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1100000         Lange to can be applied and prime open in prior to can prio to can prior to can prio to can prior to can prio to	Requirements for Ventilation and Indoor Air Quality. All dwelling units must meet the requirements of ASHRAM 1: and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)1.
11.12.         pelicities and the stages         pelicities and the stages         pelicities and the stages           11.12.         pelicities and the stages         pelicities and the stages         pelicities and the stages           11.12.         pelicities and the stages         pelicities and the stages         pelicities and the stages         pelicities and the stages           11.12.         pelicities and the stages         pelicities and the stages         pelicities and the stages         pelicities and the stages           11.12.         pelicities and the stages         pelicities and the stages         pelicities and the stages         pelicities and the stages           11.12.         pelicities and the stages         pelicities and the st	<ul> <li>Single Family Detached Dwelling Units. Single family detached dwelling units, and attached dwelling units not a other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation ( detainmined by ASUADE 32 2 Sections 4.5.4 and 4.5.2 and 5.5.2 and 5.5.2 and 5.5.2     </li> </ul>
11000         student Calibration by Bunchmann, Tangkin Luttin particly the Dynamic of Calibration of Addition (1996).         110000           110000         body Bunchmann, Tangkin Luttin and Bunch Lu	Multifumily Attached Dwelling Unlis, Multifamily attached dwelling units must have mechanical ventilation sinfor
19.14/2         Analyse Regenerate for these data frame. In the data for an it has backed at the second for and its and the	12: acconstance was equation 1000-b and must be eliment a parameter system of committees suppry of constructing entral system is not used, all units in the building must use the same system type and the dwelling-unit envisione leakage (0.2 but water for course ford of dwelling unit analytics area and waited in according to the building of the superior of the superior of the same for the dwelling unit analytics area and waited in according to the building of the superior of the superior of the same for the superior of the superior of the same system of the superior
<ul> <li>Bulde Durch Sterner Marken under Sterner Sterner</li></ul>	Multilemity Building Central Ventilation Systems: Central ventilation systems that serve multiple dwelling units
<ul> <li>Huge and water, Yaan Angle, Ageng Sanda Gaurda, Sanda Gaurda, Barras Agendari, David Agendari, Sanda Gaurda, Sanda</li></ul>	17: ventration and/or or each oweining time served at a rate equate or or greater than the rate spectred by Equation to will an 20% of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as it relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required airflow rate as its relates to the individual unit's minimum required as its relates to the individual unit's minimum required as its relates to the individual unit's minimum required as its relates to the individual unit's minimum required as its relates to the individual unit's minimum required as its relates to the individual unit's minimum required
<ul> <li>Bittigen Heiler segution hanges i beard of 200 metric segments of account process metric optic segments metric encodered account of account process metric optic segments account process metric segments</li></ul>	Field Verification and Diagnostic Testing. Dwelling unit ventilation shiftow must be verified in accordance with F     Amount 2012 1 When the state of the s
<ul> <li>Brooks Bardie Strands of bard have chear have chear starts and strands of course of strands of how to come and the and th</li></ul>	rated by HVI to comply with the ability rates and sound requirements as specified in Section 5 and 7.2 of ASHRA
<ul> <li>Martinezation, Mexicon, North Stephenkov, North Stephenkov, North Stephenkov, North Stephenkov, North North North Stephenkov, North Stephenkov, North Stephenkov, North Stephenkov, North North Stephenkov, North North North Stephenkov, North North</li></ul>	spa systems and Equipment Measures: Certification by Manufacturers. Any pool of spa heating system or equipment must be certified to have all of the
<ul> <li>meter of consider of California and Park and</li></ul>	<ul> <li>Bat complete with the Appliance Efficiency Regulations; an on-off writch mounted outside of the heater that allow without adjusting the flermostat setting; a permanant weatherproof plate or card with operating instructions; and i positive operation.</li> </ul>
<ul> <li>Balesdaw Faculty A. September 2. September 2</li></ul>	Piping. Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between it dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.
<ul> <li>Bit of and protects the Unity And Example of Section 2014 and 2014 and</li></ul>	Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.      Directional follow and Time Switches for Bools must have directional initial that advantation and the second s
<ul> <li>Angell, Merr Mader, I. derber one i famogh RJ, et al. Start for an startic care (panel and in control on the local in Case). Neuroimage and in the startic care of the starti</li></ul>	will allow all pumps to be set or programmed to run only during off-peak electric demand periods.     Direct light - barried our model and and periods.
0.0022         The extension of the second seco	Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified red rote when there and using a
B0006         members 1.44-bit of 4.50 mb byginghed energy 2.4-bit of 8.10 bit members 0.42.4.         Image: 1.50 mb bit of 1.50 mb bit of 1.50 mb bit bits of 1.50 mb bit of 1.50 mbit of 1.50 mb bit of 1.50 mb bit of 1.50 mb bit of 1.	iper, piping, mans, and varies. Regsures:
particle Version of a physical scale of a second s	Lighting Controls and Components. All lighting control devices and systems, ballaste, and luminalizes must me of § 110.9.
Bagel:         Consultation         Biology           Consultation         Consultation         Section         Biology           Analysis         Consultation         Section         Section         Section           Analysis         Consultation         Section         Section         Section           Analysis         Consultation         Section         Section         Section           Analysis         Consultation         Section	IA: Luminaire Efficacy. All installed huminaires must meet the requirements in Table 150.0-A. Blank Electrical Boxes. The number of electrical boxes that are more than 5 feet above the finished floor and de
<ul> <li>Sel Laponced Mits and Parkense Street Street</li></ul>	iB: other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimm fan speed control.
	Recessed Downlight Luminaires in Cellings. Luminaires recessed into cellings must meet all of the requireme labeling; air lealage; sealing; mainlenance; and sockst and light source as described in § 150.0(k)1C.
0.9 1116, 200         Destingtion, Hosting, unified and div confidence (HAC) (supports). Table 102-A they find the regulated in the second of the second one second of the second	D: Electronic Ballasis for Fluorescent Lamps. Ballasis for fluorescent lamps rated 13 waits or greater must be ele output frequency no less than 20 kHz.
2020:         mAx structures, Expanding Structures, Struct	Night Lights, Step Lights, and Path Lights. Night lights, step lights and path lights are not required to comply v controlled by vecancy sensors provided they are rated to concurne no more than 6 waits of power and emit no m
100%         Instrume occurpts may present suppresent su	Expression integrate the supercast of the manufactures in the manufactures in the supercast of the superc
<ul> <li>Bernsensteil - Construction of the second sec</li></ul>	Corew passed luminalities. Screw based luminalities must contain lamps that comply with Reference Joint Appendi     Light Sources in Enclosed or Recessed Luminalities. Lamps and shar second le light accuracy that are not accurately light accuracy.
<ul> <li>Meine Frederie gescheutenten Langes Bernelig Bungling bungling under Kennen and robusteling in ander kennen ander ander</li></ul>	temperature requirements, including marking requirements, must not be installed in enclosed or recessed luming     light Sources in Contents, Contents of Light Contents, Sources in Contents, So
113304     10305     1030     1030     103     1030     103     1030     103     1030     103	<ul> <li>Light Sources in Drawers, Calinets, and Linen Closers. Light Sources memal to drawers, calinetity of finan c comply with Table 150.0-A or be controlled by vacancy sensors provided that they are rated to consume no more more than 150 litheans, and are cauloused with controls that automatically that they are rated to consume to device the device.</li> </ul>
<ul> <li>Rike or other fillings on both cold and plot white fibers to advance funding the watter heater within the surface and exect.</li> <li>Rike or other fillings on both cold and plot plot filling and provide the surface of the plot on all fillings.</li> <li>Biblings (Collings of Heater) (Laster, Heady and public filling and plot plot filling and plot filling and plot plot filling and plot plot filling and plot f</li></ul>	A: Interior Switches and Controls. All forward phase out dimmers used with LED light sources must comply with N
Hone animot an experimental processing consider with participant consider with participant consigned and partity participant consigned and partity participant consigned	B: Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems. <sup>1</sup> C: Interior Switches and Controls. Lighting must have readily accessible wall-mounted-controls that allow the lighting
Building Statistics         Explorient Volum, Applications Volums, and Plantaemethy Nature, the SMACPA Needford Conduct System: instability of an entropy with the second of the second system instability of an entropy with the second system instabilit	turned ON and OFF.* D: interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's interior.
Classification of N-2 control in our program outside continuing ups and man to be a classifier of least 6 for term in outlet of any oper val. (a) 5100.0027 (b) Equip (b) Explore A control in substitution are antihous and a adopt biology links for addressifier heading systems, much addressifier of biology and another of the addressifier of biology and another of the addressifier of biology and addressifier of the substitution of the addressifier of biology and the addressifier of the substitution of the addressifier of biology and the addressifier of the substitution of the addressifier of the addres	Interior Switches and Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function comply with § 150.0(k).
UN00187         Senger Samt Insuffer. On Vester Insula, such a dange the addres storage innex for adgressive storage system, must here a estimute of F120 and F1	F: interior Switches and Controls, Lighting controls must comply with the applicable requirements of § 110.9. Interior Switches and Controls. An energy menagement control system (EMCS) may be used to comply with on
<ul> <li>a ministum of R-12 automai invusion or R-16 internal invusion. R-value is fadated on the activity of the tark plays growth plays and growthe pl</li></ul>	3: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of EMCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2.
be installed as expected in Section 20012.         Section 200	Interior Switches and Controls. A multiscene programmable controllar may be used to comply with dimmer requiprovides the functionality of a dimmer according to § 110.9, and complias with all other applicable requirements in the second secon
page years a normal commer equate to or greater than 34 too males that i not, all of values plots will a textined direct less than 34 iso male is associated will be accorded will be reached and page. Non the heading cause to furry gene takes to bitchen fiscing.              § 160.0002.            (0)(3)         the state is associated will be values too if any state is provided for a damage, including flat das to suright, moleture, equipment maintenance, and wind as registed by Sector (03.3 by Linking Sectors 0.3 by Sectors (03.3 by Linking Sectors 0.3 by Sectors and gas of the sector page will be failed set to suright, moleture, equipment maintenance, and wind as registed from 10.1 by Bit to state of the state of the sector page will be failed will be value of the state state sthe state state of the state of the state of the state s	interior switches and Controls. In balayooms, garages, laundry rooms, and utility rooms, at least one luminaire in be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sense initially confirmed to move the sensor of a vacancy sensor providing automatic-off functionality. If an occupant sense
000%         tested main interference of Maintain Statutes.         1 <td< td=""><td>Interior Switches and Controls. Luminaires that are or contain light sources that meet Reference Joint Appendix.</td></td<>	Interior Switches and Controls. Luminaires that are or contain light sources that meet Reference Joint Appendix.
Immute a regreen by obcome (day, by measure regreen to whether instructure of water instructure in protected built of year instructure of the instructure of the conditioned approximate instructure of the instructure of	Commission and that are not controlse by occupancy or vacancy sensors, must have canning composi-     Interior Switches and Controls. Under cabinet lighting must be controlled separately from ceiling-installed lighting
