GENERAL STRUCTURAL NOTES

DESIGN LOADS:

Roof:

DL 7 psf

LL 20 psf

ANGEL STADIUM ROCK AREA

DL 20 psf (Framing) + 170 psf (Conc)=190 psf

LL 20 psf

Wind:

Speed (3 sec gust) 85 mph

I 1.0

Occupancy II

Exposure C

Components & Cladding Varies

Earthquake:

I	1.0
Occupancy	II
Ss	1.50
S_1	.60
Site Class	C
Sds	1.00
S_{D1}	.520
Design Category	D
Base Shear	Varies
Analysis Procedure	Equivalent Lateral Force

STRUCTURAL STEEL

1. All fabrication and erection shall conform to the latest edition of the AISC Manual of Steel Construction and Chapter 22 of the 2007 California Building Code.
2. All welding shall be done by certified welders.
3. All wide flange structural steel shall conform to ASTM A572 Grade 50.
4. Angles and plates shall conform to ASTM A36 (or ASTM A572 Grade 50 where noted on plans or details).
5. All pipe shall conform to ASTM A53 Grade "B" (35 ksi).
6. All tube shall conform to ASTM A500, Grade B.
7. Anchor bolts and unfinished bolts shall conform to ASTM A449. Anchor rods shall conform to ASTM F1554, Grade 36 u.n.o.
8. All welding electrodes shall conform to ASTM A233, E70XX rods. All welding shall be done with low hydrogen electrodes or using a low hydrogen welding process.
9. All full penetration welds shall be ultra-sonically inspected with results sent to the Engineer and Building Department.
10. All welding procedures shall be submitted to the Engineer to insure that the quality control requirements dictated by code are in effect. A shop drawing review will not be issued by the Engineer. All welding procedures are the Structural Steel Contractor's responsibility.
11. Provide mill certificates to the Engineer and the Building Department for all steel.
12. All exposed steel, including bolts and nuts, shall be hot-dipped galvanized or equally protected.

HIGH STRENGTH BOLTS (H.S.B.)

1. High-strength bolts shall conform to the provisions of the "Specification for Structural Joints Using ASTM A325 or A490 Bolts", latest edition, as approved by the Research Council on Riveted and Bolted Structural Joints, and the provisions of the 13th Edition of the AISC Manual of Steel Construction.
2. The assembly surface, including those adjacent to the washer, shall be free of mill scale, oil, paint or other coatings.
3. All H.S.B. shall be tightened to a bolt tension not less than that given in Table 8.1 of the AISC Manual. Tightening shall be done by the turn-of-nut method, by a direct tension indicator, or by properly calibrated wrenches. Provide hardened washers under the nut or bolt head, whichever is the element turned in tightening.
4. Continuous inspection by a registered deputy inspector is required for all high strength bolting. The extent of such inspection shall conform to Chapter 17 of the California Building Code. An affidavit shall be issued to the Engineer and the Building Department at the completion of work stating whether the work was in conformance with the approved plans and specifications.
5. All bolts, washers and nuts exposed to the weather shall be hot-dipped galvanized.

METAL DECKING

1. Metal decking shall conform to ASTM A446 specifications with a 38000 psi yield. The deck shall be galvanized in accordance with ASTM A525 Class G-90 coating.
2. All decking shall be lapped 2" over the supports. All decking shall be continuous over a minimum of three supports (ie: two span minimum).

