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POLICY INTENT NOTICE **PIN: XX**

SUBJECT

Steel Quality Assurance (QA) and Quality Control (QC)

Effective: XX/XX/XXXX
Revised: XX/XX/XXXX

PURPOSE

2022 California Building Code (CBC) Sections 1705 and 1705A provide the special inspection and nondestructive testing (NDT) requirements for steel construction in buildings, structures, and portions thereof. Legacy practice in the CBC is to include an abridged version of these requirements and refer to the material standards for complete details. Some engineers, fabricators and erectors interpret the abridged requirements in the CBC as a substitute for those in the referenced material standards and are looking for clarifications.

The International Building Code (IBC), also referred to as model code, and steel material standards over time largely incorporated most of the legacy amendments for steel Quality Assurance and Quality Control (QA and QC) in the CBC. Recognizing potential cost savings and quality improvements, OSHPD proposed to eliminate most of the California-specific amendments for steel special inspections and nondestructive tests in the CBC 2025. Going forward, referenced material standards, as amended by the CBC, will serve as the basis of the steel QA/QC requirements.

This Policy Intent Notice (PIN) is intended to streamline and simplify the transition from the legacy California amendments-based steel special inspection and nondestructive testing requirements to those based mostly on model code and steel material standards.

This PIN focuses on the QA special inspections and nondestructive tests performed by the approved agencies that are employed by the Owner. The QC procedures of the steel fabricators and erectors are only touched on briefly to acknowledge their importance in ensuring the quality of steel construction. The development and implementation of the QC program is the responsibility of the fabricator and erector.

Structural stainless steel and cold-formed stainless steel are outside the scope of this PIN.

The provisions of this PIN may be applied to any project designed to the CBC 2019, 2022 or 2025 code.

BACKGROUND

CBC 2007 adopted the IBC as the model code for the first time, and the IBC steel special inspection and nondestructive testing requirements largely relied on the requirements in the steel material standards. In addition to special inspections and nondestructive tests by the approved agency, referred to as Quality Assurance or QA in the steel material standards, the steel material standards introduced Quality Control (QC) requirements. OSHPD decided at that time not to

introduce completely new QC requirements in the CBC 2007, which would have been a new mandate. Over time, the steel industry moved to a combination QA/QC model to achieve steel construction quality. The CBC gradually moved to adopt the QC provisions in the steel material standards to align more closely with the model code at each code cycle.

Future editions of the CBC will rely primarily on the steel material standards for QA/QC, rather than including some requirements in the CBC amendments and referring others to the steel material standards. To facilitate this transition, this PIN compiles the various requirements for the steel special inspections and nondestructive tests into a single resource document.

POLICY

1.0 Basic Requirements

1.1 Quality assurance (QA). The Owner shall employ one or more approved agencies to provide special inspections and nondestructive tests during construction.

Special inspections and nondestructive testing of steel shall be in accordance with the quality assurance requirements of the AISC and AISI material standards as amended in the CBC 1704.2 and 1704A.2.

User Note: All section references in this policy are to the proposed CBSC 2025, not to the CBSC 2022 or earlier codes. Referenced code sections are shown in Appendix A.

Reference to material standard sections is for the standards listed in the Chapter 35 of the CBC 2025:

AISC Standards:
ANSI/AISC 303—22: Code of Standard Practice for Steel Buildings and Bridges
ANSI/AISC 341—22: Seismic Provisions for Structural Steel Buildings
ANSI/AISC 358—22: Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications
ANSI/AISC 360—22: Specification for Structural Steel Buildings
AISI Standards:
AISI S100—16(2020) w/S2—20: North American Specification for the Design of Cold-Formed Steel Structural Members, 2016 Edition (Reaffirmed 2020), with Supplement 2,
AISI S202—20: Code of Standard Practice for Cold-formed Steel Structural Framing
AISI S220—20: North American Standard for Cold-Formed Steel Nonstructural Framing
AISI S240—20: North American Standard for Cold-Formed Steel Structural Framing
AISI S400—20: North American Standard for Seismic Design of Cold-formed Steel Structural Systems.
AWS Standards:
AWS B5.1 - 2013-AMD1: Specification for the Qualification of Welding Inspectors
AWS D1.1—2020: Structural Welding Code – Steel
AWS D1.3—2018: Structural Welding Code – Sheet Steel
AWS D1.4—2018-AMD1: Structural Welding Code – Steel Reinforcing Bars
AWS D1.8—2021: Structural Welding Code – Seismic Supplement
AWS QC1 - 2016: Specification for AWS Certification of Welding Inspectors**SDI Standard:**
ANSI/SDI QA/QC—2022: Standard for Quality Control and Quality Assurance for Installation of Steel Deck

1.2 Independence. An approved agency shall be objective, competent and independent from any other entity providing inspection services and from the contractor(s) responsible for

the work being inspected. The agency shall disclose to the building official and the registered design professional in responsible charge possible conflicts of interest so that objectivity can be confirmed.

For an approved agency to be considered independent, it should be able to demonstrate that it is impartial and that it and its personnel are free from undue commercial, financial, and other pressures that might influence their technical judgment. The independent agency should not engage in any activities that may endanger the trust in its independence of judgment and integrity in relation to its activities. *[CBC 1703.1.1, 1703A.1.1, PIN 58]*

1.3 **Quality Assurance Inspector (QAI)/Special Inspector.** The QAI/special inspector shall act under the direction of the architect or structural engineer or both and shall be responsible to the Owner. *[CBC 1704.2, 1704A.2]*

User Note: Quality Assurance Inspector (QAI) in AISC and AISI standards and Special Inspector in the CBC are equivalent. Terms Quality Assurance Inspector (QAI) and Special Inspector are used interchangeably in this document. When material standards require inspections by QAIs they are performed by the approved special Inspectors working for an approved agency employed by the Owner.

1.4 **Observe (O).** Tasks listed as Observe (O) for QA in the steel material standards shall be inspected by the QAI/special inspector on a random basis. Operations that do not interfere with the ability to observe (O) for inspections need not be delayed pending these inspections. Frequency of observations shall be adequate to confirm that the work has been performed in accordance with approved construction documents. *[AISC 360 N5.4, N5.6; AISC 341 J6, J7; AISI S240 D6; CBC 1705.2.7, 1705A.2.7]*

1.5 **Perform (P)**. Tasks listed as Perform (P) for QA in the steel material standards shall be performed for each joint or member by the QAI/special inspector and shall be documented including the part inspected, date inspected, and results of the inspection. *[AISC 360 N5.4, N5.6; AISC 341 J6, J7; AISI S240 D6; CBC 1705.2.7,1705A.2.7]*

User Note: Observe (O) and Perform (P) in the steel material standards are loosely equivalent to periodic and continuous special inspections in the CBC.

2.0 Quality Assurance (QA) Tasks for Structural Steel

2.1 The following table lists common code required quality assurance/special inspections and nondestructive testing for steel.

TABLE 2.1
REQUIRED SPECIAL INSPECTIONS AND TESTS OF STEEL CONSTRUCTION
Quality Assurance (QA) Tasks for Structural Steel

Type	Reference Standards	CBC Reference Sections
Material Identification, Test Reports, and Certifications	AISC 360 N3.2 & N5.2	1705.2.1, 1705A.2.1, 2201.2, 2201A.2
Welding	AISC 360: N5.2, N5.4, Tables N5.4-1, N5.4-2, N5.4-3	1705.2.1, 705A.2.1, 1705.2.7, 1705A.2.7
High Strength Bolts Tests and Inspections	AISC 360: N5.2, N5.6, Tables N6.4-1, N6.4-2, N5.4-3	1705.2.1, 705A.2.1, 1705.2.8, 1705A.2.8, 2216, 2216A
Nondestructive Testing (NDT) of Welded Joints	AISC 360: N5.5	1705.2.7, 1705A.2.7
Anchor Rods and Other Embeds Supporting Structural Steel	AISC 360: N5.8 ACI 318:	1705.3, 1705A.3, 2201.5, 2201A.5
Fabricated Steel or Erected Steel Frame	AISC 360: N5.8	1705.2.1, 705A.2.1, 1705.2.4, 1705A.2.4, 1705.2.6, 1705A.2.6 2201.1, 2201A.1 2207.1, 2207A.1 2210.1, 2210A.1
Inspection of Galvanized Structural Steel Main Members	AISC 360: N5.7	2201.3, 2201A.3
Shop- or Field-applied Coatings	AISC 360: N8	2201.3, 2201A.3
Installation of Steel deck	SDI QA/QC: D2 and Appendix 1	1705.2.3, 1705A.2.3, 2208.1, 2208A.2
Cold-formed Steel Light-frame Construction, Including Basic Frame Inspection	AISI S240: Chapter D, E5; AISI S100: B7	1705.2.5, 1705A.2.5, 2204.1, 2204A.1, 2206.1, 2206A.1, 2209.1, 2206A.1

2.2 The following table lists common code required quality assurance/special inspections and nondestructive testing for steel specific to the structural steel seismic force resisting system, in addition to those in Table 2.1.

