

City Council Meeting: May 14, 2024

Santa Monica, California

ORDINANCE NUMBER 2778 (CCS)

(City Council Series)

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF SANTA MONICA
AMENDING ARTICLE 8 OF THE SANTA MONICA MUNICIPAL CODE
TO ADOPT THE 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE,
REPEAL OUTDATED LOCAL AMENDMENTS, AND ADOPT A 2022 LOCAL
AMENDMENT RELATING TO CONCRETE REQUIREMENTS FOR NEWLY
CONSTRUCTED BUILDINGS

WHEREAS, the California State Building Standards Commission approved and published the 2022 edition of the California Building Standards Code on July 1, 2022, and such code becomes effective 180 days thereafter, on January 1, 2023; and

WHEREAS, the 2022 California Building Standards Code includes the 2022 California Green Building Standards Code; and

WHEREAS, California Health and Safety Code Sections 17958.7 and 18941.5 provide that the City may make changes or modifications to the building standards contained in the California Building Standards Code based upon express findings that such changes or modifications are reasonably necessary because of local climatic, geological, or topographical conditions; and

WHEREAS, Section 101.7.1 of the 2022 California Green Building Standards Code provides that for the purposes of local amendments to the 2022 California Green Building Standards Code, local climatic, topographical, or geological conditions include local environmental conditions as established by the City; and

WHEREAS, at its September 27, 2022 meeting, the Council adopted a resolution making findings regarding local climatic, geological, topographical, and environmental

conditions to support certain local amendments to the 2022 California Green Building Standards Code; and

WHEREAS, consistent with the City's May 2019 Climate Action & Adaptation Plan, the local amendments to the 2022 California Green Building Standards Code implemented by this ordinance will reduce greenhouse gas emissions; and

WHEREAS, local amendments to the 2022 California Green Building Standards Code relating to building cement and global warming potential limits were the subject of meetings between City staff and concrete suppliers ,conducted from July 27, 2023 – February 1, 2024; and

WHEREAS, local amendments to the 2022 California Green Building Standards Code relating to building cement and global warming potential limits were reviewed by the Commission on Sustainability, Environmental Justice, and the Environment in 2023; and

WHEREAS, at its September 18, 2023 meeting, the Commission on Sustainability, Environmental Justice, and the Environment recommended that the City Council adopt a low carbon ordinance that significantly reduces emissions and protects the environment and human health; and

WHEREAS, once adopted by the City Council, the local amendments to the 2022 California Green Building Standards Code will, in accordance with Health and Safety Code Section 17958.7, be submitted to the California Building Standards Commission for filing, and shall become effective 30 days after this submission.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SANTA MONICA DOES HEREBY ORDAIN AS FOLLOWS:

SECTION 1. Purpose

It is the purpose and intent of this Ordinance to adopt the 2022 California Green Building Standards Code (Title 24, Part 11), along with local modifications and changes that provide local standards that apply to plain and reinforced concrete installed in certain projects within City of Santa Monica to reduce greenhouse gas emissions.

SECTION 2. Chapter 8.106 of the Santa Monica Municipal Code is hereby amended to read as follows:

8.106.010. Adoption.

That certain document entitled "California Green Building Standards Code, 2022 Edition," as published by the California Building Standards Commission, is hereby adopted as the Green Building Standards Code of the City of Santa Monica.

8.106.020. Local amendments to the California Green Building Standards Code.

Notwithstanding any provisions of the 2022 California Green Building Standards Code, 2022 California Energy Code, or other codes adopted by any Chapter in Article VIII of the Municipal Code to the contrary, the following local amendments shall apply.

SECTION 3. Section 8.106.130 of the Santa Monica Municipal Code is hereby added to read as follows:

8.106.130 Reduction in cement use.

8.106.130.1 Adoption of Local Amendments.

That certain document entitled “California Green Building Standards Code, 2022 Edition,” as published by the California Building Standards Commission, is hereby amended with the following local amendments:

8.106.130.2 Definitions.

Unless defined herein, all defined terms shall be those found in the 2022 California Green Building Standards Code.

For the application of this section the following definitions shall apply:

Cement Limit: The maximum allowed amount of Cement in concrete at specified compressive strengths measured in pounds per cubic yards and listed on concrete mix-designs.