Gas or Propose Weiler Healing Syndams. Systems using gas or popare water heaters to sarre includent drelling critis must include all of the filthering. A dedication f28 virit. 20 amp dedicate receptor has to compare the and to all S conductors. 10         5 \$ 50.0(c)(8           A0(1)1:         AND compare much character with a Solid ADD compare water heaters in the all compare the analysis of the discipling compare the and character that and the all compares the discipling of the	Residentiat Outcoor Lighting. For single-family residential basilings, outcoor lighting permanently mounted to a r buildings on the same id, must meet the requirement in time § 150.0(x)Ai (ON and OFF switch) and the requirem \$ 150.0(x)Ai (babasel and other a residue penses or putration from which are the D 0000Ai (control of the dataset).
AVVC copper framch circuit, within 3 freet from the varier header value of chancelon. Both ends of the sunsed conductor must be balaid with the incluid breining of the incluid	Residential Outcore Lighting. For low-rise residential buildings with four or more dwelling units, outdoor fighting balconias, and porches: and residential packing lots and constraint with lass, then picht vehicles ther also must
for the terach cloud: and labeled with the words: "Future 2400 User," c Catagory the of IV vert, or Type E vert with statigit plops between the of the weater heads, and allows interate dealings instation, and allows interated heads to addition to many family and the teraction of the weater heads, and allows interated heads to instation.         Image: The terach of the terace of the weater heads and the terace of the weater heads, and allows interated heads to addite weater heads.         Image: The terace of the weater heads and the terace of ter	150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0. Residential Outdoor Lightling. For low-rise residential buildings with four or more dwelling units, any outdoor light
It is water heater, and allows instruit draining willing up assidtance, and a gas supply line wills a capsally of all send 20,000 Biu por hour.         § 190.0(0)4:           00(0)2:         Sealervaluting Loops. Reviousling loops serving multiple dualing units must mate the requirements of § 110.3(0)5.         § 190.0(0)4:           00(0)2:         Solar Water-heating Systems. Solar water-heating systems and calcobis must be orefliced and rated by the Solar Rating and Cartification Corporation (SRC3), the intermational Association of Plumitip and Mechanical Officials, Research and Testing (APMO RRT), or by a listing agency what is approved by the Executive Disector.         § 190.0(0)4:         § 190.0(0)4:           8(0)2:         Dudes. Insulation insulation in the contractor must certify to 5e oxforms in writing. That the insulation models in the contractor must here on the contractor must certify to 5e oxforms in the million. The CARC Section 601.0, MAZ, 006.0, M	or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by Section 150.0(k); comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.
Soler Water-besting Systems. Solar weter-beading systems and caleditis must be certified and rated by the Solar Reling and Cartification Corporation (SRCC), the international Association of Planthity and Mechanical Officials, Research and Testing (JAPMO RET), or by a listing agency that is approved by the Executive Disector.         \$ 190.0(k)8:           at and Pans Massures:         Dues, Insultion Installed on an existing space-conditioning data must comply with California Mechanical Code (CMC) Section 691.0, 692.0, 693.0, 694.0, H a.         \$ 150.0(k)8:           CMC Compliance. All alf-distibution system ducks and planums must certify to 5e customar in writing, that this insultifies the insultifies and return-air ducks appear and appear and return-air ducks appear and support platforms appear and return-air ducks appear and support platforms must be applicable return-air ducks and and and the requirements postillation returns and the applicable and baser and baser and baser and tout constinucks applicable applicable requirements for the autom	Internally Illuminated address signs. Internally illuminated address signs must comply with § 140.8; or must com power as determined according to § 130.0(c).
agency that is approved by the Executive Director.         § 150.0(0)35.           a and Pane Measures:         (§ 150.0(0)35.           04(0)3:         Duets. Insulation installed on an existing space-conditioning dut must comply with California Mechanical Code (CMC) Section 6010, 6020, 6030, 0540, 0050 and ANSIGMACAN-6005.0000.0000.0000.0000.0000.0000.0000	residential catages for high or more vehicles. Lighting for residential parking galages for eight or more vehicle applicable requirements for nonresidential galages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0. Interface Common Ancies of Learning Unifferential Balances in Balances in the Bull and the Bul
and rame Heast Head       Fig. 2018       Sector Participant Part Part Part Part Part Part Part Par	common common press or common measuring residences of the floor area, permanently installed lighting for the in building must be common with Table 169 0.4 and be controlled to common server.
Contractor instance must contry to be assimer in writing, that the instaltion meets this requirement.       § 150.0(b)6B:         CMEC Compliance. All air-distribution system ducts and plenum nust meet the requirements of the CMC Section 601.0, 602.0, 603.0, 604.0, 005.0 and ANSIGMACN4-005-2006 HVAC Duck Construction Standards Matal and Flexible Still Stillion. Particines of supply-air and return-air ducts are entitled in a dimension free system function of the duck system completity exposed and supromodel by directly conditioned space are not requirements for duck closure system that meets the applicable requirements of the duck system completity exposed and supromodel by directly conditioned space are not requirement of UL 723. If meetior trap is used to seel oparings greater than Vine, the combination of meetic and eliber meets of applicable requirements of the core system that meets the applicable requirements of duck constructed with meetils. Other than eselus sheet meetile, duck board or factible duct must not be used to compresse to dause reductions in the crease-esclineal area.       Solar Ready         Procection of instalting could be applicable requirements for duck construction, connections, and closures closure system that meets the applicable requirements for duck construction, connections, and closures closure specified for duck systems must comply with applicable requirements for duck construction, connections, and closures closure specified for duck systems and their components must not be sealed with distability explicable darges, mastics, sealards, and ditter requirements for duck construction, connections, and closures. Flexid-fibricated and are bands.       § 110.10(b)2         Protection of instalation must be protected for duck systems must comply with applicable requirements for duck setting ensiting and texerespoil.       § 110.10(b)2	Interfor Common Areas of Low-rise Multifamily Residential Buildings. In a tow-rise multifamily residential build common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the
block and planums musk be insulated to a minimum installed in earlineum installed in a minimum installed in a mathemet in the guiter ments on a minimum installed in a mathemet in the mesion and inportance of math ducks and planums designed for a considered minimum installed in a mathemet in the minimum installed in a minimum installed in minimum instelled in minimum installed in a minimum installed in	that building must L Comply with the applicable requirements in Sections 110.9; 130.0; 130.1, 140.6 and 141.0; and
Solar Ready         Solar Ready         9(m)4:       and surrounded by directly continued must be seared with masks taps, or disar ducks duck must furne core of ficklike ducks must be duck and furne core of ficklike ducks must be duck and furne core of ficklike ducks must be duck and furne core of ficklike ducks must be duck and furne core of ficklike ducks must be duck and furne core of ficklike duck must be duck and furne core of ficklike duck must be duck and furne core of ficklike duck must be seeded with mask and ducks and furne must be used. Building cavities, support platforms must not be used be duck and support platforms must not be used. Building cavities, and point get greater finan ducks. Duck installad in cavities and support platforms must not be occurrence constituction, connections, and closures joints and seeme of duck systems must comply with applicable requirements for duck construction, connections, and closures joints and seeme of duck and daw bands.       § 110.10(a)2:         0(m)2:       Factory-Fabricated Duck Systems. Factory-fabricated duck systems must comply with applicable requirements for duck construction, connections, and closures joints and seeme of duck and daw bands.       § 110.10(b)2:         0(m)2:       Factory-Fabricated Duck Systems. Trackory-fabricated duck systems nust comply with applicable requirements for: pressure-sensitive tapes, mastics, seadants, and other requirements specified for duck construction.       § 110.10(b)2:         0(m)2:       Gravity Ventiliation Dampers. Gravity ventillarg systems saving conditioned space and outdoors must have backdraft of automatic dampers.       § 110.10(b)2:         0(m)4:       Gravity Ventiliation nust be protected for ducage, sumight, motisture, equiprement	IL Lighting installed in contidors and statiwells must be controlled by occupant sensors that reduce the lighting power to 50 percent. The occupant sensors must be capable of burning the light fully on and off from all designed paths of ingr
UL 181, UL 187A, or UL 181B, or aerosol seelent that meets the requirements of UL 723. If meetic or tape is used to seel openings greater than the set of tape must be used. Building cavities, support platforms for alt handlets, end plenums designed or construction of mastic and either meet or tape must be used. Building cavities and support platforms must not be used to convey conditioned at. Building cavities and support platforms mey confain ducts. Building cavities and support platforms mey confain ducts. Building cavities and support platforms must not be used to convey conditioned at. Building cavities and support platforms must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with meetic and daw bands.       § 110.10(a)2:         0(m)2:       Pactory-fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for duct construction, components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with meetic and daw bands.       § 110.10(a)2:         0(m)2:       Pactory-fabricated Duct Systems: Field-fabricated duct systems must comply with applicable requirements for duct construction, must be protected from damage, sulfight, moistine, equipment maintenance, and wind. Insulation exposed to weetine must be soliable for outconstruction.       § 110.10(b)2:         0(m)9:       Gravity Ventilating systems with exacting systems and period durate, eaving continued apperiod dampers, in all openings to the outside, away continued and outside and outdoors must have backingt for solar vapor partier, to mast be protected as above or painted with a reading that is water relation and outside and outside and values and outer vapor partier, to 10(b)2:       § 110.10(b)2:         0(m)91:	Buildings: Single Family Residences. Single family residences located in subdivisions with ten or more single family residences
designed or constructed with metericits. Other than easilid sheet metal, duct board or flaxible duct must not be used to convey conditioned air. Building cavilies and support platforms may contain ducts. Duck insisted in cavilies and support platforms must not be compressed to cause reductions in the cross-sectional area.       § 110.10(a)2:         Prectory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems must comply with applicable requirements for: pressure-sensitive tapes, matures, sealards, and dither requirements specified for duct oxystems must comply with applicable requirements for: pressure-sensitive tapes, manually operated dampers in all openings to the cutable, except combustion field and outflet all openings and elevator sheft vents. Protection of insulation. Insulation must be protected are above or painted with a coaling the tis water retardant and provides shelding from sparse duct. S 110.10(b)2:       § 110.10(b)2:         0(m)6:       Gravity Vanifiation. Insulation must be protected are above or painted with a coaling that is water retardant and provides shelding from sparse duct. Protection of insulation must be protected are above or painted with a coaling that is water retardant and provides shelding from sparse duct. S 110.10(b)2:       § 110.10(b)2:         0(m)6:       Development be subble for outdoors service. For example, protected by eluminum, shear metal, painted cavays, or plastic over. Cellular four insulation must be protected are above or painted with a coaling that is water retardant and provides shelding from sparse ductors and oupoly big sparse. The ducts must be scale an	application for a tentative subdivision map for the residences has been deemed complete and approved by the ento do not have a photovollaic system installed, must comply with the requirements of § 110, 10(b) through § 110, 10(e).
