

INITIAL STATEMENT OF REASONS
FOR
PROPOSED BUILDING STANDARDS
OF THE
DIVISION OF THE STATE ARCHITECT - STRUCTURAL SAFETY (DSA-SS AND DSA-SS/CC)

REGARDING THE CALIFORNIA BUILDING CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2

The Administrative Procedure Act (APA) requires that an Initial Statement of Reasons (ISOR) be available to the public upon request when rulemaking action is being undertaken. The following information required by the APA pertains to this particular rulemaking action:

STATEMENT OF SPECIFIC PURPOSE, PROBLEM, RATIONALE and BENEFITS:

(Government Code Section 11346.2(b)(1) requires a statement of specific purpose of each adoption, amendment, or repeal and the problem the agency intends to address and the rationale for the determination by the agency that each adoption, amendment, or repeal is reasonably necessary to carry out the purpose and address the problem the agency intends to address for which it is proposed. The statement shall enumerate the benefits anticipated from the regulatory action, including the benefits or goals provided in the authorizing statute.)

The purpose of this proposed action is to adopt the 2016 California Building Code (2016 CBC) based on new information since the adoption of the 2013 CBC.

Title 24, Part 2, Volume 1
Chapter 1 – Scope and Administration

Section 1.9.2 – Modify applicable buildings standards to repeal Appendix J as the DSA amendments contained therein are relocated to Chapter 18A.

Add reference to Part 10 and repeal references to Chapter 34 in applicable building standards since California Existing Building Code (CEBC), Title 24, Part 10, is replacing Chapter 34 “Existing Structures”.

Title 24, Part 2, Volume 1
Chapter 2 – Definition

Section 202 – Definition of “approved agency” is clarified to be synonymous with “laboratory of record” that is used in Part 1. Definition of “rigid diaphragm” is deleted, since it is relocated to Section 1604.4 by model code. Definitions of “torque-controlled post-installed anchor” added to differentiate certain expansion anchor testing from screw anchor testing in Section 1910A.5.

Title 24, Part 2, Volume 2
Chapter 16 – Structural Design

Section 1616.2.1.1 – Redundant pointer to wood design standard is deleted. The wood diaphragm span-to-width requirements in the AWC SDPWS still apply.

Section 1616.2.1.4 – Relocated 2013 CBC amendment to the definition of “Diaphragm, rigid” from Section 202 since 2012 IBC relocated this definition into 1604.4.

Section 1616.7.1 – Exception for not requiring story drift to be checked for open buildings is being limited to Risk Category 1 and 2 buildings to be consistent with the companion exception in ASCE 7

Table 12.12.1 (item c) for seismic drift.

Section 1616.9.2 – Definition of base is deleted, since it is shown in ASCE 7 Section 11.2. Definition of structural elements is deleted, since similar definitions in reference standards are adequate.

Section 1616.9.5 (2013 CBC) – Section is deleted since demand and capacity in NFPA 13 is now consistent with ASCE 7-10.

Section 1616.10.1 – Amended to reference the California Existing Building Code (CEBC), Title 24, Part 10, since it is replacing Chapter 34 “Existing Structures”.

Section 1616.10.11 – Amendment in this section is revised to be consistent with ASCE 7-16.

Section 1616.10.14 – Editorial changes.

Section 1616.10.15 – The amendment in Exception 2.2 is now consistent with the provision in item 3.b.i.

Section 1616.10.16 – Amendments in previous code, which are now covered by ASTM E 580, are deleted. Horizontal restraint point spacing of 12'x12' will not work in high seismic regions by calculation, hence requirements for justification by analysis or test is added. Minimum clearance requirement for ceiling and bracing wires from unbraced pipes, ducts, and conduits are added consistent with ASTM E580 Section 5.2.8.3 requirement for bracing wire. In exit ways, the use of the ceiling grid is now permitted to brace the ceiling in the short or transverse direction to the wall where the components and connections have the capacity to do so. For lateral force bracing of the ceiling grid, the load path is further clarified.

Section 1616.10.19 (2013 CBC) – Section is deleted since demand and capacity in NFPA 13 is now consistent with ASCE 7-10.

Section 1616.10.25 (2013 CBC) – The importance factor for parts and portions in base isolated buildings is covered by ASCE 7-10, so the prior provision is deleted.

Section 1616.10.24 – ASCE 7-10 addresses uplift in the analysis so this part of the provision is deleted, but the uplift displacement testing of the isolator bearing is retained since it is not contained in Section 17.8.

Section 1616.10.27 (2013 CBC) – This prior section is deleted, since requirements are covered in ASCE 7.