Concrete: Concrete is any approved combination of mineral aggregates bound together into a hardened conglomerate in accordance with the requirements of this code.

Environmental product declaration (EPD): EPDs present quantified environmental information on the life cycle of a product to enable comparisons between products fulfilling the same function. EPDs must conform to ISO 14025, and EN 15804 or ISO 21930, and have at least a "cradle to gate" scope (which covers product life cycle from resource extraction to the factory).

High Early Strength Cement: Defined as cement used to produce concrete with the compressive strength shown on submitted building plans within 12 hours.

Newly-Constructed Building: “Newly-constructed building” means a new structure that has never before been used or occupied for any purpose or removal and replacement of an existing structure, or repair, alteration, modification, addition to, or rehabilitation of

an existing structure, where a demolition will occur, as defined Santa Monica Municipal Code Section 9.25.030 (A.1) or (A.2).

8.106.130.3 - Scope.

The requirements of this Chapter shall apply to all Newly Constructed Buildings and swimming pools and spas as provided in Section 8.106.130.1 for which a building permit for construction is issued on or after 30 days following the second reading of this ordinance. Projects that do not meet the thresholds requiring plan review, as determined by the Building Officer, shall be exempt from this ordinance.

8.106.130.3-California Building Standards Code amendments.

Section 1901.2 of the 2022 California Building Code is hereby amended as follows:

Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as amended in Section 1905 of this code and Santa Monica Municipal Code Chapter 8.106.130. Except for the provisions of Sections 1904 and 1907, and other than compliance with Santa Monica Municipal Code Section 8.106.130, the design and construction of slabs on grade shall not be governed by this chapter unless they transmit vertical loads or lateral forces from other parts of the structure to the soil.

Section R402.2.1 of the 2022 California Residential Code is hereby amended as follows:

R402.2.1 Materials for concrete. Materials for concrete shall comply with the requirements of Section R608.5.1, as amended by Santa Monica Municipal Code Section 8.106.130.

Section R404.1.3 of the 2022 California Residential Code is hereby amended as follows:

R404.1.3 Concrete foundation walls. Concrete foundation walls that support light-frame walls shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332, or PCA 100, as amended by Santa Monica Municipal Code Section 8.106.130. Concrete foundation walls that support above-grade concrete walls that are within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of this section, ACI 318, ACI 332, or PCA 100, as amended by Santa Monica Municipal Code Section 8.106.130. Concrete foundation walls that support above-grade concrete walls that are not within the applicability limits of Section R608.2 shall be designed and constructed in accordance with the provisions of ACI 318, ACI 332, or PCA 100, as amended by Santa Monica Municipal Code Section 8.106.130. Where ACI 318, ACI 332, PCA 100 or the provisions of this section, as amended by Santa Monica Municipal Code Section 8.106.130, are used to design concrete foundation walls, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

Section R506.1 of the 2022 California Residential Code is hereby amended as follows:

R506.1 General. Concrete slab-on-ground floors shall be designed and constructed in accordance with the provisions of this section or ACI 332, as amended by Santa Monica Municipal Code Section 8.106.130. Floors shall be a minimum 3 1/2 inches (89mm) thick (for expansive soils, see Section R403.1.8). The specified compressive strength of concrete shall be as set forth in Section R402.2.

Section R608.5 of the 2022 California Residential Code is hereby amended as follows:

R608.5 Materials. Materials used in the construction of concrete walls shall comply with this section, as amended by, Santa Monica Municipal Code Section 8.106.130.

Section 301 of the 2022 California Green Building Standards Code is hereby augmented with the following:

301.6 Low-carbon concrete requirements for all projects. Plain and reinforced concrete installed as part of any project subject to the application of this code shall demonstrate compliance with the requirements of Santa Monica Municipal Code Section 8.106.130, the full text of which is herein added to this code by reference.

Section 5.409.3 Product GWP compliance – prescriptive path of the California Green Building Standards Code is hereby adopted and amended as follows:

5.409.3 Product GWP compliance – prescriptive path. Each product that is permanently installed and listed in Table 5.409.3 shall have a Type III environmental product declaration (EPD), either product-specific or factory-specific. All concrete must comply with section 5.409.3.2.