TABLE 2.2 REQUIRED SPECIAL INSPECTIONS AND TESTS OF STEEL CONSTRUCTION Quality Assurance (QA) Tasks for Structural Steel		
Additional Quality Assurance (QA) Tasks for Structural Steel Seismic Force Resisting System		
Type	**Reference Standards**	**CBC Reference Sections**
Material Identification, Test Reports, and Certifications	AISC 360 N3.2; AISC 341 J3.2, J3.3, J3.4	1705.13.1, 1705.13.2, 1705A.13.1,1705A13.2, 2201.2, 2201A.2
Welding Inspection and nondestructive Testing	AISC 360 Chapter N; AISC 341 Section J7, Table J7.1; AWS D1.8	1705.13.1, 1705.13.2, 1705A.13.1,1705A13.2, 1705.14.1, 1705A.14.1, 1705.14.2, 1705A.14.2
Inspection of High Strength Bolts	AISC 360 Chapter N	1705.13.1, 1705.13.2, 1705A.13.1,1705A13.2
Inspection of Composite Structures	AISC 360 Chapter N; AISC 341 Section J10, Tables J10.1, J10.2, J10.3	1705.13.1, 1705.13.2, 1705A.13.1,1705A13.2
Inspection of H-Piles	AISC 341 Section J11, Table J11.1	1810.3.5.3.1, 1810A.3.5.3.1
Cold-formed Steel Light-frame Construction, Including Basic Frame Inspection	AISI S240: Chapter D, E5; AISI S400: G	1705.12.2, 1705A.12.2 1705A.13.3, 1705A.13.3 1705.2.5, 1705A.2.5, 2204.1, 2204A.1, 2206.1, 2206A.1, 2209.1, 2206A.1

3.0 Fabricator and Erector Quality Control (QC) Program

3.1 Quality control for structural steel systems and steel elements of composite members for buildings and other structures shall be provided by the fabricator and erector in accordance with AISC 360 Chapter N. *[AISC 360 N2, CBC 2201.1, 2201A.1, 2202.1, 2202A.1]*

3.2 Quality control for seismic force-resisting systems (SFRS) of structural steel or structural steel acting compositely with reinforced concrete shall be provided by the fabricator and erector in accordance with AISC 341 Chapter J, in addition to those required by AISC 360 Chapter N. *[AISC 341 J2, CBC 2201.1, 2201A.1, 2202.2. 2202A]*

3.3 Except as specified otherwise in the CBC, AISC material standards or instructions to the contrary in the approved construction documents, the trade practices defined in AISC 303 shall govern the fabrication and erection of structural steel. *[CBC 2201.1, 2201A.1, 2202.1, 2202A.1; AISC 360 A2]*

3.4 Quality control for installation of cold-formed steel deck and cold-formed steel diaphragms shall be provided by the installer in accordance with SDI QA/QC. *[CBC 2201.1, 2201A.1, 2208.1, 2208A.1]*

3.5 Quality control for cold-formed steel light-frame construction, including SFRS, shall be provided by the component manufacturer and installer, as applicable, in accordance with AISI S240 Chapter D. *[CBC 104.2, 2201.1, 2201A.1, 2206.1, 2206A]*

3.6 Except as specified otherwise in the CBC, AISI material standards or instructions to the contrary in the approved construction documents, the trade practices defined in AISI S202 shall govern the fabrication and erection of cold-formed steel light-frame construction. *[AISI S240 A6; CBC 104.2, 2201.1, 2201A.1, 2202.1, 2202A.1]*

4.0 Quality Assurance (QA) Inspections or Special Inspections, and Nondestructive Testing

4.1 Quality assurance inspections/special inspections shall be provided by the approved QAI/special inspector working for an approved agency retained by the Owner. Nondestructive testing (NDT) shall be performed by the approved agency responsible for quality assurance. *[AISC 360 N1; AISC 341 J1; AISI S240 D1.2; SDI QA/QC A3*; *CBC 1705.2.1. 1705A.2.1]*

4.2 Special inspections and nondestructive testing of structural steel elements in buildings, structures and portions thereof shall be in accordance with the QA requirements of AISC 360 and CBC Chapter 17 or 17A, as applicable. *[AISC 360 N4, N5; CBC Section 1705.2.1, 1705A.2.1]*

4.3 Special inspections and nondestructive tests of structural welding shall satisfy CBC Section 1705.2.7 or 1705A.2.7, as applicable. Special inspections and tests of high-strength fastener assemblies shall satisfy CBC Section 1705.2.8 or 1705A.2.8, as applicable. Open-web steel joists and joist girders shall satisfy CBC Section 1705.2.4 or 1705A.2.4, as applicable.

4.4 Special inspections and nondestructive testing of seismic force-resisting systems (SFRS) of structural steel or structural steel acting compositely with reinforced concrete shall be in accordance with the QA requirements of AISC 341 Chapter J and CBC Chapter

17 or 17A, as applicable. *[AISC 341, Chapter J; CBC 1705.2.1, 1705A.2.1, 1705.13.1, 1705A.13.1, 1705A.14.1,1705A.14.1]*

4.5 Special inspections and nondestructive testing for cold-formed steel deck and cold-formed steel diaphragms shall be in accordance with the quality assurance requirements of SDI QA/QC Section D2 & Appendix 1, and CBC Section 1705.2.3 or 1705A.2.3, as applicable. *[CBC 2201.1, 2201A.1, 2208.1, 2208A.1, 1705.2.3, 1705A.2.3]*

4.6 Special inspections and nondestructive testing for cold-formed steel light-frame construction, including seismic force resisting system (SFRS), shall be in accordance with the quality assurance requirements of AISI S240 Chapter D and CBC Section 1705.12.2,1705A.12.2, 1705A.13.3 or 1705A.13.3, as applicable.

Basic light frame and quality assurance inspections shall be provided by QAI/special inspector. Coordinated Inspections, as defined in AISI S240 D6.5, are not permitted. *[CBC 104.2, 2201.1, 2201A.1, 2206.1, 2206A.1, 1705.12.2, 1705A.12.2.]*

4.7 Special inspections and tests of cold-formed steel trusses shall satisfy CBC Section 1705.2.5 or 1705A.2.5, as applicable.

5.0 Quality Assurance (QA) Tasks for Structural Steel

5.1 The QAI/special inspector shall review the material test reports and certifications listed in AISC 360 Section N3.2 for compliance with the approved construction documents. *[CBC 2201.2 and 2201A.2; AISC 360 N5.2 and N3.2]*

5.2 Quality assurance inspection tasks shall be performed by the QAI/special inspector in accordance with AISC 360 Sections N5.4, N5.6, and N5.7. *[CBC 1705.2.1 and 1705A.2.1; AISC 360 N5.2]*

5.3 Tasks in AISC 360 Tables N5.4-1 through N5.4-3 and N5.6-1 through N5.6-3 listed for QA inspections shall be performed by the QAI/special inspector to ensure that the work is performed in accordance with the approved construction documents. *[CBC 1705.2.1 and 1705A.2.1; AISC 360 N5.2]*

5.4 Nondestructive Testing (NDT) of Welded Joints. Ultrasonic testing (UT), magnetic particle testing (MT), penetrant testing (PT), and radiographic testing (RT), where required, shall be performed by the QAI/special inspector working for an approved agency in accordance with AWS D1.1/D1.1M and AISC 360 Section N5.5. *[CBC 1705.2.1 & 1705A.2.1; AISC 360 N5.5]*

5.5 Coordinated Inspection specified in AISC 360 Section N.5, Item 3 is not permitted, since only the QA/special inspector is permitted to perform special inspections. AISC 360 Section N6 is not permitted because OSHPD does not approve fabricators. *[CBC 1705.2.1 & 1705A.2.1]*

5.6 The QAI/special inspector shall be on the premises for inspection during the placement of anchor rods and other embeds supporting structural steel for compliance with the approved construction documents. As a minimum, the diameter, grade, type, and length of the anchor rod or embeds, and the extent or depth of embedment into the concrete, shall be verified and documented prior to placement of concrete. *[CBC 1705.2.1 & 1705A.2.1; AISC 360 N5.8]*

5.7 Basic Frame Inspection. The QAI/special inspector shall inspect the fabricated steel or erected steel frame, as applicable, to verify compliance with the details shown on the approved construction documents. The acceptance or rejection of joint details and the correct application of joint details shall be documented. *[CBC Sections 1705.2.1 & 1705A.2.1; AISC 360 N5.8]*

6.0 Quality Assurance (QA) Tasks for Structural Steel Seismic Force Resisting System (SFRS)

6.1 Quality assurance tasks listed in AISC 341 Chapter J are in addition to those required by AISC 360, Chapter N. *[Reference: AISC 341, Chapter J]*

6.2 Special inspection Tasks. Special inspection tasks and documentation for quality assurance for the seismic force-resisting system (SFRS) shall be provided in accordance with the tables in AISC 360 Section N5, AISC 341 Chapter J and CBC Section 1705.2.7 or 1705A.2.7, as applicable. *[CBC 1705.13.1 and 1705A.13.1]*

6.3 Observe (O). Tasks listed as Observe (O) shall be performed at least daily. *[AISC 341 Section J.6]*

6.4 Document (D). The QAI/special inspector shall prepare reports indicating that the work has been performed in accordance with the approved construction documents.

For shop fabrication, the report shall indicate the piece mark of the piece inspected. For field work, the report shall indicate the reference grid lines and floor or elevation inspected. Work not in compliance with the approved construction documents and whether the noncompliance has been satisfactorily repaired shall be noted in the inspection report. *[CBC 1705.13.1 and 1705A.13.1; AISC 341 J6.1 and J7.1]*

6.5 Welding Inspection and Nondestructive Testing. Welding inspection and nondestructive testing shall satisfy the requirements of the AISC 360 Chapter N, AISC 341 Section J7, and AWS D1.8/D1.8M. *[CBC 1705.13.1 and 1705A.13.1; AISC 341 J7]*

6.6 Visual Welding Inspection Documentation. Visual welding inspection documentation after welding shall be performed by the QAI/special inspector. As a minimum, tasks shall be as listed in AISC Table J7.1, where Documentation (D) is required, and CBC Section 1705.2.7 or 1705A.2.7, as applicable. *[CBC 1705.2.7 and 1705A.2.7; AISC 341 J7.1]*

6.7 Nondestructive Testing (NDT) of Welded Joints. In addition to the requirements of AISC 360 Section N5.5, nondestructive testing (NDT) of welded joints shall be as required in

AISC 341 Section J7.2 and CBC Section 1705.2.7 or 1705A.2.7, as applicable. *[CBC 1705.2.7 and 1705A.2.7; AISC 341 J7.2]*

6.8 ***Other Steel Structure Inspections.*** *Other inspections of the steel structure shall satisfy the requirements of AISC 360 Section N5.8 and AISC 341 Section J9. The inspection tasks listed in AISC 3*41 Table J9.1 shall be performed, as applicable. *[CBC 1705.13.1 and 1705A.13.1; AISC 341 J9]*

6.9 Inspection of Composite Structures. Where applicable, inspection of Composite structures shall satisfy the requirements of the AISC 360 Chapter N and AISC 341 Section J10.

