

## WET MIX SHOTCRETE

### A. SCOPE:

The use of structural wet mix shotcrete is allowed by the code when the owner, engineer, contractor, and concrete supplier comply with these procedures, in addition to requirements of Section 1913 of the 2011 Los Angeles Building Code (LABC).

### B. DEFINITIONS:

Wet Mix Shotcrete is shotcrete in which all of the ingredients (including water) are mixed before being placed into the placing equipment.

### C. LIMITATIONS:

- General**  
Structural wet mix shotcrete shall not be placed where the stream from the nozzle cannot directly impinge onto the surface where the concrete is to be placed. Where the condition precludes the possibility of obtaining cores from the structure, this method shall not be used.
- Reinforcement**  
Reinforcing bars shall not exceed size #5.
- Columns**  
Shotcrete may only be applied to tied columns where the spacing of the reinforcing steel is the same as for walls.

### D. CODES:

- All applicable parts of ACI 508R-05 shall be followed. Structural wet mix shotcrete applicators shall have a copy of the ACI 508R-05 on each work site during the time that the shotcrete is being applied. The word "shall" must be substituted whenever the word "should" occurs in ACI 508R-05.
- The concrete mix shall comply with LABC Section 1905 and shall not be batched volumetrically.
- All other applicable requirements of the Code (including all requirements for pneumatically placed wet mixed mortar and maximum time-in-mixers) shall apply.

### E. INSPECTION:

- Shotcrete requires continuous inspection by a Registered Deputy Inspector.
- Continuous inspections shall be provided for the placement of all reinforcing, the placement of shotcrete, and the assembly, shooting, testing, and disassembly of test panels.

### F. PRECONSTRUCTION TESTS:

The test panel shall be a square with a minimum of 4 feet on each side.

### G. CONDITIONS:

- The minimum slump shall be 11" and the maximum slump shall be 21". Slump shall be measured at the point of discharge from the mixer, except when the Building Inspector may require slump tests at the discharge point where water may have been added.
- A capable nozzleman's helper with an air blow pipe shall be provided to assist the nozzleman in keeping all rebound build-up out of the work.
- All other workers may be required to take the rebound from the work if the rebound cannot be removed by the air blow pipe.
- No keyways or embedments shall be placed in the front face that will interfere with the stream from the nozzle.
- The contractor agrees to provide a designated liaison between his crew, the Deputy Inspector, and the Building Inspector.
- The Deputy Inspector shall be interviewed and approved by Department representatives prior to inspecting the work at the jobsite and one Deputy shall be assigned to each nozzle.
- Rigid or other approved backing shall be placed against the earth where there is any likelihood of soil being dislodged in sufficient quantity to damage the concrete during the application of wet mix shotcrete. Rigid or other approved backing shall be used where a void in the embankment is to be bridged.
- In the event that a previously presumed solid embankment should slough or shed dirt in sufficient quantity to damage the concrete, the wet mix shotcrete placement work in that area shall cease until a rigid backing is installed and any contaminated shotcrete is removed.
- The height of a layer shall be limited to not more than 3' and succeeding layers shall not be placed in less than three hours. No sloughing or sagging shall be permitted. When specifically designed by the engineer of record for a succeeding layer to be placed in less than three hours, the lesser time must be approved by the Plan Check Division.
- Details of cold joints, including the slope of the joints, shall be shown on the approved plans. When shooting up to the underside of existing concrete, the last 2" shall be dry packed or an approved method of dry pneumatic concrete shall be used.  
**EXCEPTION:** Provided that the detail of the joint is sloped so that the closure of the cold joint made with structural wet mix shotcrete does not sag away from the upper surface and provided that both sides of the cold joint have taken their initial set, the joint closure may be made with structural wet mix shotcrete.
- Reinforcing steel shall be securely tied in place in a manner that prevents any movement during the wet mix shotcreting.

The engineer of record shall provide shotcrete specifications which shall be part of the plans. This specification shall include but not be limited to the materials and conditions (in conformance with this document) required to achieve the required structural performance, and shall state the minimum type and duration of experience required for the placement team (particularly the nozzleman) so as to insure the conformance with the above.