Title 24, Part 2, Volume 2

Chapter 16A – Structural Design

Section 1602A.1 – Definition of hospital building is deleted by OSHPD.

Section 1603A.2 – Item 4 amended to reference the California Existing Building Code (CEBC), Title 24, Part 10, since it is replacing Chapter 34 “Existing Structures”.

Section 1603A.3 - Per CAC comment, DSA performed an editorial change. OSHPD concurs with the CAC recommendation.

Table 1604A.3 – Live load notation amended on table columns to clarify that deflection limits shall be checked with live load, L, or roof live load, L_r, as applicable. 2012 IBC revised definition of L and L_r in Section 1602 such that roof live load can be classified as L or L_r.

Section 1604A.3.7 – Redundant pointer to wood design standard is deleted. The wood diaphragm span-to-width requirements in the AWC SDPWS still apply.

Section 1604A.4 – Strike “rigid diaphragm” definition in middle of fourth paragraph since it is inconsistent and in conflict with definition in ASCE 7. This is a relocation of the 2013 CBC amendment to the definition of “Diaphragm, rigid” from Section 202 since 2012 IBC relocated this definition to this section.

Per CAC comment, DSA performed an editorial change regarding format for consistency.

Section 1607A.14 – Clarification that “working load” is “working stress design load” when using load combination in Section 1605A.

Section 1609A.1.3 – Exception for not requiring story drift to be checked for open buildings is being limited to Risk Category 1 and 2 buildings to be consistent with the companion exception in ASCE 7 Table 12.12.1 (item c) for seismic drift.

Section 1613A.2 – Definition of “base” is continued but now referenced to ASCE 7 Section 11.2 since there is no definition in CBC. Definition of “hospital building” is deleted by OSHPD. Definition of “structural elements” is deleted, since similar definitions in reference standards are adequate.

Section 1616A.1.1 – Amended to reference the California Existing Building Code (CEBC), Title 24, Part 10, since it is replacing Chapter 34 “Existing Structures”.

Section 1616A.1.12 – Amendment in this section is revised to be consistent with ASCE 7-16.

Section 1616A.1.16 – Editorial changes.

Section 1616A.1.18 – The amendment in Exception 2.b is now consistent with the provision in item 3.b.i.

Section 1603A.3 - Per CAC comment, DSA performed an editorial change to ensure the numbering is consistent. OSHPD concurs with the CAC recommendation.

Section 1616A.1.19 – This section is revised to adopt ACI 355.4 for qualification of post-installed adhesive anchors and ICC-ES AC 232 & AC 446 for qualification of cast-in-place specialty inserts in concrete for consistency with requirements in the ACI 318-14. The screw anchor provision is editorially clarified with no change in intent.

Section 1616A.1.20 – Relocated power actuated fastener amendment from 2013 CBC1908A.1.1 with editorial changes. Power actuated fasteners are not permitted to attach seismic braces to the structure and non-structural components, which is consistent with past and current code enforcement. However, power actuated fasteners in steel to steel connections when qualified are permitted.

Section 1616A.1.21 – Amendments in previous code, which are now covered by ASTM E 580, are deleted. Horizontal restraint point spacing of 12’x12’ will not work in high seismic regions by calculation, hence requirements for justification by analysis or test is added. Minimum clearance requirement for ceiling and bracing wires from unbraced pipes, ducts, and conduits are added consistent with ASTM E580 Section 5.2.8.3 requirement for bracing wire. In exit ways, the use of the ceiling grid is now permitted to brace the ceiling in the short or transverse direction to the wall where the components and connections have the capacity to do so. For lateral force bracing of the ceiling grid, the load path is further clarified.

Section 1616A.1.23 – Concrete anchor design overstrength factor for certain components are reduced

from 2.5 to 2.0, for consistency with ASCE 7-16.

Section 1616A.1.25 (CBC 2013) – The prior section is deleted since demand and capacity in NFPA 13 is now consistent with ASCE 7-10.

Section 1616A.1.35 (CBC 2013) - The importance factor for parts and portions in base isolated buildings is covered by ASCE 7-10, so the prior provision is deleted.

Section 1616A.1.35 – ASCE 7-10 addresses uplift in the analysis so this part of the provision is deleted, but the uplift displacement testing of the isolator bearing is retained since it is not contained in Section 17.8.

1616A.1.36 – Limitations on the use of linear procedures in high ground motions areas are now designated by Seismic Design Categories.

1616A.1.37 (CBC 2013) – This prior section is deleted, since requirements are covered in ASCE 7.

