



DSA-103 Issued 9/1/2017
List of Required Structural Tests & Special Inspections - 2016 CBC

INCREMENT #

2

DSA File No.:

1-C1

Application No.:

01 117058

Date Submitted:

4/24/2018

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School Name	COLLEGE OF ALAMEDA	District	Peralta Community College District
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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.

NOTE: This form is also available for projects submitted for review under the 2007, 2010, and 2013 CBC.

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: References are to the 2016 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 classification and testing of fill materials.	Test	LOR*	* Under the supervision of the geotechnical engineer.
X	b. Verify use of proper materials, densities 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.
-	3. DRIVEN DEEP FOUNDATIONS (PILES):			Table 1705A.7
X	a. Verify pile materials, sizes and lengths comply with the requirements.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
X	b. Determine capacities of test piles and conduct additional load tests as required.	Test	LOR*	* Under the supervision of the geotechnical engineer.
X	c. Inspect driving operations and maintain complete and accurate records for each pile.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.



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X	d. Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
	e. Steel piles.	Provide tests and inspections per STEEL section below.		
X	f. Concrete piles, and concrete filled piles.	Provide tests and inspections per CONCRETE section below.		
	g. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	*	*	* As defined on drawings or specifications.
+	4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS): Table 1705A.8			
+	5. RETAINING WALLS:			
-	6. OTHER SOILS:			
X	a. Soil Improvements	Test	GE*	Submit a comprehensive report documenting final soil improvements constructed, construction observation, and the results of the confirmation testing and analysis to CGS for final acceptance. * By geotechnical engineer or his or her qualified representative.
X	b. Inspection of Soil Improvements	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
	c.			
-	CONCRETE Table 1705A.3, ACI 318-14 Sections 26.12 & 26.13			
-	7. CAST IN PLACE CONCRETE			
	Material Verification and Testing:			
X	a. Verify use of required design mix.	Periodic	SI*	Table 1705A.3 Item 5, 1910A.1 (1909.2.3*). * To be performed by qualified batch-plant inspector and concrete sampling technician
X	b. Identify, sample, and test reinforcing steel.	Test	LOR	1910A.2 (1909.2.4*); ACI 318-14 Section 26.6.1.2. DSA IR 17-10.16
X	c. During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	Table 1705A.3 item 6; ACI 318-14 Sections 26.5 & 26.12
X	d. Test concrete (f_c).	Test	LOR	1905A.1.16 (1909.3.7*); ACI 318-14 Section 26.12.
	Inspection:			
X	e. Batch plant inspection <input type="radio"/> Continuous <input checked="" type="radio"/> Periodic	See Notes	SI	Default of 'Continuous' per 1705A.3.3; If approved by DSA, batch plant inspection may be reduced to 'Periodic' subject to requirements in Section 1705A.3.3.1 or eliminated per 1705A.3.3.2. (See Appendix for exemptions.)
	f. Not used.			
	g. Not used.			
	h. Welding of reinforcing steel.	Provide special inspection per STEEL, category 19.1(d) & (e) and/or 19.2(g) & (h) below.		
	i. Not used.			
-	8. PRESTRESSED CONCRETE (in addition to Cast in Place Concrete tests and inspections):			
	a. Sample and test prestressing tendons and anchorages.	Test	LOR	1705A.3.4, 1910A.3 (1909.2.5*)
X	b. Inspect placement of prestressing tendons.	Periodic	SI	1705A.3.4, Table 1705A.3 Items 1 & 9.



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X	c. Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	Periodic	SI	Table 1705A.3 Item 11. Special inspector to verify specified concrete strength test prior to stressing.
	d. Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	Continuous	SI	1705A.3.4, Table 1705A.3 Item 9; ACI 318-14 Section 26.13
+ 9. PRECAST CONCRETE (in addition to Cast in Place Concrete tests and inspections):				
+ 10. SHOTCRETE (in addition to Cast in Place Concrete tests and inspections):				
- 11. POST-INSTALLED ANCHORS:				
X	a. Inspect installation of post-installed anchors	See Notes	SI*	Table 1705A.3 Item 4a (Continuous) & 4b (Periodic) (see Appendix for exemptions). ACI 318-14 Sections 17.8 & 26.13 * May be performed by the project inspector when specifically approved by DSA.
X	b. Test post-installed anchors.	Test	LOR	1910A.5 (1909.2.7 ⁺). (See Appendix for exemptions.)
+ 12. OTHER CONCRETE:				
+ MASONRY TMS 402-13/ACI 530-13/ASCE 5-13 Table 3.1.3 & TMS 602-13/ACI 530.1-13/ASCE 6-13 Table 5				
- STEEL, ALUMINUM Table 1705A.2.1, AISC 303-10, AISC 360-10, AISC 341-10, AISC 358-10, AISI S100-07/S2-10				
- 17. STRUCTURAL STEEL, COLD-FORMED STEEL, AND ALUMINUM USED FOR STRUCTURAL PURPOSES				
Material Verification:				
X	a. Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	*	2203A.1 (2203.1 ⁺), Table 1705A.2.1 Item 3a-3c; AISI S100-07/S2-10 Section A2.1 & A2.2, AISI S200-12 Section A3, AISI S220-11 Section A4. * By special inspector or qualified technician when performed off-site.
X	b. Test unidentified materials	Test	LOR	2203A.1 (2203.1 ⁺).
X	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.
Inspection:				
	d. Not used.			
X	e. Verify and document steel fabrication per DSA approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (1705A.2.4).
- 18. HIGH STRENGTH BOLTS: RCSC 2009				
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	Table 1705A.2.1 Item 1, 2203A.1; RCSC 2009 Section 2.1. DSA IR 17-9
X	b. Test high-strength bolts, nuts and washers.	Test	LOR	2213A.1 (2212.6.1 ⁺). RCSC 2009 Section 7.2 DSA IR 17-8.16
Inspection of High-Strength Bolt Installation:				
X	c. Bearing-type ("snug tight") connections.	Periodic	SI	Table 1705A.2.1 Item 2a; RCSC 2009 Section 9.1. DSA IR 17-9
X	d. Slip-critical connections.	*	SI	Table 1705A.2.1 Item 2b & 2c. RCSC 2009 Section 9.2 & 9.3. * "Continuous" or "Periodic" depends on the tightening method used, DSA IR 17-9 and 1705A.2.1.
- 19. WELDING: 1705A.2.5, Table 1705A.2.1 Items 4 & 5; DSA IR 17-3, AWS D1.1 and AWS D1.8 for structural steel, AWS D1.2 for Aluminum, AWS D1.3 for cold-formed steel, AWS D1.4 for reinforcing steel. (See Appendix for exemptions.)				
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	DSA IR 17-3.