The shotcrete subcontractor shall present, upon the request of a Department of Building and Safety inspector, a "statement of qualifications" signed by an officer of the subcontractor corporation. Both the specification and statement shall include, but not necessarily be limited to, the following:

- The duration and type of structural shotcrete experience (not including swimming pools) of the nozzleman, the subcontracting company, the superintendent, and helper.
- The subcontractor's listed experience shall reference specific projects approved in the City of Los Angeles.

## CONCRETE

- ALL PHASES OF WORK PERTAINING TO CONCRETE CONSTRUCTION SHALL CONFORM TO CBC.
- CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY. MIX DESIGNS SHALL CONFORM TO CBC, METHOD B. CONCRETE WITH A 3/8" MAXIMUM AGGREGATE SIZE SHALL NOT BE USED UNLESS SPECIFICALLY APPROVED BY THE ARCHITECT OR STRUCTURAL ENGINEER. CONCRETE SHALL CONTAIN A MINIMUM OF 5 BAGS OF CEMENT PER CUBIC YARD. THE MAXIMUM SLUMP SHALL NOT EXCEED 31 1/4" FOR FOOTINGS, SLABS ON GRADE AND MASS CONCRETE, AND 4" 1/4" FOR OTHER CONCRETE.
- SCHEDULE OF STRUCTURAL CONCRETE 28 DAY MINIMUM STRENGTHS AND TYPES:  
FOOTINGS, CAISSONS,  
GRADE BEAMS ..... 145 PCF, f'c = 3000 PSI  
SLABS ON GRADE ..... 145 PCF, f'c = 3000 PSI  
ELSEWHERE UNLESS NOTED, 145 PCF, f'c = 3000 PSI
- PORTLAND CEMENT SHALL CONFORM TO CBC STANDARDS (ASTM C-150), TYPE I OR TYPE II, LOW ALKALI.
- AGGREGATE FOR HARDROCK CONCRETE SHALL CONFORM TO ASTM C-33.
- AGGREGATE FOR LIGHTWEIGHT CONCRETE SHALL CONFORM TO ASTM C-330.

- READY MIXED CONCRETE SHALL CONFORM TO CBC STANDARDS (ASTM C-94).
- PLACEMENT OF CONCRETE SHALL CONFORM TO ACI. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL CONCRETE SURFACES AGAINST WHICH CONCRETE IS TO BE PLACED.
- ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE SECURED IN POSITION PRIOR TO PLACING CONCRETE.

- PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL OPENINGS IN CONCRETE BEFORE PLACING. DO NOT CUT ANY REINFORCING WHICH MAY CONFLICT. CORING IN CONCRETE IS NOT PERMITTED EXCEPT AS SHOWN. NOTIFY THE STRUCTURAL ENGINEER, IN ADVANCE, OF CONDITIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

- THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 3"

CONCRETE EXPOSED TO EARTH OR WEATHER

1/2" THROUGH #10 BARS ..... 2"  
#5 BARS, #3 OR D31 WIRE, AND SMALLER ..... 1 1/2"

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:

SLABS, WALLS, JOISTS:  
#4 AND #8 BARS ..... 1 1/2"  
#1 BAR AND SMALLER ..... 3/4"  
BEAMS, COLUMNS:  
PRIMARY REINFORCEMENT  
STIRRUPS, TIES, SPIRALS. . . 1 1/2"

