



## Special Inspection Program

- D SPECIAL INSPECTOR-** A qualified person employed or retained by an approved agency and approved by the building official as having the competence necessary to inspect a particular type of construction requiring special inspection.
- D APPROVED AGENCY-** An established and recognized agency that is regularly engaged in conducting tests, furnishing inspections services or furnishing product certification where such agency has been approved by the building official. An approved agency shall be objective, competent and independent from the contractor doing the work.

Special inspections, as required by [Chapter 17 of the California Building Code](#) is the monitoring, testing, and inspections of critical building components and materials that contribute to the overall structural integrity and safety of the structure. These inspections are performed by qualified and certified professionals, ensuring that the construction and installation of these critical elements adhere to the relevant building codes and standards, thereby promoting public safety and structural reliability

When an application is made to the Building Official for construction, as specified in Section 105, or 1.8.4, as applicable and chapter 17 of the California Building Code requires special inspections. The owner or the owner's authorized agent, other than the contractor, shall employ one or more approved agencies to provide special inspection and testing during the construction process.

The registered design professional in responsible charge for the project shall clearly indicate the design parameters, material selection and where special inspection is necessary in accordance with the code. This information shall be presented in a "[Statement of Special Inspections](#)" which outlines the special inspections to be performed, and the corresponding frequencies (continuous or periodic). This document shall be completed and signed by the design professional, as well as the owner, or owner's authorized agent and imprinted on the first page of the structural plans. This ensures that the necessary special inspections are clearly identified and documented, promoting transparency and compliance with the building codes and regulations throughout the construction process.

Special inspections and tests required by Chapter 17 of the California Building Code are done in addition to the standard inspections conducted by the City of Downey Building Division per section 110 California Building Code, and the required structural observations conducted by the licensed design professional required by Section 1704.6, they do not take the place of them.

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**All special inspectors who perform work in the City of Downey must be from an Approved Agency and shall first register with the City of Downey Building Division prior to conducting special inspections within this jurisdiction.**

**Minimum required information from agencies seeking approval:**

- Liability Insurance.
- Organization Chart: Chart shall clearly show the functions and lines of authority for staff within the agency. Job descriptions and responsibilities of key personnel shall also be defined.
- Technical Competency of Special Inspectors, such as ICC certification, training, experience, etc.
- Jobsite Safety: Safety procedures addressing perceived risks in each field of inspection shall be implemented by the agency.
- Measuring and Monitoring Resources: The agency shall document policies and procedures on equipment maintenance, including equipment used to perform special inspections and/or verify testing under special inspections in the field.
- Sample Handling: Procedures for the preparation, acquisition, handling and storage of material samples or field-prepared specimens in accordance with applicable codes and/or standards shall be documented by the agency.
- Contents and Format of Inspection Reports.
- Training program for Special Inspectors.
- Supervision/Monitoring/Quality Assurance of Inspectors.
- As an alternate, the agency may consider the International Accreditation Service (IAS) Special Inspection Agency Accreditation Program. The program requires special inspection agencies to operate under a quality management system that is documented in a manual, and also requires the agency to be assessed in the field to determine if it is competent to perform specific inspections or types of inspections. IAS accreditation is based on the assessment of a special inspection agency's inspection procedures, the competence of its inspection staff, and its reporting procedures.

**Special inspection is also required when:**

1. The registered design professional that prepared the construction documents states that special inspection is required or recommended.
2. Where the product listing specifically requires special inspection, such as epoxy anchors.
3. Other cases when specifically required by the building official and/or his or her designee.

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## SPECIAL INSPECTION AND TESTING

The information provided in this document is intended to offer a general overview, and should be used as a preliminary reference only. It is important to note that each project has unique characteristics and requirements, and as such, additional or different criteria may be required based on the specific details and complexity of the project. It is recommended that project stakeholders consult with experienced professionals, review relevant building codes and regulations, and conduct a thorough assessment of the project's specific needs to ensure that all necessary requirements are adequately addressed and met.