Title 24, Part 2, Volume 2

Chapter 17A - Special Inspections and Tests

Section 1701A.1.3.1 – Section revised since the existing building code provisions previously in Chapter 34 are relocated to Part 10, California Existing Building Code, Chapter 3.

Section 1701A.4 – Section revised editorially and for consistency with other code modifications and terminology in other sections.

Section 1702A.1 – Definitions added to clarify distinction between quality assurance provide by the owner and quality control provided by the contractor. The term “special inspector” replaced by “approved agency” throughout Chapter 17A to be consistent with revisions in model code.

Section 1704A.2 – Exception # 4 is deleted, since the owner has to employ the laboratory of record and special inspectors in accordance with the California Administrative Code Section 4-211(c) and 4-335(f)1. Exception #2 added since DSA does not adopt Section 105 and 110 due to similar requirements already contained in the adopted California Administrative Code.

Section 1704A.2.3 – Added text since DSA does not adopt Section 107.1 due to similar requirements already contained in the adopted California Administrative Code.

Section 1704A.2.5 – Exception 1 deleted since DSA continues to not approve fabricators.

Section 1704A.5 – This section is revised for consistency in terminology with other sections of the code.

Section 1704A.6 – Existing requirements for retention of structural observer by the owner is retained, so that independence of the structural observer is not compromised. Added text since DSA does not adopt Section 110 due to similar requirements already contained in the adopted California Administrative Code.

Section 1705A.2.1 – Added text to recognize reference standard requirements for quality control.

Section 1705A.2.2 –Per CAC comment, DSA performed an editorial change. OSHPD concurs with the CAC recommendation.

Table 1705A.2.1 – Amended incorrect code pointer and clarify that deck weld inspections shall be in accordance with AWS D1.3 by AWS QC1 qualified inspector.

Section 1705A.2.2 – A pointer to periodic deck special inspection requirements in Table 1705A.2.1 is added for easy reference.

Section 1705A.3.3.1 – Editorial changes. Item 2 modifications provided clarification language identifying structural basis for waiver and added additional conditions in which waiver applies.

Section 1705A.3.3.2 – New section indicated when batch plant inspection is not required for non-structural concrete which generally matches the reinforcing steel testing waiver allowed in Section 1910A.2

Table 1705A.3 – Deleted adhesive anchor inspection item 13 since addressed by model code. Added exception in footnote c to not require certified installer for less significant anchor installations and is consistent with reduced testing frequency in 1910A.5.3.

Section 1705A.5.3 - Section 1705A.2.2 –Per CAC comment, DSA performed an editorial change for clarification. OSHPD concurs with the CAC recommendation.

Section 1705A.12.8 - Per CAC comment, DSA performed an editorial change. OSHPD concurs with the CAC recommendation.

Section 1705A.12.9 – This section is deleted for consistency with Section 1616A.1.4, which does not permit Cold-formed steel special bolted moment frame.

Section 1705A.13.2 – Provisions for manufacturer’s certification by experience data is deleted. There is no assembly tests required for bracing systems in FM 1950. Provisions are added where this may be necessary.

Section 1705A.13.3 – Modifications made to adopt special seismic certification provisions for nonstructural components in state-owned essential service buildings and other equipment when required by ASCE 7. Amendments provide clarification of testing method and range of products to be tested and are aligned with OSHPD 1 & 4 requirements.

Special seismic certification by experience data is deleted, since there are no equipment/components allowed that can be certified by experience data.

Title 24, Part 2, Volume 2
Chapter 18A – Soils and Foundations

Section 1801A.1 – Reference to Appendix J, is deleted since all the requirements in the appendix are transferred to chapter 18A and Appendix J is no longer adopted.

1801A.1.3.1 – Reference to Chapter 34 is struck because Chapter 34 is being replaced by the California Existing Building Code (CEBC), Title 24, Part 10.

Section 1803A.6 – Amendment clarifies that other attenuation relationships from NGA West 1 relations, that were not used for the 2008 USGS maps, are permitted for use in developing site specific ground motions.

Section 1803A.8 – References revised since Chapter 34 is being replaced by the California Existing Building Code (CEBC), Title 24, Part 10.

Section 1807A.2.2 – Requirements for classification of design lateral soil loads as gravity or seismic loads for load combination purposes are clarified, each category has different load factor.

Section 1810A.3.3.1.2 – Section is revised to permit piles driven by means other than hammer. All the model code provisions are based on piles driven by hammer. A number of proprietary piles are drilled, which does not provide any indication of their capacity. This will eliminate significant number of alternative system approval, thereby expediting the construction documents review.