- CONDUIT OR PIPE SIZE (O.D.) SHALL NOT EXCEED ON THIRD OF SLAB THICKNESS AND SHALL BE PLACED BETWEEN THE TOP AND BOTTOM REINFORCING, UNLESS SPECIFICALLY DETAILED OTHERWISE. CONCENTRATIONS OF CONDUITS OR PIPES SHALL BE AVOIDED EXCEPT WHERE DETAILED OPENINGS ARE PROVIDED. CLEAR SPACING BETWEEN ADJACENT CONDUITS OR PIPES SHALL BE A MINIMUM OF 2 TIMES THE LARGER OUTSIDE DIAMETER (O.D.).
- SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL MOLDS, GROOVES, REVEALS, ORNAMENTS, SLIPS AND GROUNDS TO BE CAST IN CONCRETE.
- DRYPACK UNDER BASEPLATES, SILL PLATES AND WHERE OTHERWISE NOTED ON DRAWINGS SHALL CONSIST OF 1 PART PORTLAND CEMENT AND 2-1/2 PARTS OF FINE AGGREGATE CONFORMING TO ASTM C-33 WITH ENOUGH WATER TO FORM A BALL WHEN SQUEEZED IN THE HAND. THE SPACE BETWEEN TWO SURFACES REQUIRING DRYPACK SHALL BE PACKED WITH THE DRYPACK MATERIAL BY TAMPING OR RAMMING WITH A BAR OR ROD UNTIL THE VOIDS ARE COMPLETELY FILLED.
- CONCRETE FOR SLAB ON GRADE DOES NOT REQUIRE BATCH PLANT INSPECTION. A MINIMUM OF ONE SET OF TWO CYLINDERS SHALL BE TAKEN AND TESTED FOR EACH 500 CUBIC YARDS OF CONCRETE OR FRACTION THEREOF.

## CONCRETE BLOCK MASONRY (fm = 1600 PSI)

- ALL PHASES OF WORK PERTAINING TO CONCRETE BLOCK MASONRY CONSTRUCTION SHALL CONFORM TO CBC.
- THE STRENGTH OF CONCRETE BLOCK MASONRY CONSTRUCTION SHALL BE DETERMINED BY PRISM TESTING IN ACCORDANCE WITH CBC.
- CONCRETE BLOCKS SHALL BE HOLLOW LOAD-BEARING CONCRETE MASONRY UNITS CONFORMING TO CBC STANDARDS (ASTM C-90), GRADE N-1, NORMAL WEIGHT UNITS, USE OPEN END UNITS AT VERTICAL REINFORCING.
- CEMENT SHALL BE AS SPECIFIED FOR CONCRETE.
- MORTAR SHALL CONFORM TO CBC, FOR TYPE S MORTAR. MORTAR SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI AT 28 DAYS.
- GROUT SHALL CONFORM TO CBC, FOR COARSE GROUT. USE SUFFICIENT WATER FOR GROUT TO FLOW INTO ALL CELLS WITHOUT SEGREGATION. ADMIXTURE SHALL BE Sika GROUT AID, TYPE II, IN THE PROPORTION OF SIX POUNDS PER CUBIC YARD OF GROUT. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
- PROVIDE A MINIMUM ONE BAR DIAMETER OF GROUT BETWEEN MAIN REINFORCING AND MASONRY UNITS. PROVIDE A MINIMUM OF 1" OF GROUT AROUND ALL BOLTS EMBEDDED IN MASONRY.
- ALL CELLS IN CONCRETE BLOCKS SHALL BE SOLIDLY FILLED WITH GROUT.
- MAXIMUM GROUT FOUR HEIGHT FOR LOW-LIFT CONSTRUCTION SHALL BE 6 FEET.
- HIGH-LIFT GROUTED CONSTRUCTION SHALL CONFORM TO CBC. PROVIDE CLEANOUT OPENINGS AT THE BOTTOM OF EACH POUR OF GROUT.
- HORIZONTAL REINFORCING SHALL BE PLACED IN BOND BEAM UNITS.
- CELLS SHALL BE IN VERTICAL ALIGNMENT. DOUELS IN FOOTINGS SHALL BE SET TO ALIGN WITH CORES CONTAINING VERTICAL REINFORCING.
- REFER TO ARCHITECTURAL DRAWINGS FOR SURFACE TEXTURE, HEIGHT OF MASONRY UNITS, LAYING PATTERN AND JOINT TYPE. USE RUNNING BOND PATTERN, UNLESS NOTED OTHERWISE.
- NO PIPES OR DUCTS SHALL BE PLACED IN MASONRY WALLS UNLESS SPECIFICALLY NOTED OR DETAILED.