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X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
-	19.1 SHOP WELDING:			
X	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds	Continuous	SI	Table 1705A.2.1 Item 5a1-4. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.5 & 5a.6. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.1. Per AISC 360-10 (and AISC 341-10 as applicable). AWS D1.1 & D1.3. DSA IR 17-3.
	d. Verification of reinforcing steel weldability other than ASTM A706	Periodic	SI	1705A.3.1; verify carbon equivalent reported on mill certificates. AWS D1.4. DSA IR 17-3.
	e. Inspect welding of reinforcing steel.	Continuous	SI	1705A.3.1, Table 1705A.3 Item 2, and Table 1705A.2.1 Item 5b, 1903A.8. AWS D1.4. DSA IR 17-3.
-	19.2 FIELD WELDING:			
X	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds	Continuous	SI	Table 1705A.2.1 Item 5a1-4. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	Table 1705A.2.1 Item 5a.5. Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	c. Inspect end-welded studs (ASTM A-108) installation (including bend test)	Periodic	SI	2213A.2 (2212.6.2 ⁺); per AISC 360-10 (and AISC 341-10 as applicable), AWS D1.1. DSA IR 17-3.
X	d. Inspect floor and roof deck welds	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.6; per AISC 360 (and AISC 341 as applicable) & AWS D1.3. DSA IR 17-3.
X	e. Inspect welding of structural cold-formed steel	Periodic	SI*	1705A.2.5; AWS D1.3. * May be performed by the project inspector when specifically approved by DSA. DSA IR 17-3.
X	f. Inspect welding of stairs and railing systems	Periodic	SI*	1705A.2.1; Per AISC 360-10 (and AISC 341-10 as applicable). AWS D1.1 & D1.3. DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
	g. Verification of reinforcing steel weldability	Periodic	SI	1705A.3.1; verify carbon equivalent reported on mill certificates. DSA IR 17-3.
	h. Inspect welding of reinforcing steel.	Continuous	SI	1705A.3.1, Table 1705A.3 Item 2, and Table 1705A.2.1 Item 5b, 1903A.8. AWS D1.4. DSA IR 17-3.
-	20. NONDESTRUCTIVE TESTING:			
X	a. Ultrasonic	Test	LOR	1705A.2.1 & 1705A.2.5. AISC 360-10 N5.5, AISC 341-10 J6.2. AWS D1.1, D1.8. ANSI/ASNT CP-189, SNT-TC-1A. DSA IR 17-2.
X	b. Magnetic Particle	Test	LOR	
	c.	Test	LOR	
	d.	Test	LOR	
-	21. STEEL JOISTS AND TRUSSES:			
X	a. Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	Continuous	SI	1705A.2.3, Table 1705A.2.3; AWS D1.1 and DSA IR 22-3 for steel joists only. 1705A.2.4; AWS D1.3 for cold-formed steel trusses.
-	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.14
X	b. Test bond strength.	Test	LOR	1705A.14.6



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X	c. Test density.	Test	LOR	1705A.14.5
-	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
	c.			
-	WOOD			
+	24. PREFABRICATED WOOD STRUCTURAL ELEMENTS:		Section 1705A.5	
+	25. OTHER WOOD:			
+	OTHER			



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List of required verified report(s):

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

Christopher Noll, Noll & Tam Architects

Name of Architect or Engineer in general responsible charge

Paul Rodler, Forell Elsesser Structural Engineers

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

4/24/2018

Signature of Architect or Structural Engineer

date

IDENTIFICATION STAMP
 DIV OF THE STATE ARCHITECT
 APP. # 01 117058

AC N/A F/LS N/A SS _____

DATE _____

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



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Exempt items given in IR A-22 or the 2016 CBC (including DSA amendments) and those items identified below with an "X" by the design professional are NOT subject to DSA requirements for the structural tests or special inspections noted. Items marked as exempt shall be identified by either: 1) listing specific details/sheets noted in the spaces provided below OR 2) on the approved construction documents. 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 2016 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 2016 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 - see item 7 for "Welding") given in CBC Section 1616A.1.18 (which replaces ASCE 7-10, Section 13.1.4) or 2) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."
X	2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
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 grout, mortar or masonry core testing or DSA special inspection.
X	4. Epoxy shear dowels in site flatwork.

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 per the 'Exception' language in Section 1705A.2.1); 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).
X	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	7. Any support for exempt non-structural components given in CBC Section 1616A.1.18 (which replaces ASCE 7-10, Section 13.1.4) 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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(Optional) List details for applicable exempt items: