GENERAL NOTES

GENERAL

1. ALL WORK SHALL CONFORM TO THE STANDARDS OF THE CALIFORNIA BUILDING CODE, 2010 EDITION, AS AMENDED BY CHAPTER 8 OF THE CITY OF SANTA MONICA MUNICIPAL CODE, AND THOSE CODES AND STANDARDS LISTED IN THE CONTRACT DOCUMENTS.

2. THE PROJECT MANUAL FORMS A PART OF THESE GENERAL NOTES. CODES, STANDARDS, AND SPECIFICATIONS, INCLUDING ADDENDA AND SUPPLEMENTS, REFERENCED IN THE CONTRACT DOCUMENTS SHALL BE THE LATEST APPROVED ISSUE, UNLESS SPECIFICALLY NOTED.

3. NOTES AND DETAILS ON DRAWINGS TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. IF CONFLICT OCCURS BETWEEN THE CONTRACT DRAWINGS AND THE PROJECT MANUAL, IMMEDIATELY NOTIFY ARCHITECT (STRUCTURAL ENGINEER) FOR RESOLUTION. DIMENSIONS TAKE PRECEDENCE OVER SCALED DRAWINGS.

4. DESIGN LIVE LOADS ARE NOTED ON DRAWINGS.

5. CODE LEVEL WIND DESIGN DATA:

   BASIC WIND SPEED = 85 MPH
   IMPORTANCE FACTOR, I = 1.0
   EXPOSURE CATEGORY = B
   ENCLOSURE CLASSIFICATION = ENCLOSED BUILDING
   INTERNAL PRESSURE COEFFICIENT, GCpi = ± 0.18

6. CODE LEVEL EARTHQUAKE DESIGN DATA:

   SITE COORDINATES = 34.0211°N, 118.4946°W
   MAPPED SPECTRAL RESPONSE ACCELERATION, SS = 1.823g
   MAPPED SPECTRAL RESPONSE ACCELERATION, S1 = 0.606g
   SITE CLASS = D
   DESIGN SPECTRAL RESPONSE COEFFICIENT, SDS = 1.215g
   DESIGN SPECTRAL RESPONSE COEFFICIENT, SD1 = 0.606g
   OCCUPANCY CATEGORY = II
   IMPORTANCE FACTOR, I = 1.0
   SEISMIC DESIGN CATEGORY = D
   SEISMIC RESPONSE COEFFICIENT, CS = 0.144
   BASIC SEISMIC-FORCE RESISTING SYSTEM = SRCSW
   RESPONSE MODIFICATION FACTOR, R = 6
   ANALYTICAL PROCEDURE = MODAL RESPONSE SPECTRA
   DESIGN BASE SHEAR = 3937 KIPS

7. GOVERNING CODE AUTHORITY: CITY OF SANTA MONICA

8. CONTRACT DOCUMENTS INDICATE INFORMATION SUFFICIENT TO CONVEY DESIGN INTENT. REVIEW CONTRACT DOCUMENTS AND VERIFY FIELD AND EXISTING CONDITIONS. PROMPTLY NOTIFY ARCHITECT (STRUCTURAL ENGINEER), PRIOR TO PROCEEDING WITH WORK, IF FURTHER CLARIFICATION OF DESIGN INTENT IS NEEDED.

9. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND NOTIFY THE ARCHITECT (STRUCTURAL ENGINEER) OF ANY DISCREPANCIES.

10. PERFORM STRUCTURAL RELATED WORK AND DEVELOP SHOP DRAWINGS CONSIDERING CONTRACT DOCUMENTS IN THEIR ENTIRETY. CONDITIONS NOT SPECIFICALLY DETAILED SHALL BE CONSTRUCTED AS DETAILED FOR SIMILAR WORK.

11. CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE MEANS AND METHODS OF CONSTRUCTION. PROVIDE ALL NECESSARY MEASURES TO PROTECT THE STRUCTURE DURING CONSTRUCTION. COMPLY WITH THE STATE OF CALIFORNIA, DIVISION OF OCCUPATIONAL SAFETY AND HEALTH REGULATIONS. CONSTRUCTION MATERIALS, IF PLACED ON FRAMED FLOORS AND ROOFS, SHALL BE SPREAD OUT SUCH THAT THE DESIGN LIVE LOAD PER SQUARE FOOT IS NOT EXCEEDED. PROVIDE ADEQUATE SHORING IF OVERLOAD IS ANTICIPATED OR WHERE STRUCTURAL ELEMENTS HAVE NOT ATTAINED DESIGN STRENGTH. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT CONSTITUTE ACCEPTANCE OF CONSTRUCTION MEANS AND METHODS.

12. SUBMIT SHOP DRAWINGS FOR REVIEW BEFORE FABRICATION. CONTRACTOR SHALL REVIEW FOR COMPLETENESS AND COMPLIANCE WITH CONTRACT DOCUMENTS PRIOR TO SUBMISSION TO ARCHITECT (STRUCTURAL ENGINEER). ARCHITECT'S (STRUCTURAL ENGINEER'S) REVIEW IS FOR GENERAL CONFORMANCE WITH DESIGN INTENT AND DOES NOT CONSTITUTE AN AUTHORIZATION TO DEVIATE FROM TERMS AND CONDITIONS OF CONTRACT. WHEN INDICATED, THE SUBMITTAL SHALL BE SIGNED AND SEALED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA. MAINTAIN AT SITE A COPY OF REVIEWED AND ACCEPTED SUBMITTALS.