reductions in the cross-sectional area."         Pactory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seame of duct systems and their components must not be sealed with cloth back rubber adhesive duct tages unisss such fape is used in combination with mastic and daw bands.         (m)3:       Field-Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tages, mastics, sealants, and other requirements specified for duct construction.       \$ 110.10(b)1:         (m)3:       Field-Fabricated Duct Systems. Field-fabricated duct systems serving conditioned space and outdoors must have backdraft of automatic dampers.       \$ 110.10(b)1:         (m)4:       Gravity Ventiliation Dampers. Cravity ventilating systems serving conditioned space and outdoors must have backdraft of automatic dampers.       \$ 110.10(b)2:         (m)6:       Gravity Ventiliation nust be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by auminum, sheet metal, painted canves, or pleatic cover. Cellular for tradition.       \$ 110.10(b)2:         (m)4:       Duct System Sealing and Leatage Test. When space conditioning systems use fave a non-portous layer between the linear core and ular outer vapor partier.       \$ 110.10(b)3:         (m)11:       occurs files but. Portous inner core files duct suites was a non-portous layer between the linear core and ular outer vapor partier.       \$ 110.10(b)3:         (m)12:<	Low-rise Hultifamity Buildings. Low-rise multi-family buildings that do not have a photovaltatic system installed mu requirements of § 110.10(b) through § 110.10(d).
<ul> <li>(m)2: connections, and closures; joints and seems of duct systems and their components must not be sealed with cloth back rubber adhesive duct types unless such tape is used in combination with mestic and daw bands.</li> <li>(m)3: Field Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealands, and other requirements specified for duct oxistruction.</li> <li>(m)6: Gravity Ventilation Dampers. Fan systems that excitange air between the conditioned space and outdoors must have backdraft or automatic dampers.</li> <li>(m)7: Backtraft Damper. Fan systems that excitange air between the conditioned space and outdoors must have backdraft or automatic dampers.</li> <li>(m)8: Gravity Ventilation Dampers. Gravity ventilating systems seving conditioned space and outdoors must have backdraft or automatic dampers.</li> <li>(m)9: Gravity Ventilation nust be protected from danage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weetler mixe the subation must be protected for duct systems use forost ally called any sort plastic cover. Cellular four insulation must be protected as above or painted with a calling that is water retardant and provides shielding from solar radiation.</li> <li>(m)10: Porous Inner Core Flex Duct. Porous inner core fax ducts must have a non-porous layer between the Inner core and outer vapor partier.</li> <li>(m)11: occupitable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and lagnostic testing, in accordance with § 160.0(m)11 and Reference Residential Appendix RAS.</li> <li>Alt Filtration. Space conditioning systems must have a 2 inch depth or can be 1 inch if sized per Equation 160.0-A. Pressure drops and labeling must meet the requirements in §160.0(m)12. Filters must be accessible for regular service.</li> <li>§ 110.10(d): \$110.10(d):</li> <li>§ 110.10(d):</li> <li>§ 110.10(d):&lt;</li></ul>	Minimum Solar Zone Ares. The solar zone must have a minimum lotal area as described below. The solar zone m pathway, smoke ventilation, and spacing requirements as specified in Title 24. Part 9 or other Paris of Title 24 or in
b(m)3:       Field-fabricated Duct Systems. Field-fabricated duct systems mat comply with applicable requirements for: pressure-sensitive tapes, mastics, sealards, and other requirements specified for duct construction.       § 110.10(b)1:         b(m)7:       Backtraft Damper. Fan systems that excitinge air between the conditioned space and outdoors must have backdraft or automatic dampers.       § 110.10(b)1:         b(m)8:       Gravity Ventilation Dampere. Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion infet and outlet air openings and elevator shaft vents.       § 110.10(b)2:         b(m)9:       Protection of Insulation must be protected from damage, sunlight, moisture, equipment maintenance, end wind, insulation exposed to weether must be suitable for outdoor service. For example, protected by atuminum, sheet metal, painted canvas, or plastic cover. Cellular form insulation must be protected as above or painted with a cealing that is water retardant and provides shielding from solar radiation.       § 110.10(b)2:         (m)10:       Porous inner Core Fiex Duct. Porous inner core fiex ducts must have a non-porous layer between the linear core and outer vapor barrier.       § 110.10(b)2:         (m)11:       occupiable space, the ducts must be soled and duct leakage tested, as confirmed through field verification and elegnostic testing, in accordance with § 160.0(m)1 and Reference Residential Appendix R43.       § 110.10(b)4:         (m)11:       Occupiable space conditioning systems must have a lost of ventilation systems must have MERV 18 or square, with § 160.0(m)1 and Ref	by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 fee square feet each for buildings with noof areas less than or equal to 18,000 square feet or no less than 160 square fe
D(m)?:       Backtraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft of automatic dampers.         0(m)?:       Gravity Ventilation Dempers. Gravity ventilating systems saving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion infet and outlet eir openings and elevator shaft vents.         0(m)?:       Protection of Insulation. Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be sullable for outdoor service. For example, protected by aluminum, sheet metal, painted caivas, or plastic cover. Cellular fean insulation must be protected as above or painted with a coaling that is water relationt and provides shielding from solar radiation.         0(m)0:       Portous inner Core Fiex Duct. Portous inner core fiex ducts must have a non-portous layer between the liner core and outer vapor barrier.         0(m)10:       Portous inner core fiex ducts must have a non-portous layer between the liner core and outer vapor barrier.         0(m)11:       occupiable space, the ducts must be sealed and duct leakage tests, as continned through field varification and diagnostic testing, in accordance with § 160.0(m)11 and Reference Residential Appendix RAS.         0(m)12:       Ak Filtration. Space conditioning systems must have a lone depth or can be 1 inch if sized per Equation 160.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Films must be accessible for regular service.*         Space Conditioning System Airflow Rate and Fan Efficay. Space conditioning systems that use ducts to supply cooling must ha	roor areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof and have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located the buildings or as the root or constant of constant of another stated in the solar in the solar zone must be located
winter       manually operated dampers in all openings to the outside, except combustion infet and outlet er openings and elevator shaft vents.       § 110.10(b)2:         Protection of Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular fourn insulation must be protected as above or painted with a ceating that is water retardant and provides shielding from solar radiation.       § 110.10(b)2:         0(m)0:       Porous inner Core Flex Bust. Porous inner core flex duots must have a non-porous layer between the inner core and outer vapor barrier.       § 110.10(b)34:         0(m)10:       Porous inner Core Flex Bust. Porous inner core flex duots must have a non-porous layer between the inner core and outer vapor barrier.       § 110.10(b)34:         0(m)11:       Duot System Sueling and Leatage Test. When space conditioning systems use foroid all duot systems to supply conditioned air to an occupiable space, the ducts must be sealed and duot leakage/subic, as continued through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appandix RA3.       It filterition. Space conditioning systems with duots exceeding 10 fest and the supply side of ventilation systems must have a hole of abaling must meet the requirements in §150.0(m)12. Filter must be accessible for regular service.*       § 110.10(c):         Space Conditioning System Airflow Rate and Fan Efficacy. Space conditioning systems must have a close to supply cooling must have a hole for the placement of a static presoure probe, or a permanently istalled static p	building project, and have a total area to less then 15 percent of the total root area of the building excluding any sky requirement is applicable to the entities building including any sky
0(m)9:       to weether must be suitable for outdoor service. For example, protected by eluminum, sheet metal, painted canvas, or plastic cover. Cellular four insulation must be protected as above or painted with a cosing that is water retardant and provides shielding from solar radiation.       § f10.10(b)3A         0(m)10:       Porous inner Core Flex. Bard. Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.       § 110.10(b)3B         0(m)11:       Duct System Sualing and Leakage Test. When space conditioning systems use foroed air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakagetested, as continued through field verification and diagnostic testing, in accordance with § 150.0(m)11 and Reference Residential Appandix RA3.       § 110.10(b)4:         0(m)12:       Ak Filtration. Space conditioning systems must have a 2 inch depth or can be 1 inch if sized per Equation 150.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for negular service.*       § 110.10(c):         § 110.10(d):       \$ 110.10(c):         § 110.10(d):       \$ 110.10(c):	Azimuth. All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 30
.0(m)10:       Parous inner Core Flex Dat. Porous inner core flex ducis must have a non-porous layer between the inner core and outer vapor barrier.       \$ 110.10(b)3b:         .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 leated, as confirmed through field verification and diagnostic testing, in accordance with \$ 150.0(m)11 and Reference Residential Appendix RA3.       \$ 110.10(b)3b:         Alt 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 2 inch depth or can be 1 inch if sized per Equation 160.0-A. Pressure drops and labeling must meet the requirements in \$150.0(m)12. Filters must be accessible for regular service.*       \$ 110.10(c):         \$ 110.10(c):       \$ 110.10(c):         \$ 110.10(c):       \$ 110.10(c):	snacing. The solar zone must not contain any obstructions, including but not limited for vents, chimneys, architectur mouniad equipment."
.0(m)11:       occuptable space, the ducts must be sealed and duct leakage lasted, as confirmed throw in text of a trace systems to supply contained an to an accordance with § 150.0(m)11 and Reference Residential Appands RAS.         Alt 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 2 inch depth or can be 1 inch if sized per Equation 160.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*         Space Conditioning Systems 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 istelled static pressure probe in the supply plenum. Althow must be ≥ 360 CFM	commung. Any costruction located on the root or any other part of the building that projects above a solar zone must distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the nearest point of the solar zone, measured in the verifications.
Ak 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 2 inch depth or can be 1 inch if sized per Equation 160.0-A. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*         Space Conditioning System Airflow Rate and Fan Efficase. 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 ≥ 360 CFM	Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the struc dead load and roof live load must be dearly indicated on the construction documents
and labeling must meet the requirements in \$150.0(m)(2. Files must be accessible for regular service.* Space Conditioning System Airflow Rate and Fan Efficae. 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 > 260 CFM	Interconnection Pathways. The construction documents must indicate a location reserved for inverters and materi pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical
tor the placement of a static pressure probe, of a permanently installed static pressure probe in the supply plenum. Aution must be 2 360 CFM	residences and centrel water-heating systems, a pathway reserved for routing plumbing from the solar zone to the w Documentation. A copy of the construction documents or a comparable document indicating the information from S
Visition Der Kon of Romania cooling Cabacity, and an alphandling unit be alloady < 0.45 walls not CFM for one formaria of bandlare and < 0.58 walls one of 1 Statement of the same of 1 Statement of the same of t	§ 110.10(c) must be provided to the occupant. Main Electrical Service Panel. The main electrical service penel must have a minimum bushar rating of 200 anne
CFM for all others. Small dust high velocity systems must provide an arriver ≥ 250 CFM per ton of nominal cooling capacity, and an abit-handling unit ten efficacy ≤ 0.62 walls per CFM. Field verification testing is remarked in accordance with Reference Reschential Annendity RA3.3.*	Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the Installe breaker for a future solar electric installation. The reserved space must be commanently marked as "For Future Seler-
	angeneration and house and the second se