## REINFORCING STEEL FOR CONCRETE AND MASONRY

- ALL REINFORCING STEEL SHALL BE PLACED IN CONFORMANCE WITH CBC, AND THE MANUAL OF STANDARD PRACTICE BY THE CONCRETE REINFORCING STEEL INSTITUTE, OR AS MODIFIED BY THE CONSTRUCTION DOCUMENTS.
- REINFORCING BARS SHALL CONFORM TO ASTM A-615 GRADE 60, EXCEPT #3 BARS MAY BE GRADE 40. REINFORCING BARS THAT ARE TO BE WELDED SHALL CONFORM TO ASTM A-106, GRADE 60. REINFORCING BARS IN CONCRETE FRAME MEMBERS, AND IN SHEAR WALL BOUNDARY MEMBERS SHALL CONFORM TO ASTM A-106, GRADE 60.
- WELDING OF REINFORCEMENT SHALL BE WITH LOW HYDROGEN ELECTRODES AND SHALL CONFORM TO CBC STANDARDS (STRUCTURAL WELDING CODE - REINFORCING STEEL, AWS D14, BY THE AMERICAN WELDING SOCIETY) MINIMUM TENSILE STRENGTH OF WELD METAL SHALL BE 90 KSI, ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS.
- ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
- WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-105, AND SHALL BE LAPPED 1-1/2 SPACES AND 12" MINIMUM.
- DOUELS BETWEEN FOOTINGS AND WALLS OR COLUMNS SHALL BE THE SAME GRADE, SIZE, SPACING AND NUMBER AS THE VERTICAL REINFORCEMENT, RESPECTIVELY.
- REINFORCING SPLICES SHALL BE MADE AS INDICATED ON THE DRAWINGS.
- ALL VERTICAL REINFORCING SHALL BE CONTINUOUS BETWEEN TWO LEVELS, UNLESS NOTED OTHERWISE.

