

FINAL PR 7/6/17



DSA-103 rev 9/7/2016

Listing of Structural Tests & Special Inspections - 2013 CBC

INCREMENT #

DSA File No.:

4-115788

Application No.:

Date Submitted:

6/1/2017

Revised:

Revised:

School Name	Santa Ana College, Science Center	District	Rancho Santiago Community College
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IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A.

INSTRUCTIONS: Click a plus sign (+) before any category or subcategory to reveal additional tests and special inspections. A shaded box indicates a test or special inspection that may be required, depending on the scope of the construction and other issues. A shaded box can be clicked indicating your selection of that test. **Note:** A minus (-) on a category or subcategory heading indicates that it can be collapsed. However, any selections you may have made will be cleared. Click on the "COMPILE" button to show only the tests and inspections finally selected. **For more information on use of this form, see DSA-103.INSTR.**

NOTE: This form is also available for projects submitted for review under the 2007 and 2010 CBC.

Note: References are to the 2013 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE 1	PERFORMED BY 2	CODE REFERENCE AND NOTES
-	SOILS			
	1. GENERAL:			Table 1705A.6
X	a. Verify that: • site has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	Periodic	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
-	2. COMPACTED FILLS:			Table 1705A.6
X	a. Perform qualification testing of fill materials.	Test	LOR*	* Under the supervision of the geotechnical engineer.
X	b. Verify use of proper materials and inspect lift thicknesses, placement, and compaction during placement of fill.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
X	c. Test compaction of fill.	Test	LOR*	* Under the supervision of the geotechnical engineer.
-	4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):			Table 1705A.7
X	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
X	c. Confirm pier diameters, plumbness, bell diameters (if applicable), lengths, and embedment into bedrock (if applicable). Record concrete or grout volumes.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
X	d. Confirm adequate end strata bearing capacity.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
X	e. Concrete piers.	Provide tests and inspections per CONCRETE section below.		
-	5. RETAINING WALLS:			
X	a. Placement of soil reinforcement, drainage devices, and backfill.	Continuous	GE	Placement, compaction and inspection of backfill per Section 1705A.6.1 for fills supporting foundations (see Section 2 above).



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<input checked="" type="checkbox"/>	d. Masonry retaining walls.	Provide tests and inspections per MASONRY section below.		
-	CONCRETE	Table 1705A.3		
-	7. CAST IN PLACE CONCRETE			
Material Verification and Testing:				
<input checked="" type="checkbox"/>	a. Verify use of required design mix.	Periodic	SI*	* To be performed by qualified batch-plant inspector and concrete sampling technician
<input checked="" type="checkbox"/>	b. Test reinforcing steel.	Test	LOR	1913A.2 (1913.2.6*). ASTM A370. DSA IR 17-10
<input checked="" type="checkbox"/>	c. Perform slump, temperature, air content tests, and sample concrete.	Test	LOR	ASTM C172, ASTM C31.
<input checked="" type="checkbox"/>	d. Test concrete (compression).	Test	LOR	ACI 318 Section 5.6 and 1905A.1.2 (1913.3.1*). ASTM C39.
Inspection:				
<input checked="" type="checkbox"/>	e. Batch plant inspection	Continuous	SI	1705A.3.2; If approved by DSA, batch plant inspection may be reduced to periodic if plant complies with 1705A.3.3, Item 1, and requires first batch inspection, weighmaster, and batch tickets.
<input checked="" type="checkbox"/>	h. Welding of reinforcing steel.	Provide special inspection per STEEL, category 19.1(d) & (e) and/or 19.2(g) & (h) below.		
-	11. POST-INSTALLED ANCHORS:			
<input checked="" type="checkbox"/>	a. Inspect installation of post-installed anchors	Periodic	SI*	Table 1705A.3 (See Appendix for exemptions.) * May be performed by the project inspector when specifically approved by DSA.
<input checked="" type="checkbox"/>	b. Test post-installed anchors.	Test	LOR	1913A.7 (1913.2.11*). ASTM E488. (See Appendix for exemptions.)
-	MASONRY	TMS 402-11/ACI 530-11/ASCE 5-11 Table 1.19.3		
-	13. STRUCTURAL MASONRY:	Enter f_m		psi
Material Verification and testing:				
<input checked="" type="checkbox"/>	a. Mill certificate indicate compliance with requirements for reinforcement, anchors, ties, fasteners, and metal accessories. Test reinforcing steel.	Test	LOR	2103A.14 (2103.14*). ASTM A370, DSA IR 17-10
<input checked="" type="checkbox"/>	b. Producer's certificate of compliance for masonry units, mortar and grout materials. Test masonry units, mortar and grout (unit strength method).	Test	LOR	1705A.4 and 2105A.2.2.1 (or 2105.2.2.1* and 2114.9.1*). ASTM C140, C1586 & C1019.
<input checked="" type="checkbox"/>	d. Verify proportions of site-prepared, premixed or preblended mortar and grout.	Periodic	SI	ASTM C780.
<input checked="" type="checkbox"/>	e. Test core-drilled samples.	Test	LOR	2105A.5 (2114.9.3*).
Inspection:				
<input checked="" type="checkbox"/>	g. Verify size, location and condition of all dowels, construction supporting masonry, etc.	Periodic	SI	
<input checked="" type="checkbox"/>	h. Verify specified size, grade, and type of reinforcement.	Periodic	SI	
<input checked="" type="checkbox"/>	j. Inspect placement of reinforcement, connectors, masonry units and construction of mortar joints.	Periodic	SI	
<input checked="" type="checkbox"/>	k. Verify protection of masonry during cold weather (temperature below 40° F) or hot weather (temperature above 90°).	Periodic	SI	2104A.3 and 2104A.4 (2104.3* and 2104.4*).
<input checked="" type="checkbox"/>	l. Inspect type, size, and location of anchors and all other items to be embedded in masonry including other details of anchorage of masonry to structural members, frames and other construction.	Continuous	SI	
<input checked="" type="checkbox"/>	m. Inspect grout space prior to grouting and placement of grout.	Continuous	SI	