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idential Mandatory Measures Summary	•		CF1R-PRF-01E		e e e e e e e e e e e e e e e e e e e
dards must comply will all applicable mandatory measures, regardless of the compliance approach militine, may apply	•		Project Name: Khan & Ameen Residence Calculation Date/Time: 2022-12-20115:34:34-08:00 Calculation Description: Title 24 Analysis Input File Name: 19169-2.ribd19x		0.
	Reminanta for V	fantilishin and belany Aly Quelin-			
dation doors, and existion pet doorse must limit air leakage to 0.3 cfm per square foot or loss A BAMAMAMAMATICS 100/r 5 2/A440-2011 (	\$ 150 D(o)1:	Requirements for Ventilation and Indoor Air Quality. All dwelling units must meet the requirements of ASHRAE Standard 82.2, Ventilation and Account of ASHRAE Standard 82.2, Ventilation and Account of ASHRAE Standard 82.2, Ventilation	GENERAL INFORMATION OPAQUE SURFACE CONSTRUCTIONS		_6 <sup>¶0</sup> ≤ <sup>8</sup> -
or doors must have a label meeting the requirements of Section 10-111(a).	\$ 150.060/IC:	Single Family Detached Dwelling Units. Single family detached dwelling units, and attached dwelling units not sharing cellings or floors with dher dwelling units, occuribilities are suitable areases much have machenical verificition airflow areases and the areases are an areases and the second se	OI     Project name internet matrix Ameen resurrice       OI     OI       OI     Itele 24 Analysis	05 06 07 08	S Co.
They must be cauled and/or weather shipped. They must be cauled and/or weather shipped. They coonings in the building asysteps that are potential sources of all taskage must be cauled.	\$ 100.00 ftv.	determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.	03 Project Location 312 W. 220th Construction Type Framing	Total Cavity Continuous U-factor Assembly Layers	
s. Insulation must be excitized by the Department of Consumer Alfaha, Bunsan of Household Goods	§ 150.0(o)1E:	accordance with Equation 150.0-B and must be either a balanced system or confinious supply or continuous enfaust system. If a balanced system or confinious supply or continuous enfaust system. If a balanced system is not used, all infits in the bulking must have have any the dualing units and used or S CFM at SP 2c.	04 City Carson 05 Standards Version 2019		
Finere: Heatist set finers must be investigating me the resultantian of Society 110 R(n)		(0.2 inch water) per square toot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8.	Of         Zip code         90745         O7         Software Version         EnergyPro 8.3         R-13 Wall         Exterior Walls         Wood Framed Wall         2x4@16 in.	O. C. R-13 None / None 0.101 Cavity / Frame: R-13 / 2x4	
Thermal Children. The thermal emiliance and aged solar reliectance values of the rooting	§ 150.0(0)1F:	minimum y summing Central vermanon systems. Central verminators systems that serve manaple oweaning time must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 160.08. All unit airflows must be	08     Climate Zone 8     09     Front Orientation (deg/ Cardinal) 270	Exterior Finish: 3 Coat Stucco	SER.
tecal) and be ablead per grout to when the assessment of a control is specified of the or tro- tries must have an amiltanos of 0.05 or less and be cardined to the Department of Consumer Atlates.	§ 150.0(o)16:	National Action of the second s	10     Building Type Single family     11     Number of Dwelling Units       12     Project Scope Addition Only     13     Number of Bedracers	Roofing: Light Roof (Asphalt Shingle)	AND DE
num R-22 insulation in wood-frame celling; or the weighted average. U-factor must not exceed 0.043. If of 0.054 or less in a railer roof alteration. Aftic access doors must have permanently attached	§ 150.0(o)2:	Field Verification and Diagnostic Testing. Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RAS.7. Kitchen range hoods must be verified in accordance with Reference Residential Appendix RAS.7.4.3 to confirm it is	12     Project 5000 Plantoniny     13     Project 5000 Plantoniny     Attic Roofs     Wood Pramed Ceiling     2x4 @ 24 in.       14     Addition Cond. Floor Area (ff <sup>2</sup> ) 325     15     Number of Stories 1     Attic Roofs     Ceiling     2x4 @ 24 in.	O. C. R-O None / None 0.644 Koor Deck: Wood / Siding/sheathing/decking	~ 20
iteners. The attic access must be gasketed to prevent air leakage, induiation must be installed in ng which is sealed to limit infiltration and extilization as specified in § 110.7, including but not fimiled	Pool and Spa Syste	naed by HVF to comply with the ashow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.	16 Existing Cond. Floor Area (ft <sup>2</sup> ) 858 17 Fenestration Average U-factor 0.32	Cavity / Frame: no insul. / 2x4	
ne roor deck of on up or a crywall cealing. Nust meet the manufacturer's required density for the labeled R-veice.	8 510 Aleb	Certification by Manufacturers. Any pool or spa healing system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater	18 Total Cond. Floor Area (ft <sup>2</sup> ) 1193 19 Glazing Percentage (%) 16.31% Ceilings (below Wood Framed 2x10 @ 16 in	Over Ceiling Joists: R-6.0 insul.	
n 2x4 inch wood faming well or have a U-factor of 0.102 or less, or R-20 in 2x6 Inch wood framing or 6 or U-factor of 0.874 or less). Opaque non-framed assemblies must have an overall assembly U-	S r torilar	without adjusting the thermostal setting; a parmanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.	20     ADU Bedroom Count     n/a       20     ADU Conditioned Floor Area     n/a	Inside Finish: Gypsum Board	IL-
i installed value of R-13 in a wood framed assembly. Mesonry walls must mest Table 160.1-A or B." sulation in raised word framed floor or 0.837 maximum U-factor."	§ 110.4(d)1:	Piping. Any pool or spa nearing system or equipment must be installed with at least 36 inches of pipe between the filter and the healer, or decicated suction and return lines, of built-in or built-up connections to allow for future sclar healing.	22 Is Natural Gas Available? Yes		
a must mest all of he following: have a water absorption rate, for the insulation material alone without same namenase in original flam 2.0 means are inder he renderlied from physical damage and 1.1/	\$ 110.4(b)2:	Covers. Outdoor pools or spes that have a heat pump or gas heater must have a cover. Directional injets and Time Switches for Pools. Pools must have directional injets that adequately mix the pool water, and a time switch that	Addition Alone Project Analysis Parameters	•	S'2H
nt of a heated size soor, mael the requirements of § 110,8(g).	§ 110.5:	will allow all pumps to be set or programmed to run only during off-peak electric damand periods. Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot floht.	O1         O2         O3         O4         O5         O6	03 04	I B SIDE
no de calut non a diversion dans space non space name be considered with the exception to \$ 160.0(d).	§ 150.0(p):	Peol Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, fitters, and valves.	Existing Area (excl. new addition) (ft2)       Addition Area (excl. existing) (ft2)       Total Area (ft2)       Existing Bedrooms       Addition Bedrooms       Total Bedrooms		Er din
and unvented attics with air permessile insulation. ding skylights, separating conditioned space from unconditioned space or outdoors must have a	Lighting Measures:	Inhiting Controls and Companyates All Wolfan control devices and antipation follows and backeteres with the state of the second	868         325         1193         2         1         3	Not Kequired n/a	
everage U-factor of all fenestration must not exceed 0.58.*	§ 110.9:	איז	WATER HEATING SYSTEMS		
s are not allowed for indoor and outdoor fireplaces.	§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A.	COMPLIANCE RESULTS     01     02     03	04 05 06 07	
replaces must have a closelve metal or glass door covering the entire opening of the firebox. It fireolaces must have a combustion outside air intake, which is at least six source loches in grea	§ 150.0(k)18: 0	other device must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or an speed control.	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.	leater Name (#) Solar Heating System Compact Distribution HERS Verification	
perable, and tight-filing damper or compusition air control device.	§ 150.0(k)1C:	Recessed Downlight Luminaires in Gellinge. Luminaires recessed into cellings must meet all of the requirements for: insulation contact (IC) abeling; air teakage; sealing; maintenance; and socket and light source as described in § 150.0(k)1C.	03     Dimestic Hot Water     Standard Distribution       03     DHW Sys 1     Other Standard Distribution	v Heater 1 (1) n/a None n/a	
Forsuros;	§ 150.0001D:	memorial measures for relief escent Lamps. Bellasis for flucrescent lamps rated 13 walls or greater must be electronic and must have an utput frequency no less than 20 MHz.			
momoning (HVAC) equipment, wellsh heaters, showerheads, faucets, and all other regulated funer to the Energy Commission."	§ 150.0(k)1E:	using sugars, and perm Lignus, Align lignus, regarding so and path lights are not required to comply with Table 150.0. A or be controlled by vacancy sensors provided they are raised to consume no more than 5 waits of power and emit no more than 150 lumens.	ENERGY USE SUMMARY WATER HEATERS	·	
appacable enciency requirements in Table 110.2-A through Table 110.2-K." Mary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heaters	\$ 150.0(k)1F:	Annual analysis of consult rans. Ligning integral to exhaust rans (except when installed by the manufacturer in kitchen exhaust hoods) nust meet the applicable requirements of § 150.0(k).	Energy Use (kTDV/ft <sup>2</sup> -yr) Standard Design Proposed Design Compliance Margin Percent Improvement 01 02 03 04 05 06 07	<b>J8 O9 10 11 12 13 14</b>	
ary nearer operator when the nearing load can be met by the heat pump alone; and in which the is higher than the caton temperature for supplementary heating, and the cut-off temperature for off temperature for evolution the time.	3 13U.U(K)16: 5	And Sources in Enclosed or Recessed Lumineres. Lands and other senarable light sources that are not convilent with the 140 clauster	Space Heating 1.85 1.9 -0.05 -2.7 Heating Tank Energy	ank Stendby 1st Hr. Tank Location Verified	
en controlled by a central energy management control system (EMCS) must have a	3 10U.U(K)TH: tr	emperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.	Space Cooling     37.49     34.29     3.2     8.5     Name     # of Units     Vol.     Factor or or Pilot     Input Rating     Insu	Ation Loss or Reting or Retard or Model Or Ambient Status Existing	
ng Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling units must ion, pump primitia sump isolation value, and recirculation loom connection recuirements of &	\$ 150.0(k)11; 0	omply 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 pote than 150 lutinens, and are exclosed with controls that automatically time that automatically time that automatically time that automatically time that any sensors provided that they are rated to consume no more than 5 watts of power, emit no	Nace ventuation     U     U     U     U     Image: second s	/Ext) Condition Condition	12/11
with an input raing greater than 8.8 kBTU per hour (2 kW) must have isolation values with hose	§ 150.0(k)2A: In	terior Switches and Controls. All forward phase out dimmers used with LED light sources must comply with NEMA SSL 7A.	Self Utilization/Flexibility Credit     n/a     0     n/a     0     e= 75       Na     0     0     n/a     1     50     0.7-EF     <= 75	0 76 n/a n/a n/a Existing n/a	
ster lines to allow for flushing the water heater when the valves are closed.	§ 150.0(K)2B: In	sterior Switches and Controls. Exhaust fans must be controlled separately from lighting systems."	Compliance Energy Total 100.07 96.92 3.15 3.1		
anaction with pilot lights that consume less than 150 Blu/hr are exempt; and pool and spa heaters."	§ 160.0/k)20:	imed ON and OFF.*	REQUIRED SPECIAL FEATURES		
d Pundamentals Volume; the SMACNA Residential Comfort System installation Standards conditions specified in § 150.0fm)2.	§ 150.0(k)2E:	Instance in example and example and example and example and example and interpretation of the control is installed to approximate and example	The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.	05 06 07 08	
outdoor condensing units must have a clearance of at least 5 feat from the cullet of any dryer veni.	§ 150.0(k)2F: in	terior Switches and Controls, Lighting controls must comply with the applicable requirements of § 110.9.	Variable capacity heat pump compliance option (verification details from VCHP Staff report, Appendix B, and RA3)     Name Pipe Insulation Parallel Piping Compact Distribut	ion Compact Distribution Recirculation Control Distribution Heat Recovery	
pump systems must be equipped with liquid line filter drives if required, as specified by the	§ 150.0(k)2G: pr	terior Switches and Controls. An energy menagement control system (EMCS) may be used to comply with control requirements if it: ovides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the	DHW Sys 1 - 1/1 Not Required Not Required Not Required Not Required	None Not Required Not Required Not Required	
tanks, such as slonge tanks and backup storage tanks for solar water-heating systems, must have 6 internal insulation where the internet insulation R-value is indicated on the exterior of the tank.	§ 150.0(k)2H:	MCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2. terfor Switches and Controls. A multiscene programmable controller may be used to comply with climmer requirements in § 150.0(k) if it	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		
r Piping, and Space Conditioning System Line Insulation. All demostic hot water piping must If the California Plumbing Code. In addition, the following piping conditions must have a minimum	§ 150.0(k)21;	ovides the nucleonality of a dimmer according to s 110.9, and contains with all other applicable requirements in § 160.0(k)2, lerior Switches and Controls. In balancome, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must	detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry SPACE CONDITIONING SYSTEMS		
um insulation R-value of 7.7: the first 5 feet of cold water pipes from the storage tank; all hot weler eater than 3/4 incluses than 1 incly; all hot weler piping with a noninal diameter less than 3/4	ini	controled by an occupant sensor of a vecancy sensor providing automatic on tunctionanty. If an occupant sensor is installed, it must be itally configured to manual on operation using the manual control required under Section 150.0(k)2C.	Building-level Verifications: • None	05 06 07 08 09 10 11	
Harer recirculation system, from ano nearing source to storage rank or between ranks, burned below 1 fixtures.*	§ 150.0(k)2): di	mining and that are not controlled by occupancy or vacancy sensors, must have dimining controls.	Cooling System Verifications:	Distribution Required Verified Heating Cooling	