## WOOD

- ALL PHASES OF WORK PERTAINING TO WOOD CONSTRUCTION SHALL CONFORM TO THE CBC AND NDS 2005.
- LUMBER SHALL BE GRADED IN ACCORDANCE WITH THE STANDARD GRADING RULES NO. 16 OF THE WEST COAST LUMBER INSPECTION BUREAU, OR THE STANDARD GRADING ASSOCIATION.
- DIMENSION LUMBER SHALL BE DOUGLAS FIR-LARCH, NO. 1 UNLESS NOTED OTHERWISE. TIMBER LUMBER SHALL BE DOUGLAS FIR-LARCH, NO. 1 GRADE, UNLESS NOTED OTHERWISE. SOFT MATERIAL WILL BE REJECTED.
- ALL FLYWOOD SHALL BE STRUCTURAL I AND COMPLY WITH CBC STANDARDS. USE FLYWOOD NAILS SAME GAUGE AS COMMON WIRE NAILS WITH LENGTHS AT LEAST EQUAL TO FLYWOOD THICKNESS PLUS REQUIRED PENETRATION PER CBC.
- BOLT HOLES SHALL BE A MINIMUM OF 1/32 IN. TO A MAXIMUM OF 1/16 IN. LARGER DIAMETER THAN NOMINAL SIZE OF BOLT USED. RETIGHTEN ALL NUTS PRIOR TO CLOSING IN. HOLD-DOWN BOLTS IN OVERSIZED HOLES IN EXCESS OF 1/16" SHALL BE REJECTED.
- STANDARD PLATE WASHERS SHALL BE USED UNDER BOLT HEADS AND NUTS AGAINST WOOD. USE HEAVY PLATE WASHERS TYPICAL.
- DO NOT BORE OR NOTCH JOISTS, RAFTERS OR BEAMS, EXCEPT WHERE SHOWN IN DETAILS. OBTAIN STRUCTURAL ENGINEER'S APPROVAL FOR ANY HOLES OR NOTCHES NOT DETAILED.
- MISCELLANEOUS METAL CONNECTORS FOR WOOD CONSTRUCTION SHALL BE SIMPSON STRONG-TIE UNLESS NOTED OTHERWISE. FILL ALL ROUND AND TRIANGULAR HOLES WITH THE SPECIFIED NAILS. APPROVED EQUALS MAY ONLY BE USED WITH PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER.
- ALL SILL PLATES WHICH REST ON FOUNDATION OR SLAB ON GRADE SHALL BE PRESSURE TREATED IN ACCORDANCE WITH CBC, AND SHALL BEAR THE WCLB OR WUPA GRADE STAMP AND THE AWPQ QUALITY MARK CUTS AND HOLES SHALL BE RETREATED PER AWPQ M4.
- JOISTS MORE THAN 8-INCH DEPTH SHALL BE CONTINUOUSLY BRIDGED BY SOLID BLOCKING, 2 INCHES THICK AND THE FULL DEPTH OF THE JOIST, SPACED AT 8 FEET ON CENTER.
- EXPOSED MEMBERS SHALL BE SELECT STRUCTURAL GRADE, FREE OF HEART SIZE PERMITS, AND SELECTED FOR APPEARANCE AND STRAIGHTNESS.
- ALL NAILING SHALL CONFORM TO CBC NAILING SCHEDULE USING COMMON WIRE NAILS. FREDRILL ALL NAILS 20D AND LARGER AND WHERE REQUIRED TO PREVENT SPLITTING. BOX NAILS WILL BE REJECTED.
- THE MOISTURE CONTENT OF WOOD MEMBERS SHALL NOT EXCEED 19% BEFORE INSTALLATION. IT WILL BE THE RESPONSIBILITY OF THE INSPECTOR OF RECORD TO VERIFY THAT THE CONTRACTOR HAS SUPPLIED LUMBER OF THE PROPER MOISTURE CONTENT BEFORE INSTALLATION. THE USE OF A HAND HELD MOISTURE CONTENT METER IS ACCEPTABLE.
- SSI JOISTS ARE A PROPRIETARY ENGINEERED WOOD PRODUCT FABRICATED BY STANDARD STRUCTURES, INC. LARR NUMBER 25436. NO SUBSTITUTIONS ARE ALLOWED.
- PSL BEAMS ARE A PROPRIETARY ENGINEERED WOOD PRODUCT FABRICATED BY TRUSJOIST MACMILLAN, LARR NUMBER 25202. MEMBERS SHALL BE FABRICATED IN THE SHOP OF AN APPROVED FABRICATOR. SUBMIT CALCULATIONS, SHOP DRAWINGS AND CERTIFICATION OF FABRICATION TO BUILDING DEPARTMENT PRIOR TO INSTALLATION. USE WESTERN SPECIES MATERIAL, 2x10# PSI MODULUS OF ELASTICITY.
- PROVIDE DOUBLE CT CONTINUITY TIES OR ST TENSION TIES AT ALL CONNECTIONS INDICATED. SIMPSON HOLD-DOWNS ARE NOT AN ACCEPTABLE SUBSTITUTION. CT CONTINUITY TIES ARE MANUFACTURED BY "ZONE FOUR" (510) 351-4310, AND ARE AVAILABLE AT HCS CUTLER AND ORCO OUTLETS. (CBO 5302, LARR 25334.
- HOLES FOR CT CONTINUITY TIES MUST BE DRILLED IN WOOD MEMBERS WITH CT NAILED IN PLACE, DO NOT LAYOUT HOLES, DRILL, AND THEN INSTALL CT'S.
- HOLD-DOWN CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE APPROVED PLATE WASHERS. HOLD-DOWNS SHALL BE TIGHTENED JUST PRIOR TO COVERING THE WALL FRAMING. (2306.5) CONNECTOR BOLTS INTO WOOD FRAMING REQUIRE STEEL PLATE WASHERS IN ACCORDANCE WITH TABLE 2306.5 OF THE LA BUILDING CODE.
- ROOF DIAPHRAGM NAILING TO BE INSPECTED BEFORE COVERING. FACE GRAIN OF FLYWOOD SHALL BE PERPENDICULAR TO SUPPORTS. FLOOR SHALL HAVE TONGUE AND GROOVE OR BLOCKED PANEL EDGES.
- HOLD-DOWN HARDWARE MUST BE SECURED IN PLACE PRIOR TO FOUNDATION INSPECTION.