13. MODIFICATIONS AND SUBSTITUTIONS MUST BE ACCEPTED IN WRITING BY ARCHITECT (STRUCTURAL ENGINEER). NO MODIFICATION OR SUBSTITUTION WILL BE ACCEPTED VIA SHOP DRAWING REVIEW. MANUFACTURED MATERIALS SHALL BE APPROVED BY THE GOVERNING CODE AUTHORITY PRIOR TO THEIR USE. ADHERE TO ALL CONDITIONS OF THOSE APPROVALS.

14. EQUIPMENT MANUFACTURER SHALL PROVIDE EQUIPMENT ANCHORAGE TO THE STRUCTURE MEETING THE REQUIREMENTS OF ASCE/SEI 7, CHAPTER 13.6. USE ISOLATORS, FASTENERS AND BRACING HAVING CURRENT ICC-ES REPORTS. EQUIPMENT ANCHORAGE SHALL BE CAPABLE OF TRANSMITTING CODE REQUIRED LATERAL LOADS BUT IN NO EVENT LESS THAN A LATERAL LOAD EQUIVALENT TO 30 PERCENT OF THE OPERATING WEIGHT OF EQUIPMENT. SECURE SUSPENDED EQUIPMENT WITH LATERAL OR SWAY BRACING HAVING CURRENT ICC-ES REPORTS.

15. PIPING AND DUCTWORK BRACING SHALL BE IN ACCORDANCE WITH THE SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA) "SEISMIC RESTRAINT MANUAL - GUIDELINES FOR MECHANICAL SYSTEMS", INCLUDING ADDENDA.

16. "TYPICAL DETAILS" ARE APPLICABLE THROUGHOUT CONSTRUCTION DOCUMENTS AND MAY NOT BE SPECIFICALLY REFERENCED THEREIN. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THESE TYPICAL DETAILS AND UNDERSTANDING EXTENT OF THEIR APPLICATION PRIOR TO PERFORMING WORK.

17. UNLESS SPECIFICALLY SHOWN ON THE PLANS NO STRUCTURAL MEMBER SHALL BE CUT, DRILLED OR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER.

18. SEE ARCHITECTURAL DRAWINGS FOR:

   A. SIZE AND LOCATION OF DOOR AND WINDOW OPENINGS IN STRUCTURAL WALLS
   B. SIZE AND LOCATION OF FLOOR AND ROOF OPENINGS AND SLAB EDGES
   C. SIZE AND LOCATION OF NON-BEARING CMU WALLS AND OPENINGS THEREIN
   D. SIZE AND LOCATION OF CONCRETE CURBS, SLOPES, DEPRESSIONS, CHANGES IN LEVEL, CHAMFERS AND REVEALS, INSERTS FOR FINISH SYSTEMS
   E. EXTERIOR WALL SYSTEM AND LOCATION
   F. STAIR SIZE AND LOCATION, FRAMING AND DETAILS
   G. DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS

19. SEE MECHANICAL, ELECTRICAL, PLUMBING DRAWINGS FOR:

   A. SIZE AND LOCATION OF EQUIPMENT PADS, EQUIPMENT ANCHORAGE TO STRUCTURE, AND EQUIPMENT WEIGHTS
   B. ANCHORAGE OF DUCTWORK, PIPING, ELECTRICAL CONDUITS TO STRUCTURE
   C. ELECTRICAL CONDUIT RUNS, OUTLETS AND BOXES IN CONCRETE SLABS AND WALLS
   D. PIPE SLEEVES, TRENCHES, AND OPENINGS THROUGH WALLS AND SLABS FOR DUCTWORK, PIPE RUNS, ELECTRICAL CONDUIT RUNS

20. MECHANICAL, ELECTRICAL AND PLUMBING LOADS SHALL BE SUPPORTED FROM BEAMS. EXCEPTION: LIGHT MECHANICAL, ELECTRICAL AND PLUMBING LOADS MAY BE SUPPORTED BY METAL DECK ASSEMBLY, BUT MUST BE ANCHORED INTO STRUCTURAL CONCRETE BY A SYSTEM HAVING CURRENT ICC-ES REPORT.

21. NON-STRUCTURAL ITEMS, INCLUDING BUT NOT LIMITED TO, STAIR FRAMING, ARCHITECTURAL CLADDING, ETC., WHEN NOT DETAILED ON THE STRUCTURAL OR ARCHITECTURAL DRAWINGS, SHALL BE THE DESIGN RESPONSIBILITY OF THE CONTRACTOR. THESE NON-STRUCTURAL ITEMS MAY BE SUPPORTED BY THE PRIMARY STRUCTURE, BUT SHALL NOT IMPOSE TORSIONAL LOADS ONTO THE PRIMARY SUPPORT MEMBERS. PROVIDE BRACES, KICKERS, STIFFENERS, ETC., AS NECESSARY TO ELIMINATE TORSIONAL LOADS AT NO ADDITIONAL COSTS TO THE OWNER.

STRUCTURAL OBSERVATION

1. STRUCTURAL OBSERVATION IS REQUIRED FOR THE STRUCTURAL SYSTEM IN ACCORDANCE WITH SECTION 1710 OF THE CALIFORNIA BUILDING CODE (CBC). STRUCTURAL OBSERVATION IS THE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM BY A REGISTERED DESIGN PROFESSIONAL FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT THE COMPLETION OF THE STRUCTURAL SYSTEM. SIGNIFICANT CONSTRUCTION STAGES ARE THE STAGES OF CONSTRUCTION IDENTIFIED BY THE ENGINEER OF RECORD AS SIGNIFICANT AND REQUIRE SITE STRUCTURAL OBSERVATION. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR THE INSPECTIONS REQUIRED BY SECTION 110 AND SECTION 1704 OF THE CBC.