Section 1810A.3.5.3.3 – A pointer is added to the installation and monitoring requirements for existing buildings when shoring are installed adjacent to them, to ensure continued safety for occupying exiting buildings during construction.

Sections 1812A and 1813A – These sections are relocated from Appendix J to Chapter 18A based on their successful use in construction projects.

Title 24, Part 2, Volume 2
Chapter 19 - Concrete

Section 1913.2.1 (2013 CBC) – Amendment deleted since covered by section 1903.3.

Section 1913.2.2 (2013 CBC) – Limits on the use of cementitious materials are deleted since adequately addressed in ACI 318.

Section 1909.2.1 - The prior provisions for testing alkali silica reactivity in aggregates are replaced with equivalent requirements in Appendix X1 of ASTM C33.

Section 1909.2.2 – Existing prohibition on use of discontinuous steel fibers as shear reinforcement is retained, since there is minimal cyclic test data for their use in seismic design category D, E, or F and ACI 318 provisions which permit its use result in a very limited application.

Section 1909.2.4 – Editorial changes to testing of reinforcing steel. Scope of waiver expanded to non-building structures due to their lower risk.

Section 1913.2.9 (CBC 2013) – Redundant pointer to other sections is deleted.

Section 1913.2.10 (CBC 2013) – Gypsum field test requirement is deleted, since it is no longer in the scope of Chapter 19 and is considered an alternative system.

Section 1909.2.7 – Section reorganized.

Section 1909.2.7.5 – Hydraulic ram test apparatus support location relative to the tested anchor is clarified. The torque wrench method is limited to torque controlled post-installed and screw-type anchors for consistency with Section 1909.2.7.2.

Section 1909.3.2 – Minimum reinforcement for diaphragm openings, equivalent to those required in ACI 318 Chapter 11 for walls is added.

Section 1913.3.4 (2013 CBC) – Amendment deleted as changes made to ACI 318 Section 18.10.6.4 deemed adequate.

Section 1909.3.6 – Modification to interaction equation is based on paper in the Concrete International journal (September 2014) titled, “Proposed Revisions to the Strength-Reduction Factor Axially loaded members,” by R. D. Lequesne and J. A. Pinchenia that addresses a quark in the interaction equation for non-prismatic members. For reinforcement strain greater than yield strain, design for non-prismatic (C, T or I shaped walls) members with flanges in compression may become unsafe without the amendment.

Per CAC comment, DSA performed an editorial change regarding format.

Section 1913.3.8 (2013 CBC) – Amendment deleted as Section 1905.1.8 now contains the same provisions.

Title 24, Part 2, Volume 2
Chapter 19A – Concrete

Section 1903A.4 (CBC 2013) - Amendment is deleted, since ACI 318-14 Chapter 26 adequately

addresses these items.

Section 1903A.5 - The prior provisions for testing alkali silica reactivity in aggregates are replaced with equivalent requirements in Appendix X1 of ASTM C33.

Section 1903A.6 (2013 CBC) – Limits on the use of cementitious materials are deleted since adequately addressed in ACI 318.

Section 1903A.7 – Existing prohibition on use of discontinuous steel fibers as shear reinforcement is retained, since there is minimal cyclic test data for their use in seismic design category D, E, or F and ACI 318 provisions which permit its use result in a very limited application.

Sections 1903A.8 – Welding limitations in this section is deleted since AWS D1.4 addresses these requirements and verification requirements in Table 1705A.3 Item # 2 and certificate of compliance requirements in Section 1704A.5 Items # 6 & # 7 now adequately address the issue. Condition under which shop fusion welded stirrups/ties are permitted to facilitate construction is added.

Section 1904A.1 – Exception is deleted, since structures covered by the exception are outside DSA jurisdiction.

Section 1905A.1.5 – Editorial changes and deleted portions of the amendment that are covered adequately by ACI 318.

Section 1905A.1.7 – Minimum reinforcement for diaphragm openings, equivalent to those required in ACI 318 Chapter 11 for walls is added.

Sections 1905A.1.3 & 1905A.1.4 (CBC 2013) – These amendments are deleted since materials addressed by these amendments are not in common use anymore and are considered means and methods.

Section 1905A.1.5 (CBC 2013) – This amendment is deleted, since the concrete joist system, which forms the basis for the provisions, is infrequently used and content covered by this sections is covered by ACI 318 and can be addressed as interpretation of ACI 318 by the office.

Section 1905A.1.7 (CBC 2013) – This section is deleted, since definition of specified concrete cover in Section 2.3 of ACI 318 adequately addresses the cover requirements.