## FOUNDATION

- ALL PHASES OF WORK PERTAINING TO EXCAVATIONS, FOUNDATIONS, AND RETAINING WALLS SHALL CONFORM TO THE CBC.
- THE FOUNDATION DESIGN IS BASED ON A SOIL REPORT BY:  
  
IRVINE GEOTECHNICAL  
1505 N. SIERRA MADRE BLVD.,  
SUITE 12  
PASADENA, CA 91101  
626-844-6641
- THE CONTRACTOR SHALL REVIEW THE SOIL REPORT AND COMPLY WITH ALL THE RECOMMENDATIONS NOTED.
- A BEARING VALUE OF 2500 PSF WAS USED FOR DESIGN OF FOOTINGS. BOTTOM OF FOOTING SHALL EXTEND 12" MINIMUM BELOW NATIVE MATERIAL, TYPICAL.  
  
SOIL TYPE:  
  
OLDER ALLUVIUM
- ALL EXCAVATIONS AND FILLS SHALL CONFORM TO THE SOIL REPORT AND THE RECOMMENDATIONS NOTED THEREIN.
- THE CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATIONS FROM EITHER SURFACE WATER, GROUND WATER OR SEEPAGE.
- THE CONTRACTOR SHALL PROVIDE FOR THE DESIGN, APPROVALS, PERMITS, INSTALLATION AND MONITORING OF ALL CRIBBING, SHEATHING AND SHORING REQUIRED TO SAFELY RETAIN TEMPORARY EXCAVATIONS.
- EXCAVATIONS FOR FOOTINGS SHALL BE APPROVED BY THE LOCAL BUILDING INSPECTOR PRIOR TO PLACING CONCRETE AND REINFORCING. THE CONTRACTOR SHALL NOTIFY THE BUILDING DEPARTMENT WHEN EXCAVATIONS ARE READY FOR INSPECTION.
- ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH. THE CONTRACTOR SHALL BRACE OR PROTECT ALL BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL DESIGN STRENGTH. THE CONTRACTOR SHALL PROVIDE FOR DESIGN, PERMITS AND INSTALLATION AND REMOVAL OF SUCH BRACING.
- FOOTING BACKFILL AND UTILITY TRENCH BACKFILL WITHIN BUILDING AREA SHALL BE MECHANICALLY COMPACTED IN LAYERS, TO THE APPROVAL OF THE GEOTECHNICAL ENGINEER. FLOODING WILL NOT BE PERMITTED.
- ALL ABANDONED FOOTINGS, UTILITIES, ETC., THAT INTERFERE WITH NEW CONSTRUCTION SHALL BE REMOVED.
- THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD ANY BURIED STRUCTURES, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC., BE FOUND.

## STRUCTURAL STEEL AND MISCELLANEOUS METAL

- ALL PHASES OF WORK PERTAINING TO STRUCTURAL STEEL CONSTRUCTION SHALL CONFORM TO CBC STANDARDS (SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, THIRTEENTH EDITION).
- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A-992, GRADE 50, MISCELLANEOUS PLATES AND SHAPES MAY BE A-36 STEEL.
- STEEL PIPE SHALL CONFORM TO ASTM A-53, TYPE B OR S, SAME SIZE PERMITS, SHALL CONFORM TO ASTM A-500, GRADE B.
- ANCHOR BOLTS-ASTM A-307 TYPICAL. STEEL CONNECTIONS-ASTM A-325N (BEARING MOMENT AND DRAG CONNECTIONS-ASTM A-325BC (SLIP CRITICAL) MISCELLANEOUS CONNECTIONS NOT NOTED OTHERWISE-ASTM A-325N.
- THE STRUCTURAL STEEL FABRICATOR SHALL SUBMIT SHOP DRAWINGS TO THE ARCHITECT FOR REVIEW PRIOR TO FABRICATION. SUBMIT (1) SEPIA AND (2) BLUELINE SETS.
- ALL WELDING SHALL CONFORM TO CBC STANDARDS (STRUCTURAL WELDING CODE - STEEL, AWS D1), BY THE AMERICAN WELDING SOCIETY. MINIMUM TENSILE STRENGTH OF WELD METAL SHALL BE 10 KSI. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS.
- ALL WELDS NOT SPECIFIED SHALL BE CONTINUOUS FILLET WELDS. SIZE OF WELDS SHALL BE BASED ON CBC STANDARDS FOR THICKER PART JOINED.
- BOLT HOLES SHALL BE 1/16" LARGER IN DIAMETER THAN NOMINAL SIZE OF BOLT USED, UNLESS NOTED OTHERWISE.
- ALL STRUCTURAL STEEL SURFACES THAT ARE TO RECEIVE SPRAY-APPLIED FIREPROOFING OR TO BE ENCASED IN CONCRETE OR MASONRY SHALL BE LEFT UNPAINTED.
- ALL METAL ITEMS, INCLUDING CONNECTORS, EXPOSED TO THE WEATHER SHALL BE HOT-DIPPED GALVANIZED, AFTER FABRICATION.
- STRUCTURAL STEEL SHALL BE DELIVERED TO THE JOB SITE FREE OF EXCESSIVE RUST, MILL SCALE, GREASE, ETC.
- OPENINGS SHALL NOT BE PLACED IN STEEL MEMBERS UNLESS SPECIFICALLY DETAILED.
- ALL WORK SHALL BE PERFORMED IN THE SHOP OF AN APPROVED, LICENSED FABRICATOR.