K be protected that damage, including that due to surfight, mostlye, equipyment maintenance, and ion exposed to weather must be water relardant and protected from UV light (no extractive tapes).	3 100.0(k)26. 18	nerror switches and controls. Under cacinet ignang must be controlled separately from celling-installed lighting systems. sidential Outdoor Lighting. For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other	Verified Refrigerant Charge     Name     Name     Name     Name	Fan Name Name Thermostat Status Existing Equipment Equipment Type Condition Count Count	
engerant section pang neares outside me concrete space must make or be protected by a store buried below grade must be installed in a waterproof and non-austhable casing or sleave.	§ 150.0(k)3A:	Incomps on the same lot, must meet the requirement in item § 150.0(k)3Al (ON and OFF switch) and the requirements in either 150.0(k)3Al (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3Ali (setronomical time clock), or an EMCS.	Airflow in habitable rooms (SC3.1.4.1.7) Heating System Verifications:		10 Land
vectorial recepted that is connected to the electric panel with a 120/240 with 3 conductor, 10 the stocal recepted that is connected to the electric panel with a 120/240 with 3 conductor, 10 the water between the transformed to the property of the property received received and the the local data with the	§ 150.0(k)3B: ba	isourian owneed Lighting: For twense resources backings with less than eight vehicles par site must comply with either Section 10/0/38 and carports with less than eight vehicles par site must comply with either Section 10/0/38 and with the single probable resultances in Section 110/0/38 and 130/2 490.4 40.7 and 440.0	Verified HSPF     HVAC.1 Heat pump heating cooling System 1 System 1     Verified heat pump rated heating cooling System 1	n/a n/a SetDack New NA 1 1	·
e a reserved shipe pole circuit breaker space in the elactrical panel adjacent to the circuit breaker its Thuine 2400 lise; a Calegory like of V vant, or a Type B vent with stratistic time betware the	§ 150.0(k)3C: Re	visidential Outdoor Lighting. For low-rise residential buildings with four or more dwaling units, any outdoor lighting for residential parking lots ecrops with a total of eight or more vahicles per size and any outdoor lighting not resident by Section 150 P/V/38 or Section 150 P/V/38 or wet	Wall-mounted thermostat in zones greater than 150ft2 (SC3.4.5)		
water heater is installed; a condensate drain that is no more than 2 inches higher than the base of without pump assistance; and a gas supply line with a capacity of at least 200,000 Blu per hour.	00 9 150 0/24 Int	mply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.	Ductiess indoor units located entirely in conditioned space (SC3.1.4.1.8)      HVAC Distribution System Verifications:	06 07 08 09 10 11	
nving multiple dvaling units must meet the requirements of § 110.3(o)5.	8 150 0/05- Re	wer as determined according to \$ 130.0(c). sidential Garages for Eight or More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with the	None      HVAC - HEAT PUMPS  Domestic Hot Water System Verifications:	Copling	C C
alion of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or by a listing war	s isospiration ap	plicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0. erior Common Areas of Low-rise Multifamity Residential Buildings. In a low-rise multifamity residential building where the total Interior	None Name System Type Number of Units HSPF/COP Cap 47	Cap 17 SEER EER/CEER Controlled Type HERS Verification	
	§ 150.0(K)6A: cor bui	inmon area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that Iding must be camply with Table 160.0-A and be controlled by an occupant sensor.	ZONE INFORMATION	Single Heat Pump System	
e-conditioning dust must comply with California Mechanical Code (CMC) Section 604.0. If a r nust cartify to the castomer in writing, that the insulation meets this requirement	COF COF	error Common Areas of Low-rise Muthamity Residential Buildings, in a tow-rise multificantly residential building where the total interior rimon area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in	01         02         03         04         05         06         07         Heat Pump System 1         VCHP-ductless         1         9         24000	18000 14 12 Not Zonal Speed 1-hers-htpump	
ducts and plenums must meet the requirements of the CMC Section 601.0, 602.0, 603.0, 604.0, unt Construction Sandards Metal and Elevisia 3rd Edition, Participations of supplications and return air	S Innedician Bis E.C.	a busine music. Somply with the applicable requirements in Sections 110.9; 130.0, 130.1, 140.6 and 141.0; and influent institute institutes and statuted and the controlled by consumer that exting the lighting beyond in one by statute to and	Zone Name     Zone Type     HVAC System Name     Zone Floor Area (ft <sup>2</sup> )     Avg. Ceiling Height     Water Heating System 1		
imum installed livel of R-5.0 or a minimum installed level of R-4.2 when ducts are entirely in estitication and discretion being (R-3.1,4.3.8). Portions of the duct system completely exposed	50	percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress,	1st Floor Addition Conditioned HVAC1 325 8 DHW Sys 1 N/A 01 02 03 04	05 06 07 08 09	
are not required to be insulated. Connections of metal ducts and inner core of flexible ducts must sealed with masic, tape, or other duct-closure system that meets the applicable requirements of	Solar Ready Bundings Sin	st gle Parvilly Residences. Single family residences located in subdivisions with ten or more single family residences and where the		Verified Refrigerant	
ant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than nesh or tape must be used. Building cavities, support platforms for air handlers, and planums	8 10.10(a)1: app doi	incaton for a temptive subdivision map for the residences has been deemed complete and approved by the enforcement agency, which not have a photocolleic system installed, must comply with the requirements of \$ 110.10(b) through \$ 110.10(e).		Charge Charge Cap 47 Cap 17	
nan semio sneet metal, duct board of flexible duct must hot be used to convey conditioned air. onfain ducts. Duck installed in cavities and support platforms must not be compressed to cause	3 110.10(8)2: LOV řeqi	wrise Rundramity Buildings. Low-rise multi-tarnity buildings that do not have a photovoltaic system installed must comply with the ulterments of § 110.10(b) through § 110.10(b).	OI     OI     OI     OI     OI     OI     OI     OI     OI     Heat Pump System       Image: Window and Door     Imag	Required Yes Yes Yes Yes	
abricated duot systems must comply with applicable requirements for duct construction,	Min pati	imum Solar Zone Area. The solar zone must have a minimum total area as described below. The solar zone must comply with access, way, smoke ventilation, and spacing requirements as specified in Title 24, Part 9 or other Parts of Title 24 or in any requirements adopted	Name Zone Construction Azimuth Orientation Gross Area (ft <sup>2</sup> ) Area (ft2) 1st (deg) Wall Exceptions Status		
would systems and men components must not be sealed with cloth back rubber adhesive duct with mastic and draw bands.	S 110-10/014	a new pursuance. The sourd zone total area must be comprised of areas that have no dimension less than 5 feel and are no less than 80 are feet each for buildings with roof areas less than or equal to 18,000 square feet or no less than 180 square feet each for buildings with fareas areaster than 10,000 square feet or no less than 180 square feet each for buildings with	North Wall     1st Floor Addition     R-13 Wall     0     Left     88     7     90     none     New		
citied for duct construction.	and	have a total area no less than 250 square feet. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of buildings or on the roof or overhang of another structure located within 250 feet of the building. or on coverand narking installed with the	Cast wall         LSt Floor Addition         R-13 wall         90         Back         150         20         90         none         New         V/L         V/	Air Filter Sizing Low Leakage Minimum	
so an sourceirum vanammu space anu sourceors must have either automatic or readily accessible.	buik regi	the project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone Inement is applicable to the entire building, including mixed occupancy.	Roof     1st Floor Addition     R-30 Roof Attic     n/a     n/a     n/a     n/a     Name     Certified     Airflow to     Ductless Units       Roof     1st Floor Addition     R-30 Roof Attic     n/a     162.5     n/a     n/a     New     Name     Low-Static     Habitable     in Conditioned     The state	Il Mount & Ramp; Pressure Conditioned RA3.3 and non-continuous Running	
une cusaide, except combustion infeit and outlet air openings and elevator shaft vents. Inclected from danage, sunlight, moisture, equipment maintenance, and wind, insulation exposed	§ f10.10(b)2: Azl	muth. All sections of the solar zone located on steep-sloped roofs must be criented between 90 degrees and 300 degrees of true north.	Roof 2         1st Floor Addition         R-30 Roof Attic         n/a         162.5         n/a         n/a         New	Drop Rating Space SC3.3.3.4.1 Fan Continuously	
e. For example, protected by aluminum, sheet metal, painled canvas, or plassic cover. Cellular painted with a coaling that is water relationt and provides shelding from solar radiation.	§ T10,10(b)8A: MOU	Inted equipment.	Heat Pump System 1 Not required Require	equired Not required Not required Not required Not required	
one flex ducts must have a non-porous layer between the Inner core and outer vapor barrier.	§ 110.10(b)38: dist the	ance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of nearest point of the solar zone, measured in the vertical plane.	01 02 03 04 05 06 07 08 DOCUMENTATION ALITHOR'S DECLARATION STATEMENT	· · · · · · · · · · · · · · · · · · ·	
nd duct leakage issied, as confirmed through field verification and diagnostic testing, in Residential Appendix RAS.	§ 110.10(b)4: Stru dear	ictural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof d load and roof live load must be dearly indicated on the construction documents.	Name         Construction         Type         Roof Rise (x in 12)         Roof Reflectance         Roof Emittance         Radiant Barrier         Cool Roof         1. I certify that this Certificate of Compliance documentation is accurate and complete.		O GLEGT
n ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or systems must have a 2 inch depth or can be 1 inch if sized per Equation 160.0-A. Pressure drops	§ 110.10(c): path	reconnection remways. The construction documents must indicate a location reserved for inverters and matering equipment and a way reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for engle family lorges and control under harding the solar zone to the point of interconnection with the electrical service; and for engle family	Attic Ist Floor Addition Attic Roof1st Floor Ventilated 4 0.1 0.85 No No	Documentation Author Signature:	
and the state of the second second second for the second s	§ 110.10(d): 5.11	unientation. A copy of the construction documents or a comparable document indicating the information from § 110.10(0) through 0.10(0) must be provided to the occurrent.	Audition Addition Add	Signature Date:	
a permanently issalled static pressure probe in the supply plenum. Altitow must be $\geq$ 360 CFM handling unit handlines and $\leq$ 0.45 watts per CFM for gas fumace air handlers and $\leq$ 0.58 watts per limit and the supply plenum.	§ 110.10(e)1: Main	Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.	FENESTRATION / GLAZING Energy Compliance Services	2022-12-20 15:50:30	
nnue uner promeran amon « cov or in per voir or nominal cooling capacity, and an air-handling infication tasking is required in accordance with Réference Residential Appendix RAS.3.*	\$ 110.10(e)2; brea	Ker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".	01 02 03 04 05 06 07 08 09 10 11 12 13 14 Address:	CEA/ HERS Certification Identification (If applicable):	
			Name Type Surface Orientation Azimuth Kith Height (ff) Width Height (ff) Mult. (ff) U-factor SHGC Source SHGC Sour	Phone	
· · · · · · · · · · · · · · · · · · ·			(it) (it) (it) source e summing Chystate/20: Lakewood, CA 90712	562-461-3749	C GR CI-
· .			North Windows     Window     North Wall     Left     0     1     7     0.32     NFRC     0.28     NFRC     Bug Screen       Fast Windows     Windows     Fast Wall     Back     00     1     6     0.32     NEPC     0.38     NEPC     Part Screen		
A Martin Robert C. And Andrew C.			East Windows     Window     East Wall     Back     90     1     6     0.32     NFRC     0.28     NFRC     Bug Screen     1     f am eligible under Division 3 of the Business and Professions Code to accept responsibility for the state of California:	the building design identified on this Certificate of Compliance.	A A
			East Windows 3       Window       East Wall       Back       90       1       6       0.32       NFRC       0.28       NFRC       2.       1 certify that the energy features and performance specifications identified on this Certificate on	Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.	E.
			3. The building design reatures or system design reatures identified on this Certificate of Complian calculations, plans and specificationssubmitted to the enforcement agency for approval with the	is building permit application.	
			O1         O2         O3         O4         O5         O6         O7         O8         O9         10         11         12         13         14         Alan Sakimoto	Responsible Designer Signature: Alan Sakimoto	
			Intrideb storate Area II forder SHGC Company:	Date Signed:	
			Name Type Surface Orientation Azimuth (ft) (ft) Mult. (ft) U-factor Source SHGC Source Alan Sakimoto, Architect, Inc.	2022-12-20 15:52:37	TTAL ALLANTE
	ć		East Windows 4     Window     East Wall     Back     90     1     8     0.32     NFRC     0.28     NFRC     Bug Screen     Address: 1 4 41     M	License: C-14338	JUU NUMPEN
			South Door Window South Wall Right 180 1 20 0.32 NFRC 0.28 NFRC Bug Screen	Phone:	
			SLAB FLOORS Gardena, CA 90248	310-532-7108	403
			01 02 03 04 05 06 07 02	1	
			VI         VI         VI         VI           Frigo incuil Duratuo         Frigo incuil Duratuo         Frigo incuil Puratuo		UALE PRINTED
			Name Zone Area (ft <sup>2</sup> ) Perimeter (ft) and Depth and Depth Carpeted Fraction Heated		
			Slab-on-Grade 1st Floor Addition 325 36 none 0 80% No		
			Digitally signed by CatCERTS. This digital signature is provided in order to secure the content of	his registered document, and in no way implies	
			Registration Provider responsibility for the accuracy of the information.	Fasy to Verify	
				at CalCERTS.com	
			Registration Number: Regis 222-P010247214B-000-000-0000000-0000	tration Date/Time: HERS Provider: 2022-12-20 15:52:37 CaiCERTS inc.	SHEET
			CA Building Energy Efficiency Standards - 2019 Residential Compliance Repo	rt, Version: 2019.2.000 Report Generated: 2022-12-20 15:34:48	(1967) Al 2 Long Sang &
			Sche	nd version: rev 20200901	