1. **Concrete construction.** The special inspection and tests of concrete construction are found in Section 1705.3. See Table 1705.3 for detailed information regarding inspections.
  - A. Reinforcing steel, including prestressing tendons and placement.
    - Inspect type, grade and visual conformity of rebar with specifications.
    - Rebar Condition: Inspect that rebar is undamaged, free of oil, dirt and excessive rust.
    - Rebar Tying and Bracing: Inspect that rebar is adequately tied, chaired and supported to prevent displacement during concrete placement.
    - Rebar Clearance: Inspect minimum and maximum clear distances between bars and minimum structural distance to outside of concrete and to surface of concrete.
    - Rebar Placement: Inspect the size, location and spacing quantity of rebar. Verify bar laps for proper length and stagger, and bar bends for minimum diameter, slope and length.
    - Verify prestressing steel type, size and grade, and tendon fabrication in conformance with acceptable quality standards.
    - Verify that prestressing steel is free of oil, dirt, scale, pitting, excessive rust; is free from damage; and is properly wrapped as required.
    - Verify that prestressing steel tendons and post tensioning ducts are adequately tied, chaired, and supported to prevent displacement during concrete placement and are adequate for intended stresses.
    - Verify minimum concrete cover is maintained between prestressing steel and the surface of concrete.
    - Verify minimum and maximum clear distances between prestressing steel and minimum structural distance to outside of concrete.
  - B. Reinforcing steel welding.
    - Verify that welding of reinforcing steel is approved and properly inspected. Verify proper procedures and weldability of reinforcing steel bars other than ASTM A 706 Periodic inspection single-pass fillet welds, maximum 5/16" Inspect all other welds in accordance with ACI 318 and AWS D1.4.
  - C. Anchors cast in concrete.
  - D. Anchors post-installed in hardened concrete members.

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- E. Verifying use of required design mix.
  - Verify: concrete mix design based on water/cement ratio or laboratory mix design, cement type is as specified, aggregate type, weight, and size are as specified and that admixtures are correct.
- F. Sampling fresh concrete, and performing slump, air content and fresh concrete temperature at time of making specimens for strength tests.
  - Properly handle and place specimens in protected area after preparation and arrange for transportation of specimens to test facility
- G. Proper application techniques for concrete and shotcrete placement.
  - Supervise preparation of nozzleman prequalification tests. (The mock-up panel shall represent the thickest and most congested area of the structure).
  - Examine cores from prequalification test panel for bond between shotcrete and reinforcing steel; bond between adjacent concrete or masonry; evidence of sand streaks, voids, rock pockets, or other defects.
  - Supervise preparation of production test panels to obtain suitable cores for compression testing. Arrange positioning of test panels to represent job conditions
- H. Maintaining specified curing temperature and techniques.
- I. Prestressed concrete, including application of prestressing forces and grouting of bonded prestressing tendons.
  - Check for proper calibration of steel stressing ram.
  - Verify that steel is prestressed at the proper time using proper techniques, including locations, sequence, and with proper records of stressing and steel elongations.
  - Verify final prestressing steel tension immediately after anchorage, as specified.
  - Verify grout mix design based on water/cement ratio or laboratory mix design and correct placement of grout into post tensioning ducts for bonded prestressing
  - tendons.
  - Verify correct trimming of excess tendon length after stressing and correct corrosion protection of stressing pockets.
- J. Erecting precast concrete members.
- K. Precast concrete diaphragm connections or reinforcement at joints
- L. Inspect installation tolerances of precast concrete
- M. Verifying in-situ concrete strength prior to stressing of tendons in post-tensioned concrete, and prior to the removal of shores and forms from beams and structural slabs.
- N. Formwork for shape, location and dimensions of concrete members.
  - Construction Joints: Inspect proper preparation of construction joint surface prior to placing.
  - Embedded Items: Inspect that embedded items are properly spaced, sized and anchored.