Section 1905A.1.8 (CBC 2013) – Per CAC comment, DSA performed an editorial change.

Section 1905A.1.9 (CBC 2013) – This amendment is deleted since it is a conservative simplification of the code provisions in other sections and not a relaxation of the requirements in other sections of the code. Previous amendments was based on the unacceptability of title of “empirical design” (empirical design is not permitted by DSA for any materials, ACI specifically changed the title to address the concern raised by DSA about the title) only and not due to unacceptability of content.

Sections 1905A.1.12 (CBC 2013) – This amendment is deleted, since content covered by this section is more thoroughly covered by ACI 318 and can be addressed as interpretation of ACI 318 by the office.

Section 1905A.1.18 (2013 CBC) – Amendment deleted as changes made to ACI 318 Section 18.10.6.4 deemed adequate.

Section 1905A.1.14 – Modification to interaction equation is based on paper in the Concrete International journal (September 2014) titled, “Proposed Revisions to the Strength-Reduction Factor Axially loaded members,” by R. D. Lequesne and J. A. Pinchenia that addresses a quark in the

interaction equation for non-prismatic members. For reinforcement strain greater than yield strain, design for non-prismatic (C, T or I shaped walls) members with flanges in compression may become unsafe without the amendment.

Per CAC comment, DSA performed an editorial change regarding format.

Sections 1908A.1 and 1909A.1 (CBC 2013) – These sections along with the CBC 2013 amendments are deleted since requirements are now covered in Chapter 16A.

Section 1910A.2 – Editorial changes to testing of reinforcing steel. Scope of waiver expanded to non-building structures due to their lower risk.

Section 1910A.5 – Section reorganized.

Section 1910A.5.5 – Hydraulic ram test apparatus support location relative to the tested anchor is clarified. The torque wrench method is limited to torque controlled post-installed and screw-type anchors for consistency with Section 1910A.5.2.

Section 1913A.5 (CBC 2013) – Redundant pointer to other sections is deleted.

Section 1913A.6 (CBC 2013) – Gypsum field test requirement is deleted, since it is no longer in the scope of Chapter 19A and is considered an alternative system.

Title 24, Part 2, Volume 2

Chapter 21 - Masonry

Section 2114.2 (2013 CBC) – Mortar type for glass masonry amendment deleted since adequately addressed in TMS 602.

Section 2114.3.1 (CBC 2013) – This section is deleted because TMS 602, Article 2.2 C and ASTM C476, Section 3.1.5 adequately address the requirement.

Section 2114.3.2 (CBC 2013) – This section is deleted because the use of antifreeze compounds is now restricted by ASTM C270 Section 4.1.4 for mortar and ASTM C476 Section 3.1.7 for grout.

Section 2114.2 – Deleted requirements for mortar is covered by ASTM C270 Sections 4.1.4.

Section 2114.4 (2013 CBC) – Deleted tolerance amendment as TMS 602 now contains same limits.

Section 2114.5 (2013 CBC) – Deleted mortar requirements for glass masonry since adequately addressed in TMS 602.

Section 2114.3.1 – Relocated provisions that permit partially grouted construction from deleted 2013 CBC Section 2114.13.

Section 2114.5 – Permitted masonry compressive strength (f'_m) for routine design without special consideration is increased from 1500 psi to 2000 psi for consistency with changes in TMS 602-13 Table 2 and ASTM C 90-14.

Section 2114.6.1 – Mortar sampling and testing are revised to align with ASTM C1586 “Standard Guide for Quality Assurance of Mortars” where field cast mortar cubes are not tested in compression, rather fresh mortar samples are tested for proportions in accordance with ASTM C780. Sampling and testing is not required when approved preblended mortars are used. Exception added to reduce field testing of mortar, consistent with trend in TMS 402/602. In the exception, mortar test for non-bearing

non-shear masonry walls up to 12' is limited to one set of test at the beginning of the project because of relatively minor effect of mortar in overall masonry wall strength.

Section 2114.8.2 (2013 CBC) - Per CAC comment, DSA performed editorial changes regarding format.

Section 2114.9.2 (2013 CBC) – Prism testing amendment is deleted to since similar provisions in TMS 602 are deemed adequate.