## 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 St

AIA California

d to include the green building measures specified as mandatory in s code. Voluntary green building measures are also included in the d in the design and construction of structures covered by this code, city, county, or city and county as specified in Section 101.7. • <b>[HCD]</b> The mandatory provisions of Chapter 4 shall be applied to esidential buildings where the addition or alteration increases the , or size. The requirements shall apply only to and/or within the ation. • <b>t</b> , residential buildings undergoing permitted alterations, additions, c npliant plumbing fixtures with water-conserving plumbing fixtures. µired prior to issuance of a certificate of final completion, certificate al by the local building department. See Civil Code Section 1101.1, impliant plumbing fixture, types of residential buildings affected and <b>RESIDENTIAL BUILDINGS. [HCD]</b> The provisions of ly to either low-rise residential buildings high-rise residential be designated by banners to indicate where the section applies se only (HR). When the section applies to both low-rise and <b>t</b> .	or		<ul> <li>4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS) When EV chargers are installed, EV spaces required by Section 4.106.2.2, item 3, shall comply with at least one of the following options:</li> <li>1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the <i>California Building Code</i>, Chapter 11A, to allow use of the EV charger from the accessible parking space.</li> <li>2. The EV space shall be located on an accessible route, as defined in the <i>California Building Code</i>, Chapter 2, to the building.</li> </ul>		DIVISION 4.3 WATER EFFICIENCY AND CONSERVATIO 4.303 INDOOR WATER USE 4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water close urinals) and fittings (faucets and showerheads) shall comply with the sections 4.303.1.1, 4.303.1.2
d to include the green building measures specified as mandatory in s code. Voluntary green building measures are also included in the d in the design and construction of structures covered by this code, city, county, or city and county as specified in Section 101.7. <b>. [HCD]</b> The mandatory provisions of Chapter 4 shall be applied to esidential buildings where the addition or alteration increases the , or size. The requirements shall apply only to and/or within the ation. 4, residential buildings undergoing permitted alterations, additions, c npliant plumbing fixtures with water-conserving plumbing fixtures. jured prior to issuance of a certificate of final completion, certificate al by the local building department. See Civil Code Section 1101.1, impliant plumbing fixture, types of residential buildings affected and <b>RESIDENTIAL BUILDINGS. [HCD]</b> The provisions of ly to either low-rise residential buildings high-rise residential be designated by banners to indicate where the section applies se only (HR). When the section applies to both low-rise and 1.	or		<ol> <li>required by Section 4.106.2.2, item 3, shall comply with at least one of the following options:</li> <li>The EV space shall be located adjacent to an accessible parking space meeting the requirements of the <i>California Building Code</i>, Chapter 11A, to allow use of the EV charger from the accessible parking space.</li> <li>The EV space shall be located on an accessible route, as defined in the <i>California Building Code</i>, Chapter 2, to the building.</li> </ol>		4.303 INDOOR WATER USE 4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water close urinals) and fittings (faucets and showerheads) shall comply with the sections 4.303.1.1, 4.303.1.2
<ul> <li>IHCD] The mandatory provisions of Chapter 4 shall be applied to esidential buildings where the addition or alteration increases the addition.</li> <li>residential buildings undergoing permitted alterations, additions, conpliant plumbing fixtures with water-conserving plumbing fixtures. Juired prior to issuance of a certificate of final completion, certificate al by the local building department. See Civil Code Section 1101.1, impliant plumbing fixture, types of residential buildings affected and</li> <li>RESIDENTIAL BUILDINGS. [HCD] The provisions of ly to either low-rise residential buildings high-rise residential buildings section applies to both low-rise and 1.</li> </ul>	or		from the accessible parking space. 2. The EV space shall be located on an accessible route, as defined in the <i>California Building</i> Code, Chapter 2, to the building.		unitials) and hungs (laucets and snowerneads) shall comply with the sections 4.303.1.1, 4.303.1.
<ul> <li>esidential buildings where the addition of alteration increases the ratio, or size. The requirements shall apply only to and/or within the ration.</li> <li>residential buildings undergoing permitted alterations, additions, or npliant plumbing fixtures with water-conserving plumbing fixtures. Juired prior to issuance of a certificate of final completion, certificate rai by the local building department. See Civil Code Section 1101.1, impliant plumbing fixture, types of residential buildings affected and</li> <li><b>RESIDENTIAL BUILDINGS. [HCD]</b> The provisions of ly to either low-rise residential buildings high-rise residential be designated by banners to indicate where the section applies se only (HR). When the section applies to both low-rise and 1.</li> </ul>	or				
RESIDENTIAL BUILDINGS. [HCD] The provisions of ly to either low-rise residential buildings high-rise residential be designated by banners to indicate where the section applies se only (HR). When the section applies to both low-rise and 1.			<b>Exception:</b> Electric vehicle charging stations designed and constructed in compliance with the <i>California Building Code</i> , Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2. Item 3.		plumbing fixtures. Plumbing fixtures in any residential real property shall be replaced with w plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificat completion, certificate of occupancy, or final permit approval by the local building departm Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types buildings affected and other important enactment dates
<b>RESIDENTIAL BUILDINGS. [HCD]</b> The provisions of ly to either low-rise residential buildings high-rise residential be designated by banners to indicate where the section applies se only (HR). When the section applies to both low-rise and 1.			<b>Note:</b> Electric Vehicle charging stations serving public housing are required to comply with the <i>California Building Code</i> , Chapter 11B.		4.303.1.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA Water Specification for Tank-type Tollets.
It is a constructed by banners to indicate where the section applies se only (HR). When the section applies to both low-rise and 1.			<b>4.106.4.2.2 Electric vehicle charging space (EV space) dimensions.</b> The EV space shall be designed to comply with the following:		Note: The effective flush volume of dual flush tollets is defined as the composite, average of two reduced flushes and one full flush.
			<ol> <li>The minimum width of each EV space shall be 9 feet (2743 mm).</li> <li>One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).</li> </ol>		<b>4.303.1.2 Urinals.</b> The effective flush volume of wall mounted urinals shall not exceed 0.125 gather the effective flush volume of all other urinals shall not exceed 0.5 gallons per flush.
YBUILDINGS			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.		4.303.1.3.1 Single Showerhead. Showerheads shall have a maximum flow rate of not r gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria o
<b>INGS.</b> In mixed occupancy buildings, each portion of a building ing measures applicable to each specific occupancy.			<b>4.106.4.2.3 Single EV space required.</b> 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		WaterSense Specification for Showerheads. <b>4.303.1.3.2 Multiple showerheads serving one shower</b> . When a shower is served by r showerhead, the combined flow rate of all the showerheads and/or other shower outlets (
nunity Development nmission			diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit		a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be dea allow one shower outlet to be in operation at a time.
uctural Safety Ig and Development			installation of a branch circuit overcurrent protective device. 4.106.4.2.4 Multiple EV spaces required. Construction documents shall indicate the raceway		4.303.1.4 Faucets.
			termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs of all required EV appears at the full receiver of the EVSE. For design dealers are appeared as the full receiver of the EVSE.		<b>4.303.1.4.1 Residential Lavatory Faucets.</b> The maximum flow rate of residential lavator not exceed 1.2 gallons per minute at 60 psi. The minimum flow rate of residential lavatory not be less than 0.8 gallons per minute at 20 psi.
			40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.		4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas. The maximum flow r faucets installed in common and public use areas (outside of dwellings or sleeping units) in buildings shall not exceed 0.5 gallons per minute at 60 psi.
AND DESIGN			<b>4.106.4.2.5 Identification.</b> 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 <i>California Electrical Code</i>		<b>4.303.1.4.3 Metering Faucets.</b> Metering faucets when installed in residential buildings shows than 0.2 galions per cycle.
d are included here for reference)		<u> </u>	4.106.4.3 New hotels and motels. All newly constructed hotels and motels shall provide EV spaces		4.303.3.4.4 Attend Faucets. The maximum now rate of kitchen faucets shall not exceed per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximu to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 minute at 60 psi.
sed area loosely filled with rock, gravel, fragments of brick or similar rage or runoff water.			capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.		Note: Where complying faucets are unavailable, aerators or other means may be used to reduction.
t in runoff. Wattles are often constructed of natural plant materials the form of tubes and placed on a downflow slope. Wattles are also			<ol> <li>Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.</li> <li>There is no requirement for EV spaces to be constructed or available until EV chargers</li> </ol>		<b>4.303.2 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS.</b> Plumbing fixtures and fittings sh in accordance with the <i>California Plumbing Code</i> , and shall meet the applicable standards refere 1701.1 of the <i>California Plumbing Code</i> .
allable natural resources shall be accomplished through evaluation effects on the site and adjacent areas. Preservation of slopes, erosion controls shall comply with this section.			are installed for use. <b>4.106.4.3.1 Number of required EV spaces.</b> The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with		NOTE: THIS TABLE COMPILES THE DATA IN SECTION 4.303.1, AND IS INCLUDED AS A CONVENIENCE FOR THE USER.
<b>ENTION DURING CONSTRUCTION.</b> Projects which disturb less larger common plan of development which in total disturbs one acre ge during construction. In order to manage storm water drainage			Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.		TABLE - MAXIMUM FIXTURE WATER USE
owing measures shall be implemented to prevent flooding of adjacer inoff on the site.	nt		TABLE 4.106.4.3.1       TOTAL NUMBER OF PARKING     NUMBER OF REQUIRED EV		FIXTURE TYPE FLOW RATE
to a public drainage system, collection point, gutter or similar filtered by use of a barrier system, wattle or other method approved			SPACES         SPACES           0-9         0		(RESIDENTIAL) LAVATORY FAUCETS (RESIDENTIAL) MIN 0.8 CPM @ 20 PSI
ted storm water management ordinance. Control Board for projects which disturb one acre or more of soil, or			10-25 1		LAVATORY FAUCETS IN COMMON & PUBLIC USE AREAS 0.5 GPM @ 60 PSI
pment which in total disturbs one acre or more of soil. //water_issues/programs/stormwater/construction.html)			26-50 2		KITCHEN FAUCETS1.8 GPM @ 60 PSIMETERING FAUCETS0.2 GAL/CYCLE
plans shall indicate how the site grading or drainage system will ater from entering buildings. Examples of methods to manage surfac llowing:	æ		31-75     4       76-100     5       101-150     7		WATER CLOSET1.28 GAL/FLUSHURINALS0.125 GAL/FLUSH
/stems			151-20010201 and over6 percent of total		4.304 OUTDOOR WATER USE
ep surface water away from buildings and aid in groundwater			<b>4.106.4.3.2 Electric vehicle charging space (EV space) dimensions.</b> The EV spaces shall be designed to comply with the following:		<b>4.304.1 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS</b> . Residential developments sha a local water efficient landscape ordinance or the current California Department of Water Resources' M Efficient Landscape Ordinance (MWELO), whichever is more stringent.
is not altering the drainage path. <i>I</i> construction. New construction shall comply with Sections ate future installation and use of EV chargers. Electric vehicle supply	,		<ol> <li>The minimum length of each EV space shall be 18 feet (5486mm).</li> <li>The minimum width of each EV space shall be 9 feet (2743mm)</li> </ol>		NOTES: 1. The Model Water Efficient Landscape Ordinance (MWELO) is located in the California Code
ordance with the California Electrical Code, Article 625.			<b>4.106.4.3.3 Single EV space required.</b> When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.		Title 23, Chapter 2.7, Division 2. MVVELO and supporting documents, including water budget available at: https://www.water.ca.gov/
where the local enforcing agency has determined EV charging and ible based upon one or more of the following conditions: commercial power supply.			<ul> <li>4.106.4.3.4 Multiple EV spaces required. When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.</li> <li>4.106.4.3.5 Identification. The service panels or sub-panels shall be identified in accordance with Section</li> </ul>		
ADU) and Junior Accessory Dwelling Units (JADU) without addition	al		4.106.4.2.5. <b>4.106.4.3.6 Accessible EV spaces.</b> In addition to the requirements in Section 4.106.4.3, EV spaces for hotels and all EVSE, when installed, shall comply with the accessibility provisions for the EV charging statistics in the Objective Object		
stings and townhouses with attached private garages. For each					
I 1-inch inside diameter). The raceway shall originate at the main to a listed cabinet, box or other enclosure in close proximity to the ways are required to be continuous at enclosed, inaccessible or			DIVISION 4.2 ENERGY EFFICIENCY 4.201 GENERAL		
panel and/or subpanel shall provide capacity to install a 40-ampere ice(s) reserved to permit installation of a branch circuit overcurrent			<b>4.201.1 SCOPE.</b> For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.		
vice panel or subpanel circuit directory shall identify the overcurrent for future EV charging as "EV CAPABLE". The raceway termination isibly marked as "EV CAPABLE".					
idential parking is available, ten (10) percent of the total number of or all types of parking facilities, shall be electric vehicle charging ature EVSE. Calculations for the required number of EV spaces shall	I				
nded to demonstrate the project's capability and capacity for spaces to be constructed or available until EV chargers are installed	ana an				
space (EV space) locations. Construction documents shall acces. Where common use narking is provided at least one EV acces					
sibly ident or all sture anded space	marked as "EV CAPABLE". iai parking is available, ten (10) percent of the total number of types of parking facilities, shall be electric vehicle charging EVSE. Calculations for the required number of EV spaces shal to demonstrate the project's capability and capacity for es to be constructed or available until EV chargers are installed e (EV space) locations. Construction documents shall Where common use parking is provided at least one EV space area and shall be available for use by all residents.	marked as "EV CAPABLE". tai parking is available, ten (10) percent of the total number of types of parking facilities, shall be electric vehicle charging EVSE. Calculations for the required number of EV spaces shall to demonstrate the project's capability and capacity for es to be constructed or available until EV chargers are installed to demonstructed or available until EV chargers are installed e (EV space) locations. Construction documents shall Where common use parking is provided at least one EV space area and shall be available for use by all residents.	marked as "EV CAPABLE". tial parking is available, ten (10) percent of the total number of types of parking facilities, shall be electric vehicle charging EVSE. Calculations for the required number of EV spaces shall to demonstrate the project's capability and capacity for es to be constructed or available until EV chargers are installed to demon use parking is provided at least one EV space area and shall be available for use by all residents.	marked as "EV ČAPABLE". iai parking is available, ten (10) percent of the total number of types of parking facilities, shall be electric vehicle charging EVSE. Calculations for the required number of EV spaces shall it o demonstrate the project's capability and capacity for as to be constructed or available until EV chargers are installed e (EV space) locations. Construction documents shall Where common use parking is provided at least one EV space area and shall be available for use by all residents.	marked as "EV ČAPABLE". iai parking is available, ten (10) percent of the total number of types of parking facilities, shall be electric vehicle charging EVSE. Calculations for the required number of EV spaces shall it o demonstrate the project's capability and capacity for es to be constructed or available until EV chargers are installed e (EV space) locations. Construction documents shall Where common use parking is provided at least one EV space area and shall be available for use by all residents.