2. **Inspection of fabricators.** Required where fabrication of structural load-bearing members and assemblies are being performed on the premises of the fabricator, special inspections of the fabricated items shall be performed during fabrication. Section 1704.2.5.1. does not require special inspections of structural, load-bearing, or lateral load resisting members when work is performed on the premises of a fabricator that has been approved by the building official or approved agency to do such work without special inspection.
3. **Steel construction.** Special inspections and nondestructive testing of steel construction in buildings, structures, and portions thereof shall be in accordance with 1705.2 Steel elements of buildings and structures requiring special inspection and nondestructive testing are found in Section 1705.2.  
**Exception:** Special inspections of the steel fabrication process shall not be required where the fabrication process for the entire building or structure does not include any welding, thermal cutting, or heating operations of any kind.
  - A. Verify mill test reports, steel identification markings, or other documentation of structural steel for compliance with plans and specifications. Verify bolts, nuts and washer materials for conformance
  - B. For structural steel, identification markings to conform to AISC 360.
  - C. For other steel, identification markings to conform to ASTM standards specified in the approved construction documents.
  - D. Manufacturer's certified test reports
4. **Masonry construction.** The special inspection and tests of masonry construction shall be performed in accordance with Sections 1705.4., and the quality assurance program requirements of TMS 402 and TMS 602.
  - A. Vertical Reinforcement:
    - Inspect the placement and alignment of vertical bars and dowels for size, grade and spacing. Inspect length of lap splices, clearances between bars, clearances to masonry units and positioning of steel.
  - B. Horizontal Reinforcement:
    - Inspect horizontal joint reinforcement steel and stagger, bond beam reinforcement bars for size, length of lap splices, dowels, clearances between bars, clearance to masonry units and positioning of steel.
  - C. Ties:
    - Inspect ties in masonry for straightness, embedment, spacing and size.
  - D. Anchor Connections:
    - Inspect the installation of masonry anchor bolts, joist anchors, insert and straps
  - E. Observe grouting operations, verify grout mix, proper technique, mechanical vibration, prepare grout testing samples.
  - F. Verify proper application of dry packing
5. **Wood construction.** The special inspection of prefabricated wood structural elements and assemblies for high-load diaphragms, shall be in accordance with Section 1705.5.

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6. **Soils.** Special inspections and tests of existing site soil conditions, fill placement and load-bearing requirements shall be performed in accordance with 1705.6 and Table 1705.6.
  - A. Verify foundation excavations depth, size, bearing material, proper material as specified, depth into bearing material, and cleaning of bearing surface for conformance with plans and specifications.
  - B. Perform classification and testing of compacted fill materials.
  - C. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.
  - D. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly.
7. **Driven deep foundations.** Special inspection and tests shall be performed during the installation of driven deep foundation elements as specified in Table 1705.7. The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.
8. **Cast-in-place deep foundations.** Special inspection and tests shall be performed during the installation of cast-in-place deep foundation elements as specified in Table 1705.8. The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.
  - A. Verify placement locations and plumbness; confirm element diameters; bell diameters (if applicable); lengths; embedment into bedrock (if applicable); and adequate end-bearing strata capacity.
  - B. Record concrete or grout volumes
9. **Helical pile foundations.** Continuous special inspection shall be performed during the installation of helical pile foundations. The information recorded shall include installation equipment used, pile dimensions, tip elevations, final depth, final installation torque and other pertinent installation data as required by the registered design professional in responsible charge. The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.
10. **Special inspection for wind resistance.** Special inspections for wind resistance shall be in accordance with Sections 1705.12.1 through 1705.12.3 are required for buildings and structures constructed in certain wind exposure categories.
  - A. **Structural wood.** Continuous inspection of field gluing operations of the main wind force resisting system is required. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of components. Special inspection of the main wind force resisting system is not required where fastener spacing of the sheathing is greater than 4 inches on center.
    - Periodic special inspection is required for nailing, bolting, anchoring, and other fastening of elements of the main windforce resisting system, including wood shear walls, wood diaphragms, drag struts, braces, and hold-downs



- Exception: special inspections are not required for wood shear walls, shear panels, and diaphragms, including nailing, bolting, anchoring, and other fastening to other elements of the main windforce resisting system, where the lateral resistance is provided by structural sheathing and the specified fastener spacing at panels edges is more than 4" on center.
- B. Cold-formed steel light-frame construction.** Periodic inspection is required during welding operations of elements of the main windforce-resisting system. Periodic special inspection is required for screw attachment, bolting, anchoring and other fastening of components within the main wind force resisting system. Special inspections are not required when the sheathing is gypsum or fiberboard or the structural panel is only one sided *and* the specified fastener spacing is greater than 4" on center.

