

Los Angeles Uniform Code Program
Uniform Procedure I-7: Special Inspections



SPECIAL INSPECTOR REGISTRATION

NAME: _____ Registration No.: _____

COMPANY: _____ Registration Fee: _____

PHONE & E-MAIL: _____ Date: _____

ADDRESS: _____

I. Categories of Registration:

- | | | |
|---|---|--|
| 1. <input type="checkbox"/> Reinforced Concrete (RC) | 2. <input type="checkbox"/> Structural Masonry (SM) | 4. <input type="checkbox"/> Welding & Bolting (WB) |
| 3. <input type="checkbox"/> Pre-stressed/Post-tensioned Concrete/Masonry (PC) | 5. <input type="checkbox"/> Spray-applied Fireproofing (SF) | 6. <input type="checkbox"/> Other: _____ |

II. Related Certifications in Good Standing:

- | | | |
|---|--|--|
| ICBO <input type="checkbox"/> Structural Steel & Welding | <input type="checkbox"/> Structural Masonry | <input type="checkbox"/> Spray-Applied Fire Proofing |
| ACI + <input type="checkbox"/> Reinforced Concrete | <input type="checkbox"/> Pre-stressed Concrete | |
| L. A. City <input type="checkbox"/> Reinforced Concrete | <input type="checkbox"/> Structural Masonry | <input type="checkbox"/> Structural Steel & Welding |
| <input type="checkbox"/> Fireproofing Controlled Activity | <input type="checkbox"/> Grading | |
| L. A. County <input type="checkbox"/> Reinforced Concrete | <input type="checkbox"/> Pre-stressed Concrete | <input type="checkbox"/> Structural Masonry |
| <input type="checkbox"/> Welding & High-strength Bolting | | |

III. Education & Experience:

Please complete the education and experience information on the reverse side of this form.

IV. Declaration

I hereby affirm that all the information I have given herein is true and complete to the best of my knowledge, and that I will inform this jurisdiction in the event any certification listed above is no longer in good standing. I understand that any false statement herein will subject me to disqualification anytime.

Signature Date

Supporting documents verified by:

Signature Date

Application for Registration Approved by:

Signature Date

(Please turn over)

EDUCATION AND EXPERIENCE

EDUCATION	EDUCATION: Circle Last Grade Completed: 8 9 10 11 12		DID YOU GRADUATE? YES NO		IF NOT, HAVE YOU PASSED GED? YES NO		
	NAME AND LOCATION OF COLLEGES OR TRADE SCHOOLS ATTENDED	DATES ATTENDED	CREDITS COMPLETED		MAJOR	UNITS COMPLETED IN MAJOR	DEGREES OR CERTIFICATES RECEIVED
			SEM. UNITS	QTR. UNITS			
		FROM					
		TO					
		FROM					
		TO					
		FROM					
		TO					
		FROM					
		TO					

EXPERIENCE: Begin with your most recent job. List each job separately. List all jobs and any periods of unemployment in the last 10 years. Include military service. Also list any job you held more than 10 years ago, which relate to the job for which you are applying and indicate the number of months and years that you worked.

DATES		EMPLOYERS	DUTIES				
MONTH AND YEAR		NAME OF PRESENT OR LAST EMPLOYER	YOUR TITLE				
FROM	TO		DUTIES				
		ADDRESS					
TOTAL							
YEAR	MONTH	PHONE NUMBER	Concrete	Masonry	Steel	Fireproofing	Others
			%	%	%	%	%

DATES		EMPLOYERS	DUTIES				
MONTH AND YEAR		NAME OF PRESENT OR LAST EMPLOYER	YOUR TITLE				
FROM	TO		DUTIES				
		ADDRESS					
TOTAL							
YEAR	MONTH	PHONE NUMBER	Concrete	Masonry	Steel	Fireproofing	Others
			%	%	%	%	%

DATES		EMPLOYERS	DUTIES				
MONTH AND YEAR		NAME OF PRESENT OR LAST EMPLOYER	YOUR TITLE				
FROM	TO		DUTIES				
		ADDRESS					
TOTAL							
YEAR	MONTH	PHONE NUMBER	Concrete	Masonry	Steel	Fireproofing	Others
			%	%	%	%	%

DATES		EMPLOYERS	DUTIES				
MONTH AND YEAR		NAME OF PRESENT OR LAST EMPLOYER	YOUR TITLE				
FROM	TO		DUTIES				
		ADDRESS					
TOTAL							
YEAR	MONTH	PHONE NUMBER	Concrete	Masonry	Steel	Fireproofing	Others
			%	%	%	%	%



Los Angeles Uniform Code Program
Uniform Procedure I-7: Special Inspections

**PROCEDURES
FOR
SPECIAL INSPECTION**

Based on the 1998
CBC and L. A. Regional Uniform Code

(Updated 12-05-2000)

Special inspection is the monitoring of materials, construction procedures and workmanship while the work is in progress. It is in addition to the regular inspections performed by the jurisdiction, which focus on code compliance of the end products instead of working procedures and workmanship. As used in this bulletin, the term *special inspection* includes sampling and testing of materials and specimens.