Special inspection of structural steel elements used in composite structures shall comply with the requirements of AISC 341 Chapter J. Special inspection of reinforced concrete shall comply with the requirements of ACI 318 and CBC Sections 1705.3 or 1705A.3, as applicable. Special inspection of welded reinforcing steel shall comply with the applicable requirements of Section J7.

The minimum inspection tasks shall be as listed in Tables J10.1 and J10.2, where applicable to the type of composite construction.

In composite structures, the concrete compressive strength shall be tested and documented at the specified age.

6.9 Inspection of H-Piles. Where applicable, special inspection of piling shall satisfy the requirements of AISC 341 Section J11. The inspection tasks listed in Table J11.1 shall be performed as applicable.

7.0 Implementation on HCAI Projects

7.1 Special inspector/quality assurance inspector (QAI) qualifications. Prior to the start of the construction, the approved agencies shall provide written documentation to the building official demonstrating the competence and relevant experience or training of the special inspectors/quality assurance inspector (QAI) who will perform the special inspections and tests during construction. Experience or training shall be considered to be relevant where the documented experience or training is related in complexity to the same type of special inspection or testing activities for projects of similar complexity and material qualities.

The registered design professional in responsible charge and engineers of record involved in the design of the project are permitted to act as an approved agency and their personnel are permitted to act as special inspectors/QAI for the work designed by them, provided they qualify as special inspectors. *[CBC 1704.2.1, 1704A.2.1 and PIN 58]*

7.2 The architect and/or engineer in responsible charge of the work shall prepare and administer a testing, inspection, and observation (TIO) program which shall be submitted to the OSHPD for approval prior to the issuance of the building permit. [CAC 7-141(d)]

7.3 Written evidence verifying independence of approved agency shall be submitted to HCAI along with the TIO program. *[CBC 1703.1.1 and 1703A.1.1]*

7.4 The inspection program shall identify all special inspections to be performed on the project along with approved agency and the individual(s) to perform the special inspections. The special inspections shall include, at a minimum, those special inspections required by applicable sections of the California Building Standards Code. *[CAC 7-141(g)]*

7.5 The testing program shall identify materials and tests to be performed on the project. The approved agency and/or individual(s) to perform each of the required tests shall also be identified. The testing program shall include, at a minimum, those tests required by applicable sections of the California Building Standards Code. *[CAC 7-141(e)]*

7.6 The Testing, Inspection, and Observation (TIO) program shall specify the manner, frequency, duration and reporting of the testing, inspection, and observation of work performed away from the site. *[CAC 7-141(j)]*

7.7 All completed test and inspection reports shall be submitted to the inspector of record, the owner and the architect or engineer in responsible charge by the author of the report. *[CAC 7-141(l)]*

7.8 Administration of construction. The administration of the work of construction, including the testing, inspection, and observation program, shall be under the responsible charge of an architect and structural engineer. *[CAC 7-141(a)]*

7.9 Test reports for structural tests are required to be reviewed and accepted by an independent California licensed structural engineer. *[CBC 1703.4 and 1703A.4]*

7.10 Report requirement. Approved agencies shall keep records of special inspections and tests. The approved agency shall submit reports of special inspections and tests to the building official and to the registered design professional in responsible charge at frequencies required by the approved construction documents or building official. All reports shall describe the nature and extent of inspections and tests, the location where the inspections and tests were performed, and indicate that work inspected or tested was or was not completed in conformance with approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the owner or the owner's authorized agent to the building official. *[CBC 1704.2.4 and 1704A.2.4]*

XX/XX/XXXX

Chris Tokas Date

APPENDIX A
2025 CBSC (AS PROPOSED) and REFERENCE STANDARDS
Selected sections related to this Policy Intent Notice

CALIFORNIA CODE OF REGULATIONS: TITLE 24, PART 1
2025 CALIFORNIA ADMINISTRATIVE CODE (CAC)

CHAPTER 7
SAFETY STANDARDS FOR HEALTH FACILITIES

ARTICLE 4 – CONSTRUCTION

…

7-141. Administration of construction.

(a) The administration of the work of construction, including the testing, inspection and observation program, shall be under the responsible charge of an architect and structural engineer. When a structural engineer is not substantially involved, the architect shall be solely responsible. Where neither structural nor architectural elements are substantially involved, a mechanical or electrical engineer registered in the branch of engineering most applicable to the project may be in responsible charge.

(b) All architects and engineers to whom responsibility has been delegated for preparation of construction documents as listed on the application shall observe the work of construction for their portion of the project. They shall consult with the architect or engineer in responsible charge in the interpretation of the approved construction documents, the preparation of changes to the approved construction documents and deferred submittals and the selection of approved agencies.

(c) The architect or engineer in responsible charge or having delegated responsibility may name one or more persons to act as alternate(s) for observation of the work of construction provided such persons are architects or engineers qualified under these regulations to assume the responsibility assigned.

(d) The architect and/or engineer in responsible charge of the work shall prepare and administer a testing, inspection and observation program which shall be submitted to the Office for approval prior to the issuance of the building permit.

(e) The testing program shall identify materials and tests to be performed on the project. The approved agency and/or individual(s) to perform each of the required tests shall also be identified. The testing program shall include, at a minimum, those tests required by applicable sections of the *California Building Standards Code.*

(f) The inspection program shall include a completed application for inspector(s) of record for the project. If a project has more than one inspector of record, the distribution of responsibilities for the work shall be clearly identified for each inspector of record.

(g) The inspection program shall also identify all special inspections to be performed on the project along with approved agency and the individual(s) to perform the inspections. The special inspections shall include, at a minimum, those special inspections required by applicable sections of the *California Building Standards Code.*

(h) The observation program shall identify each design professional that must, through personal knowledge as defined in Section 7-151, verify that the work is in compliance with the approved construction documents.
(i) The design professionals, contractor or owner/builder, approved agency, and the inspector(s) of record shall verify that the work is in compliance with the approved construction documents in accordance with the requirements for personal knowledge as it applies to each participant. The program shall give specific intervals or project milestones at which such reporting is to occur for each affected participant. Each required observation report shall be documented by a Verified Compliance Report form prepared by each participant and submitted to the Office.
(j) The Testing Inspection and Observation (TIO) program shall specify the manner, frequency, duration and reporting of the testing, inspection, and observation of work performed away from the site.
(k) The testing, inspection and observation program shall include samples of test and inspection reports and provide time limits for the submission of reports.

Exception: Samples of test and inspection reports shall not be required when tests and special inspections are performed by an OSHPD Preapproved Agency (OPAA).

(l) All completed test and inspection reports shall be submitted to the inspector of record, the owner and the architect or engineer in responsible charge by the author of the report.
(m) Changes to the testing, inspection and observation program made subsequent to approval by the office shall be submitted to the office in accordance with Section 7-153.

…

CALIFORNIA CODE OF REGULATIONS: TITLE 24, PART 2
2025 CALIFORNIA BUILDING CODE (CBC)

CHAPTER 1
DIVISION II
SCOPE AND ADMINISTRATION

PART 1 - SCOPE AND APPLICATION

…

[A] 104.2 Determination of compliance. The *building official* shall have the authority to determine compliance with this code, to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures:

1. Shall be in compliance with the intent and purpose of this code.
2. Shall not have the effect of waiving requirements specifically provided for in this code.

…

CHAPTER 2
DEFINITIONS

SECTION 202 - DEFINITIONS

…

[A] CONSTRUCTION DOCUMENTS. Written, graphic and pictorial documents prepared or assembled for describing the design, location and physical characteristics of the elements of a project necessary for obtaining a building *permit*.

…

[BS] SPECIAL INSPECTION. Inspection of construction requiring the expertise of an *approved special inspector* in order to ensure compliance with this code and the approved *construction documents*.

Continuous special inspection. *Special inspection* by the *special inspector* who is present continuously when and where the work to be inspected is being performed.

Periodic special inspection. *Special inspection* by the *special inspector* who is intermittently present where the work to be inspected has been or is being performed ***[OSHPD 1, 1R, 2, 4 & 5]*** *and at the completion of the work.*

…

CHAPTER 17
SPECIAL INSPECTIONS AND TESTS

…

1704.2 Special inspections and tests. Where application is made to the *building official* for construction as specified in Section 105, *or 1.8.4, as applicable*, the *owner* or the *owner's* authorized

agent, other than the contractor, shall employ one or more *approved agencies* to provide *special inspections* and tests during construction on the types of work specified in Section 1705 and identify the *approved agencies* to the *building official*. These *special inspections* and tests are in addition to the inspections by the *building official* that are identified in Section 110.

[OSHPD 1R, 2 & 5] *In addition, the approved agencies shall provide special inspections and tests during construction on the types of work listed under Chapters 14, 15, 17, 18, 19, 20, 21, 22, 23, 24 and 25, and noted in the Test, Inspection and Observation (TIO) program as required by the Office.*

The inspectors shall act under the direction of the architect or structural engineer or both, and be responsible to the Owner. Where California Administrative Code Section 7-115(a) 2 permits construction documents to be prepared under the responsible charge of a mechanical, electrical or civil engineer, inspectors shall be permitted to work under the direction of an engineer in the appropriate branch as permitted therein.