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- STEEL, ALUMINUM				
Table 1705A.2.1				
- 17. STRUCTURAL STEEL, COLD-FORMED STEEL, AND ALUMINUM USED FOR STRUCTURAL PURPOSES				
Material Verification:				
X	a. Verify that all materials are appropriately marked and that: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	*	* By special inspector or qualified technician when performed off-site.
X	b. Test unidentified materials	Test	LOR	2203A.1 (2203.1*). ASTM A370.
X	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.
Inspection:				
X	e. Verify and document steel fabrication per DSA approved construction documents.	Periodic	SI	Not applicable to cold-formed steel, except for trusses (1705A.2.2.4).
- 18. HIGH STRENGTH BOLTS:				
Material Verification of High-Strength Bolts, Nuts, and Washers:				
X	a. Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA approved documents.	Periodic	SI	DSA IR 17-9
X	b. Test high-strength bolts, nuts and washers.	Test	LOR	2213A.1 (2212.6.1*). ASTM F606, A370. DSA IR 17-8
Inspection of High-Strength Bolt Installation:				
X	c. Bearing-type ("snug tight") connections.	Periodic	SI*	DSA IR 17-9
X	d. Slip-critical connections.	*	SI	* "Continuous" or "Periodic" depends on the tightening method used, DSA IR 17-9 and 1705A.2.1.
- 19. WELDING:				
Verification of Materials, Equipment, Welders, etc:				
X	a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.	Periodic	SI	
X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
- 19.1 SHOP WELDING:				
X	a. Inspect groove, multi-pass fillet welds > 5/16", plug and slot welds	Continuous	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
X	c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.2.1 Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
X	d. Verification of reinforcing steel weldability	Periodic	SI	1705A.3.1; verify carbon equivalent reported on mill certificates. DSA IR 17-3.
X	e. Inspect welding of reinforcing steel.	Continuous	SI	1705A.2.2.1.2, 1705A.2.2.5 and Table 1705A.2.1 Item 5b. AWS D1.4. DSA IR 17-3.
- 19.2 FIELD WELDING:				
X	a. Inspect groove, multi-pass fillet welds > 5/16", plug and slot welds	Continuous	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.
X	c. Inspect end-welded studs (ASTM A-106) installation (including bend test)	Periodic	SI	Per AISC 360 (and AISC 341 as applicable), 2213A.2 (2212.6.2*). DSA IR 17-3.
X	d. Inspect floor and roof deck welds	Periodic	SI	Per AISC 360 (and AISC 341 as applicable). DSA IR 17-3.



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X	e. Inspect welding of structural cold-formed steel	Periodic	SI*	* May be performed by the project inspector when specifically approved by DSA. DSA IR 17-3. 1705A.2.2.1.1 and 1705A.2.2.5
X	f. Inspect welding of stairs and railing systems	Periodic	SI*	* May be performed by the project inspector when specifically approved by DSA. DSA IR 17-3. 1705A.2.2.1.1 and 1705A.2.2.5
X	g. Verification of reinforcing steel weldability	Periodic	SI	1705A.3.1; verify carbon equivalent reported on mill certificates. DSA IR 17-3.
X	h. Inspect welding of reinforcing steel.	Continuous	SI	1705A.2.2.1.2, 1705A.2.2.5 and Table 1705A.2.1 Item 5b. AWS D1.4. DSA IR 17-3.
-	20. NONDESTRUCTIVE TESTING:			
X	a. Ultrasonic	Test	LOR	AISC 360 N5.5, AISC 341, App. Q 5.2. AWS D1.1, D1.8.- ANSIIASNT CP-189, SNT-TC-1A. - ASTM E543, E1444, E164 - DSA IR 17-2.
X	b. Magnetic Particle	Test	LOR	
-	22. SPRAY APPLIED FIRE-PROOFING:			
X	a. Examine structural steel surface conditions, inspect application, take samples, measure thickness, and verify compliance of all aspects of application with DSA approved documents.	Periodic	SI	1705A.13. ASTM E605.
X	b. Test bond strength.	Test	LOR	1705A.13.6. ASTM E736.
X	c. Test density.	Test	LOR	1705A.13.5. ASTM E605.
-	23. ANCHOR BOLTS, ANCHOR RODS, & OTHER STEEL:			
X	a. Anchor Bolts and Anchor Rods	Test	LOR	IR 17-11 Sample and test anchor bolts and anchor rods not readily identifiable.
X	b. Threaded rod not used for foundation anchorage.	Test	LOR	Sample and test threaded rods not readily identifiable per procedures noted in IR 17-11
+	WOOD			
+	OTHER			



