACTIONS
EACH LIGHTING CONTROL INSTALLED TO MEET 130.1 REQUIREMENTS SHALL INCORPORATE THE FUNCTIONS OF OTHER LIGHTING CONTROLS REQUIRED BY THIS SECTION.
1. FOR GENERAL LIGHTING, MANUAL AREA CONTROL SHALL PERMIT THE LEVEL OF LIGHT PROVIDED WHILE LIGHTING IS ON TO BE SET OR ADJUSTED BY CONTROLS SPECIFIED IN 130.1(b), (c), (d) and (e).
2. MANUAL AREA CONTROL SHALL PERMIT SHUTOFF CONTROL TO TURN THE LIGHTING DOWN OR OFF.
3. MULTILEVEL CONTROL SHALL PERMIT THE AUTOMATIC DAYLIGHTING CONTROL TO ADJUST ELECTRIC LIGHTING IN RESPONSE TO DAYLIGHT.
4. MULTILEVEL CONTROL SHALL PERMIT THE DEMAND RESPONSIVE (DR) CONTROL TO ADJUST LIGHTING DURING A DR EVENT THEN RETURN IT TO THE LEVEL SET BY THE CONTROL AFTER THE EVENT.
5. SHUTOFF CONTROL SHALL PERMIT THE MANUAL AREA CONTROL TO TURN THE LIGHTING ON.
6. AUTOMATIC DAYLIGHTING CONTROL SHALL PERMIT MULTILEVEL LIGHTING CONTROL TO ADJUST THE LIGHTING LEVEL.
7. FOR LIGHTING CONTROLLED BY MULTILEVEL LIGHTING CONTROLS AND OCCUPANT SENSING CONTROLS THAT PROVIDE AUTOMATIC ON/FUNCTION, CONTROLS SHALL PROVIDE A PARTIAL-ON FUNCTION THAT IS CAPABLE OF AUTOMATICALLY ACTIVATING BETWEEN 50-70% OF CONTROLLED LIGHTING POWER.

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
Project Name: County of Humboldt Tenant Improvements 2022 6th Street, Eureka
Project Address: 2022-09-16T16:18:43-04:00

Table with 6 columns: O1, O2, O3, O4, O5, O6. Rows include Area Description, Complete Building or Area Category Primary Function Area, Allowed Density (W/H^2), Area (ft^2), Allowed Wattage (Watts), and Additional Allowance / Adjustment Area Category PAF.

J. ADDITIONAL ALLOWANCE: AREA CATEGORY METHOD QUALIFYING LIGHTING SYSTEM
This section does not apply to this project.

K. TAILORED METHOD GENERAL LIGHTING POWER ALLOWANCE
This section does not apply to this project.

L. ADDITIONAL LIGHTING ALLOWANCE: TAILORED WALL DISPLAY
This section does not apply to this project.

M. ADDITIONAL LIGHTING ALLOWANCE: TAILORED FLOOR AND TASK LIGHTING
This section does not apply to this project.

N. ADDITIONAL LIGHTING ALLOWANCE: TAILORED ORNAMENTAL/SPECIAL EFFECTS
This section does not apply to this project.

O. ADDITIONAL LIGHTING ALLOWANCE: TAILORED VERY VALUABLE MERCHANDISE
This section does not apply to this project.

P. POWER ADJUSTMENT: LIGHTING CONTROL CREDIT (POWER ADJUSTMENT FACTOR (PAF))
This section does not apply to this project.

Registration Number: Generated Date/Time: Documentation Software: Energy Code Ace

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION
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Project Address: 2022-09-16T16:18:43-04:00

Q. RATED POWER REDUCTION COMPLIANCE FOR ALTERATIONS
This section does not apply to this project.

R. 80% LIGHTING POWER FOR ALL ALTERATIONS - CONTROLS EXCEPTIONS
This section does not apply to this project.

S. DAYLIGHT DESIGN POWER ADJUSTMENT FACTOR (PAF)
This section does not apply to this project.

T. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION
Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019\_compliance\_documents/Nonresidential\_Documents/NRC/

Form/Title
NRCI-LTI-01-E - Must be submitted for all buildings
NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.

U. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE
Selections have been made based on information provided in this document. If any selection have been changed by the permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and any with "A" in the form name must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Form/Title
NRCI-LTI-02-A - Must be submitted for occupancy sensors and automatic time switch controls.
NRCI-LTI-03-A - Must be submitted for automatic daylight controls.

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
Project Name: County of Humboldt Tenant Improvements 2022 6th Street, Eureka
Project Address: 2022-09-16T16:18:43-04:00

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: DONALD ALAMEIDA
Alameida Architecture
Company: 555 S. Main St. Suite 2
Address: Sebastopol, CA 95472
City/State/Zip: Sebastopol, CA 95472
Signature Date: 5/10/22
CEA/HERS Certification Identification (if applicable):
Phone: 707 824-1219

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am a registered professional under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible design).
3. The energy features and performance specifications, materials, components, and manufacturer cut sheets for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. 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.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the building provides to the building owner at occupancy.

Responsible Designer Name: DONALD ALAMEIDA
Alameida Architecture
Company: 555 S. Main St. Suite 2
Address: Sebastopol, CA 95472
City/State/Zip: Sebastopol, CA 95472
Signature Date: 5/10/22
Phone: 707 824-1219

Registration Number: Generated Date/Time: Documentation Software: Energy Code Ace
CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance
Report Version: 2019.1.003
Schema Version: rev 20200601
Compliance ID: 67997
Report Generated: 2022-09-16 13:18:46

STATE OF CALIFORNIA
Indoor Lighting
CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE
Project Name: County of Humboldt Tenant Improvements 2022 6th Street, Eureka
Project Address: 2022-09-16T16:18:43-04:00

Table with 4 columns: O1, O2, O3, O4. Rows include Project Location (city), Climate Zone, and Occupancy Types Within Project.