…

1704.2.4 Report requirement. *Approved agencies* shall keep records of *special inspections* and tests. The *approved agency* shall submit reports of *special inspections* and tests to the *building official* and to the *registered design professional in responsible charge* at frequencies required by the approved construction documents or building official. All reports shall describe the nature and extent of inspections and tests, the location where the inspections and tests were performed, and indicate that work inspected or tested was or was not completed in conformance to *approved construction documents*. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the *building official* and to the *registered design professional in responsible charge* prior to the completion of that phase of the work. A final report documenting required *special inspections* and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the *owner* or the *owner's* authorized agent to the *building official*. ***[OSHPD 1R, 2 & 5]*** *Report requirement shall be per 1704A.2.4.*
…

1705.2.1 Structural steel. *Special inspections* and nondestructive testing of *structural steel elements* in *buildings*, *structures* and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360 ***[OSHPD 1R, 2 & 5]*** and this code.

Exception: *Special inspection* of railing systems composed of *structural steel elements* shall be limited to welding inspection of welds at the base of cantilevered rail posts.

[OSHPD 1R, 2 & 5] *The following provisions of AISC 360, Chapter N are not permitted:*

1. *N5, Item 3. (Coordinated Inspection).*
2. *N6 (Approved Fabricators and Erectors).*

User notes: [OSHPD 1R, 2 & 5]

1. *Quality assurance requirements in AISC 360, AISC 341, AISC 358, AISI S240, SDI QA/QC and AISC 370 are equivalent to special inspection and testing requirements in this code and are provided by approved agencies employed by*

the Owner.

2. *Chapter 22 requires the steel fabrication and erection, including quality control, to be in accordance with the AISC 360, AISC 341, AISC 358, AISI S240, SDI QA/QC and AISC 370.*

…

1705.2.3 Cold-formed steel deck. *Special inspections* and qualification of welding *special inspectors* for cold-formed steel floor and *roof deck* shall be in accordance with the quality assurance inspection requirements of SDI QA/QC ***[OSHPD 1R, 2 & 5]*** and this code.

[OSHPD 1R, 2 & 5] *SDI QA/QC Section D3 (Coordinated Inspection) is not permitted.*

…

1705.2.4 Open-web steel joists and joist girders. *Special inspections* of open-web *steel joists* and joist girders in *buildings*, *structures* and portions thereof shall be in accordance with Table 1705.2.4.

1705.2.4.1 Steel joist and joist girder inspection. [OSHPD 1R, 2 & 5] *Special inspection is required during the manufacture and welding of steel joists or joist girders. The approved agency shall verify that proper quality control procedures and tests have been employed for all materials and the manufacturing process and shall perform visual inspection of the finished product. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected joist or joist girder. This mark or tag shall remain on the joist or joist girder throughout the job site receiving and erection process.*

…

1705.2.5 Cold-formed steel trusses spanning 60 feet or greater. Where a cold-formed steel truss clear span is 60 feet (18 288 mm) or greater, the *special inspector* shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the *approved* truss submittal package.

1705.2.5.1 Light-framed steel truss inspection and testing. [OSHPD 1R, 2 & 5] *Regardless of truss span, the manufacture of cold-formed light-framed steel trusses shall be continuously inspected by an approved agency. The approved agency shall verify conformance of materials and manufacture with approved construction documents. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected truss. This mark or tag shall remain on the truss throughout the job site receiving and erection process. Refer to Section 2206.1.3.3 for requirements applicable to manufactured trusses specified therein.*

…

1705.2.7 Special inspections and tests of structural welding. [OSHPD 1R, 2, & 5] *Special inspection and testing (including nondestructive testing) of all shop and field welding operations shall be in accordance with this section and Sections 1705.2.1, 1705.2.2, 1705.13.1, and 1705.14.1, as applicable. Special inspections shall be performed by an approved welding. The minimum requirements for a qualified welding special inspector shall be*

as those for an AWS Certified Welding Inspector (CWI), as defined in the provisions of the AWS QC1 or AWS B5.1.

The welding inspector shall make a systematic daily record of all welds. This record shall include:

1. *Identification marks of welders.*
2. *List of defective welds.*
3. *Manner of correction of defects.*

The welding inspector shall check the material, details of construction and procedure, as well as workmanship of the welds. The special inspector shall verify that the installation of end-welded stud shear connectors are in accordance with the requirements of Section 2216.2 and the approved construction documents. The approved agency shall furnish the architect, structural engineer and the enforcement agency with a verified report that the welding has been done in conformance with AWS D1.1, D1.3, D1.4, D1.6, D1.8, as applicable, and the approved construction documents.

1705.2.8 Special inspection and tests of high-strength fastener assemblies. [OSHPD 1R, 2 & 5] *Special inspections and tests for high-strength fasteners shall be in accordance with this section and Section 2216.1.*

…

1705.12.2 Cold-formed steel light-frame construction. *Periodic special inspection* is required for welding operations of elements of the *main windforce-resisting system*. *Periodic special inspection* is required for screw attachment, bolting, anchoring and other fastening of elements of the *main windforce-resisting system*, including shear walls, braces, *diaphragms*, *collectors* (*drag struts*) and *hold-downs*.

Exception: *Special inspections* are not required for cold-formed steel light-frame shear walls and *diaphragms*, including screwing, bolting, anchoring and other fastening to components of the windforce-resisting system, where either of the following applies:

1. The sheathing is *gypsum board* or *fiberboard*.
2. The sheathing is *wood structural panel* or steel sheets on only one side of the shear wall, shear panel or *diaphragm* assembly and the specified fastener spacing at the panel or sheet edges is more than 4 inches (102 mm) on center (o.c.).

…

1705.13.1 Structural steel. *Special inspections* for seismic resistance shall be in accordance with Section 1705.13.1.1 or 1705.13.1.2, as applicable.

1705.13.1.1 Seismic force-resisting systems. *Special inspections* of structural steel in the *seismic force-resisting systems* in *buildings* and *structures* assigned to *Seismic Design Category* B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** and this code.

Exceptions: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1. In *buildings* and *structures* assigned to *Seismic Design Category* B or C, *special inspections* are not required for structural steel *seismic force-resisting systems* where the response modification coefficient, *R*, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, has been used for design and detailing.
2. In structures assigned to *Seismic Design Category* D, E, or F, *special inspections* are not required for structural steel *seismic force-resisting systems* where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.13.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the *seismic force-resisting systems* of *buildings* and *structures* assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.13.1.1, including struts, *collectors*, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** and this code.

Exceptions: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1. In *buildings* and *structures* assigned to *Seismic Design Category* B or C, *special inspections* of *structural steel elements* are not required for *seismic force-resisting systems* with a response modification coefficient, *R*, of 3 or less.
2. In *structures* assigned to *Seismic Design Category* D, E, or F, *special inspections* of *structural steel elements* are not required for *seismic force-resisting systems* where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. *Special inspection* shall be in accordance with the applicable referenced standard listed in ASCE 7, Table 15.4-1.

…

1705.14 Testing for seismic resistance. Testing for seismic resistance shall be required as specified in Sections 1705.14.1 through 1705.14.4, unless exempted from *special inspections* by the exceptions of Section 1704.2.

1705.14.1 Structural steel. Nondestructive testing for seismic resistance shall be in accordance with Section 1705.14.1.1 or 1705.14.1.2, as applicable.

1705.14.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel in the seismic force-resisting systems in buildings and structures assigned to Seismic Design Category B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** *and this code*.

Exceptions: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing is not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, has been used for design and detailing.
2. In structures assigned to Seismic Design Category D, E, or F, nondestructive testing is not required for structural steel seismic force-

resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.14.1.2 Structural steel elements. Nondestructive testing of structural steel elements in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B, C, D, E or F other than those covered in Section 1705.14.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** *and this code*.

Exceptions: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing of structural steel elements is not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In structures assigned to Seismic Design Category D, E or F, nondestructive testing of structural steel elements is not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. Nondestructive testing of structural steel elements shall be in accordance with the applicable referenced standard listed in ASCE 7, Table 15.4-1

…

CHAPTER 17*A*
SPECIAL INSPECTIONS AND TESTS

…

1704*A*.2 Special inspections and tests. Where application is made to the building official for construction as specified in Section 105, the owner shall employ one or more approved agencies to provide special inspections and tests during construction on the types of work specified in Section 1705*A* and identify the approved agencies to the building official. These special inspections and tests are in addition to the inspections by the building official that are identified in Section 110.

[OSHPD 1 & 4] *The inspectors shall act under the direction of the architect or structural engineer or both, and be responsible to the Owner. Where the California Administrative Code (CAC) Section 7-115 (a) 2 permits construction documents to be prepared under the responsible charge of a mechanical, electrical or civil engineer, inspectors shall be permitted to work under the direction of engineer in appropriate branch as permitted therein.*

Exceptions:

1. Special inspections and tests are not required for construction of a minor nature or as warranted by conditions in the jurisdiction as approved by the building official.

…

1704*A*.2.4 Report requirement. *The inspector(s) of record and approved agencies* shall keep records of *special inspections* and tests. *The inspector(s) of record and approved agency* shall submit reports of *special inspections* and tests to the *building official* and to the *registered design*

professional in responsible charge at frequencies required by the approved *construction documents* or *building official as required by the California Administrative Code.* All reports shall describe the nature and extent of inspections and tests, the location where the inspections and tests were performed, and indicate that work inspected or tested was or was not completed in conformance to *approved construction documents*. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the *building official* and to the *registered design professional in responsible charge* prior to the completion of that phase of the work. A final report documenting required *special inspections* and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the *owner* or the *owner's* authorized agent to the *building official*.

…

1705*A*.2.1 Structural steel. *Special inspections* and nondestructive testing of *structural steel elements* in *buildings*, *structures* and portions thereof shall be in accordance with the quality assurance requirements of AISC 360 *and this code.*

Exception: Special inspection of railing systems composed of structural steel elements shall be limited to welding inspection of welds at the base of cantilevered rail posts.

The following provisions of AISC 360, Chapter N are not permitted:

1. *N5, Item 3 (Coordinated Inspection).*
2. *N6 (Approved Fabricators and Erectors).*

User notes:

1. *Quality assurance requirements in AISC 360, AISC 341, AISC 358, AISI S240, SDI QA/QC and AISC 370 are equivalent to special inspection and testing requirements in this code and are provided by approved agencies employed by the Owner.*
2. *Chapter 22A requires the steel fabrication and erection, including quality control, to be in accordance with the AISC 360, AISC 341, AISC 358, AISI S240, SDI QA/QC and AISC 370.*

…

1705*A*.2.3 Cold-formed steel deck. *Special inspections* and qualification of welding *special inspectors* for cold-formed steel floor and *roof deck* shall be in accordance with the quality assurance requirements of SDI QA/QC *and this code*.

[OSHPD 1 & 4] *SDI QA/QC Section D3 (Coordinated Inspection) is not permitted.*

1705A.2.4 Open-web steel joists and joist girders. *Special inspections* of open-web *steel joists* and joist girders in *buildings*, *structures* and portions thereof shall be in accordance with Table 1705*A*.2.4.

1705A.2.4.1 Steel joist and joist girder inspection. *Special inspection is required during the manufacture and welding of steel joists or joist girders. The approved agency*

shall verify that proper quality control procedures and tests have been employed for all materials and the manufacturing process and shall perform visual inspection of the finished product. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected joist or joist girder. This mark or tag shall remain on the joist or joist girder throughout the job site receiving and erection process.

1705A.2.5 Cold-formed steel trusses spanning 60 feet or greater. Where a cold-formed steel truss clear span is 60 feet (18 288 mm) or greater, the *special inspector* shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the *approved* truss submittal package.

1705A.2.5.1 Light-framed steel truss inspection and testing. *Regardless of truss span, the manufacture of cold-formed light framed steel trusses shall be continuously inspected by an approved agency. The approved agency shall verify conformance of materials and manufacture with approved construction documents. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected truss. This mark or tag shall remain on the truss throughout the job site receiving and erection process. Refer to Section 2206A.1.3.3 for requirements applicable to manufactured trusses specified therein.*

…

1705A.2.7 Special inspections and tests of structural welding. *Special inspection and testing (including nondestructive testing) of all shop and field welding operations shall be in accordance with this section, and Sections 1705A.2.1,1705A.2.2, 1705A.13.1, and 1705A.14.1, as applicable. Special inspections shall be performed by an approved welding inspector The minimum requirements for a qualified welding inspector shall be as those for an AWS certified welding inspector (CWI), as defined in the provisions of the AWS QC1 or AWS B5.1.*

The welding inspector shall make a systematic daily record of all welds. In addition to other required records, this record shall include:

1. *Identification marks of welders.*
2. *List of defective welds.*
3. *Manner of correction of defects.*

The welding inspector shall check the material, details of construction and procedure, as well as workmanship of the welds. The special inspector shall verify that the installation and testing of end-welded stud shear connectors is in accordance with the requirements of Section 2216A.2 and the approved construction documents. The approved agency shall furnish the architect, structural engineer and the enforcement agency with a verified report that the welding has been done in conformance with AWS D1.1, D1.3, D1.4, D1.6, D1.8, as applicable, and the approved construction documents.

1705A.2.8 Special inspection and tests of high-strength fastener assemblies. *Special inspections and tests for high-strength fasteners shall be in accordance with this section and Section 1705A.2.1. High strength bolts, nuts and washers shall be sampled and tested by an*

*approved agency for conformance with the requirements of applicable ASTM standards **[OSHPD 1 & 4]** and in accordance with Section 2216A.1.*

…

1705A.12.2 Cold-formed steel light-frame construction. *Periodic special inspection* is required for welding operations of elements of the *main windforce-resisting system*. *Periodic special inspection* is required for screw attachment, bolting, anchoring and other fastening of elements of the *main windforce-resisting system*, including shear walls, braces, *diaphragms*, *collectors* (*drag struts*) and *hold-downs*.

…

1705*A*.13 Special inspections for seismic resistance. *Special inspections* for seismic resistance shall be required as specified in Sections 1705*A*.13.1 through 1705*A*.13.9, unless exempted by the exceptions of Section 1704*A*.2.

1705*A*.13.1 Structural steel. *Special inspections* for seismic resistance shall be in accordance with Section 1705*A*.13.1.1 or 1705*A*.13.1.2, as applicable.

1705*A*.13.1.1 Seismic force-resisting systems. *Special inspections* of structural steel in the *seismic force-resisting systems* in *buildings* and *structures* assigned to *Seismic Design Category* D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 *and this code*.

1705A.13.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the *seismic force-resisting systems* of *buildings* and *structures* assigned to *Seismic Design Category* D, E or F other than those covered in Section 1705A.13.1.1, including struts, *collectors*, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 *and this code.*

…

1705*A*.14 Testing for seismic resistance. Testing for seismic resistance shall be required as specified in Sections 1705*A*.14.1 through 1705*A*.14.4, unless exempted from special inspections by the exception of Section 1704*A*.2.

1705*A*.14.1 Structural steel. Nondestructive testing for seismic resistance shall be in accordance with Section 1705*A*.14.1.1 or 1705*A*.14.1.2, as applicable.

1705*A*.14.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel in the *seismic force-resisting systems* in *buildings* and *structures* assigned to *Seismic Design Category* D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 *and this code.*

1705*A*.14.1.2 Structural steel elements. Nondestructive testing of *structural steel elements* in the *seismic force-resisting systems* of *buildings* and *structures* assigned to *Seismic Design Category* D, E or F other than those covered in Section 1705*A*.14.1.1, including struts, *collectors*, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 *and this code.*

…

CHAPTER 22
STEEL

SECTION 2201 - GENERAL

2201.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel construction.

…

2201.2 Identification. Identification of steel members shall be in accordance with the applicable referenced standards within this chapter. Other steel furnished for structural load-carrying purposes shall be identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Where the steel grade is not readily identifiable from marking and test records, the steel shall be tested to verify conformity to such standards.

…

SECTION 2202 - STRUCTURAL STEEL AND COMPOSITE STRUCTURAL STEEL AND CONCRETE

2202.1 General. The design, fabrication and erection of *structural steel elements* and composite structural steel and concrete elements in *buildings*, *structures* and portions thereof shall be in accordance with AISC 360.

…

SECTION 2206—COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

2206.1 Structural framing. For cold-formed steel *light-frame construction*, the design and installation of the following structural framing systems, including their members and connections, shall be in accordance with AISI S240, and Sections 2206.1.1 through 2206.1.3, as applicable:

1. Floor and roof systems.
2. Structural walls.
3. Shear walls, strap-braced walls and diaphragms that resist in-plane lateral loads.
4. Trusses.

…

SECTION 2208 - STEEL DECK

2208.1 Steel decks. The design and construction of cold-formed steel floor and roof decks and composite slabs of concrete and steel deck shall be in accordance with SDI SD. The design of cold-

formed steel diaphragms shall be in accordance with additional provisions of AISI S310, as applicable.

[OSHPD 1R, 2 & 5] *The base material thickness of the steel deck shall not be less than 0.0359 inch (0.9 mm) (20 gage).*

…

CHAPTER 22A
STEEL

SECTION 2201*A* – GENERAL

2201*A*.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel construction.

…

2201*A*.2 Identification. Identification of steel members shall be in accordance with the applicable referenced standards within this chapter. Other steel furnished for structural load-carrying purposes shall be identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Where the steel grade is not readily identifiable from marking and test records, the steel shall be tested to verify conformity to such standards.

…

SECTION 2202*A* - STRUCTURAL STEEL AND COMPOSITE STRUCTURAL STEEL AND CONCRETE

2202*A*.1 General. The design, fabrication and erection of *structural steel elements* and composite structural steel and concrete elements in *buildings*, *structures* and portions thereof shall be in accordance with AISC 360.

…

SECTION 2206*A* - COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

2206*A*.1 Structural framing. For cold-formed steel *light-frame construction*, the design and installation of the following structural framing systems, including their members and connections, shall be in accordance with AISI S240, and Sections 2206*A*.1.1 through 2206*A*.1.3, as applicable:

1. Floor and roof systems.
2. Structural walls.
3. Shear walls, strap-braced walls and diaphragms that resist in-plane lateral loads.
4. Trusses.

…

SECTION 2208*A* - STEEL DECK

2208*A*.1 Steel decks. The design and construction of cold-formed steel floor and roof decks and composite slabs of concrete and steel deck shall be in accordance with SDI SD. The design of cold-formed steel diaphragms shall be in accordance with additional provisions of AISI S310, as applicable. *The base material thickness of steel deck shall not be less than 0.0359 inch (0.9 mm) (20 gage).*

…

ANSI/AISC 360-22
Specification for Structural Steel Buildings

…

CHAPTER N
QUALITY CONTROL AND QUALITY ASSURANCE

This chapter addresses minimum requirements for quality control, quality assurance, and nondestructive testing for structural steel systems and steel elements of composite members for buildings and other structures.

N1. GENERAL PROVISIONS

Quality control (QC), as specified in this chapter, shall be provided by the fabricator and erector. Quality assurance (QA), as specified in this chapter, shall be provided by others when required by the authority having jurisdiction (AHJ), applicable building code, purchaser, owner, or engineer of record (EOR), and when required, responsibilities shall be specified in the contract documents. Nondestructive testing (NDT) shall be performed by the agency or firm responsible for quality assurance, except as permitted in accordance with Section N6.