2. THE OWNER SHALL EMPLOY A STATE OF CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER OR LICENSED ARCHITECT TO PERFORM THE STRUCTURAL OBSERVATION. THE GOVERNING CODE AUTHORITY RECOMMENDS THE USE OF THE ENGINEER OR ARCHITECT RESPONSIBLE FOR THE STRUCTURAL DESIGN WHO ARE INDEPENDENT OF THE CONTRACTOR.

3. THE STRUCTURAL OBSERVER SHALL PROVIDE EVIDENCE OF EMPLOYMENT BY OWNER OR THE OWNER'S REPRESENTATIVE. A LETTER FROM THE OWNER, THE OWNER'S REPRESENTATIVE, OR A COPY OF THE AGREEMENT FOR SERVICES SHALL BE SENT TO BUILDING INSPECTOR BEFORE THE FIRST SITE VISIT.

4. THE OWNER OR OWNER'S REPRESENTATIVE SHALL COORDINATE AND CALL FOR A MEETING BETWEEN ENGINEER OR ARCHITECT RESPONSIBLE FOR THE STRUCTURAL DESIGN, STRUCTURAL OBSERVER, CONTRACTOR, AFFECTED SUBCONTRACTORS AND DEPUTY INSPECTORS. THE PURPOSE OF THE MEETING SHALL BE TO IDENTIFY MAJOR STRUCTURAL ELEMENTS AND CONNECTIONS THAT AFFECT VERTICAL AND LATERAL LOAD SYSTEMS OF THE STRUCTURE AND TO REVIEW SCHEDULING OF THE REQUIRED OBSERVATIONS. A RECORD OF THE MEETING SHALL BE INCLUDED IN THE FIRST OBSERVATION REPORT SUBMITTED TO THE BUILDING INSPECTOR.

5. THE STRUCTURAL OBSERVER SHALL PERFORM SITE VISITS AT THOSE STEPS IN THE PROGRESS OF THE WORK THAT ALLOW FOR CORRECTION OF DEFICIENCIES WITHOUT SUBSTANTIAL EFFORT OR UNCOVERING OF THE WORK INVOLVED. AT A MINIMUM, THE LISTED SIGNIFICANT CONSTRUCTION STAGES ON THE FOLLOWING STRUCTURAL OBSERVATION/SIGNIFICANT CONSTRUCTION STAGE TABLE REQUIRE A SITE VISIT AND AN OBSERVATION REPORT FROM THE STRUCTURAL OBSERVER.

6. THE STRUCTURAL OBSERVER SHALL PREPARE A REPORT FOR EACH SIGNIFICANT STAGE OF CONSTRUCTION OBSERVED. THE ORIGINAL OF THE STRUCTURAL OBSERVATION REPORT SHALL BE SENT TO THE BUILDING INSPECTOR'S OFFICE AND SHALL BE SIGNED AND SEALED (WET STAMP) BY THE RESPONSIBLE STRUCTURAL OBSERVER. ONE COPY OF THE OBSERVATION REPORT SHALL BE ATTACHED TO THE APPROVED PLANS. THE COPY ATTACHED TO PLANS SHALL BE SIGNED AND SEALED (WET STAMP) BY THE RESPONSIBLE STRUCTURAL OBSERVER OR THEIR DESIGNEE. COPIES OF REPORT SHALL ALSO BE GIVEN TO THE OWNER, CONTRACTOR, AND DEPUTY INSPECTOR. ANY DEFICIENCIES NOTED ON THE OBSERVATION REPORT WILL BECOME THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER OF RECORD TO VERIFY ITS COMPLETION BY HIM (HER), OR BY A REGISTERED DEPUTY INSPECTOR AT THE DISCRETION OF THE STRUCTURAL OBSERVER.

7. A FINAL OBSERVATION REPORT AND THAT OF THE REGISTERED DEPUTY INSPECTOR MUST BE SUBMITTED WHICH SHOWS THAT ALL OBSERVED DEFICIENCIES WERE RESOLVED AND STRUCTURAL SYSTEM GENERALLY CONFORMS WITH THE APPROVED PLANS AND SPECIFICATIONS. THE GOVERNING CODE AUTHORITY WILL NOT ACCEPT THE STRUCTURAL WORK WITHOUT THIS FINAL OBSERVATION REPORT AND THAT OF THE REGISTERED DEPUTY INSPECTOR (WHEN PROVIDED) AND THE CORRECTION OF SPECIFIC DEFICIENCIES NOTED DURING NORMAL BUILDING INSPECTION.

8. THE STRUCTURAL OBSERVER SHALL PROVIDE THE ORIGINAL STAMPED AND SIGNED STRUCTURAL OBSERVATION REPORT TO THE BUILDING INSPECTOR.

9. WHEN THE OWNER ELECTS TO CHANGE THE STRUCTURAL OBSERVER OF RECORD, THE OWNER SHALL:

   A. NOTIFY THE BUILDING INSPECTOR IN WRITING BEFORE THE NEXT INSPECTION
   B. CALL AN ADDITIONAL PRECONSTRUCTION MEETING, AND
   C. FURNISH THE REPLACEMENT STRUCTURAL OBSERVER WITH A COPY OF ALL PREVIOUS OBSERVATION REPORTS.THE REPLACEMENT STRUCTURAL OBSERVER SHALL APPROVE THE CORRECTION OF THE ORIGINAL OBSERVED DEFICIENCIES UNLESS OTHERWISE APPROVED BY THE GOVERNING CODE AUTHORITY. THE POLICY OF THE GOVERNING CODE AUTHORITY SHALL BE TO CORRECT ANY PROPERLY NOTED DEFICIENCIES WITHOUT CONSIDERATION OF THEIR SOURCE.