TABLE 5.409.3

PRODUCT GWP LIMITS

Buy Clean California Materials Product Category ¹	Maximum acceptable GWP value (unfabricated) (GWP _{allowed})	Unit of Measurement
Hot-rolled structural steel sections	1.77	MT CO _{2e} /MT
Hollow structural sections	3.00	MT CO _{2e} /MT
Steel plate	2.61	MT CO _{2e} /MT
Concrete reinforcing steel	1.56	MT CO _{2e} /MT
Flat glass	2.50	kg CO _{2e} /MT
Light-density mineral wool board insulation	5.83	kg CO _{2e} /1 m ²
Heavy-density mineral wool board insulation	14.28	kg CO _{2e} /1 m ²

~~Concrete, Ready-Mixed~~^{2,3}

Concrete Product Category	Maximum GWP allowed value (GWP _{allowed})	Unit of Measurement
up to 2499 psi	450	kg CO _{2e} /m ³
2500-3499 psi	489	kg CO _{2e} /m ³
3500-4499 psi	566	kg CO _{2e} /m ³
4500-5499 psi	664	kg CO _{2e} /m ³
5500-6499 psi	704	kg CO _{2e} /m ³
6500 psi and greater	799	kg CO _{2e} /m ³

~~Concrete, Lightweight Ready-Mixed~~²

Concrete Product Category	Maximum GWP allowed value (GWP allowed)	Unit of Measurement
up to 2499 psi	875	kg CO_{2e}/m³
2500-3499 psi	956	kg CO_{2e}/m³
3500-4499 psi	1,039	kg CO_{2e}/m³

Footnotes:

- ~~1. The GWP values of the products listed in Table 5.409.3 are based on 175 percent of Buy Clean California Act (BCCA) GWP values, except for concrete products which are not included in BCCA.~~
- ~~2. For concrete, 175 percent of the National Ready Mix Concrete Association (NRMCA) 2022 version 3 Pacific Southwest regional benchmark values are used for the GWP allowed, except for High Early strength.~~
- ~~3. Concrete High Early Strength ready mixed shall be calculated at 130 percent of the Ready mixed concrete GWP allowed values for each product category.~~

Notation:

~~Authority: Health and Safety Code Section 18930.5~~

~~Reference(s): Health and Safety Code Section 18930.5~~

~~**5.409.3.1** Products shall not exceed the maximum GWP value specified in Table 5.409.3.~~

~~**Exception:** Concrete may be considered one product category to meet compliance with this section. A weighted average of the maximum GWP for all concrete mixes installed in the project shall be less than the weighted average maximum GWP allowed per Table 5.409.3 using Exception Equation 5.409.3.1. Calculations shall be performed with consistent units of measurement for the material quantity and the GWP value. For the purposes of this exception, industry wide EPD's are acceptable.~~

Exception EQUATION 5.409.3.1

$$\underline{GWP_n} < \underline{GWP_{allowed}}$$

where

$$\underline{GWP_n = \sum (GWP_n)(v_n) \text{ and } GWP_{allowed} = \sum (GWP_{allowed})(v_n)}$$

and

n = each concrete mix installed in the project

GWP_n = the GWP for concrete mix n per concrete mix EPD, in kg CO_{2e}/m³

$GWP_{allowed}$ = the GWP potential allowed for concrete mix n per Table 5.409.3

v_n = the volume of concrete mix n installed in the project, in m³

~~**5.409.3.2. Verification of compliance.** Calculations to demonstrate compliance, Type III EPDs for products required to comply if included in the project, and Worksheet WS-5 signed by the design professional of record shall be provided on the construction documents. Updated EPDs for products used in construction shall be provided to the owner at the close of construction and to the enforcement entity upon request. The enforcing agency may require inspection and inspection reports in accordance with Sections 702.2 and 703.1 during and at completion of construction to demonstrate substantial conformance. Inspection shall be performed by the design professional of record or third party acceptable to the enforcing agency.~~

5.409.3.2 Reduction in cement use requirements.

All plain and reinforced concrete installed in residential and non-residential Newly Constructed Buildings and swimming pools and spas as provided in Section 8.106.130.1 for which a building permit for construction is issued on or after 30 days after the second reading of this ordinance shall comply with Section 5.409.3 to reduce embodied carbon in concrete. Projects that do not meet the thresholds requiring plan review, as determined by the Building Officer, shall be exempt from this ordinance.