Special inspectors, who are retained by the owner or design professional to assist in quality control of construction, do not represent an extension of the jurisdiction's inspection services. The code, however, requires that they be pre-qualified by the building official by demonstrating their expertise in the type of work they inspect.

Special inspection often requires continuous inspection, in which case the special inspector must be on site at all times while work is in progress. Some special inspections may be made on a periodic basis per Section 1701.6.2, provided the inspection schedule is outlined in the plans and specifications and approved by the building official.

This bulletin provides specific guidelines with which a project may comply with the special inspection requirements in the 1998 edition of the California Building Code and the Los Angeles Regional Amendments. It should be noted, however, the special inspectors should follow the special inspection program and other quality control requirements specified in the construction documents. Based on specific needs of each project the design professionals often prescribe more stringent quality assurance programs than that required by code. The scopes of inspection that are required of the special inspectors in a particular project may very well exceed those outlined in this bulletin.

1. Special Inspection Program

CBC Section 106.3.5 requires that when special inspection or structural observation is required, an *Inspection and Observation Program* shall be submitted by the architect or engineer of record for approval *prior to* issuance of the building permit. The following procedures are provided to meet this requirement:

- a. A standardized form which follows this procedure instruction, or a similar form prescribed by the jurisdiction, shall be used for the *Special Inspection Program*.
- b. The program shall identify all items of work that require special inspection, with the names of individuals or firms who will perform the special inspection. The designated special inspectors must meet the minimum qualifications described in Section 2 below, and have prior approval by the building official or hold unexpired registration with the jurisdiction.
- c. The *Special Inspection Program*, along with a *Structural Observation Program* where applicable, shall be made a part of the approved plans.
- d. Substitution of special inspectors subsequent to issuance of the building permit may be requested through the architect or engineer of record as a plan revision.

CBC Section 1701.1 requires that the special inspectors shall be hired by the owner or by the engineer or architect of record. The *Special Inspection Program* and any subsequent substitution therefore should include a declaration signed by the person who hires the special inspectors. The building official may waive this requirement for minor constructions pursuant to the Exception to Section 1701.1.

2. Minimum Qualifications of Special Inspectors

CBC Section 1701.2 empowers the building official to determine whether an individual is qualified as a special inspector based on the person's competence in a particular type of construction. The following criteria are to establish a minimum competence level by which an individual may be deemed qualified.

- a. **Individual vs. Company.** To determine whether an individual is qualified as a special inspector, consideration must be based on the individual's own merits. Being employed by a reputable testing lab or inspection firm alone is not sufficient ground to qualify an individual as a special inspector. Owners and design professionals may obtain a list of pre-qualified special inspectors from the jurisdiction when trying to designate special inspectors on the *Special Inspection Program*, as described in Section 1 of this bulletin. It is acceptable that a firm which employs one or more pre-qualified individuals is designated as a special inspector on the *Special Inspection Program*. The employee who performs the inspection, however, must meet the criteria described in this section, and be approved by the building official before any inspection.
- b. **Design Professional of Record vs. Special Inspector.** Except for grading and smoke control, the fact that a person is the architect or engineer of record should be no factor in determining whether the person is qualified as a special inspector. If the architect or engineer is qualified as a special inspector by demonstrating satisfactory competence in a particular type of construction, it is acceptable for the architect or engineer to perform both structural observation and special inspection for a project.

The soils engineer or engineering geologist of record is deemed qualified as a special inspector for excavation and filling. As an alternative, the soils engineer or engineering geologist of record may designate another soils engineer or engineering geologist, or a certified Grading Inspector, to be the special inspector.

A team consisting of the mechanical engineer of record and an air balancing technician certified by the National Environmental Balancing Bureau (NEBB) or the Associated Air Balancing Council (AABC) is deemed qualified as the smoke control system special inspector. The mechanical engineer of record may be substituted with another mechanical engineer approved by the mechanical engineer of record.

Piling, drilled piers and caissons shall be inspected by the soils engineer or engineering geologist of record in addition to appropriate special inspectors. A Driven Piles Special Inspector certification issued by the City of Long Beach is highly desirable, but not required, for installation of driven piles.

- c. **Certification.** Except for grading and smoke control, all special inspectors must be certified in their areas of expertise. The following table indicates required certification for each type of special inspection and the recognized agencies who issue such or equivalent certifications.