10. THE ENGINEER OR ARCHITECT OF RECORD WILL DEVELOP ALL CHANGES RELATING TO THE STRUCTURAL SYSTEMS. THE GOVERNING CODE AUTHORITY SHALL REVIEW AND APPROVE ALL CHANGES TO THE APPROVED PLANS AND SPECIFICATIONS.

11. STRUCTURAL OBSERVATION/SIGNIFICANT CONSTRUCTION STAGE TABLE:

STRUCTURAL OBSERVATION/SIGNIFICANT CONSTRUCTION STAGE TABLE			
CONST STAGE	CONST TYPE	ELEMENTS/CONNECTIONS TO BE OBSERVED	OBSERVER
FOUNDATION	SPREAD FOOTINGS CONTINUOUS FTGS	FIRST SIGNIFICANT FOUNDATION POUR REINF IN-PLACE PRIOR TO CONCRETING	SBI
WALL	CONC SHEAR WALLS	FIRST SIGNIFICANT SHEAR WALL POUR REINF IN-PLACE PRIOR TO CLOSING FORMS	SBI
	SHOTCRETE WALLS	FIRST APPLICATION OF SHOTCRETE	SBI
FRAME	PENTHOUSE FRAMING	COMPLETION OF FIRST MOMENT FRAME WELD	SBI
DIAPHRAGM	PARKING LEVEL P3	REINF IN-PLACE PRIOR TO CONCRETING	SBI
	GROUND LEVEL	REINF IN-PLACE PRIOR TO CONCRETING	SBI
	THIRD LEVEL PT SLAB	PT TENDON LAYOUT PRIOR TO CONCRETING	SBI
		FIRST STRESSING OF POST-TENSION TENDONS	SBI
COMPLETION	OVERALL STRUCTURE	ALL OBSERVED DEFICIENCIES RESOLVED GENERAL CONFORMANCE TO APPROVED DOCUMENTS	

DEMOLITION

1. VERIFY EXISTING BUILDING DIMENSIONS AND ELEVATIONS. NOTIFY ARCHITECT (STRUCTURAL ENGINEER) OF ANY DISCREPANCIES BEFORE PROCEEDING WITH WORK.

2. DEMOLITION WORK SHALL BE CONDUCTED IN SUCH A MANNER AS TO NOT DAMAGE EXISTING ELEMENTS THAT ARE TO REMAIN IN THE FINISHED BUILDING.

3. EXISTING ELEMENTS OF THE STRUCTURE THAT ARE TO REMAIN IN THE FINISHED BUILDING SHALL BE PROTECTED AS NECESSARY TO MINIMIZE DAMAGE DURING DEMOLITION WORK. ANY SUCH DAMAGE SHALL BE REPAIRED AND/OR REPLACED AT NO ADDED COST.

4. PROVIDE MEASURES NECESSARY TO PROTECT THE EXISTING STRUCTURE DURING DEMOLITION WORK. PROTECTIVE MEASURES SHALL REMAIN IN PLACE UNTIL THE FINAL STRUCTURAL ELEMENTS ARE IN PLACE AND ABLE TO SAFELY CARRY ALL IMPOSED EXISTING BUILDING LOADS. SUCH MEASURES INCLUDE, BUT NOT LIMITED TO, BRACING AND SHORING.

5. EXISTING CONCRETE ELEMENTS THAT ARE TO BE REMOVED BY CHIPPING SHALL BE STARTED WITH A 3/4 INCH DEEP SAW CUT. CORNERS SHALL BE DRILLED TO PREVENT OVER-CUTTING. EXPOSED SAW CUT LINES SHALL BE CLEAN, STRAIGHT AND SMOOTH.

6. ROUGHEN EXISTING CONCRETE SURFACES AGAINST WHICH FRESH CONCRETE IS TO BE PLACED TO A FULL AMPLITUDE OF 1/4 INCH.

7. EXISTING REINFORCING STEEL TO REMAIN SHALL BE CLEANED TO BARE METAL.

8. DEMOLISHED MATERIALS PLACED ON EXISTING FLOORS SHALL BE SPREAD OUT SUCH THAT IMPOSED LOADS DO NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING WHERE OVERLOAD IS ANTICIPATED.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE STANDARDS OF THE AMERICAN CONCRETE INSTITUTE, ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE" AND ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", WITH MODIFICATIONS AS NOTED IN THE CONTRACT DOCUMENTS.