5.409.3.2.1.

Products shall comply with the requirements for product GWP or Cement Limit performance in accordance with Section 5.409.3 using the maximum acceptable GWP or Cement Limit value for the product category listed in Table 5.409.3.5.

5.409.3.3 Project Based Compliance:

A weighted average of the maximum GWP or Cement Limit for all concrete mixes installed in the project shall be less than the weighted average maximum GWP or Cement Limit allowed per Table 5.409.3.5 using Project Based Equation 5.409.3.3A or 5.409.3.3B. Calculations shall be performed with consistent units of measurement for the material quantity and the GWP or Cement Limit value. For the purposes of this exception, industry wide EPD's are acceptable.

Project Based GWP Equation 5.409.3.3A

$$GWP_n < GWP_{allowed}$$

where

$$GWP_n = \sum (GWP_n)(v_n) \quad \text{and} \quad GWP_{allowed} = \sum (GWP_{allowed})(v_n)$$

and

n = each concrete mix installed in the project

GWP_n = the GWP for concrete mix n per concrete mix EPD, in kg CO₂e /m³

$GWP_{allowed}$ = the GWP potential allowed for concrete mix n per Table 5.409.3.5

v_n = the volume of concrete mix n installed in the project, in m³

Project Based Cement Limit Equation 5.409.3.3B

$$Cem_{proj} < Cem_{allowed}$$

where

$$Cem_{proj} = \sum Cem_n v_n \text{ and } Cem_{allowed} = \sum Cem_{lim} v_n$$

and

n = the total number of concrete mixtures for the project

Cem_n = the cement content for mixture n , kg/m^3 or lb/yd^3

Cem_{lim} = the maximum cement content for mixture n per Table 5.409.3.5 kg/m^3 or lb/yd^3

v_n = the volume of mixture n concrete to be placed, yd^3 or m^3

Applicant can use yd^3 or m^3 for calculation, but must keep same units throughout

5.409.3.4. Verification of compliance.

Calculations to demonstrate compliance, Type III EPDs for products required to comply if included in the project, or Mix Designs showing the cement content, and the Acknowledgement Worksheet signed by the design professional of record shall be provided on the construction documents. Updated EPDs or Mix Designs for products used in construction shall be provided to the owner at the close of construction and to the City. The City requires inspection and inspection reports in accordance with Sections 702.2 and 703.1 during and at completion of construction to demonstrate substantial conformance. Inspection shall be performed by the design professional of record or third party acceptable to the City

TABLE 5.409.3.5**Concrete GWP and Cement Limits**

Note: Acceptable supplementary cementitious materials used to replace cement in concrete mix designs include but are not limited to:

1. Fly ash conforming to ASTM C618.
2. Slag cement (GGBFS) conforming to ASTM C989.
3. Silica fume conforming to ASTM C1240.
4. Natural pozzolan conforming to ASTM C618.
5. Blended supplementary cementitious materials conforming to ASTM C1697.
6. Ultra-fine fly ash (UFFA) conforming to ASTM C618.
7. Metakaolin conforming to ASTM C618.
8. Ground-glass pozzolan per ASTM C1866/C1866M.
9. Other materials with comparable or superior environmental benefits, as approved by the Engineer of Record and enforcing authority.

Concrete, Ready-Mixed

	Cement Limits	Global Warming Potential (GWP) Limits
Minimum specified 28 day compressive strength f'_c , psi	Maximum cement content, lbs/yd ³	Maximum Global Warming Potential (GWP) kg CO ₂ e/m ³
up to 2500	362	260
3000	410	289
4000	456	313
5000	503	338
6000	531	356
7000	594	394
7001 and higher	657	433
up to 2499 light weight	512	500
Up to 3499 light weight	571	546
Up to 4499 light weight	629	594

Notes

(1) For concrete strengths between the stated values, use linear interpolation to determine cement and/or GWP limits.

(2) Cement of any type per ASTM C150, ASTM C595.

(3) Project applicants can choose to comply using the Maximum Cement limits OR the Maximum Global Warming Potential limits.