Where section 1705.12 specifies special inspections or tests for wind resistance, the statement of special inspections shall identify the main windforce-resisting systems and windforce-resisting components that are subject to the special inspection or tests.

- 11. Special inspection for seismic resistance.** Special inspections for seismic resistance shall be in accordance with Sections 1705.13.1 through 1705.13.9, unless exempted by the exceptions of Section 1704.2.

1705.13 Exceptions:

- A. The structure consists of light frame construction.
- B. The seismic force-resisting system of the structure consists of reinforced masonry or reinforced concrete.
- C. The structure is a detached one- or two-family dwelling not exceeding two stories above grade plane and does not have any of the following horizontal or vertical irregularities in accordance with section 12.3 of ASCE 7
  - Torsional or extreme torsional irregularity
  - Nonparallel systems irregularity
  - Stiffness-soft story or stiffness- extreme soft story irregularity
  - Discontinuity in lateral strength-weak story irregularity

Where section 1705.13 or 1705.14 specifies special inspections or tests for seismic resistance, the statement of special inspections shall identify the designated seismic systems and seismic force-resisting systems that are subject to the special inspection or tests.

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

- A. **Architectural components.** Periodic special inspection is required for the erection and fastening of exterior cladding, interior and exterior nonbearing walls, and interior and exterior veneer in structures assigned to Seismic Design Category D, E or F.

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- B. **Access floors.** Section 1705.13.5.1 requires periodic special inspection for the anchorage of access floors in structures assigned to Seismic Design Category D, E or F.
- C. **Plumbing, mechanical and electrical components.** Section 1705.13.6 contains requirements for periodic special inspection for plumbing, mechanical and/or electrical equipment for installations in various seismic design categories.
- D. **Storage racks.** Periodic special inspection is required for the anchorage of storage racks 8 feet or greater in height as required by Table 1705.13.7.

**NOTE:** Section 2209.3 states a certificate of compliance shall be submitted to the owner or owners authorized agent for rack storage structures greater than 8' in height

- 13. **Sprayed fire-resistant materials.** Special inspection and tests of sprayed fire-resistant material applied to floors, roof and wall assemblies, and structural members in accordance with Sections 1705.15.1 through 1705.15.6.
- 14. **Mastic and intumescent fire-resistant coatings.** Special inspection and tests for mastic and intumescent fire-resistant coatings applied to structural elements and decks shall be in accordance with AWCI 12-B.
- 15. **Exterior insulation and finish systems (EIFS).** Special inspections shall be required for all EIFS applications in accordance with 1705.17. Special inspections are not required when EIFS are applied over water-resistive barriers with a means for draining excess water. Special inspections shall not be required for EIFS applications installed on masonry or concrete walls.
- 16. **Fire-resistant penetrations and joints.** Special inspections for fire resistant penetrations and joints is required in accordance with 1705.18 in high-rise buildings, buildings assigned to risk category 3 or 4, or in fire areas containing Group R occupancies with an occupant load greater than 250.
- 17. **Testing for smoke control.** Smoke control systems shall be tested by a special inspector in accordance with 1705.19.
- 18. **Sealing of mass timber.** Periodic special inspection of sealants or adhesives shall be conducted where sealant or adhesive required by 703.7 is applied to mass timber building elements
- 19. **Special cases.** When in the opinion of the building official or design professional, special inspections are needed because of the use of alternative materials, unusual design or use of materials not having building code approval or needing to meet special manufacturer requirements are authorized in Section 1705.1.1.

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