Section 2114.6.2 – Core testing frequency revised to be based solely on wall area and not floor area, since it better correlates to quantity of masonry wall for the building. Various editorial changes made. Restriction placed on when samples may be cored to allow grout to attain strength. Clarification made as to which set of consecutive cores are required to comply with minimum shear strength requirements. Core testing exemption for non-bearing non-shear single wythe concrete masonry walls up to $f'_m = 2,000$ psi and not exceeding total height of 12' is added on the basis of tests conducted by Masonry Institute of America (MIA) and presented by John Chrysler & Kurtis Siggard (2013) at the 12th Canadian Masonry Symposium, Vancouver, British Columbia. Exception does not cover higher strength masonry or bearing/shear walls, since MIA tests didn't include such walls. Core testing for quality assurance of the multi-wythe in-situ post-grouted assembly is needed to verify that the inspection procedures were adequate for such walls. Exception added to permit a nondestructive alternative test procedure to coring.

Section 2114.7.1 – Item 1 amended to delete reference to strength design method for not permitting joint reinforcement so as to not permit it for any design method to be consistent with minimum No. 4 reinforcing steel required in this section.

Section 2114.9 – This amendment has been modified to require that glass block walls or panels be designed for seismic forces. The glass unit masonry provisions in TMS 402 Chapter 13 are prescriptive and address only wind forces.

Sections 2114.13 & 2114.14 – Amendments in these sections are deleted, since requirements are now addressed in the reference standard TMS 402/TMS 602. Requirements equivalent to sections deleted in the reference standard is more detailed and consistent with general design requirements for all masonry structures.

Per CAC comment, DSA performed an editorial change regarding format.

Title 24, Part 2, Volume 2

Chapter 21A - Masonry

Section 2101A.2 (CBC 2013) – Amendments in sections deleted in the model code are deleted.

Section 2101A.2 – Reference to TMS 403, which covers direct design method, is deleted for consistency with Section 2101A.1.3. TMS 403 is based on TMS 402-08/ASCE 7-05, hence is not consistent with provisions of TMS 402-13/ASCE 7-10, which is the basis of design in this code.

Section 2102A.1 – Definition is revised to remove reference to Section 2114A, since that section is removed from the code.

Section 2103A.1 – Reference to AAC masonry is deleted for consistency with Section 2101A.1.3 & Section 1616A.3.5

Section 2103A.13.1 (CBC 2013) – This section is deleted because TMS 602, Article 3.5 A and ASTM C476, Section 5.2.2.1 adequately address the requirement.

Section 2103A.13.2 (CBC 2013) – This section is deleted since ASTM C476 now adequately address the requirement.

Section 2103A.3.1 – Amended to clarify that grout space width shall be calculated in accordance with TMS 602 for consistent application.

Section 2103A.15.1 (CBC 2013) – This section is deleted because TMS 602, Article 2.2 C and ASTM C476, Section 3.1.5 adequately address the requirement.

Section 2103A.15.2 (CBC 2013) – This section is deleted because the use of antifreeze compounds is now restricted by ASTM C270 Section 4.1.4 for mortar and ASTM C476 Section 3.1.7 for grout.

Section 2103A.5 – Deleted requirements for mortar is covered by ASTM C270 Sections 4.1.4.

Section 2104A.1.3.1.2.1 – Relocated provisions that permit partially grouted construction from deleted 2013 CBC Section 2114A.1. In item 2), amended to clarify that grout space width shall be calculated in accordance with TMS 602 for consistent application.

Section 2105A.2 – Permitted masonry compressive strength (f'_m) for routine design without special consideration is increased from 1500 psi to 2000 psi for consistency with changes in TMS 602-13 Table 2 and ASTM C 90-14. Editorial changes to align exception with OSHPD for co-adoption.

Section 2105A.3 – This section is revised with the intent of reducing field test, consistent with trend in TMS 402/602. In exception 1, mortar test for non-bearing non-shear masonry walls up to 12' is limited to one set of test at the beginning of the project because of relatively minor effect of mortar in overall masonry wall strength. In exception 2, mortar sampling and testing are revised to align with ASTM C1586 "Standard Guide for Quality Assurance of Mortars" where field cast mortar cubes are not tested in compression, rather fresh mortar samples are tested for proportions in accordance with ASTM C780. Sampling and testing is not required when approved preblended mortars are used.

Section 2105A.4 – Core testing frequency revised to be based solely on wall area and not floor area, since it better correlates to quantity of masonry wall for the building. Various editorial changes made. Restriction placed on when samples may be cored to allow grout to attain strength. Clarification made as to which set of consecutive cores are required to comply with minimum shear strength requirements. Core testing exemption for non-bearing non-shear single wythe concrete masonry walls up to $f'_m = 2,000$ psi and not exceeding total height of 12' is added on the basis of tests conducted by Masonry Institute of America (MIA) and presented by John Chrysler & Kurtis Siggard (2013) at the 12th Canadian Masonry Symposium, Vancouver, British Columbia. Exception does not cover higher strength masonry or bearing/shear walls, since MIA tests didn't include such walls. Core testing for quality assurance of the multi-wythe in-situ post-grouted assembly is needed to verify that the inspection procedures were adequate for such walls. Exception added to permit a nondestructive alternative test procedure to coring.