…

N3. FABRICATOR AND ERECTOR DOCUMENTS

1. Submittals for Steel Construction

The fabricator or erector shall submit the following documents for review by the EOR or the EOR's designee, in accordance with *Code of Standard Practice* Section 4.4, prior to fabrication or erection, as applicable:

(a) Fabrication documents, unless fabrication documents have been furnished by others
(b) Erection documents, unless erection documents have been furnished by others

2. Available Documents for Steel Construction

The following documents shall be available in electronic or printed form for review by the EOR or the EOR's designee prior to fabrication or erection, as applicable, unless otherwise required in the construction documents to be submitted:

(a) For main structural steel elements, copies of material test reports in accordance with Section A3.1.
(b) For steel castings and forgings, copies of material test reports in accordance with Section A3.2.
(c) For fasteners, copies of manufacturer's certifications in accordance with Section A3.3.
(d) For anchor rods and threaded rods, copies of material test reports in accordance with Section A3.4.

(e) For welding consumables, copies of manufacturer's certifications in accordance with Section A3.5.
(f) For headed stud anchors, copies of manufacturer's certifications in accordance with Section A3.6.
(g) Manufacturer's product data sheets or catalog data for welding filler metals and fluxes to be used. The data sheets shall describe the product, limitations of use, recommended or typical welding parameters, and storage and exposure requirements, including baking, if applicable.
(h) Welding procedure specifications (WPS).
(i) Procedure qualification records (PQR) for WPS that are not prequalified in accordance with *Structural Welding Code—Steel* (AWS D1.1/D1.1M), hereafter referred to as AWS D1.1/D1.1M, or *Structural Welding Code—Sheet Steel* (AWS D1.3/D1.3M), as applicable.
(j) Welding personnel performance qualification records (WPQR) and continuity records.
(k) Fabricator's or erector's, as applicable, written QC manual that shall include, as a minimum, the following:
(1) Material control procedures
(2) Inspection procedures
(3) Nonconformance procedures
(l) Fabricator's or erector's, as applicable, QCI qualifications.
(m) Fabricator NDT personnel qualifications, if NDT is performed by the fabricator.

…

N5. MINIMUM REQUIREMENTS FOR INSPECTION OF STRUCTURAL STEEL BUILDINGS

1. Quality Control

QC inspection tasks shall be performed by the fabricator's or erector's QCI, as applicable, in accordance with Sections N5.4, N5.6, and N5.7.

Tasks in Tables N5.4-1 through N5.4-3 and Tables N5.6-1 through N5.6-3 listed for QC are those inspections performed by the QCI to ensure that the work is performed in accordance with the construction documents.

For QC inspection, the applicable construction documents are the fabrication documents and the erection documents, and the applicable referenced specifications, codes, and standards.

2. Quality Assurance

The QAI shall review the material test reports and certifications as listed in Section N3.2 for compliance with the construction documents.

QA inspection tasks shall be performed by the QAI in accordance with Sections N5.4, N5.6, and N5.7.

Tasks in Tables N5.4-1 through N5.4-3 and N5.6-1 through N5.6-3 listed for QA are those inspections performed by the QAI to ensure that the work is performed in accordance with the construction documents.

Concurrent with the submittal of such reports to the AHJ, EOR, or owner, the QA agency shall submit to the fabricator and erector the following:

(a) Inspection reports

(b) NDT reports

…

4. Inspection of Welding

Observation of welding operations and visual inspection of in-process and completed welds shall be the primary method to confirm that the materials, procedures, and workmanship are in conformance with the construction documents.

As a minimum, welding inspection tasks shall be in accordance with Tables N5.4-1, N5.4-2, and N5.4-3. In these tables, the inspection tasks are as follows:

(a) Observe (O): The inspector shall observe these items on a random basis. Operations need not be delayed pending these inspections.

(b) Perform (P): These tasks shall be performed for each welded joint or member.

Table N5.4-1
Inspection Tasks Prior to Welding

Inspection Tasks Prior to Welding	QC	QA
Welder qualification records and continuity records	P	O
WPS available	P	P
Manufacturer certifications for welding consumables available	P	P
Material identification (type/grade)	O	O
Welder identification system • Fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. • Die stamping of members subjected to fatigue shall be prohibited unless approved by the engineer of record.	O	O
Fit-up of groove welds (including joint geometry) • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable)	O	O
Fit-up of CJP groove welds of HSS T-, Y-, and K-connections without backing (including joint geometry) • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	P	O
Configuration and finish of access holes	O	O
Fit-up of fillet welds • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location)	O	O
Check welding equipment	O	–

TABLE N5.4-2
Inspection Tasks During Welding

Inspection Tasks During Welding	QC	QA
Control and handling of welding consumables • Packaging • Exposure control	O	O
No welding over cracked tack welds	O	O
Environmental conditions • Wind speed within limits • Precipitation and temperature	O	O
WPS followed • Settings on welding equipment • Travel speed • Selected welding materials • Shielding gas type/flow rate • Preheat applied • Interpass temperature maintained (min./max.) • Proper position (F, V, H, OH)	O	O
Welding techniques • Interpass and final cleaning • Each pass within profile limitations • Each pass meets quality requirements	O	O
Placement and installation of steel headed stud anchors	P	P

TABLE N5.4-3
Inspection Tasks After Welding

Inspection Tasks After Welding	QC	QA
Welds cleaned	O	O
Size, length, and location of welds	P	P
Welds meet visual acceptance criteria • Crack prohibition • Weld/base-metal fusion • Crater cross section • Weld profiles • Weld size • Undercut • Porosity	P	P
Arc strikes	P	P
k-area[a]	P	P
Weld access holes in rolled heavy shapes and built-up heavy shapes[b]	P	P
Backing removed and weld tabs removed (if required)	P	P
Repair activities	P	P
Document acceptance or rejection of welded joint or member[c]	P	P
No prohibited welds have been added without the approval of the engineer of record	O	O

[a]When welding of doubler plates, continuity plates, or stiffeners has been performed in the *k*-area, visually inspect the web *k*-area for cracks within 3 in. (75 mm) of the weld.
[b]After rolled heavy shapes (see Section A3.1d) and built-up heavy shapes (see Section A3.1e) are welded, visually inspect the weld access hole for cracks.
[c]Die stamping of members subjected to fatigue shall be prohibited unless approved by the engineer of record.

5. Nondestructive Testing of Welded Joints

5a. Procedures

Ultrasonic testing (UT), magnetic particle testing (MT), penetrant testing (PT), and radiographic testing (RT), where required, shall be performed by QA in accordance with AWS D1.1/D1.1M.

5b. CJP Groove Weld NDT

For structures in risk category III or IV, as defined in ASCE/SEI 7, UT shall be performed by QA on all complete-joint-penetration (CJP) groove welds subjected to transversely applied tension loading in butt, T-, and corner joints, in material 5/16 in. (8 mm) thick or greater. For structures in risk category II, UT shall be performed by QA on 10% of CJP groove welds in butt, T-, and corner joints subjected to transversely applied tension loading, in materials 5/16 in. (8 mm) thick or greater.

5c. Welded Joints Subjected to Fatigue

When required by Appendix 3, Table A-3.1, welded joints requiring weld soundness to be established by radiographic or ultrasonic inspection shall be tested by QA as prescribed. Reduction in the rate of UT is prohibited.

5d. Ultrasonic Testing Rejection Rate

The ultrasonic testing rejection rate shall be determined as the number of welds containing defects divided by the number of welds completed. Welds that contain acceptable discontinuities shall not be considered as having defects when the rejection rate is determined. For evaluating the rejection rate of continuous welds over 3 ft (1 m) in length where the effective throat is 1 in. (25 mm) or less, each 12 in. (300 mm) increment or fraction thereof shall be considered as one weld. For evaluating the rejection rate on continuous welds over 3 ft (1 m) in length where the effective throat is greater than 1 in. (25 mm), each 6 in. (150 mm) of length, or fraction thereof, shall be considered one weld.

5e. Reduction of Ultrasonic Testing Rate

For projects that contain 40 or fewer welds, there shall be no reduction in the ultrasonic testing rate. The rate of UT is permitted to be reduced if approved by the EOR and the AHJ. Where the initial rate of UT is 100%, the NDT rate for an individual welder or welding operator is permitted to be reduced to 25%, provided the rejection rate, the number of welds containing unacceptable defects divided by the number of welds completed, is demonstrated to be 5% or less of the welds tested for the welder or welding operator. A sampling of at least 40 completed welds shall be made for such reduced evaluation on each project.

5f. Increase in Ultrasonic Testing Rate

For structures in risk category II and higher (where the initial rate for UT is 10%) the NDT rate for an individual welder or welding operator shall be increased to 100% should the rejection rate (the number of welds containing unacceptable defects divided by the number of welds completed) exceed 5% of the welds tested for the welder or welding operator. A sampling of at least 20 completed welds on each project shall be made prior to implementing such an increase. If the rejection rate for the welder or welding operator falls to 5% or less on the basis of at least 40 completed welds, the rate of UT may be decreased to 10%.

5g. Documentation

All NDT performed shall be documented. For shop fabrication, the NDT report shall identify the tested weld by piece mark and location in the piece. For field work, the NDT report shall identify the tested weld by location in the structure, piece mark, and location in the piece.

When a weld is rejected on the basis of NDT, the NDT record shall indicate the location of the defect and the basis of rejection.

6. Inspection of High-Strength Bolting

Observation of bolting operations shall be the primary method used to confirm that the materials, procedures, and workmanship incorporated in construction are in conformance with the construction documents and the provisions of the RCSC *Specification*.