METAL STUDS

1. Metal studs, tracks and channels shall conform to Cemco Steel Framing Systems per ICBO ES Report 3403-P.
2. All studs shall be unpunched, ECS type u.n.o.
3. No. 16 and 14 gauge hot rolled steel shall comply with ASTM A570 Grade 50 and No. 16 and 14 gauge galvanized shall comply with ASTM A653 Grade 50 (formerly A446-D) and Galvanized specification ASTM A924 (formerly ASTM A525). Use G90 (i.e. Z275) galvanized coating or equal protection. All have a minimum yield point of 50 ksi.
4. No. 18 gauge hot roll shall comply with ASTM A570 Grade 33, No. 18 gauge cold roll shall comply with ASTM A611 Grade C, No. 18 and 20 gauge Galvanized shall comply with ASTM A653 Grade 33 (formerly ASTM A446 Grade A) and Galvanized Specification ASTM A924 (formerly ASTM A525). Use G90 (i.e. Z275) galvanized coating or equal protection. All have a minimum yield point of 33 ksi.
5. Channels and tracks shall be unpunched metal tracks with deep legs with same gauge as the studs.
6. Screws shall be long enough so that 3 threads are exposed on the backside of the material being fastened. All screws shall be hot-dipped galvanized. All exposed screws shall have wafer heads.
7. The edge of holes in studs shall be greater than the depth of the stud away from the end of the stud.
8. Drill 1/2"ø holes in flanges of tracks at 16" o.c. for drainage where one side of wall is exposed to the weather, see 8/S0-2.

EPOXY AND CONCRETE ANCHORS

1. All epoxy shall be Simpson Set-XP per ICC ESR-2508. Provide special inspection for all epoxy work except for slab dowels.
2. All wedge anchors shall be Simpson Wedge-All anchors installed per ICC Report ESR 1396. Provide special inspection where called for in details and on plans.
3. All Strong Bolts shall be manufactured by Simpson Strong-Tie and be installed per ICC Report ESR 1771. Provide special inspection when installing Strong Bolts.
4. Do not cut existing rebar when installing new rods, bolts or screws.
5. All anchors used in exterior applications shall be hot-dipped galvanized or stainless steel.

SHOTCRETE CONCRETE

1. Shotcrete shall conform to California Building Code Section 1913 for shotcrete concrete.
2. The proportions of cement to aggregate in loose dry volumes shall not be less than 1 to 4-1/2. The quantities of aggregate and cement shall be accurately measured. All shotcrete shall attain a minimum compressive strength of 3000 psi 28 days.
3. All cement shall comply with American Concrete Institute (ACI) 318-05 Section 3.2 .
4. All aggregates shall comply with American Concrete Institute (ACI) 318-05 Section 3.3 .
5. The proportions of water to cement shall be accurately controlled so as to produce thorough and uniform hydration of the concrete, which, when placed, will form a homogenous mass containing neither sags nor dry sand formation. An accurately calibrated pressure gauge shall be provided in the water line. The water shall have a minimum pressure of 60 psi plus an additional 5 psi for each 10 feet of rise in elevation between the pressure gauge and the nozzle.
6. The cement and aggregate shall be mixed without added water in a batch mixer for less than one minute and shall be discharged completely before the mixer is recharged. Other types of mixing equipment may be used may be use when approved by the department. Nozzles used to place concrete for structural purposes shall have a maximum size of 1-5/8 inches.
7. Pneumatic concrete shall not be placed where the stream from the nozzle cannot directly impinge on the surface on which the concrete is to be placed. Where shooting conditions are difficult, the proper results shall be obtained by maintaining normal air pressure and water ratio and reducing supply of material.
8. Whenever possible, except when enclosing reinforcing steel, the nozzle shall be held at right angles to the surfaces and a distance of not more than 3 feet.
9. Any deposits of loose sand or rebound shall be carefully removed from the surface before applying additional concrete. When enclosing reinforcing steel, the nozzle shall be held so as to direct the material around the bars. Each bar shall shot from at least two directions. A second experienced person equipped with an air jet shall attend the operators whenever reinforcing steel is being enclosed and shall carefully precede the nozzle and blow out all rebound and sand which may be lodged behind the steel.
10. Placing of pneumatic concrete shall be started at the bottom of the section and the top surface shall be held at a minimum of 45 degrees with the horizontal to facilitate removal of rebound. Pneumatic concrete shall be applied to beams from the side to permit removal of the rebound.
11. Unfinished work shall not be allowed to stand for more 30 minutes unless all abrupt edges are sloped to a thin edge. Before resuming work, this sloped portion shall be cleaned and where the concrete has reached its initial set, the surface shall be thoroughly wetted.
12. The air pressure at the machine end of the hose shall be not less than 45 psi for hose lengths of 100 feet or less and shall be increased 5 psi for each additional 50 feet or fraction thereof, for hose in excess of the first 100 feet. In addition, the air pressure shall be increased 5 psi for each 25 feet, or fraction thereof, of vertical rise.
13. Pneumatic concrete shall be kept constantly damp for a period of not less than 14 days after being deposited, unless other approved methods are specified on the stamped plans.
14. Rebound, pockets, sags, sloughing and other defects occurring in the work shall be cut out and replaced.
15. A minimum of three cores shall be taken for each 150 cubic yards, or fraction thereof, of pneumatic concrete deposited. The cores shall be taken and tested by the methods described in California Building Code Standard No. 26-10. The cores shall be tested 28 days from the date the pneumatic concrete is deposited and the tests shall show a 28-day strength at least equal to the (fc) specified on the plans.
16. The application of all pneumatic concrete shall be continuously inspected by a registered deputy inspector approved by the Engineer and the Building Official.
17. The reinforcing steel shall be securely tied in place in a manner that prevents any movement during the gunite installation.
18. Lap splices in reinforcing bars shall be by the noncontact lap splice method with at least 2 inches clearance between bars. The Building Official may permit the use of contact lap splices when necessary for the support of the reinforcing provided it can be demonstrated by means of preconstruction testing, that adequate encasement of the bars at the splice can be achieved and provided that the splices are placed so that a line through the center of the two spliced bars is perpendicular to the surface of the shotcrete work.