Work Requiring Special Inspection	Required Certification for Special Inspector	Recognized Agencies for required Certifications
Concrete, Reinforcing Steel, Special Concrete Moment Frame	Reinforced Concrete	ACI Joint Program, L.A. City, L.A. County.
Shotcrete	Reinforced Concrete or Shotcrete Controlled Activity.	RC: ACI Joint Program, L.A. City, L.A. County; Shotcrete: L.A. City.
Insulating Concrete Fill, Reinf. Gypsum Concrete, Structural Epoxy Injection	Reinforced Concrete or Structural Masonry	RC: ACI Joint Program, L.A. City, L.A. County; SM: ICBO, L.A. City, L.A. County.
Bolts installed in Concrete/Masonry (double strength or drilled-in)	Reinf. Concrete/ Structural Masonry or Drilled-in/ Torque Test Controlled Activity	RC: ACI Joint Program, L.A. City, L.A. County; SM: ICBO, L.A. City, L.A. County. Drilled-in or Torque Test: L.A. City.
Structural Masonry	Structural Masonry	ICBO, L.A. City, L.A. County.
Prestress/Post-tension Steel Tendons	Prestressed Concrete or Prestressing Controlled Activity	ACI Joint Program, L.A. City, L.A. County.
Structural Welding	Structural Steel & Welding	ICBO, L.A. City, L.A. County.
High-strength Bolting	Structural Steel & Welding	ICBO, L.A. City, L.A. County.
Spray-applied Fireproofing	Spray-applied Fireproofing	ICBO
Piling, Drilled Piers and Caissons	Reinforced Concrete + Soils Engineer/Engineering Geologist of record	RC: ACI Joint Program, L.A. City, L.A. County.
Grading, Excavation and Filling	Soils Engineer/Engineering Geologist or Grading ¹	Grading: L.A. City.

Smoke-control System	Certified Air Balancing Technician + Mechanical Engineer of Record	Air Balancing: NEBB; AABC.
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1. Grading special inspector must be designated by the soils engineer or engineering geologist of record as an alternative. See discussion in 2-b.

3. Responsibilities of the Special Inspector

In addition to any duties that may rise out of a particular service agreement between the special inspector and the client, all special inspectors shall fulfill the following basic responsibilities:

- a. **Start Work Notification.** Before starting any inspection for a new project, the special inspector must notify the building official or appropriate City inspector. This notification shall be made no later than the last working day preceding such commencement of inspection. If a special inspector is different from the one designated on the approved *Special Inspection Program*, the designation shall be revised by the architect or engineer of record and approved by the building official before the special inspector can proceed with the inspection.
- b. **Observing Designated Work.** The special inspector shall observe the work assigned for conformance to the approved plans, specifications and the applicable workmanship provisions of the code. Section 4 of this bulletin describes special inspectors' specific tasks for performing each type of special inspection. Where continuous inspection is required, the special inspector shall be present at all times while the work is in progress. Where periodic inspection is specified in the *Special Inspection Program*, the special inspector shall inspect the work according to the schedule outlined in the plans and specifications, and make sure that the periodic inspection is adequate to satisfy the purpose of a continuous inspection on the particular work.
- c. **Reporting Discrepancies.** Work not conforming to approved plans, specifications and applicable workmanship provisions of the code shall be brought to the immediate attention of the contractor for correction. If any discrepancy is not corrected timely, the special inspector shall submit a *Discrepancy Report* to the building official, using the attached standard form or a similar one prescribed by the jurisdiction, and copies distributed to the contractor, architect/engineer of record and the owner.
- d. **Filing Conformance Report.** If no discrepancies are observed, or all discrepancies are corrected timely, the special inspector shall submit a *Conformance Report* to the building official, using the attached standard form or a similar one prescribed by the jurisdiction, and copies distributed to the contractor, architect/engineer of record and the owner. The final *Compliance Report* shall be submitted no later than the business day following the conclusion of work that is under the scope of the subject inspection. If the duration of the work is longer than five days, a progress *Conformance Report* shall be submitted at an interval of no more than five days.

4. Tasks of each type of Special Inspection

Guidelines provided in this section are intended to clarify requirements contained in CBC Sections 1701.5 and 1701.6. These guidelines may serve as minimum criteria for meeting the intent of the code. Conditions do vary from one project to another, and the special inspectors' attention should not be limited to the tasks that are listed in this section.

The architect or engineer of record, based on the need of each particular project may prescribe more stringent quality control requirements. The special inspector must follow the requirements called for in the plans and specifications in addition to the guidelines contained in this bulletin.

4.1 Reinforced Concrete, Shotcrete, Drilled Piers & Caissons, Reinforced Gypsum Concrete and Insulating Concrete Fill

4.1.1 General Requirements

The concrete special inspector shall:

- a. Conduct a preconstruction conference with the design professional of record, owner's representative and building official to determine scope of inspection, level of quality assurance.
- b. Check mill certifications for reinforcing steel, and verify with approved plans and specifications.
- c. Verify trip tickets from concrete delivery, mix design, concrete quality, mixing, and placing.
- d. Check proper storage and protection of materials, make sure it is protected from exposure to excessive moisture or drying.
- e. Observe and document special measures taken during cold or hot weather construction.
- f. Coordinate and observe preparation of test panels or specimens.