2. CONCRETE SHALL ATTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH AT 28-DAY (f'c), UNLESS NOTED OTHERWISE:

CONTINUOUS FOOTINGS	4,000 PSI	NORMAL WEIGHT
SPREAD FOOTINGS	4,000 PSI	NORMAL WEIGHT
SLABS-ON-GRADE	4,000 PSI	NORMAL WEIGHT
RETAINING WALLS	5,000 PSI	NORMAL WEIGHT
SHEAR WALLS	5,000 PSI (UNO)	NORMAL WEIGHT
COLUMNS - PER SCHEDULE		NORMAL WEIGHT
SLABS AND BEAMS	5,000 PSI(UNO0	NORMAL WEIGHT
POST-TENSIONED CONC SLABS	4,000 PSI(UNO)	NORMAL WEIGHT
CONCRETE ON METAL DECK	3,000 PSI	NORMAL WEIGHT
CONCRETE ON VOID FORMS (PEDESTRIAN AREAS)	3,000 PSI	LIGHTWEIGHT
CONCRETE ON VOID FORMS (EQUIPMENT ROOMS)	3,000 PSI	NORMAL WEIGHT
ALL OTHER CONCRETE	3,000 PSI	NORMAL WEIGHT

3. UNLESS NOTED OTHERWISE HEREIN, CONCRETE IS ASSIGNED TO EXPOSURE CLASSES F0, S0, P0, AND C0, AS DEFINED IN TABLE 4.2.1 OF ACI 318.

   A. CONCRETE IN CONTACT WITH SITE SOIL SHALL BE ASSIGNED TO EXPOSURE CLASS S1.

4. PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE I OR TYPE II. PORTLAND CEMENT FOR CONCRETE IN EXPOSURE CLASS S1 SHALL CONFORM TO ASTM C150, TYPE II (OR OTHER TYPES OF PORTLAND CEMENT WITH C3A CONTENT LESS THAN 5 PERCENT).

5. AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. NORMAL WEIGHT CONCRETE SHALL HAVE A MINIMUM DRY UNIT WEIGHT OF 145 PCF.

6. AGGREGATES FOR LIGHTWEIGHT CONCRETE SHALL BE EXPANDED SHALE CONFORMING TO ASTM C330. PRESIZE AGGREGATE BEFORE FIRING TO ALLOW OUTER CERAMIC SHELL TO REMAIN INTACT. LIGHTWEIGHT CONCRETE SHALL HAVE A DRY UNIT WEIGHT OF 110±3 PCF AND AIR CONTENT OF 4.5±1.5 PERCENT AS MEASURED BY THE VOLUMETRIC METHOD DESCRIBED IN ASTM C173.

7. MAXIMUM AGGREGATE SIZE SHALL BE 1-1/2 INCHES FOR FOUNDATIONS AND 1 INCH ELSEWHERE, BUT NO LARGER THAN (A) 1/5 THE NARROWEST DIMENSION BETWEEN SIDES OF FORMS, (B) 1/3 THE DEPTH OF SLABS, OR (C) 3/4 THE MINIMUM CLEAR SPACING BETWEEN INDIVIDUAL REINFORCING BARS OR WIRES, BUNDLES OF BARS, INDIVDUAL TENDONS, BUNDLED TENDONS, OR DUCTS. SMALLER AGGREGATE SIZES MAY BE ALLOWED WITH THE APPROVAL OF THE ARCHITECT (STRUCTURAL ENGINEER).

8. MAXIMUM SLUMP SHALL BE 5 INCHES TYPICALLY AND 4 INCHES IN FLATWORK, UNLESS A HIGH-RANGE WATER REDUCING ADMIXTURE (SUPERPLASTICIZER) IS USED IN THE CONCRETE MIX PROPORTIONS.

9. CONCRETE SHRINKAGE SHALL BE LIMITED TO 0.05 PERCENT AT 35 DAYS AS DETERMINED BY ASTM C157. TEST SPECIMENS SHALL BE MOIST CURED IN LIME SATURATED WATER FOR 28 DAYS AND AIR STORED FOR 7 DAYS.

10. WATER CEMENT RATIO SHALL NOT EXCEED 0.45 FOR ALL FLATWORK THAT RECEIVES A MOISTURE SENSITIVE ADHESIVE TO AFFIX FLOOR FINISHES AND 0.50 ELSEWHERE. EXCEPTION: FOR CONCRETE ON METAL DECK, A WATER CEMENT RATIO OF 0.50 MAY BE USED FOR CONCRETE PLACED ON VENTED METAL DECKS. WATER CEMENT RATIO FOR CONCRETE IN EXPOSURE CLASS S2 SHALL NOT EXCEEDS 0.45, AND f'c NOT LESS THAN 4,500 PSI.

11. CONCRETE MIX PROPORTIONING SHALL BE SIGNED AND SEALED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA AND SHALL BE SUBMITTED TO THE ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND APPROVAL.

   A. STRENGTH: CONCRETE MIX PROPORTIONING SHALL BE BASED ON FIELD EXPERIENCE AND/ OR TRIAL MIXTURES AS STIPULATED IN ACI 318, SECTION 5.3. SUBMIT CONCRETE MIX PROPORTIONING DATA INCLUDING HISTORICAL RECORDS AND/ OR RESULTS OF TRIAL MIXTURES, FOR EACH TYPE AND COMPRESSIVE STRENGTH OF CONCRETE.

   B. MODULUS OF ELASTICITY (MOE): MODULUS OF ELASTICITY TESTS SHALL BE PERFORMED ON LABORATORY TRIAL MIXTURES FOR EACH CONCRETE STRENGTH, EACH CONCRETE MIX PROPORTION, AND FOR EACH AGGREGATE SOURCE. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

   C. THE DESIGN CONCRETE MIX PROPORTION SHALL SPECIFY AGGREGATES THAT PRODUCE A CONCRETE MODULUS OF ELASTICITY NOT LESS THAN THAT SPECIFIED IN THE PROJECT PLANS AND SPECIFICATIONS. THE MODULUS OF ELASTICITY OF PRODUCTION CONCRETE DELIVERED TO THE JOBSITE SHALL BE CONSISTENT WITH THE MODULUS OF ELASTICITY OF THE DESIGN MIX PROPORTION FOR ESTABLISHING THE CONCRETE f'c AND MOE USED IN THE BUILDING DESIGN.