FORMWORK, REMOVAL OF FORMS AND SHORES

1. The Contractor shall design all forms and supporting shores in conformance with ACI 347-05. Design shall include rate and method of placing concrete and construction loads, including vertical, horizontal, and impact loads. Forms shall be substantial and sufficiently tight to prevent leakage of mortar and properly braced or tied to maintain position and shape.
2. Forms shall be removed in such a manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby. The ACI Committee 347 suggests the following minimum time forms and supports should remain in place under ordinary conditions:

   Walls, Columns and side of Beams and Girders ..... 12 Hours
   Joists, Beams, and Girder Soffits and Slabs
   10 ft. span between structural supports ..... 7 Days
   10 ft. – 20 ft. span ..... 14 Days
   Over 20 ft. ..... 21 Days

   Reshore until 28 days after placement, and for full duration where construction loads exceed specified service loads. Reshore shall conform to ACI 347-05.

REINFORCING STEEL

1. Reinforcing steel shall conform to ASTM A615, Grade 40 for sizes #3 & #4 and Grade 60 for sizes #5 and larger. Maximum yield shall not exceed 1.3 times that specified.
2. Welding of reinforcing steel shall conform to AWS D12-1 using proper low hydrogen electrodes. All bars to be welded shall conform to ASTM A706.
3. All bars in concrete shall be lapped a minimum of 48 bar diameters (2'-0" min.) for Grade 40 and 72 bar diameters (2'-6" min.) for Grade 60 at all splices unless noted otherwise.
4. Splices of horizontal rebar in walls and footings shall be staggered 4'-0" minimum.
5. Dowels for walls and columns shall be the same size and spacing as the wall/column reinforcing unless noted otherwise.
6. All bending of reinforcing steel shall conform to the latest edition of the California Building Code.

GENERAL

1. All construction and workmanship shall conform to the 2007 California Building Code.
2. These notes shall be used in conjunction with the plans and any discrepancies shall be brought to the attention of the Landscape Architect/Engineer.
3. Contractor must check all dimensions, framing conditions, and site conditions before starting work. Landscape Architect/Engineer shall be notified immediately of any discrepancies or possible deficiencies.
4. Conditions not specifically shown shall be constructed similar to the details for the respective materials.
5. The drawings and specifications represent the finished structure. All bracing, temporary supports, shoring, etc. is the sole responsibility of the contractor. Observation visits to the job site by the Landscape Architect/Engineer do not include inspection of construction procedures. The contractor is solely responsible for all construction methods and conditions at the worksite. These visits will not be construed as continuous and detailed inspections.
6. Design, material, equipment, and products other than those described below or indicated on the drawings may be considered for use, provided prior approval is obtained from the Owner, Landscape Architect/Engineer, and the applicable governing code authority.

TESTS AND INSPECTIONS

1. Continuous inspection by a registered deputy inspector is required for all field welding, high strength bolting, concrete with a strength greater than 2500 psi, and masonry. The extent of such inspection shall conform to Chapter 17 of the California Building Code. An affidavit shall be issued to the Landscape Architect/Engineer and the Building Department at the completion of each type of work stating whether the work was in conformance with the approved plans and specifications. Concrete inspection may be limited to slump tests, compression tests, and inspection of placed rebar.
2. The following items require inspection by a licensed Deputy Inspector:

ITEM	YES	NO
Epoxy	✓	
Concrete	✓ (Structural Slabs; Caissons, Poured-in-Place Walls & their Footings)	✓
Structural Steel	✓ (Field Welding, High Strength Bolting)	✓ (Shop fabrication in Licensed Shop)

FOUNDATIONS

1. All existing fill soil and disturbed natural soils are to be excavated and replaced with properly compacted fill. All filling, backfilling, recompaction, etc. is to be accomplished only under the supervision of a soils engineer.
2. All excavations are to be inspected and approved by a Soils Engineer prior to the placement of any concrete or reinforcing steel.
3. Footings are to be carried a minimum of 18" into firm undisturbed natural soil or approved compacted fill.
4. Design bearing pressure is 2500 psf with a 33% increase for seismic or wind loading.
5. Relatively non-expansive fill should be used in backfilling behind walls. All walls shall be adequately shored during the backfill operation.
6. All excavations, grading, compaction, etc. shall be accomplished and performed in accordance with the Soils Report as prepared by Converse Consultants, Project No. 07-81-368-01, dated October 30, 2008 .

   This Soils Report and addendum is hereby made a part of these General Notes and all recommendations contained therein shall be considered as minimums.

CONCRETE

1. Unless noted otherwise, all concrete shall attain a minimum compressive strength of 2500 psi at 28 days. All caisson concrete shall attain a minimum strength of 4000 psi at 28 days. See also schedules.
2. Aggregates shall be natural sand and rock conforming to ASTM C33.
3. Cement shall be Portland Cement conforming to ASTM C-150, Type II/V, low alkali.
4. Water shall be potable, clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials, or other substances that may be deleterious to concrete or reinforcement.
5. Admixtures to be used in concrete shall be subject to prior approval by the Engineer.
6. Maximum permissible water-cement ratios for concrete shall conform to Table 4.2.2 and 4.3.1. of ACI 318-05. Maximum slump shall be 4 inches for slabs, and 5 inches for footings.
7. Concrete shall be cured while in a moist condition for at least the first 7 days after placement. Methods for accelerated curing shall have prior approval of the Engineer.
8. The following minimum clear distances between reinforcing steel and face of concrete shall be maintained unless noted otherwise:

   Slabs on grade ..... Center of slab
   Concrete below grade, formed ..... 2"
   Concrete below grade,
   unformed (poured against earth).....3"
   Concrete exposed to weather.....1 1/2"

9. Pipes may pass through structural concrete in sleeves, but shall not be embedded therein. Pipes or ducts exceeding one-third the slab or wall thickness shall not be placed in the structural concrete unless specifically detailed.
10. Provide 3/4" chamfers at all exposed corners.
11. Refer to Landscape architectural drawings for reveals, areas of textured concrete or special finishes, items required to be cast into concrete, curbs and slab depressions.
12. All concrete shall be vibrated.
13. For exposed concrete (i.e. walls, slabs), use a 3/4" aggregate mix with approximately equal percentages of coarse (>3/8"), intermediate (<3/8", >#8) and fine (<#8) aggregate.

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SHEET TITLE

GENERAL SITE STRUCTURAL NOTES

100% CONSTRUCTION DOCUMENT

DATE	REVISIONS

STAMP

REGISTERED PROFESSIONAL ENGINEER
WILLIAM J. CORREIA
No. 2132
Exp.12/31/09
STRUCTURAL
STATE OF CALIFORNIA

(08047)

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DATE 7-30-09	FILE NAME
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