B. PROJECT SCOPE
This table includes any lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.6 or §141.0b(2) for alterations.

Table with 5 columns: Scope of Work, Conditioned Spaces, Unconditioned Spaces, Calculation Method, Area (ft^2). Rows include My Project Consists of (check all that apply), New Lighting System, New Lighting System - Parking Garage, Altered Lighting System, and Total Area of Work (ft^2).

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C. COMPLIANCE RESULTS
If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D, for guidance.

Table with 10 columns: O1, O2, O3, O4, O5, O6, O7, O8, O9, O10. Rows include Lighting in conditioned and unconditioned spaces must not be combined for compliance per §140.6(b)(1), Total Adjusted (Watts), and Compliance Results.

D. EXCEPTIONAL CONDITIONS
This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form. Track Lighting has been included in this project, details are provided in Table G.

E. ADDITIONAL REMARKS
This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. INDOOR LIGHTING FIXTURE SCHEDULE
This table includes all permanent designed lighting and all portable lighting in offices.
Designed Wattage: Conditioned Spaces

Table with 10 columns: O1, O2, O3, O4, O5, O6, O7, O8, O9, O10. Rows include Name or Item Tag, Complete Luminaire Description, Modular (Track) Fixture, Small Aperture & Color Change, Watts per luminaire^2, How is Wattage determined, Total Number of Luminaires, Excluded per §140.6(a)(3), Design Watts, Field Inspector.

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F. INDOOR LIGHTING FIXTURE SCHEDULE
Designed Wattage: Unconditioned Spaces

Table with 10 columns: A, B, D, F, H, L, K, E. Rows include LED RETROFIT FOR (E) PARBOLIC LIGHTS, LED RETROFIT/RELOCATE EXISTING PARBOLIC, 1x4 LED PENDENT, LED RECESSED CAN LIGHT, 2x2 DIM W/LED, LED RING PENDENT, TRACK LIGHT FIXTURE SILO DYNAMIC, EXISTING FUTURE TO REMAIN.

FOOTNOTE: Design Watts for small aperture and color changing luminaires which qualify per §140.6(a)(8) is adjusted to be 75% of their rated wattage. Table F automatically makes this adjustment, the permit applicant should enter full rated wattage in column O5.
\*Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c). Wattage used must be the maximum rated for the luminaire, not the lamp.

G. MODULAR LIGHTING SYSTEMS
This table calculates wattage for modular lighting systems/track lighting fixtures indicated on Table F and transfers wattage to Table F.

Table with 4 columns: O1, O2, O3, O4. Rows include Name or Item Tag, Complete Track Description, Calculation Method per §130.0(c)(6), Track Wattage.

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G. MODULAR LIGHTING SYSTEMS

Table with 2 columns: Number of luminaires in system, Rated Watts per luminaire. Rows include Total Watts, Linear ft of track or busway, Default W/F, Total Watts.

FOOTNOTE: For power-over-Ethernet lighting systems, power provided to installed non-lighting devices may be subtracted from the total power rating of the power-over-Ethernet system.

H. INDOOR LIGHTING CONTROLS (Not including PAFs)
This table includes lighting controls for conditioned and unconditioned spaces. When a control having a "I" is shown, the notes section of this table provides more detail on how compliance is achieved. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.

Table with 3 columns: O1, O2, O3. Rows include Mandatory Demand Response §110.12(c), Shut-off controls §130.1(c), Field Inspector.

Area Level Controls
Not Required - Building <= 0.5W/SF
See Area/Space Level Controls

Table with 12 columns: O4, O5, O6, O7, O8, O9, O10, O11, O12. Rows include Area Description, Complete Building or Area Category Primary Function Area, Area Controls §130.1(a), Multi-Level Controls §130.1(b), Shut-Off Controls §130.1(c), Primary/Sky lit Daylighting §130.1(d), Secondary Daylighting §130.6(d), Interlocked Systems §130.6(a)(1), Field Inspector.

\*Notes: Controls with a "I" require a note in the space below explaining how compliance is achieved.
EX: Conference 1: Primary/SkyLight Daylighting. Exempt because less than 120 watts of general lighting; EXCEPTION 1 to §130.1(d)(2)
Plan Sheet Showing Daylit Zones: E-4

Registration Number: Generated Date/Time: Documentation Software: Energy Code Ace
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PROJECT MANAGEMENT

ALAMEIDA ARCHITECTURE

CONSTRUCTION MANAGEMENT

555 S. MAIN STREET, SUITE 2
SEBASTOPOL, CA 95472
(707) 824-1219
WWW.ALAMEIDA.COM



PROJECT
TENANT IMPROVEMENTS FOR ECONOMIC DEVELOPMENT AND CHILD SUPPORT SERVICES

2420 6TH STREET
EUREKA, CA

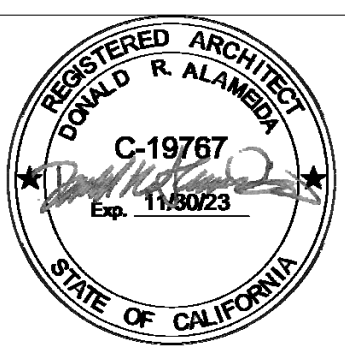


Table with 3 columns: No., Description, Date. Row 1: PLAN CHECK COMMENTS, 12/12/22

Table with 3 columns: No., Description, Date. Multiple empty rows for project management tracking.

TITLE 24 INDOOR LIGHTING

Table with 2 columns: Project number, Date, Drawn by, Checked by. Values: 2108, 5/8/22, Author, Checker

T24-1

Scale