## GENERAL

- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE ARCHITECT SHALL BE NOTIFIED OF ANY DISCREPANCIES OR INCONSISTENCIES.
- THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT ARE NOT LIMITED TO, BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. CONTRACTOR AT HIS OWN EXPENSE SHALL ENGAGE PROPERLY QUALIFIED PERSONS TO DESIGN BRACING, SHORING, ETC. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE OBSERVATION OF THE ABOVE NOTED ITEMS.
- DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS.
- SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.
- WORK NOT PARTICULARLY SHOWN OR SPECIFIED SHALL BE THE SAME AS SIMILAR PARTS THAT ARE SHOWN OR SPECIFIED.
- ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE FOLLOWING CODES:

CALIFORNIA BUILDING CODE, 2010 EDITION AND ANY OTHER REGULATING AGENCIES WHICH MAY HAVE AUTHORITY OVER ANY PORTION OF THE WORK, INCLUDING THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY, AND THOSE CODES AND STANDARDS LISTED IN THESE NOTES AND SPECIFICATIONS.

- SPECIFICATIONS, CODES AND STANDARDS NOTED SHALL BE OF THE LATEST APPROVED ISSUE, INCLUDING SUPPLEMENTS, UNLESS NOTED OTHERWISE.

## PROJECT DESIGN CRITERIA

- BASIC DESIGN LIVE LOADS:  
ROOF: 20 PSF  
FLOOR: 40 PSF, REDUCIBLE.
- EARTHQUAKE DESIGN CRITERIA:  
SEISMIC IMPORTANCE FACTOR I = 1.0  
OCCUPANCY CATEGORY = II  
MAAPPED SPECTRAL RESPONSE ACCELERATION, Sa = 1.758 + 5i = 6.99  
SEISMIC DESIGN CATEGORY = D  
BASIC SEISMIC-FORCE RESISTING SYSTEM(S) = WOOD STRUCTURAL PANELS  
ANALYSIS PROCEDURE USED: EQUIVALENT LATERAL FORCE PROCEDURE  
  
Sh = 1.758g (MCE)  
Sh = .950g  
Sds = 1.758g (DBE)  
Sdi = .639  
  
SEISMIC RESPONSE COEFFICIENT(S), Cs = .184  
RESPONSE MODIFICATION FACTOR(S), R = 6 1/2

DESIGN BASE SHEAR = 129 k

- WIND DESIGN DATA:  
BASIC WIND SPEED = 85 MPH  
WIND IMPORTANCE FACTOR = 1.0  
WIND EXPOSURE = C  
  
THE APPLICABLE INTERNAL PRESSURE COEFFICIENT = +1.0

## EXISTING UNDERGROUND UTILITIES

- THE ENGINEER IS NOT RESPONSIBLE FOR THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES WHETHER OR NOT SHOWN ON THE DRAWINGS. THE LOCATION OF ANY EXISTING UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER SHOULD ANY SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES WHICH MAY RESULT FROM FAILURE TO EXACTLY LOCATE AND PRESERVE ALL EXISTING UNDERGROUND UTILITIES.