nent)	N/A = NOT APPLICABLE RESPON. PARTY = RESPONSIBLE PARTY {ie: ARCHITECT, ENGINEE OWNER, CONTRACTOR, INSPECTOR ETC.}	R,	
Y N/A RESPON. PARTY			風俗
	DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE		ý
	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 wails 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		
	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.		NES.
	1. Excavated soil and land-clearing debris.		
	recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.		
·	<ol><li>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.</li></ol>		
	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.		
	<ol> <li>Identify the construction and demolition waste materials to be diverted from disposal by recycling,</li> </ol>		
	<ol> <li>Specify if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).</li> </ol>		
	<ol> <li>Identify diversion facilities where the construction and demolition waste material collected will be taken.</li> <li>Identify construction methods employed to reduce the amount of construction and demolition waste</li> </ol>		
	<ul> <li>generated.</li> <li>5. Specify that the amount of construction and demolition waste materials diverted shall be calculated by wasted.</li> </ul>		
	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.		. 1e
	<b>Note:</b> 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		$\mathbb{P}^{\mathbb{Q}}$
	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	r	
	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:		
	<ol> <li>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.</li> </ol>		
	<ol> <li>Mixed construction and demolition debris (C &amp; D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).</li> </ol>		
	4.410 BUILDING MAINTENANCE AND OPERATION 4.410.1 OPERATION AND MAINTENANCE MANUAL. At the time of final inspection, a manual, compact		$   \sim$
	following shall be placed in the building:		
	<ol> <li>Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.</li> <li>Operation and maintenance instructions for the following:</li> </ol>		
	<ul> <li>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</li> </ul>		
	<ul> <li>b. Roof and yard drainage, including gutters and downspouts.</li> <li>c. Space conditioning systems, including condensers and air filters.</li> </ul>		
	<ul> <li>a. Landscape irrigation systems.</li> <li>e. Water reuse systems.</li> <li>3. Information from local utility, water and waste recovery providers on methods to further reduce</li> </ul>		$\bigcirc$
	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		
	<ol> <li>Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.</li> </ol>		Z
	<ol> <li>Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.</li> <li>Information about state solar energy and incentive programs available.</li> </ol>		0
	10. A copy of all special inspections verifications required by the enforcing agency or this code.		
	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,		
	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.		
			K
	DIVISION 4.5 ENVIRONMENTAL QUALITY		N
	4.501.1 Scope The provisions of this chapter shall outline means of reducing the quality of air contaminants that are odorous,		
	SECTION 4.502 DEFINITIONS		101
	<b>5.102.1 DEFINITIONS</b> The following terms are defined in Chapter 2 (and are included here for reference)		12
	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,		270
	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 five sease to the outside atmosphere.		
	compussion non the outside atmosphere and discharges all fille gases to the outside atmosphere.		
			<b>L</b> SHE
			1 .

## **2019 CALIFORNIA GREEN BUILDING STANDARDS CODE** RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement) NOT APPLICABLE RESPONSIBLE PARTY (10: ARCHITECT, ENGINEER DWNER, CONTRACTOR, INSPECTOR ETC.) y N/A RESPON. PARTY N/A RESPON. PARTY **CHAPTER 7 INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS** 702 QUALIFICATIONS 702.1 INSTALLER TRAINING. HVAC system installers shall be trained and certified in the proper instellation 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. 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. d) d product 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). on of Volatile rsion 1.1, [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 4.1. project they are inspecting for compliance with this code. f floor area receiving 703 VERIFICATIONS for the Testing and 703.1 DOCUMENTATION. Documentation used to show compliance with this code shall include but is not mental Chambers," limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other .ow-Emitting Material methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific Database. documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in Schools program). the appropriate section or identified applicable checklist. Evaluation of pers", Version 1.1, ity fiberboard ents for 120 et seg.), s requested ngineered d Canadian CSA ds Code. r retarder by retarder by the ne of the 5 nall be provided with vill address bleeding, Concrete Institute, s of water damage ceed 19 percent neter.Equivalent sfy requirements e grade stemped end th documentation and floor framing. ved to dry prior to drying ply with the ontrolled by a ge less than or 100 NUMDE tomatic means of quired to be vate printed shower or DECEMBER 20 y Code. stems shall be Residentia Systems) sidential Sheet 2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE s are DISCLAIMER: THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE 2016 CALIFORNIA GREEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.

**AIA** California N/A RESPON. PARTY 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 Caulies. 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, perchlorcethylene and tricloroethylene), except for aerosol producte, 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: Manufacturer's product specification. 2. Field verification of on-site product containers.