5.409.3.6 Allowable Increases.

1. Cement or GWP limits shown in Table 5.409.3.5 can be increased by 30% for concrete demonstrated in writing to the Building Official or for Public Works Projects, the City Engineer, as requiring high early strength. Such concrete could include precast, prestressed concrete; beams and slabs above grade; shotcrete; and other applications as demonstrated in writing by the Professional Engineer or other licensed professionals.

2. Approved Cements. The industry-average EPD describing Portland cements produced in the United States by the Portland Cement Association, certified by ASTM, lists a Portland cement global warming potential of 922 kg CO₂e/metric ton. If your plant specific EPD for a cement or blended cement, demonstrated to the Building Official by an approved EPD, is lower than 922 kg CO₂e/metric ton an increase in cement is allowed (e.g. use of ASTM 595 Type 1L Cement). The maximum cement content may be increased above the compliance level in Table 5.409.3.5 proportionate to the percentage difference in GWP of the plant specific EPD and the industry-average 922 kg CO₂e/metric ton.

Formula: $922 - \text{Plant Specific GWP} = \text{Difference}$

$\text{Difference}/922 = \text{Percent Allowable Increase}$

For example: A plant specific EPD of 900 kg CO₂e/metric ton could allow up to a 2% increase in allowable cement.

$$922 - 900 = 22$$

$$22/922 = 0.02.$$

5.409.3.7 Exemptions.

If an applicant for a project subject to this chapter believes that circumstances exist that make it a hardship or infeasible to meet the requirements of this chapter, the applicant may request an exemption in writing to the building department or Public Works (for City project or work within the Public Right of Way). In applying for an exemption, the burden is on the applicant to show hardship or infeasibility. Circumstances that constitute hardship or infeasibility may include:

- There is a lack of commercially available material necessary to comply with this chapter. Applicant must provide written notice from at least two local concrete suppliers that there is a lack of commercially available materials necessary to comply.
- The cost of the concrete mix that achieves compliance is more than the cost of a 100% Portland cement (ASTM C-150) or a 100% Portland limestone cement (ASTM C-595 Type 1L) mix. Applicant must provide quotes from at least two local concrete suppliers comparing the cost of a 100% PC (ASTM-150) or 100% PLC (ASTM C-595 Type 1L) mix and equivalent strength low-carbon concrete mix.
- Emergency purchases made in conformance with Section 2.24.240;
- Building permit applications submitted over the counter are exempt from this ordinance.
- This Chapter does not apply to pre-packaged proprietary concrete bags used for small quantities (less than 3 yards) or where there is an immediate need for on-site concrete mixing.


SECTION 4. Any provision of the Santa Monica Municipal Code or appendices thereto inconsistent with the provisions of this Ordinance, to the extent of such

inconsistencies and no further, is hereby repealed or modified to that extent necessary to effect the provisions of this Ordinance.

SECTION 5. If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed this Ordinance and each and every section, subsection, sentence, clause, or phrase not declared invalid or unconstitutional without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.


SECTION 6. The Mayor shall sign and the City Clerk shall attest to the passage of the Ordinance. The City Clerk shall cause the same to be published once in the official newspaper within 15 days after its adoption. This Ordinance shall become effective thirty days after adoption. Building permit applications submitted on or after the effective date of this Ordinance shall be required to comply with the requirements set forth herein.

APPROVED AS TO FORM:

DocuSigned by:

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Douglas Sloan, City Attorney

Approved and adopted this 14th day of May, 2024.

DocuSigned by:

FF645AF0515A449...

Phil Brock, Mayor

State of California)
County of Los Angeles) ss.
City of Santa Monica)

I, Nikima S. Newsome, Interim City Clerk of the City of Santa Monica, do hereby certify that the foregoing Ordinance No. 2778 (CCS) had its introduction on April 23, 2024 and was adopted at the Santa Monica City Council meeting held on May 14, 2024, by the following vote:

AYES: Councilmembers de la Torre, Torosis, Davis, Parra, Zwick,
Mayor Pro Tem Negrete, Mayor Brock

NOES: None

ABSENT: None

ATTEST:

DocuSigned by:

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Nikima S. Newsome, Interim City Clerk

5/16/2024

Date

A summary of Ordinance No. 2778 (CCS) was duly published pursuant to California Government Code Section 40806.