## DEMOLITION

- ALL DEMOLITION SHALL BE CARRIED ON IN SUCH A WAY AS NOT TO DAMAGE EXISTING ELEMENTS WHICH ARE TO BE IN THE FINISHED BUILDING.
- ALL ELEMENTS OF THE STRUCTURE WHICH ARE TO REMAIN AND WHICH ARE DAMAGED DURING DEMOLITION WORK SHALL BE REPLACED AT NO ADDED COST. EXISTING ELEMENTS SHALL BE PROTECTED TO THE FULLEST EXTENT POSSIBLE, IN ORDER TO REDUCE SUCH DAMAGE TO A MINIMUM.

## SPECIAL INSPECTIONS

- SPECIAL INSPECTIONS SHALL CONFORM TO CBC, AND SHALL BE PROVIDED BY A SPECIAL INSPECTOR DURING CONSTRUCTION, ON THE FOLLOWING TYPES OF WORK:  
a) EPOXY GROUTING  
b) STRUCTURAL CONCRETE  
c) FIELD WELDING

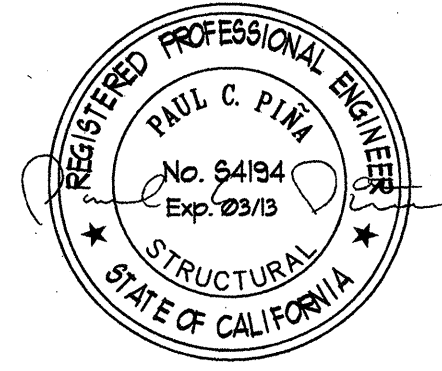
- THE SPECIAL INSPECTOR SHALL BE A REGISTERED DEPUTY BUILDING INSPECTOR, APPROVED BY THE ENFORCEMENT AGENCY. THE DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL CONFORM TO CBC.

## SHORING AND EXCAVATIONS

- THE CONTRACTOR SHALL PROVIDE FOR THE DESIGN, APPROVALS, PERMITS, INSTALLATION AND MONITORING OF ALL CRIBBING, SHEATHING AND SHORING REQUIRED TO SAFELY RETAIN TEMPORARY EXCAVATIONS.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE CALIFORNIA CONSTRUCTION SAFETY ORDERS (CAL-OSHA).
- HEAVY VEHICULAR TRAFFIC (CRANE, CONCRETE TRUCKS, MATERIAL TRUCKS, ETC.) OR MATERIAL STORAGE SHALL BE PROHIBITED WITHIN 10 FEET OF SHORING BULKHEADS OR TOPS OF SLOPED EMBANKMENTS UNLESS SPECIFICALLY CONSIDERED IN THE DESIGN AND IDENTIFIED ON THE SHORING PLANS.
- DUST SHALL BE CONTROLLED DURING EXCAVATION OPERATIONS.
- SURFACE WATER SHALL BE PREVENTED FROM ENTERING EXCAVATIONS OVER THE TOPS OF SHORING AND CUT SLOPES.
- TEMPORARY CUTS SHALL NOT EXCEED SLOPES RECOMMENDED IN THE SOIL REPORT, NOR THOSE RECOMMENDED BY CAL-OSHA.

**Piña**  
structural engineering

Paul C. Piña, Principal  
1983 W. 190th St Suite 200  
Torrance, CA 90504  
(310) 516-9300 office  
(310) 508-1606 cell  
structure@roadrunner.com



NO.	ISSUED FOR	DATE
	PLAN CHECK	8/8/11
	PLAN CHECK	10/18/11
1	SHOTCRETE	4/13/12
2	BASEMENT EXTENSION	5/30/12

RESIDENCE ADDITION  
217 SOUTH McCADDEN PLACE  
LOS ANGELES CA 90004

JOB NUMBER
S2207
DRAWN BY
CADpros
CHECKED BY
PCP

## GENERAL NOTES

S0.1