(a) For snug-tight joints, pre-installation verification testing as specified in Table N5.6-1 and monitoring of the installation procedures as specified in Table N5.6-2 are not applicable. The QCI and QAI need not be present during the installation of fasteners in snug-tight joints.
(b) For pretensioned joints and slip-critical joints, when the installer is using the turn-of-nut or combined method with matchmarking techniques, the direct tension-indicator method, or the twist-off-type tension control bolt method, monitoring of bolt pretensioning procedures shall be as specified in Table N5.6-2. The QCI and QAI need not be present during the installation of fasteners when these methods are used by the installer.
(c) For pretensioned joints and slip-critical joints, when the installer is using the turn-of-nut or combined method without matchmarking, or the calibrated wrench method, monitoring of bolt pretensioning procedures shall be as specified in Table N5.6-2. The QCI and QAI shall be engaged in their assigned inspection duties during installation of fasteners when these methods are used by the installer.

As a minimum, bolting inspection tasks shall be in accordance with Tables N5.6-1, N5.6-2, and N5.6-3. In these tables, the inspection tasks are as follows:

(a) Observe (O): The inspector shall observe these items on a random basis. Operations need not be delayed pending these inspections.
(b) Perform (P): These tasks shall be performed for each bolted connection.

TABLE N5.6-1
Inspection Tasks Prior to Bolting

Inspection Tasks Prior to Bolting	QC	QA
Manufacturer's certifications available for fastener materials	O	P
Fasteners marked in accordance with ASTM requirements	O	O
Correct fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	O	O
Correct bolting procedure selected for joint detail	O	O
Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	O	O
Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	P	O
Protected storage provided for bolts, nuts, washers, and other fastener components	O	O

TABLE N5.6-2
Inspection Tasks During Bolting

Inspection Tasks During Bolting	QC	QA
Fastener assemblies placed in all holes, and washers and nuts are positioned as required	O	O

Joint brought to the snug-tight condition prior to the pretensioning operation	O	O
Fastener component not turned by the wrench prevented from rotating	O	O
Fasteners are pretensioned in accordance with the RCSC *Specification*, progressing systematically from the most rigid point toward the free edges	O	O

TABLE N5.6-3
Inspection Tasks After Bolting

Inspection Tasks After Bolting	QC	QA
Document acceptance or rejection of bolted connections	P	P

7. Inspection of Galvanized Structural Steel Main Members

Exposed cut surfaces of galvanized structural steel main members and exposed corners of rectangular HSS shall be visually inspected for cracks subsequent to galvanizing. Cracks shall be repaired or the member shall be rejected.

8. Other Inspection Tasks

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The QAI shall be on the premises for inspection during the placement of anchor rods and other embedments supporting structural steel for compliance with the construction documents. As a minimum, the diameter, grade, type, and length of the anchor rod or embedded item, and the extent or depth of embedment into the concrete, shall be verified and documented prior to placement of concrete.

The QAI shall inspect the fabricated steel or erected steel frame, as applicable, to verify compliance with the details shown on the construction documents.

User Note: This includes such items as braces, stiffeners, member locations, and the correct application of joint details at each connection.

The acceptance or rejection of joint details and the correct application of joint details shall be documented.

N7. NONCONFORMING MATERIAL AND WORKMANSHIP

Identification and rejection of material or workmanship that is not in conformance with the construction documents is permitted at any time during the progress of the work. However, this provision shall not relieve the owner or the inspector of the obligation for timely, in-sequence inspections. Nonconforming material and workmanship shall be brought to the immediate attention of the fabricator or erector, as applicable.

Nonconforming material or workmanship shall be brought into conformance or made suitable for its intended purpose as determined by the EOR.

Concurrent with the submittal of such reports to the AHJ, EOR, or owner, the QA agency shall submit to the fabricator and erector:

(a) Nonconformance reports
(b) Reports of repair, replacement, or acceptance of nonconforming items

N8. MINIMUM REQUIREMENTS FOR SHOP- OR FIELD-APPLIED COATINGS

When coating or touch up is specified in the contract documents to be performed by the fabricator or erector, the fabricator or erector, as applicable, shall establish, maintain, and implement QC procedures to ensure the proper application of coatings on structural steel in accordance with the coating manufacturer’s product data sheet.

Unless there is direction to the contrary in the contract documents, observation of the coating process prior to, during, and after the application of the coating shall be the primary method to confirm that the coating material, procedures, and workmanship are in conformance with the construction documents.

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ANSI/AISC 341-22
Seismic Provisions for Structural Steel Buildings

CHAPTER J
QUALITY CONTROL AND QUALITY ASSURANCE

This chapter addresses requirements for quality control and quality assurance.

User Note: All requirements of *Specification* Chapter N also apply, unless specifically modified by these Provisions.

J1. GENERAL PROVISIONS

Quality control (QC), as specified in this chapter, shall be provided by the fabricator and erector. Quality assurance (QA), as specified in this chapter, shall be provided by others when required by the authority having jurisdiction (AHJ), applicable building code, purchaser, owner, or engineer of record, and when required, responsibilities shall be specified in the contract documents. Nondestructive testing (NDT) shall be performed by the agency or firm responsible for QA, except as permitted in accordance with *Specification* Section N6.

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J3. FABRICATOR AND ERECTOR DOCUMENTS

1. Documents to Be Submitted for Steel Construction

In addition to the requirements of *Specification* Section N3.1, the following documents shall be submitted by the fabricator and/or erector for review by the engineer of record (EOR) or the EOR's designee, prior to fabrication or erection of the affected work, as applicable:

(a) Welding procedure specifications.
(b) Copies of the manufacturer's typical certificate of conformance for all electrodes, fluxes, and shielding gasses to be used.
(c) For demand critical welds, manufacturer's certifications that the filler metal meets the supplemental notch toughness requirements, as applicable. When the filler metal manufacturer does not supply such supplemental certifications, the fabricator or erector, as applicable, shall have testing performed and provide the applicable test reports in accordance with AWS D1.8/D1.8M.
(d) Supplemental notch toughness data for intermix testing per AWS D1.8/D1.8M, if applicable.
(e) Manufacturer's product data sheets or catalog data for welding filler metals and fluxes to be used. The product data sheets shall describe the product, limitations of use, welding parameters, and storage and exposure requirements, including backing, if applicable.
(f) Bolt installation procedures.

2. Documents to Be Available for Review for Steel Construction

In addition to the requirements of *Specification* Section N3.2, documents required by the EOR in the contract documents shall be made available by the fabricator or erector for review by the EOR or the EOR's designee prior to fabrication or erection, as applicable.

3. Documents to Be Submitted for Composite Construction

The following documents shall be submitted by the responsible contractor for review by the EOR or the EOR's designee, prior to concrete production or placement, as applicable:

(a) Concrete mix design and test reports for the mix design
(b) Reinforcing steel fabrication documents
(c) Concrete placement sequences, techniques, and restriction

4. Documents to Be Available for Review for Composite Construction

The following documents shall be available from the responsible contractor for review by the EOR or the EOR's designee prior to fabrication or erection, as applicable, unless specified to be submitted:

(a) Material test reports for reinforcing steel
(b) Inspection procedures
(c) Material control procedure
(d) Welder performance qualification records (WPQR) as required by *Structural Welding Code—Reinforcing Steel* (AWS D1.4/D1.4M)
(e) QC Inspector qualifications

J4. QUALITY ASSURANCE AGENCY DOCUMENTS

The agency responsible for quality assurance shall submit the following documents to the authority having jurisdiction, the engineer of record, and the owner or owner's designee.

(a) Quality assurance (QA) agency's written practices for the monitoring and control of the agency's operations. The written practice shall include the following:

(1) The agency's procedures for the selection and administration of inspection personnel, describing the training, experience, and examination requirements for qualification and certification of inspection personnel
(2) The agency's inspection procedures, including general inspection, material controls, and visual welding inspection

(b) Qualifications of management and QA personnel designated for the project
(c) Qualification records for inspectors and nondestructive testing (NDT) technicians designated for the project
(d) NDT procedures and equipment calibration records for NDT to be performed and equipment to be used for the project
(e) For composite construction, concrete testing procedures and equipment

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J6. INSPECTION TASKS

Inspection tasks and documentation for quality control and quality assurance for the seismic force-resisting system (SFRS) shall be as provided in accordance with the tables in *Specification* Section N5. Any tasks listed as Observe (O) shall be performed at least daily.

1. Document (D)

The inspector shall prepare reports indicating that the work has been performed in accordance with the contract documents. The report need not provide detailed measurements for joint fit-up, welding procedure specification settings, completed welds, or other individual items listed in the tables. For shop fabrication, the report shall indicate the piece mark of the piece inspected. For field work, the report shall indicate the reference grid lines and floor or elevation inspected. Work not in compliance with the contract documents and whether the noncompliance has been satisfactorily repaired shall be noted in the inspection report.

J7. WELDING INSPECTION AND NONDESTRUCTIVE TESTING

Welding inspection and nondestructive testing shall satisfy the requirements of the *Specification*, this section, and AWS D1.8/D1.8M.

If welding involves the intermix of FCAW-S weld metal with weld metal from other processes, inspection prior to welding shall include a quality control (QC) task and quality assurance (QA) task to Observe (O) that the use of intermixed weld metals is supported by appropriate documentation in accordance with AWS D1.8/D1.8M.

If a reinforcing or contouring fillet weld is required, it shall be inspected by the quality control inspector and quality assurance inspector as a Perform (P) task.

For each individual welder, fit-up of a minimum of 10 groove welds or all groove welds if less than 10 exist on the project shall be inspected to the Perform (P) task. If the inspector ascertains that fit up of the groove welds meets the requirements of the welding procedure specification (WPS), this task shall be reduced from Perform (P) to Observe (O). Should the fit up not meet the WPS requirements, the task shall be returned to Perform (P) until such time as the fit up meets the welding procedure requirements.

1. Visual Welding Inspection Documentation

Visual welding inspection documentation after welding shall be performed by both QC and QA personnel. As a minimum, tasks shall be as listed in Table J7.1, where Documentation (D) is required as indicated.

TABLE J7.1
Documentation of Visual Inspection After Welding

Documentation of Visual Inspection After Welding	QC		QA	
	Task	Doc.	Task	Doc.
Welds meet visual acceptance criteria – Crack prohibition – Weld/base-metal fusion – Crater cross section	P	D	P	D

– Weld profiles and size – Undercut – Porosity				
k-area[a]	P	D	P	D
Placement of reinforcing or contouring fillet welds (if required)	P	D	P	D
Backing removed, weld tabs removed and finished, and fillet welds added (if required)	P	D	P	D

[a] When welding of doubler plates, continuity plates, or stiffeners has been performed in the *k*-area, visually inspect the web *k*-area for cracks within 3 in. (75 mm) of the weld. The visual inspection shall be performed no sooner than 48 hours following completion of the welding.

Note:
Doc. = documentation

2. NDT of Welded Joints

In addition to the requirements of *Specification* Section N5.5, nondestructive testing (NDT) of welded joints shall be as required in this section.

2a. CJP Groove Weld NDT

Ultrasonic testing (UT) shall be performed on 100% of complete-joint-penetration (CJP) groove welds in materials c in. (8 mm) thick or greater. UT in materials less than 5/16 in. (8 mm) thick is not required. Welds shall be inspected by UT in compliance with AWS D1.8/D1.8M.

Magnetic particle testing (MT) shall be performed on 25% of all beam-to-column CJP groove welds. Welds shall be inspected by MT in compliance with AWS D1.8/D1.8M.

For ordinary moment frames in structures in risk categories I or II, UT and MT of CJP groove welds shall be required only for demand critical welds.

The rate of UT and MT is permitted to be reduced in accordance with Sections J7.2g and J7.2h, respectively.

2b. PJP Groove Weld NDT

UT shall be performed using written procedures and UT technicians qualified in accordance with AWS D1.8/D1.8M. Weld joint mock-ups used to qualify procedures and technicians shall include at least one single-bevel partial-joint-penetration (PJP) groove welded joint and one double-bevel PJP groove welded joint, detailed to provide transducer access limitations similar to those to be encountered at the weld faces and by the column web.

Rejection of discontinuities outside the groove weld throat, and within 5/16 in. (8 mm) of the root, shall be considered false indications in procedure and personnel qualification. Procedures qualified using mock-ups with artificial flaws that are 1/16 in. (2 mm) in their smallest dimension are permitted.

The initial 5/16 in. (8 mm) from the root of the bevel shall be disregarded from the UT evaluation. QC shall perform visual testing (VT) of the root.

UT examination of welds using alternative techniques in compliance with AWS D1.1/D1.1M, Annex O, is permitted.

Weld discontinuities located within the groove weld throat shall be inspected by UT in compliance with AWS D1.8/D1.8M.

The rate of UT is permitted to be reduced in accordance with Section J7.2g.

1. Column Splice Welds

UT is not required for PJP groove welds in column splices designed to meet the requirements of Section D2.5b. UT shall be performed as described in this section on 100% of PJP welds meeting the requirements of Sections E3.6g.2 and E3.6g.4.

2. Column-to-Base Plate Welds

UT shall be performed by QA on 100% of PJP groove welds in column-to-base plate welds.

3. Alternative Approach to UT

When requested by the fabricator or erector and approved by the engineer of record, as an alternative to performing UT on PJP welds, a combination of VT and MT is permitted to be used in accordance with written examination procedures.

2c. Base Metal NDT for Lamellar Tearing and Laminations

After joint completion, base metal thicker than 12 in. (38 mm) loaded in tension in the through-thickness direction in T- and corner-joints, where the connected material is greater than 1 ½ in. (19 mm) and contains CJP groove welds, shall be ultrasonically tested for discontinuities behind and adjacent to the fusion line of such welds. Any base metal discontinuities found within $t/4$ of the steel surface shall be accepted or rejected on the basis of criteria of AWS D1.1/D1.1M, Table 8.2, where t is the thickness of the part subjected to the through-thickness strain.

2d. Beam Cope and Weld Access Hole NDT

At welded splices and connections, thermally cut surfaces of beam copes and weld access holes shall be tested using magnetic particle testing or penetrant testing, when the flange thickness exceeds 12 in. (38 mm) for rolled shapes, or when the web thickness exceeds 12 in. (38 mm) for built-up shapes.

2e. Reduced Beam Section Repair NDT

MT shall be performed on any weld and adjacent area of the reduced beam section (RBS) cut surface that has been repaired by welding, or on the base metal of the RBS cut surface if a sharp notch has been removed by grinding.

2f. Weld Tab Removal Sites

At the end of welds where weld tabs have been removed, MT shall be performed on the same joints receiving UT as required under Section J7.2a. Except for demand critical welds, the rate of MT is permitted to be reduced in accordance with Section J7.2h. MT of continuity plate weld tab removal sites is not required.

2g. Reduction of Percentage of Ultrasonic Testing

The percentage of UT is permitted to be reduced in accordance with *Specification* Section N5.5e, except no reduction is permitted for demand critical welds.

2h. Reduction of Percentage of Magnetic Particle Testing

The percentage of MT on CJP groove welds is permitted to be reduced if approved by the engineer of record and the authority having jurisdiction. The MT rate for an individual welder or welding operator is permitted to be reduced to 10%, provided the reject rate is demonstrated to be 5% or less of the welds tested for the welder or welding operator. A sampling of at least 20 completed welds for a job shall be made for such reduction evaluation. Reject rate is the number of welds containing rejectable defects divided by the number of welds completed. This reduction is prohibited on welds at repair sites, weld tab removal sites for demand critical welds, backing removal sites, and weld access holes.

J8. INSPECTION OF HIGH-STRENGTH BOLTING

Bolting inspection shall satisfy the requirements of *Specification* Section N5.6.

J9. OTHER STEEL STRUCTURE INSPECTIONS

Other inspections of the steel structure shall satisfy the requirements of *Specification* Section N5.8 and this section. The inspection tasks listed in Table J9.1 shall be performed, as applicable.

TABLE J9.1
Other Inspection Tasks

Other Inspection Tasks	QC		QA	
	Task	Doc.	Task	Doc.
RBS requirements, if applicable • Contour and finish • Dimensional tolerances	P	D	P	D
Protected zone—no holes or unapproved attachments made by fabricator or erector, as applicable	P	D	P	D

Note:
Doc. = documentation

J10. INSPECTION OF COMPOSITE STRUCTURES

Where applicable, inspection of composite structures shall satisfy the requirements of the *Specification* and this section. These inspections shall be performed by the responsible contractor's quality control personnel and by quality assurance personnel. Inspection of structural steel elements used in composite structures shall comply with the requirements of this chapter. Inspection of reinforced concrete shall comply with the requirements of ACI 318, and inspection of welded reinforcing steel shall comply with the applicable requirements of Section J7.

The minimum inspection tasks shall be as listed in Tables J10.1 and J10.2, where applicable to the type of composite construction.

In composite structures, the concrete compressive strength shall be tested and documented at the specified age.

TABLE J10.1
Inspection of Composite Structures
Prior to Concrete Placement

Inspection of Composite Structures Prior to Concrete Placement	QC		QA	
	Task	Doc.	Task	Doc.
Material identification of reinforcing steel (type/grade)	O	–	O	–
If welded, determination of carbon equivalent for reinforcing steel other than ASTM A706/A706M	O	–	O	–
Proper reinforcing steel size, spacing, and orientation	O	–	O	–
Reinforcing steel has not been rebent in the field	O	–	O	–
Reinforcing steel has been tied and supported as required	O	–	O	–
Required reinforcing steel clearances have been provided	O	–	O	–
Composite member has required size	O	–	O	–

Note:
Doc. = documentation
– = indicates no documentation is required

TABLE J10.2
Inspection of Composite Structures
During Concrete Placement

Inspection of Composite Structures During Concrete Placement	QC		QA	
	Task	Doc.	Task	Doc.
Concrete: Material identification (mix design, compressive strength, maximum large aggregate size, maximum slump)	O	D	O	D
Limits on water added at the truck or pump	O	D	O	D
Proper placement techniques to limit segregation	O	–	O	–

Note:
Doc. = documentation
– = indicates no documentation is required

J11. INSPECTION OF H-PILES

Where applicable, inspection of piling shall satisfy the requirements of this section. These inspections shall be performed by both the responsible contractor's quality control personnel and by quality assurance personnel. The inspection tasks listed in Table J11.1 shall be performed as applicable.

TABLE J11.1
Inspection of H-Piles

Inspection of Piling	QC		QA	
	Task	Doc.	Task	Doc.
Protected zone—no holes or unapproved attachments made by the responsible contractor, as applicable	P	D	P	D

Note:
Doc.= documentation

…

APPENDIX B
Frequently Asked Questions (FAQs)

1. **Can we assume that Quality Assurance (QA) requirements in the AISC and AISI Standards are equivalent to Special Inspection and Testing requirements in the CBC Chapters 17 and 17A?**

   Yes. However, requirements in the CBC modify, supplement, or supersede the AISC and AISI Standards, as applicable.

2. **Can we loosely assume that Perform (P) and Observe (O) in AISC and AISI Standards to be equivalent to continuous and periodic inspection requirements, as defined in the CBC Chapter 2?**

   Yes.

3. **Are the Quality Assurance Inspector (QA), Nondestructive Testing (NDT) technician, and coating inspection personnel qualification given in AISC 360 and AISC 341 adequate for Special Inspector or NDT technician qualification.**

   Yes, except that Associate Welding Inspectors (AWIs) are not permitted as special inspectors.

   Reference: CBC Sections 1705.2.7and 1705A.2.7.

4. **Are the special inspectors and test technicians in accordance with HCAI PIN 58 acceptable for steel quality assurance?**

   Yes.

5. **Are the special inspections and tests in accordance with this PIN acceptable for projects based on the CBC 2022 or earlier codes, in-lieu of equivalent requirements in those codes?**

   Yes.