4.1.2 Continuous Inspection

Continuous inspection is required for the following:

- a. Preparation and taking of test specimens.
- b. Mixing and placing of concrete, except for slabs on grade and conventional footings where the structural design is based on an f'_c no greater than 2,500 psi.
- c. Prior to and during the placement of concrete around bolts, as required by Table 19-D footnote 5 or Section 1923.
- d. Prior to and during the installation of drilled-in anchors.
- e. During placing of reinforcement for special moment frames in Seismic Zones 3 & 4.

- f. During placing of reinforcing steel for drilled piers and caissons.
- g. During placing of reinforcement for shotcrete, unless exempt per Section 1701.12.
- h. During application of shotcreting, including use of rebound, unless exempt per Section 1701.12.
- i. Setup of shotcrete equipment and lines before commencement of application; checking equipment capacity, pressure and proper functioning.
- j. Mixing and placing of cast-in-place class B gypsum concrete.

4.1.3 Periodic Inspection

Unless otherwise required by the engineer or architect of record, periodic inspections are permitted for the following per Section 1701.6.2:

- a. At the start of and during each phase of the project, ascertain conformity of materials, personnel qualifications as required, and procedures with the applicable codes, plans and specifications.
- b. Verify design mix before any concrete is placed; check calibration of equipment and admixture approvals.
- c. Verify placement of reinforcement, except for special moment frames, provided inspection is completed prior to the closing of forms or delivery of concrete to the job site.
- d. Check preparation of deck surface and placement of reinforcing before placing of insulating concrete fill. Unless otherwise required by the architect or engineer, special inspection for insulating concrete fill may be limited to this initial inspection and the preparation of compression test specimens.
- e. Check ground wires or other thickness gauging method for shotcrete.
- f. Verify the soils strata during drilling of piers and caissons.

4.1.4 Sampling and Testing

- a. Perform slump, air and unit weight test per plans and specifications.
- b. Sample concrete and prepare test cylinders according to ASTM C31.
- c. Sample and test reinforcing steel per ASTM A615.
- d. Prepare shotcrete test panels or in-place samples per Section 1924.10 and ACI 506.
- e. Core tests for investigation of low-strength concrete.

4.1.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Test reports for cones or cores.
- c. Corrective measures or design changes for detected deficiencies.
- d. Soils engineer's approval for excavation of foundations, drilled piers and caissons.

4.2 Prestressed/Post-tensioned Concrete

Prestressed concrete is usually prefabricated in the shop, and post-tensioned concrete is mostly constructed onsite. The manufacturing shops typically have established tight quality control programs, partly because of the high strength of concrete usually specified in the prestressed concrete. The quality control of the post-tensioned construction, on the other hand, is placed on the special inspectors in the field.

4.2.1 General Requirements

- a. See applicable requirements for Reinforced Concrete.
- b. Check that the shop drawings have been approved by the building official and the engineer or architect of record.
- c. Verify calibration of jacking equipment.
 - a. Record or verify tensioning data.

4.2.2 Continuous Inspection

- a. See applicable continuous inspections for Reinforced Concrete.
- b. During stressing of tendons.
- c. During grouting of tendons.

4.2.3 Periodic Inspection

- a. See applicable periodic inspections for Reinforced Concrete.
- b. Placing and profile of reinforcing steel and tendons.
- c. Curing, handling and testing of test cylinders by the fabricating shop.

- d. Erection of prefabricated components in the field.

4.2.4 Sampling and Testing

- a. See applicable sampling and testing for Reinforced Concrete.
- b. Pre-stressing test of tendons.

4.2.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Testing reports for steel, tendon and concrete.
- c. Tendon stress data, including elongation of strand and gauge pressure.
- d. Spelled concrete, broken tendons, anchorage slippage and out of tolerance elongation.
- e. Corrective measures or design changes for detected deficiencies.

4.3 Structural Masonry

4.3.1 General Requirements

Structural masonry special inspector shall:

- a. Conduct a preconstruction conference with the design professional of record, owner's representative and building official to determine scope of inspection, level of quality assurance per ACI 530-99 Section 1.14.1, and intervals of periodic inspections listed under 4.2.3.
- b. Check mill certifications for unit masonry, reinforcing steel, cement, and verify with approved plans and specifications.
- c. Check proper storage and protection of materials so that cement, lime, and masonry units are protected from exposure to excessive moisture or drying.
- d. Observe and document special measures taken during cold or hot weather construction.

4.3.2 Continuous Inspection

Continuous inspection is required for the following, unless the height to thickness ratio is less than 30:1 and the design stresses have been adjusted according to Chapter 21 to allow noncontinuous inspection:

- a. During preparation and taking of prisms or test specimens.