12. FOR CONCRETE SLABS-ON-GRADE PLACED DIRECTLY ON VAPOR RETARDER:

   A. CONCRETE MIXTURE:
      1. USE INCREASED SIZE OF MAXIMUM-SIZE COARSE AGGREGATE AND COARSER SAND.
      2. COARSE AGGREGATE TO BE WELL GRADED WITH MINIMUM FLAT OR ELONGATED PARTICLES.
      3. REDUCE SAND CONTENT TO LOWEST LEVEL CONSISTENT WITH ADEQUATE WORKABILITY.
      4. USE HIGH-RANGE WATER-REDUCING ADMIXTURE WITH GOOD SHRINKAGE-REDUCTION CHARACTERISTICS.

   B. FINISHING AND CURING:
      1. USE PROPER FINISHING TECHNIQUES AND PROPER TIMING BETWEEN FINISHING OPERATIONS TO AVOID BLISTERING AND DELAMINATION.
      2. USE CONTINUOUS MOIST CURE OR HIGH-SOLIDS CURING COMPOUNDS.

13. CONCRETE MIXING SHALL CONFORM TO ASTM C94.

14. FOR MAT FOUNDATIONS 7 FEET AND THICKER, THE MIX DESIGN, PLANNING SEQUENCE, AND METHOD OF THERMAL CONTROL MUST BE DONE IN A MANNER SUCH THAT THE INTERNAL CONCRETE TEMPERATURE DURING HYDRATION DOES NOT EXCEED 165 DEG F AND THE DIFFERENTIAL TEMPERATURE BETWEEN ANY TOW SURFACES WITHIN THE CONCRETE MASS IS LIMITED TO 40 DEG F.

15. THE MAXIMUM SIZE OF A SINGLE POUR FOR ELEVATED SLABS SHALL NOT EXCEED 25,000 SQUARE FEET AND THE LENGTH TO WIDTH RATIO OF THE POUR SHALL NOT EXCEED 2 WITHOUT THE APPROVAL OF THE ARCHITECT (STRUCTURAL EINGINEER).

16. SUBMIT SHOP DRAWINGS INDICATING LOCATIONS OF CONCRETE CONSTRUCTION JOINTS TO THE ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND APPROVAL PRIOR TO PLACING CONCRETE. LOCATE CONSTRUCTION JOINTS TO MINIMIZE EFFECTS OF SHRINKAGE AND AT POINTS OF LOW STRESS. HORIZONTAL CONSTRUCTION JOINTS ARE NOT PERMITTED IN BEAMS AND SLABS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED BY THE ARCHITECT (STRUCTURAL ENGINEER) PRIOR TO CONSTRUCTION.

17. THE OUTSIDE DIAMETER OF CONDUITS AND PIPES EMBEDDED IN WALLS AND SLABS SHALL NOT EXCEED 1/3 THE OVERALL THICKNESS OF SLAB OR WALL IN WHICH THEY ARE EMBEDDED. LOCATE CONDUITS AND PIPES WITHIN THE MIDDLE THIRD OF SLABS OR WALLS AND NO CLOSER THAN 3 DIAMETERS ON CENTER WITH A CLEAR SPACING NOT LESS THAN 4 INCHES. CROSSING OF ELECTRICAL CONDUIT IS NOT PERMITTED WITHOUT THE PRIOR WRITTEN CONSENT OF THE ARCHITECT (STRUCTURAL ENGINNER).

18. PROVIDE SLEEVES FOR ELECTRICAL AND PLUMBING OPENINGS. IF CONFLICT OCCURS BETWEEN REINFORCING AND SLEEVES, REPOSITION REINFORCING OR SLEEVES OR BOTH. DO NOT CUT ANY REINFORCING. CORING IS NOT PERMITTED.
SUBMIT DRAWINGS INDICATING LOCATIONS OF SLEEVES AND OPENINGS TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

19. PRIOR TO PLACING CONCRETE, REINFORCING BARS (INCLUDING WELDED WIRE REINFORCEMENT), EMBEDDED PLATES, ANCHOR BOLTS, AND OTHER CONCRETE EMBEDMENTS SHALL BE WELL SECURED IN POSITION.

20. CONCRETE PLACEMENT SHALL CONFORM TO ACI 304 AND CONTRACT DOCUMENTS. INTENTIONALLY ROUGHEN ALL PREVIOUSLY HARDENED CONCRETE SURFACES TO A FULL AMPLITUDE OF 1/4-INCH AGAINST WHICH FRESH CONCRETE IS PLACE.

CAST-IN-PLACE CONCRETE (CONTINUED

21. PROVIDE KEYED CONSTRUCTION JOINT WHERE INDICATED ON DRAWINGS. CLEAN, REMOVE LAITANCE, THOROUGHLY WET, AND REMOVE STANDING WATER IMMEDIATELY BEFORE PLACING FRESH CONCRETE.

22. FORMS SHALL BE CONSTRUCTED TO PROVIDE CAMBER AS SPECIFIED ON THE DRAWINGS. CONCRETE SLAB THICKNESS SHALL BE MAINTAINED.

23. FORM EXPOSED CORNERS OF COLUMNS, BEAMS AND WALLS WITH A 3/4-INCH CHAMFER, UNLESS NOTED OTHERWISE ON ARCHITECTURAL DRAWINGS.