2106A.1.1 – Item 1 amended to delete reference to strength design method for not permitting joint reinforcement so as to not permit it for any design method to be consistent with minimum No. 4 reinforcing steel required in this section.

Section 2110A.1 – This amendment has been modified to require that glass block walls or panels be designed for seismic forces. The glass unit masonry provisions in TMS 402 Chapter 13 are prescriptive and address only wind forces.

Sections 2114A & 2115A – Amendments in these sections are deleted, since requirements are now addressed in the reference standard TMS 402/TMS 602. Requirements equivalent to sections deleted in the reference standard is more detailed and consistent with general design requirements for all masonry structures.

Title 24, Part 2, Volume 2
Chapter 22 – Steel

Section 2212.2.1 – Permanent identification of protected zones is necessary to avoid damage to those zones during construction and future alterations and is consistent with balloted changes to AISC 341-16.

Section 2212.2.2 – Horizontal diaphragm brace member slenderness ratio specified to avoid ambiguity and is consistent with balloted changes to AISC 341-16.

Section 2212.2.6 – New amendment to provide general provisions for multi-tiered ordinary concentric braced frames and is consistent with balloted changes to AISC 341-16.

Section 2212.2.7 – Language added to specify a “need not exceed” force for collectors in frame lines with a specific brace configuration.

Section 2212.2.8 – New amendment to provide general provisions for multi-tiered special concentric braced frames and is consistent with balloted changes to AISC 341-16.

Section 2212.3 – Item # 2 is deleted since it is redundant with AISC 358-10 Chapter 10 Item # 2(6) and some of the AISC qualification tests had 3,000 psi concrete. Item # 4 is deleted since only the pretension of the high strength bolts is used as the tension design capacity. Item #3 is amended to specify the minimum wall thickness for built-up box column sections based on range of tested column thicknesses.

Title 24, Part 2, Volume 2
Chapter 22A – Steel

Section 2205A.3.1 – Permanent identification of protected zones is necessary to avoid damage to those zones during construction and future alterations and is consistent with balloted changes to AISC 341-16.

Section 2205A.3.2 – Horizontal diaphragm brace member slenderness ratio specified to avoid ambiguity and is consistent with balloted changes to AISC 341-16.

Section 2205A.3.5 – New amendment to provide general provisions for multi-tiered ordinary concentric braced frames and is consistent with balloted changes to AISC 341-16.

Section 2205A.3.7 – Language added to specify a “need not exceed” force for collectors in frame lines with a specific brace configuration.

Section 2205A.3.8 – New amendment to provide general provisions for multi-tiered special concentric braced frames and is consistent with balloted changes to AISC 341-16.

Section 2206A.2.1 – Item # 2 is deleted since it is redundant with AISC 358-10 Chapter 10 Item # 2(6) and some of the AISC qualification tests had 3,000 psi concrete. Item # 4 is deleted since only the pretension of the high strength bolts is used as the tension design capacity. Item #3 is amended to specify the minimum wall thickness for built-up box column sections based on range of tested column thicknesses.

Title 24, Part 2, Volume 2
Chapter 23 - Wood

Section 2301.1.3.1 – Reference to Chapter 34 is struck because Chapter 34 is being replaced by the California Existing Building Code (CEBC), Title 24, Part 10.

Section 2301.1.4 – Prohibition on various design methods, systems, and materials for wood design located at various parts of the code are consolidated into one section for easy reference. This consolidation is not a change in code requirements. Most of the items covered by this section is relocated from the CBC 2013 Section 2305.1.2 with editorial changes. Item 9. - Cross-laminated timber is included in the NDS, but not in the AWC SDPWS. There are no provisions for the purposes of designing or establishing cross-laminated timber capacities as part of the seismic force resisting system. Approval as an alternative system in accordance with Section 104.11 will be required for this use.

Section 2303.1.3.1 – Removed unnecessary pointer to Chapter 17A.

Section 2303.1.4 – Requirements for glued cross-laminated timber are made equivalent to glued laminated timber.

Section 2303.4.3.1 – Removed unnecessary pointer to Chapter 17A.

