

 Building Division	SHOTCRETE INSPECTION City of Palo Alto (CPA) Building Inspection Division 285 Hamilton Ave. Inspection Request: 650 329-2496 IVR# 210	Revision Date: 1/20/11
		General Requirements/Checklist for: Residential and Commercial Codes Enforced: 2010 CRC, CBC Palo Alto Municipal Code (PAMC) American Concrete Institute (ACI)
The information provided in this document is general and intended as a guide only. Each project is unique and additional requirements may be enforced as deemed appropriate.		

WARNING

- Failure to complete items below prior to inspection may result in a re-inspection fee.
- Gas/Electric utilities will be removed if found to be unsafe at time of inspection.

REQUIRED SPECIAL INSPECTION AND TESTING

Work requiring Special Inspection per <i>CBC 1701</i>	Required certification for Special Inspector
Shotcrete and Reinforcement <ul style="list-style-type: none"> • <u>Continuous</u> Special Inspection of shotcrete placement for proper application techniques. <i>CBC 1704.4 (6)</i> 	<ul style="list-style-type: none"> • ICC Reinforced Concrete
<ul style="list-style-type: none"> • <u>Periodic</u> Special inspection of reinforcement steel. <i>CBC Table 1704.4 #(1)</i> 	<ul style="list-style-type: none"> • ICC Reinforced Concrete

REQUIRED STRUCTURAL OBSERVATION BY ENGINEER OF RECORD

- Engineer of record shall inspect reinforcement in addition to the above required Special Inspections. *CBC 1709.2 #5*

PLANS AND REVISIONS Frequently missed/Inspection Failures

- Shotcrete shall be called out on the CPA approved set of plans. **If not**, Engineer of record shall revise plans to include shotcrete. Revisions must be CPA approved.
- The approved plans shall include shotcrete wall details for reinforcement size, min. clearances between parallel bars, when two curtains of steel are provided need min. spacing between curtains, reinforcement around openings in wall and non contact lap splicing clearance between bars. *CBC 1913.4.1, 1913.4.2, 1913.4.3*

PRECONSTRUCTION TEST PANEL

- **Special inspection** is required for test panel and to qualify the nozzleman.
- Engineer shall provide a letter and detail depicting most congested area reinforcement.
- **On site test panels** require a CPA inspection and special inspection report prior to shotcrete. The test panel shall represent the thickest and most congested area of reinforcement.
- **Off site test panels** shall be pre approved by the CPA Building Official, if approved the **Engineer of record shall inspect and provide a panel field verification report** indicating that the panel thickness and reinforcement demonstrated the most thickest and congested area specified in the structural design AND special inspection report.
- **Nozzleman** shall be ACI certified for application used i.e. Dry mix, Wet mix, Vertical, Overhead.
- Test panel shall be shot, cured, cored or sawn, examined, and tested prior to commencement of the project. *CBC 1924.5*
- Once test panel is completed and the nozzleman has been qualified, permitted work can start.
- **Exception: Based on CPA inspector field verification**, Engineer of record may omit test panel requirements if reinforcement is designed with minimal congestion and not larger than # 5 bar. *CBC 1913.4.1*

NOT ALLOWED

- Shotcrete shall not be applied to spirally tied columns. *CBC 1913.4.4*
- Bonding agents are not allowed.

PRIOR TO CPA INSPECTION

- Project Engineer and Special Inspector shall inspect and complete field report for project reinforcement prior to CPA inspection. (Reports shall be on site for CPA inspector)

CPA INSPECTION Shotcrete Wall Steel

ICC Special inspection and engineer structural observation does not waive the CPA inspection for reinforcement prior to shotcrete.

- See Foundation and basement wall checklist for all general requirements.
- Verify all paper work is complete. (i.e. engineer of record and special inspection, survey/setbacks letter.) *CBC 1802 a .1*
- Verify all details are complete. *CBC 1913.4*
- Verify that forms are plum and properly braced or tied together to maintain position and shape. *ACI 6.1*
- Verify non-contact splices and clearances. *CBC vol. 2 1913.4.3*
- All debris such as tie wire and rebound shall be removed. *CBC 1913.6*
- All steel, electrical, plumbing, etc. shall be secured in place to prevent vibration and displacement.
- Concrete or masonry to receive shotcrete shall have entire surface thoroughly cleaned and roughened. (Bonding agents are not allowed).

DAMAGE

- Shotcrete that exhibits sags, sloughs, segregation, honeycombing, sand pockets or other obvious defects shall be removed and replaced. *CBC 1913.8*
- Repair method shall be as required by structural Engineer and requires special inspection. *CBC 1913.8*

REMOVAL OF FORMS AND SHORING

- The structural analysis and concrete strength data used in planning and implementing form and shoring removal shall be furnished by the Contractor to the Building Official/Inspector when so requested. *ACI 6.2 (A)*
- Forming and shoring shall not be removed until concrete has sufficient strength to support safely its weight and loads placed thereon. *ACI 6.2 (B)*