- b. Placing of all masonry units. For fully grouted open-end hollow-unit masonry, continuous inspection is required only at the start of laying units.
- c. Placement of reinforcements, except for fully grouted open-end hollow-unit masonry.
- d. Installation of cleanouts and immediately prior to closing.
- e. During all grouting operations.

4.3.3 Periodic Inspection

- a. At the start of and during each phase of the project, confirm material specifications, personnel qualifications as required, testing requirements and procedures with the applicable codes, plans and specifications.
- b. At such frequency as necessary, verify that the cleanliness, mortar projections and reinforcement clearances within grout spaces conform to minimum requirements.
- c. Verify that the grout pours and construction joints are in compliance with Section 2104.6.1.
- d. Verify that the dowels, anchor bolts and inserts are secured in place, particularly at the roof lines, floor lines and intersecting wall lines.

4.3.4 Sampling and Testing

- a. Perform prism test per plans and specifications.
- b. Where prism test is not specified on the plans, perform at least one prism test before construction. For designs using full stresses, or where f'_m is greater than 1,500 psi for CMU and 2,600 psi for clay units, perform at least one prism test for each 5,000 sq. ft. of wall surface area during construction.
- c. Sample and test grout per ASTM C1019 for each 5000 sq. ft of wall surface area. Test at least three specimen at each age specified for each test.

4.3.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Test report for prisms, mortar and grout.
- c. Corrective measures or design changes for detected deficiencies.

4.4 Structural Welding

4.4.1 General Requirements:

The welding special inspector shall:

- a. Become familiar with applicable provisions of governing and referenced codes and specifications, particularly the latest applicable American Welding Society (AWS) D1.1 Structural Welding Code - Steel, D1.3 Structural Welding Code - Sheet Steel, D1.4 Structural Welding Code - Reinforcing Steel, the Steel Construction Manual by American Institute of Steel Construction, inc (AISC).
- b. Review all approved welding procedure specifications (WPS). Check that welding procedures employed at the jobsite meet the provisions of AWS D1.1, 5.1 or are qualified in accordance with 5.2 and 5.5.
- c. Ensure that only materials conforming to the requirements of building Code and referenced AWS, AISC or ASTM, and specified on approved plans are used.
- d. Check individual welder certification, and verify that each welder is restricted to the specific area of work as qualified.
- e. Visually inspect the procedures for preparation and welding, type and size of electrodes and equipment used for compliance to WPS; changes to Procedure Qualification Record (PQR) may require re-qualification.
- f. Observe the technique of each welding process for compliance with procedure qualification records (PQR).
- g. Inspect joints for proper preparation, including bevel, root face, root opening, new rework, or repairs.
- h. Notify the welder and the foreman of any rejectable weld (either visually or by non-destructive test), and verify its removal, rework or repair.
- i. Verify the use of proper preheat and interpass temperatures.
- j. Record mill test reports and check heat numbers with materials as received, verify that proper identification of steel is maintained during fabrication.
- k. Tag or stamp accepted weldments with the inspector's identification stamp.

4.4.2 Continuous Inspection:

- a. Perform continuous inspections on all welding not done in an approved fabricators shop, except that periodic inspections shall be allowed per Exception 2 to Section 1701.5.1, or Exception to Section 1701.5.3.
- b. Observe multi-pass welds for effective visual inspection of the work performed.

- c.. Monitor the work for compliance with the requirements of AWD1.1, 5.1, Section 3, workmanship, and 8.15, 9.25, or 10.17 as applicable.
- d. Monitor that the size, length and location of all welds conform to the requirements of this code and to the detail drawings and that no unspecified welds have been added without approval.
- e. Monitor that electrodes are used only in the positions and with the type of welding current and polarity for which they are classified.

4.4.3 Periodic Inspection:

The following welding work may be inspected on a periodic basis:

- a. Single pass fillet welds not exceeding 5/16 inch (7.9 mm) in size or when deemed necessary.
- b. Floor and roof deck welding.
- c. Welded studs in structural diaphragm or composite systems.
- d. Cold formed studs and joists.
- e. Stairs and railing systems.
- f. Reinforcing steel, not larger than No. 5 bars, used for embedments.
- g. The inspector shall, at intervals, observe joint preparation, assembly practice, preheat and inter pass temperatures, the welding techniques, and performance of each welder, welding operator, and tack welder to make certain that the applicable requirements of this code are met.

4.4.4 Sampling and Testing:

- a. Sample steel for property testing per project specifications. When steel members are delivered to finish length and no crop ends are available for sample cutting, coordinate cutting and patching requirements with the architect or engineer of record.
- b. Non-destructive testing for fully restrained connections in ordinary and special moment-resisting frames by ultrasonic, magnetic particle, radiography or other methods, except the following as provided in Section 1703:
 - i. All complete joint penetration groove welds;
 - ii. All partial penetration groove welds in column splices
 - iii. Base metal thicker than 1-1/2 inches (38mm), when subjected to through-thickness weld shrinkage strains.

4.4.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Reports of Nondestructive testing.
- c. Reports of sample testing, including the sample number, locations and test data.
- d. Records of welders by names, identification numbers or steel marks, and the percentage of rejectable welds by each welder.
- e. Corrective measures or design changes in response to detected deficiencies.

4.5 High strength bolting

4.5.1 General Requirements:

- a. Review type of joint specified (i.e. slip critical, non-slip critical).
- b. Ensure that only materials conforming to the requirements of building Code and referenced AWS, AISC or ASTM, and specified on approved plans are used.
- c. High strength bolting shall be installed in accordance with the Specifications for Structural Joints Using ASTM A325 or A490 Bolts as approved by the Research Council on Structural Connections of the Engineering Foundation, unless otherwise specified on the approved plans and specification.

4.5.2 Continuous Inspection:

- a. Check bolts, nuts, and washers for compliance to project specifications.
- b. Review the procedure for installation of bolts. The amount and type of inspection during installation will depend on the method used.
- c. Check joint surfaces to verify that they are free of burrs, dirt, etc.
- d. Verify installation procedures meet minimum bolt tensions required by code.
- e. Check calibration of wrenches for tightening capacity in a wrench calibrator tensioning device.
- f. Verify length of bolt shank for non-slip critical joints.
- g. Check faying surfaces to verify that they are free of burrs, dirt, etc.
- h. When applicable, verified bolt tensioning torque with a tensioning device such as the Skidmore-Wilhelm at least once a day, once a shift and each time a new batch of bolts is opened. Bolts other than the snap-off variety or the direct tension indicator shall have

tension/torque verified.

4.5.3 Periodic Inspection:

- a. At the start of and during each inspection of the project to ascertain conformity of materials, personnel qualifications and procedures with the applicable codes, plans and specifications.
- b. Prior to erection of structural steel members, all faying surfaces for all high strength bolted connections are to be verified as required by code (ASD specification for structural joints using ASTM A325 or A490 bolts).
- c. During erection of structural steel members at such frequency as necessary to verify all requirements for surface conditions, hole size, bolts, nuts, washers, verification of proper assembly for connections of high strength bolted connections as required by code (ASD specification for structural joints using ASTM A325 or A490 bolts).
- d. After erection of structural steel members, all torque testing and visual inspection may be performed on connections assembled by turn of the nut method, calibrated wrench tightening, alternate design bolts or direct tension indicators tightening as required by code (ASD specification for structural joints using ASTM A325 or A490 bolts).

4.5.4 Sampling and Testing

- a. Sample high strength bolts, washers, and nuts for testing from the lots in the shop or on the jobsite, according to the plans and specifications.
- b. Pretensioning test per plans and specifications.

4.5.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Reports of sample materials tests.
- c. Reading of tension tests for slip-critical bolts..
- d. Corrective measures or design changes in response to detected deficiencies.

4.6 Driven Piles

4.6.1 General Requirements

CBC Section 1807.1 requires a soils and geological investigation for the design of driven piles. The soils engineer or engineering geologist should be closely involved in the special inspection of pile driving operation to:

- a. Verify the type and capacity of pile hammers.
- b. Record the blow counts during driving of piles.
- c. Observe the load tests.

4.6.2 Continuous Inspection

- a. Observe the load testing, when required.
- b. During the driving of piles, record steam or air pressure used in the case of steam or air hammer; weight of hammer and length of stroke in the case of dropped hammer.

4.6.3 Periodic Inspection

- a. Verify the type and number of exploratory piles as specified.
- b. Check angle variations of piles from the batter line specified on plans. Unless specifically approved by the architect or engineer, variations shall be no more than $\frac{1}{4}$ inch per foot.
- c. Record the size and depth of excavations or drilled holes, when applicable, for driven piles.
- d. Verify and maintain a copy of penetration log for the last 10 blows of each pile.
- e. Check the cutoff and extension of piles. Timber piles shall be cut at precise elevation. Use of shims or splicing shall not be permitted unless specifically approved by the architect or engineer. Concrete piles shall have no spalling or damage after the cutoff.

4.6.4 Sampling and Testing

Number and location of load test to be as specified by the engineer or architect.

4.6.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Load test report.
- c. Blow logs.

4.7 Sprayed Fireproofing

4.7.1 General Requirements

The spray-applied fireproofing special inspector is to:

- a. Verify thickness, density and adhesion/cohesion strength of the sprayed fire-resistive material (SFRM) in accordance with approved plans, specifications and applicable ASTM Standards.
- b. Where a fireproofing schedule is not included in the approved plans and specifications, prepare a schedule and submit it to the building department along with inspection reports.
- c. Verify that the surface to receive fireproofing is free of dirt, dust, grease, loose material or incompatible materials which affect bond of fireproofing.
- d. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place. The fireproofing needs to be re-inspected if any of these items is installed after the fireproofing.
- e. Verify that ducts, piping, equipment or other items which would interfere with application of fireproofing are not positioned until fireproofing work is complete.
- f. Document the names of SFRM applicators. Applicators shall be approved by the manufacturers of the materials specified, unless specifically approved by the design professional of record.
- g. Verify that the SFRM is as specified.
- h. Verify that primer, if required, is of the type recommended by the SFRM manufacturer.

4.7.2 Continuous Inspection

The following items require continuous inspection:

- a. Observe construction of mockup, if required by the design professional of record. Examine the mockup for noticeable shrinkage, cracking, checking, flaking, spalling, separation or blistering.
- b. Observe application of primer, if required, per manufacturer's printed instructions.
- c. Measure thickness of the SFRM.
- d. Take SFRM specimen for density test.
- e. Conduct SFRM adhesion/cohesion test in the field.

4.7.3 Periodic Inspection

The following items may be inspected periodically at an interval adequate to assure the construction quality:

- a. Verify substrate preparation before application of SFRM.

- b. Observe application of SFRM.
- c. Observe temperature of substrate material and surrounding air. Monitor that temperature is within the range as permitted by the SFRM manufacturer.
- d. Monitor that ventilation is provided in areas to receive fireproofing during application.

4.7.4 Sampling and Testing

- a. Sample and measure thickness and density per UBC Standard 7-6 or ASTM E605.
- b. Sample and conduct adhesion/cohesion test per UBC Standard 7-6 or ASTM E736.

4.7.5 Inspection Reports

- a. Discrepancy and conformance reports.
- b. Test reports for thickness, density and adhesion/cohesion.
- c. Corrective measures or design changes for detected deficiencies.

4.8 Grading

4.8.1 General Requirements

- a. Conduct a preconstruction conference with the soils engineer or geologist of record, owner's representative and building official to determine scope of inspection, level of quality assurance.
- b. Check soils engineer or geologists report for recommendations and extent of work.
- c. Check equipment on site, to insure it is appropriate for the work to be done.
- d. Observe and document the corrective measures taken during grading work.

4.8.2 Continuous Inspection

Continuous inspection is required for the following work:

- a. Unloading of imported materials.
- b. Removal of debris and organic materials from the soils to be compacted.
- c. Placing, watering and compacting of fill materials.

- d. Slot cutting or cutting steeper than 2:1.
- e. Preparation and erection of shoring.
- f. Placing of segmental retaining wall system. Check position of block units and wall face inclination while work is in progress.
- g. Placement of geotextiles for reinforced earth mass.

4.8.3 Periodic Inspection

Periodical inspection is required for the following work:

- a. Excavation at a slope no steeper than 2:1.
- b. Benching.
- c. Installation of sub-drainage system, before it is covered.
- d. Banking and slope protection.

4.8.4 Sampling and Testing

- a. Sample the following materials for soils classification and properties test:
 - 1. Substrate materials;
 - 2. Native-fill materials;
 - 3. Imported materials;
 - 4. Additive materials, if applicable.
- b. Conduct in-place density and moisture tests in the field using procedures specified in the construction documents.
- c. take samples for lab test per plans and specifications.

4.8.5 Inspection Report

- a. Discrepancy and conformance reports.
- b. Test report for materials classification and properties.
- c. Compaction report signed by the soils engineer or engineering geologist of record.
- d. Rough grading certification signed by the civil engineer or land surveyor of record.

4.9 Smoke Control

4.9.1 General Requirements:

- a. Inspect and pressure test all duct work and control tubing pertaining to smoke control.
- b. Verify equipment and materials to conform to approved plans and specifications.
- c. Test equipment and other devices for proper operation, sequencing, and proper function.
- e. Pretest all smoke control zones and the smoke control system for proper sequences and operation according to the specified method.

4.9.2 Continuous Inspection

Unless required by the engineer or architect of record, special inspections for the smoke control system may be done on a periodic basis.

4.9.3 Periodic Inspection

- a. During erection of ductwork and prior to concealment, for the purpose of leakage testing and recording of device location.
- b. Prior to occupancy and after sufficient completion of the system, for the purpose of system operation testing. See Sampling and testing section for required testing.

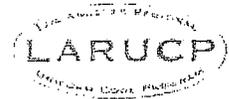
4.9.4 Sampling and Testing

- a. Conduct leakage testing on ductwork and control tubing section by section per plans and specifications.
- b. Test the smoke- or fire-detection and control system.
- c. Test the power supply system per Section 905.8.
- d. Measure pressure difference, flow velocity or exhaust rate per the approved plans and specifications.