TABLE 4.504.1 - ADHESIVE VOC LIN	/IT <sub>1,2</sub>					
(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.

THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

				PARTY		
	- 	- I				
TABLE 4.504.2 - SEALANT VOC LIMIT	Γ				TABLE 4.504.5 - FORMALDEHYDE L	IMITS1
(Less Water and Less Exempt Compounds in Gram	s per Liter)				MAXIMUM FORMALDEHYDE EMISSIONS IN PAR	RTS PER MILLION
SEALANTS	VOC LIMIT				PRODUCT	CURRENT LIMIT
ARCHITECTURAL	250				HARDWOOD PLYWOOD VENEER CORE	0.05
MARINE DECK	760				HARDWOOD PLYWOOD COMPOSITE CORE	0.05
NONMEMBRANE ROOF	300				PARTICLE BOARD	0.09
ROADWAY	250				MEDIUM DENSITY FIBERBOARD	0.11
SINGLE-PLY ROOF MEMBRANE	450				THIN MEDIUM DENSITY FIBERBOARD2	0.13
OTHER	420				1. VALUES IN THIS TABLE ARE DERIVED FROM	A THOSE SPECIFIED
SEALANT PRIMERS					BY THE CALIF. AIR RESOURCES BOARD, AIR T MEASURE FOR COMPOSITE WOOD AS TESTED	OXICS CONTROL
ARCHITECTURAL	੶ <u>ੑੑ</u> ਗ਼੶ਫ਼ਖ਼੶ਖ਼ਫ਼ਗ਼ਫ਼ਗ਼ਫ਼ਸ਼ਫ਼	4			WITH ASTME 1333. FOR ADDITIONAL INFORM	ATION, SEE CALIF.
NON-POROUS	250	-			CODE OF REGULATIONS, TITLE 17, SECTIONS 93120.12	93120 THROUGH
POROUS	775				2. THIN MEDIUM DENSITY FIBERBOARD HAS A	MAXIMUM
	500				THICKNESS OF 5/16" (8 MM).	
	760				<i>t</i> -	
	750	-				
			10		DIVISION 4.5 ENVIRONMENTAL QUA 4.504.3 CARPET SYSTEMS. All carpet installed in the building interior requirements of at least one of the following:	LITY (continue or shall meet the testing an
TABLE 4.504.3 - VOC CONTENT LIN	AITS FOR				<ol> <li>Carpet and Rug Institute's Green Label Plus Program.</li> <li>California Department of Public Health, "Standard Method for Organic Chemical Emissions from Indoor Sources Using En-</li> </ol>	or the Testing and Evaluat vironmental Chambers" V
ARCHITECTURAL COATINGS2.3					February 2010 (also known as Specification 01350). 3. NSF/ANSI 140 at the Gold level.	
GRAMS OF VOC PER LITER OF COATING, LES	S WATER & LESS EXEMPT				4. Scientific Certifications Systems Indoor AdvantageTM Gold.	
COATING CATEGORY	VOCLIMIT				4.504.3.1 Carpet cushion. All carpet cushion installed in the bu	ilding interior shall meet th
FLAT COATINGS	50	*******		<u> </u>	requirements of the Carpet and Rug Institute's Green Label prog	ndili.
	400				4.504.3.2 Carpet adhesive. All carpet adhesive shall meet the r	equirements of Table 4.50
	100			1	4.504.4 RESILIENT FLOORING SYSTEMS. Where resilient flooring	is installed , at least 80%
NUNFLAI-HIGH GLOSS COATINGS	150				resilient flooring shall comply with one or more of the following:	
SPECIALTY COATINGS					1. Products compliant with the California Department of Public	Health, "Standard Method
ALUMINUM ROOF COATINGS	400				Evaluation of volatile Organic Chemical Emissions from Inde Version 1.1, February 2010 (also known as Specification 01)	our sources Using Enviror 350), certified as a CHPS
BASEMENT SPECIALTY COATINGS	400	****	-		in the Collaborative for High Performance Schools (CHPS) H 2. Products certified under UL GREENGUARD Gold (formerter	High Performance Product
BITUMINOUS ROOF COATINGS	50				3. Certification under the Resilient Floor Covering Institute (RFI	CI) FloorScore program.
BITUMINOUS ROOF PRIMERS	350				<ol> <li>Meet the California Department of Public Health, "Standard I Volatile Organic Chemical Emissions from Indoor Sources U</li> </ol>	wemon for the Testing and sing Environmental Cham
BOND BREAKERS	350				February 2010 (also known as Specification 01350).	
CONCRETE CURING COMPOUNDS	350				4.504.5 COMPOSITE WOOD PRODUCTS. Hardwood plywood, partic	deboard and medium den
CONCRETE/MASONRY SEALERS	100				composite wood products used on the interior or exterior of the building formaldehyde as specified in ARB's Air Toxics Control Measure for Con	the requirem most the requirem mostle Wood (17 CCR 9
DRIVEWAY SEALERS	50				by or before the dates specified in those sections, as shown in Table 4.	.504.5
DRY FOG COATINGS	150				4.504.5.1 Documentation. Verification of compliance with this	section shall be provided a
FALIX FINISHING COATINGS	350				by the enforcing agency. Documentation shall include at least or	e of the following:
	350				1. Product certifications and specifications.	
	100	14 yı və			<ol> <li>Chain of custody certifications.</li> <li>Product labeled and invoiced as meeting the Composition of the Compo</li></ol>	te Wood Products regulat
	250				CCR, Title 17, Section 93120, et seq.).	r PS_2 stendards of the F
	200	- And			Wood Association, the Australian AS/NZS 2269, Euro	pean 636 3S standards, a
GRAFITICARIS CUATINGS (SIGN PAINTS)	500	- A CARACTER AND A C			U121, CSA 0151, CSA 0153 and CSA 0325 standards 5. Other methods acceptable to the enforcing agency	
	420					-
INDUSTRIAL MAINTENANCE COATINGS	250				4.505.1 General. Buildings shall meet or exceed the provisions of the	California Building Standa
LOW SOLIDS COATINGS	120		┟┤	<u> </u>	4.505.2 CONCRETE SEAB FOLINDATIONS Concrete elab foundation	ns required to have a vary
MAGNESITE CEMENT COATINGS	450		Ħ	tl	California Building Code, Chapter 19, or concrete slab-on-ground floors	required to have a vapor
MASTIC TEXTURE COATINGS	100				Camornia Residential Code, Chapter 5, shall also comply with this sect	ION.
METALLIC PIGMENTED COATINGS	500		믹		4.505.2.1 Capillary break. A capillary break shall be installed in following:	compliance with at least
MULTICOLOR COATINGS	250				following.	
PRETREATMENT WASH PRIMERS	420				<ol> <li>A 4-inch (101.6 mm) thick base of 1/2 inch (12.7mm) o a vapor barrier in direct contact with concrete and a co</li> </ol>	r larger clean aggregate s ncrete mix design, which
PRIMERS, SEALERS, & UNDERCOATERS	100				shrinkage, and curling, shall be used. For additional in	formation, see American
REACTIVE PENETRATING SEALERS	350				<ul><li>AGI 302.2R-06.</li><li>Other equivalent methods approved by the enforcing a</li></ul>	igency.
RECYCLED COATINGS	250	<b>Harding States</b>			3. A slab design specified by a licensed design professio	nal.
ROOF COATINGS	50				4.505.3 MOISTURE CONTENT OF BUILDING MATERIALS. Building	materials with visible sign
	020		Π		shall not be installed. Wall and floor framing shall not be enclosed when moisture content, Moisture content shall be verified in compliance with	n the framing members ex the following:
	400				1 Moinfurn anniant shall be determined with states and the	or contrast time instation
					moisture content snall be determined with either a probe-type moisture verification methods may be approved by the enforce	s or contact-type moisture
	/30	*******			found in Section 101.8 of this code. 2. Moisture readings shall be taken at a coint 2 fact (610 mm) to	4 feet (1219 mm) from th
OPAQUE	550				of each piece verified.	
SPECIALTY PRIMERS, SEALERS &	100				<ol> <li>At least three random moisture readings shall be performed or acceptable to the enforcing agency provided at the time of an</li> </ol>	on wall and floor framing we proval to enclose the wal
STAINS	250	*********			Ineriation products which an visible water base a birth mainten and	if chall he malered as -14
STONE CONSOLIDANTS	450	(h) i de la construcción			enclosure in wall or floor cavities. Wet-applied insulation products shall	follow the manufacturers
	400				recommendations prior to enclosure.	
SVVININING POOL COATINGS	340			ļ]	4.506 INDOOR AIR QUALITY AND EXHAUST	
	100		뮈		4.000.1 Bathroom exhaust tans. Each bathroom shall be mechanical following:	iv ventilated and shall con
TUB & TILE REFINISH COATINGS	420				t Eans shall be ENEDOV STAD some first and he during the	mingto outside the built of
WATERPROOFING MEMBRANES	250				2. Unless functioning as a component of a whole house ventilation	ion system, fans must be (
WOOD COATINGS	275				humidity control.	
WOOD PRESERVATIVES	350	and a second			a. Humidity controls shall be capable of adjustment betwee	een a relative humidity ran
ZINC-RICH PRIMERS	340	te 4 an i shekarar ta			equal to 50% to a maximum of 80%. A humidity contro adjustment.	a may usize manual or au
1. GRAMS OF VOC PER LITER OF COATING, IN	NCLUDING WATER &				<ul> <li>A humidity control may be a separate component to the integral (i.e., built-in)</li> </ul>	e exhaust fan and is not re
2. THE SPECIFIED LIMITS REMAIN IN EFFECT ARE LISTED IN SUBSEQUENT COLUMNS IN TH 3. VALUES IN THIS TABLE ARE DERIVED FROM	UNLESS REVISED LIMITS HE TABLE. M THOSE SPECIFIED BY		and a lot in strated over the second s		Notes: 1. For the purposes of this section, a bathroom is a room tub/shower combination	which contains a bathtub,
THE CALIFORNIA AIR RESOURCES BOARD, AI SUGGESTED CONTROL MEASURE, FEB. 1, 200 AVAILABLE FROM THE AIR RESOURCES BOAN	RCHITECTURAL COATINGS 08. MORE INFORMATION IS RD.				2. Lighting integral to bathroom exhaust fans shall comply 4.507 ENVIRONMENTAL COMFORT 4.507.2 HEATING AND AIR-CONDITIONING SYSTEM DESIGN. Heat	y with the <i>California Energ</i> ting and air conditioning s
			Π		sized, designed and have their equipment selected using the following r	methods:
					1. The heat loss and heat gain is established according to ANSI	ACCA 2 Manual J - 2011
· .	· .				Load Calculation), ASHRAE handbooks or other equivalent d 2. Duct systems are sized according to ANSI/ACCA 1 Marinal D	esign software or method - 2014 (Residential Duct
					ASHRAE handbooks or other equivalent design software or n	nethods.
					<ol> <li>Select nearing and cooling equipment according to ANSI/ACC Equipment Selection), or other equivalent design software or</li> </ol>	LA 3 Manual 5 - 2014 (Re methods.
				.	Evontion, the of atomate desire term	notire the sustain the state
					Exception: Use of alternate design temperatures necessary to e acceptable.	ensure the system function



NEW HIPROOF

WITH SHINGLES

TO MATCH.



EXISTING HIP ROOF

COMPOSITION SHINGLES

WITH BLACK