24. AT LEAST TWO HOURS MUST ELAPSE BETWEEN THE END OF COLUMN OR WALL PLACEMENT AND THE BEGINNING OF SLAB PLACEMENT.

25. CONCRETE SHALL BE MAINTAINED ABOVE 50 DEGREES FAHRENHEIT AND IN A MOIST CONDITION FOR A MINIMUM OF 7 DAYS AFTER PLACEMENT UNLESS OTHERWISE ACCEPTED BY ARCHITECT (STRUCTURAL ENGINEER).

26 CURING COMPOUNDS, SEALERS, HARDENERS, ETC., USED ON CONCRETE THAT RECEIVES A FINISH SHALL BE APPROVED BY THE ARCHITECT BEFORE USE.

25. GROUT SHALL BE NON-SHRINK, NON-METALLIC, SHALL NOT CONTAIN CHLORIDES, AND SHALL ATTAIN A 28-DAY COMPRESSIVE STRENGTH OF 6,000PSI.

26. LEAN CONCRETE SHALL CONTAIN 2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE. USE ONLY WHERE SPECIFICALLY INDICATED.

FOUNDATION

1. DESIGN OF FOUNDATION SYSTEM BASED ON RECOMMENDATIONS IN GEOTECHNICAL ENGINEERING INVESTIGATION REPORT BY HAMILTON & ASSOCIATES, INC., DATED APRIL 29, 2013 AND ALL SUBSEQUENT ADDENDA. GEOTECHNICAL REPORT AND ADDENDA SHALL BE CONSIDERED PART OF THESE CONTRACT DOCUMENTS AND SHALL BE KEPT AT JOB SITE AT ALL TIMES.

2. ISOLATED SPREAD FOOTING AND CONTINUOUS SPREAD FOOTING DESIGN BASED ON ALLOWABLE NET BEARING PRESSURES OF 2500 PSF . BOTTOM OF FOOTINGS SHALL BE A MINIMUM OF 24 INCHES BELOW LOWEST ADJACENT FLOOR OR GRADE AND 24 INCHES INTO RECOMMENDED BEARING MATERIAL (NATIVE EARTH MATERIALS). FOOTING DIMENSIONS SHALL NOT BE LESS THAN 24 INCHES.
ALLOWABLE BEARING PRESSURES INCREASED 300 PSF FOR EACH ADDITIONAL FOOT OF WIDTH AND 600 PSF FOR EACH ADDITIONAL FOOT OF DEPTH TO A MAXIMUM ALLOWABLE BEARING PRESSURE OF 4000 PSF AND 6000 PSF FOR FOOTINGS TO ADEPTH OF 20FT & FOR FOOTINGS BELOW 35 FT RESPECTIVELY, ALLOWABLE BEARING PRESSURES INCREASED 33 PERCENT FOR SEISMIC OR WIND LOADING.

3. RESISTANCE TO LATERAL LOADS PROVIDED BY FRICTION AGAINST BASE AND SIDES OF FOUNDATIONS AND BY PASSIVE EARTH PRESSURES. ALLOWABLE COEFFICIENT OF FRICTION IS 0.35 AND ALLOWABLE PASSIVE PRESSURE FOR SIDES CAST AGAINST UNDISTURBED OR RECOMPACTED SOIL IS EQUIVALENT TO A FLUID DENSITY OF 350 PCF TO A MAXIMUM ALLOWABLE PASSIVE PRESSURE OF 4000 PSF.

4. FOUNDATIONS MAY BE CAST DIRECTLY AGAINST EXCAVATIONS PROVIDED EXCAVATION IS CAPABLE OF MAINTAINING A VERTICAL CUT WITHOUT SLOUGHING. FOUNDATION DIMENSION SHALL BE ENLARGED BY AN ADDITIONAL ONE INCH IN THE DIRECTION OF THE SIDE CAST AGAINST EARTH.

5. CONCRETE SHALL NOT BE PLACED ON FROZEN GRADE. IF FOOTING IS SUBJECT TO FREEZING TEMPORATURES AFTER FOUNDATION CONSTRUCTION, THEN FOOTING SHALL BE ADEQUATELY PROTECTED FROM FREEZING.

6. EXCAVATION, BACKFILL, AND COMPACTION SHALL BE DONE IN STRICT ACCORDANCE WITH GEOTECHNICAL ENGINEERING INVESTIGATION REPORT RECOMMENDATIONS.

7. FOUNDATION EARTHWORK SHALL BE OBSERVED BY A QUALIFIED GEOTECHNICAL ENGINEER, RETAINED BY OWNER AND SATISFACTORY TO ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY. PERFORM REQUIRED OBSERVATIONS OF THIS CONTRACT AND CBC SECTION 1704.7.

8. FOUNDATION EXCAVATION, BACKFILLING, AND COMPACTION SHALL BE OBSERVED AND APPROVED BY A GEOTECHNICAL ENGINEER AND THE GOVERNING AGENCY PRIOR TO PLACING REINFORCING STEEL AND CONCRETE. GEOTECHNICAL ENGINEER SHALL PROVIDE A LETTER OF COMPLIANCE TO THE OWNER.