4.9.5 Inspection Reports

- a. Discrepancy and conformance reports.
- b. The complete record of all tests reports conducted on the smoke control systems. A copy of the reports shall be kept at the building available at anytime for review.
- c. A certification letter from the mechanical engineer or fire protection engineer responsible for the smoke control system design, stating that the system meets the design criteria based on the test data.

**LOS ANGELES REGIONAL UNIFORM CODE PROGRAM
SPECIAL INSPECTION PROGRAM**



This form to be attached to the construction plans prior to permit approval.

ITEMS (only checked items are required)	DESCRIPTION (only checked items are required)	Individuals/Firms* to perform S. I.
• Concrete	• All concrete • All except _____ • Test: ___ per ___ c.y.; ___ @ 7 days, ___ @ 28 days, ___ hold.	
• Bolts installed in Concrete	• Bolts in existing concrete/masonry • Bolts in shear walls	
• Special Moment-Resisting Concrete Frame	• Locations as indicated • All concrete frames • Test: ___ per ___ c.y.; ___ @ 7 days, ___ @ 28 days, ___ hold.	
• Reinforcing Steel and Pre-stressing Tendons	• Stressing and grouting of tendons Steel placement: • Periodic Inspection • Continuous Inspection	
• Structural Welding	• All welding except Periodic: • Single pass fillet welds < 5/16" • Cladding connection • Welded studs • Cold formed studs/joists • Metal deck • Stairs & railing • Reinforcing steel NDT: • UT • Rg • MPT • PT	
• High-strength Bolting	Snug tight: • All • As indicated • _____ Pretension: • All • As indicated • _____	
• Structural Masonry	• Working Stress Design: • full- • half-stresses • as indicated; • Strength Design; • Empirical Design. $f_m =$ _____ psi. TESTING: Before During • Other remarks: Prisms • • Grout • • Mortar • • Units • •	
• Reinforced Gypsum Concrete	Mixing & placement: • Continuous Inspection • Periodic Inspection • Test ___ specimens/5000 ft ² during construction	
• Insulating Concrete Fill	• Initial inspection • Periodic inspection during placing of concrete • Strength testing	
• Spray-applied Fire-resistive Materials	• Fireproofing schedule as indicated • Prepare a fireproofing schedule as an attachment to S. I. Report Spray application: • Continuous Inspection • Periodic Inspection	
• Piling, Drilled Piers and Caissons	• Inspection by Geotechnical Engineer in addition to S. I. • Load testing Driving: • Continuous Inspection • Periodic Inspection Drilling: • Continuous Inspection • Periodic Inspection	
• Shotcrete	• Preconstruction panel testing • In-place cores testing	
• Special Grading, Excavation & Filling	INSPECTIONS: Continuous Periodic Civil Engineer • • Soils Engineer • • Engineering Geologist • • Certified Grading Inspector • • • Subgrade tests @ _____ ft ² • Compaction tests @ _____ ft ² each lift.	
• Smoke-control System	Duct erection: • Continuous Inspection • Periodic Inspection Air Testing: • Differential pressure • Air velocity • Exhaust rate • Power system test • Detection & control system test	
• Others:		

* Individuals who are employed by these firms must meet the qualifications stated above to perform the Special Inspections.

Los Angeles Regional Uniform Code Program
Uniform Procedure I-7: Special Inspections



REVISION TO THE SPECIAL INSPECTION PROGRAM

The following Special Inspection Program and the designated Special Inspectors, if approved by the Architect/Engineer of record and by the City, shall supercede the previously approved special inspection program on the plans.

PROJECT ADDRESS _____ **PERMIT APPL. NO.** _____

Description of Work: _____

Owner _____ **Architect** _____ **Engineer** _____

Phone _____ **Phone** _____ **Phone** _____

Fax _____ **Fax** _____ **Fax** _____

E-mail _____ **E-mail** _____ **E-mail** _____

ITEMS (only checked items are required)	DESCRIPTION (only checked items are required)	Individuals/Firms* to perform S. I.
• Concrete	• All concrete • All except _____ • Test: ___ per ___ c.y.; ___ @ 7 days, ___ @ 28 days, ___ hold.	
• Bolts installed in Concrete	• Bolts in existing concrete/masonry • Bolts in shear walls	
• Special Moment-Resisting Concrete Frame	• Locations as indicated • All concrete frames • Test: ___ per ___ c.y.; ___ @ 7 days, ___ @ 28 days, ___ hold.	
• Reinforcing Steel and Pre-stressing Tendons	• Stressing and grouting of tendons Steel placement: • Periodic Inspection • Continuous Inspection	
• Structural Welding	• All welding except Periodic: • Single pass fillet welds <5/16" • Cladding connection • Welded studs • Cold formed studs/joists • Metal deck • Stairs & railing • Reinforcing steel NDT: • UT • Rg • MPT • PT	
• High-strength Bolting	Snug tight: • All • As indicated Pretension: • All • As indicated	