Section 2304.6.1 – Exception is not needed since model code reference to importance factor of 1.0 is removed.

Sections 2305.2, 2305.3, 2306.2, and 2306.3 – Redundant amendments in Sections 2305.2 & 2306.2 are deleted, since staples are not permitted in lateral force resisting system. Amendment in Section 2305.3 is deleted, since section does not exist in model code.

Section 2309.1.1 – Editorial change for consistency with Section 2308.2.7.

Title 24, Part 2, Volume 2
Chapter 24 – Glass and Glazing

Section 2410 – Follow-up test requirements and post-earthquake inspection requirements are removed based on satisfactory performance of Structural Silicone Glazing (SSG) in the field and cyclic tests.

Title 24, Part 2, Volume 2
Chapter 26 – Foam Plastic Insulation

Section 2603.11.1 – Amendment added to require a design submittal and DSA approval. The manufacturer's installation instructions are beyond DSA's control and are subject to change. Consistent with requirements in 1601A.2 and 1603A.3.

Section 2603.12.3 – Amendment added to require a design submittal and DSA approval. The manufacturer's installation instructions are beyond DSA's control and are subject to change. Consistent with requirements in 1601A.2 and 1603A.3.

Title 24, Part 2, Volume 2
Chapter 35 - Referenced Standards

References in this chapter are revised for consistency with amendments in all other chapters.

Title 24, Part 2, Volume 2
Appendix J – Grading

All DSA amendments in this appendix are moved to Chapter 18A. This appendix is not adopted by DSA.

TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS:

2015 IBC: International Building Code.
2015 IEBC: International Existing Building Code.
ASCE 7-10: Minimum Design Loads for Buildings and Other structures with Supplements Nos. 1 & 2.
ASCE 24-14: Flood Resistant Design and Construction.
ASCE 41-13: Seismic Evaluation and Retrofit of Existing Buildings
ACI 318-14: Building Code Requirements for Structural Concrete and Commentary.
AISC 360-10: Specification for Structural Steel Buildings
AISC 341-10: Seismic Provisions for Structural Steel Buildings.
AISC 358-10: Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications including Supplement Nos. 1 & 2.
TMS 402-13: Building Code Requirements for Masonry Structures.
TMS 602-13: Specification for Masonry Structures.
AWC NDS-15: National Design Specification (NDS) for Wood Construction.
AWC SDPWS-2015: Special Design Provisions for Wind and Seismic.

STATEMENT OF JUSTIFICATION FOR PRESCRIPTIVE STANDARDS:

Health and Safety Code (H&SC) Section 18941 requires consistency with state and nationally recognized standards for building construction in view of the use and occupancy of each structure to preserve and protect the public health and safety.

CONSIDERATION OF REASONABLE ALTERNATIVES

DSA did not identify nor determine any reasonable alternatives to these regulations. The alternative to these proposed regulations would be to leave regulations as they are which will be inconsistent with H&SC 18941 requirements.

REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS.

There will be no adverse impact on small business.

FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE IMPACT ON BUSINESS.

The regulations proposed will have no overall cost impact on business, since they are equivalent to current requirements in the Code. Technical updates to the national standards for structural design are incorporated, mostly by reference.

ASSESSMENT OF EFFECT OF REGULATIONS UPON JOBS AND BUSINESS EXPANSION, ELIMINATION OR CREATION

The Division of the State Architect (DSA) has assessed whether or not and to what extent this proposal will affect the following:

- The creation or elimination of jobs within the State of California.

The Division of the State Architect did not identify any amended regulation that would lead to the creation or elimination of jobs.

- The creation of new businesses or the elimination of existing businesses within the State of California.

The Division of the State Architect did not identify any amended regulation that would lead to elimination of existing businesses.

- The expansion of businesses currently doing business with the State of California.

The Division of the State Architect did not identify any amended regulation that would lead to the expansion of businesses currently doing business with the State of California.

- The benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment.

The Division of the State Architect did not identify any amended regulation that would have a significant positive or adverse impact. These regulations will promote safer building design by the adoption of current national model codes, so that they will remain safe following major earthquake as required by statute.

ESTIMATED COST OF COMPLIANCE, ESTIMATED POTENTIAL BENEFITS, AND RELATED ASSUMPTIONS USED FOR BUILDING STANDARDS

The proposed changes to the regulations are editorial to provide clarity, and do not result in an increase to the cost of compliance in the application and implementation of the California Building Code, since they are equivalent to current requirements. Technical updates to the national standards for structural design are incorporated, mostly by reference.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

These regulations do not duplicate or conflict with federal regulations.