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List of required verified report(s):

- 1 Soils testing and Inspection: Geotechnical Verified Report - Form DSA-293
- 2 All Structural Testing: Laboratory Verified Report - Form DSA-291
- 3 Concrete Batch Plant Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292
- 4 Masonry Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292
- 5 Shop Welding Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292
- 6 Field Welding Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292
- 7 HS Bolt Installation Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292
- 8 Fire-Proofing Application Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292

KEY to Columns

1 Type -	2 Performed By -
Continuous – Indicates that a continuous special inspection is required	GE – Indicates that the special inspection is to be performed by a registered geotechnical engineer or his or her authorized representative
Periodic – Indicates that a periodic special inspection is required	LOR – Indicates that the test or inspection is to be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See section 4-335, 2013 CCR Title 24, Part 1.
Test – indicates that a test is required	SI – Indicates that the special inspection is to be performed by a special inspector
COMPILE	PRINT

James G. Matson

Name of Architect or Engineer in general responsible charge

Name of Structural Engineer (When structural design has been delegated)

James G. Matson
Signature of Architect or Structural Engineer

7/3/17

date

IDENTIFICATION STAMP
DIV OF THE STATE ARCHITECT
APP. # 04-115788

AC N/A F/LS N/A SS 1/2

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Appendix: Work Exempt from DSA Requirements for Special Inspection or Structural Testing

Exempt items given in IR A-22 or the 2013 CBC (including DSA amendments) and those items identified below with an "X" by the design professional are NOT subject to DSA requirements for structural tests and special inspections. The project inspector shall verify all construction complies with the approved construction documents.

Exempted by Design Prof.	
Soils:	
X	1. Deep foundations acting as a cantilever footing designed based on minimum allowable pressures per 2013 CBC Table 1806A.2 and having no geotechnical report for the following types of structures: free standing sign, scrolling message sign, scoreboard, covered walkway or shade structure with dead load less than 5 psf and other light-weight structures of which the apex is less than 8' above the highest adjacent grade.
X	2. Shallow foundations meeting the exception item #1 criteria specified in 2013 CBC Section 1803A.2.
(Optional) List details for applicable exempt items:	
Concrete/Masonry:	
X	1. Post-Installed anchors for the following: 1) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment) given in ASCE 7-10, Section 13.1.4 (and modified by CBC Section 1818A.1.18) or 2) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."

Exempted by Design Prof.	
Welding:	
X	1. Solid-clad and open-mesh gates with maximum leaf span or rolling section for rolling gates of 10' and apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
X	2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections); fillet welds cannot be ground flush.
X	3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
X	4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above).
X	5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above).



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X	2. Concrete batch plant inspection is not required for the following, provided they are identified on the approved construction documents and the licensed weighmaster and batch ticket requirements of Section 1705A.3.3 are implemented: 1) site flatwork, 2) unenclosed site structures, including but not limited to lunch or car shelters, bleachers, solar structures, flag or light poles, or retaining walls less than 4'-0" above the top of foundation not supporting a surcharge and free standing nonbearing non-shear walls up to 6'-0" above adjacent grade, 3) controlled low-strength material backfill, 4) single-story relocatable buildings less than 2,160 square feet.		
X	3. Masonry retaining walls less than 4'-0" above the top of foundation not supporting a surcharge and free standing nonbearing non-shear masonry walls up to 6'-0" above adjacent grade do not require mortar or masonry core testing or DSA special inspection. For non-bearing non-shear masonry walls not exceeding total wall height of 12' above wall base, mortar test shall be permitted to be limited to those at the beginning of masonry work for each mix design. Core sampling and testing is not required for non-bearing non-shear masonry walls, not exceeding total wall height of 12' above wall base, built with single-wythe hollow unit concrete masonry that attaches opposite face shells using webs cast as single unit, when designed using an f'm not exceeding 1,500 psi (10.34 MPa).		6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 of listing above).
X	4. Epoxy shear dowels in site flatwork.		7. Any support for exempt non-structural components given in ASCE 7-10, Section 13.1.4 (and modified by CBC Section 1616A.1.18) meeting the following: 1) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) <= 4' above supporting floor/roof, 2) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.
(Optional) List details for applicable exempt items:			



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