9. TEMPORARY CUT SLOPES SHALL NOT EXCEED THOSE RECOMMENDED IN THE GEOTECHNICAL ENGINEERING INVESTIGATION REPORT. DO NOT PERMIT ANY PERSON TO DESCEND INTO TRENCHES OR EXCAVATIONS GREATER THAN FIVE FEET IN DEPTH UNLESS NECESSARY PERMIT FROM STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY IS OBTAINED PRIOR TO ISSUANCE OF BUILDING OR GRADING PERMIT. CONTRACTOR TO PROVIDE FOR DESIGN, PERMIT, AND INSTALLATION OF ALL SHORING AND SHEATHING NECESSARY TO SAFELY RETAIN EARTH BANKS.

10. CONTRACTOR TO PROVIDE FOR DEWATERING OF EXCAVATIONS FROM SURFACE WATER, GROUND WATER OR SEEPAGE. DEWATERING SHALL EFFECTIVELY ELIMINATE ANY HYDROSTATIC PRESSURE ON SHORING. ENSURE THAT CONTAMINATED WATER IS NOT DISPOSED OF IN PUBLIC SEWER OR STORM DRAIN SYSTEM AND ENSURE THAT DIRTY WATER IS NOT DISPOSED OF INTO PUBLIC RIGHT-OF-WAY.

11. UNLESS ADEQUATELY BRACED AND SHORED, RETAINING WALLS SHALL NOT BE BACKFILLED UNTIL WALLS HAVE ATTAINED FULL DESIGN STRENGTH. FOR PIT WALLS AND BUILDING WALLS BELOW GRADE, BRACING AND SHORING SHALL REMAIN IN PLACE UNTIL ATTACHED FLOORS ARE PLACED, CURED FOR AT LEAST 7 DAYS, AND HAVE ATTAINED FULL DESIGN STRENGTH. BACKFILL PLACED IMMEDIATELY BEHIND RETAINING WALLS SHALL BE COMPACTED WITH HAND OPERATED EQUIPMENT.

12. SIDEWALKS OR PAVING IMMEDIATELY ADJACENT TO BUILDING PERIMETER SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDING. LANDSCAPE IRRIGATION IS NOT PERMITTED WITHIN FIVE FEET OF BUILDING PERIMETER FOOTINGS EXCEPT WHEN ENCLOSED IN PROTECTED PLANTERS THAT DIRECT DRAINAGE AWAY FROM STRUCTURE AND FOUNDATIONS. DISCHARGE FROM DOWNSPOUTS, ROOF DRAINS AND SCUPPERS IS NOT PERMITTED ONTO UNPROTECTED SOILS WITHIN FIVE FEET OF BUILDING PERIMETER.

REINFORCING STEEL

1. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE TO AMERICAN CONCRETE INSTITUTE ACI 318 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE" AND CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE".

2. REINFORCING STEEL SHALL CONFORM TO ASTM A615/A615M, GRADE 60, UNLESS NOTED OTHERWISE. BARS TO BE WELDED SHALL CONFORM TO LOW ALLOY ASTM A706/A706M, GRADE 60.

3. REINFORCEMENT RESISTING EARTHQUAKE-INDUCED FLEXURE, AXIAL FORCES OR BOTH IN SPECIAL MOMENT FRAMES, SPECIAL STRUCTURE WALLS, AND ALL COMPONENTS OF SPECIAL STRUCTURAL WALLS (INCLUDING COUPLING BEAMS AND WALL PIERS) SHALL COMPLY WITH ASTM A706, GRADE 60. ASTM A615/A615M GRADE 40 AND 60 REINFORCEMENT SHALL BE PERMITTED IN THESE MEMBERS IF:

   A. THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED THE SPECIFIED YIELD STRENGTH BY MORE THAN 18,000 PSI (RETESTS SHALL NOT EXCEED THIS VALUE BY MORE THAN AN ADDITIONAL 3000 PSI).

   B. THE RATIO OF THE ACTUAL TENSILE STRENGTH TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.

4. WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A1064. LAP WELDED WIRE REINFORCEMENT 8 INCHES MINIMUM, MEASURED BETWEEN OUTERMOST CROSS WIRE OF EACH REINFORCEMENT SHEET.

5. DEFORMED BAR ANCHORS SHALL BE NELSON STUD WELDING, INC. TYPE D2L (ICC EVALUATION SERVICE REPORT ESR-2907), OR AN APPROVED EQUAL, AND SHALL BE MADE FROM DEFORMED STEEL WIRE CONFORMING TO ASTM A1064, WITH A MINIMUM YIELD STRENGTH OF 70 KSI AND A MINIMUM TENSILE STRENGTH OF 80 KSI

6. LENTON FORM SAVER COUPLERS, FA OR FS SERIES, SHALL BE BY ERICO INTERNATIONAL CORPORATION (IAPMO UES EVALUATION REPORT NO. 0129) OR APPROVED EQUAL.

7. LENTON TERMINATORS BY ERICO INTERNATIONAL CORPORATION (IAPMO UES EVALUATION REPORT NO. 0188) OR APPROVED EQUAL MAY BE USED IN LIEU OF STANDARD HOOKS.

8. MECHANICAL SPLICES SHALL BE LENTON STANDARD COUPLERS BY ERICO INTERNATIONAL CORPORATION (IAPMO UES EVALUATION REPORT NO. 0129) OR APPROVED EQUAL.

9. PREPARE REINFORCING STEEL SHOP DRAWINGS IN ACCORDANCE TO ACI 315, PART B. SHOP DRAWINGS MAY BE PREPARED MANUALLY OR BY COMPUTER. PLACING DRAWINGS SHALL BE PREPARED TO THE SAME STANDARD AS CONTRACT DRAWINGS. SHOW REINFORCING PLACEMENT, SPLICE LOCATIONS, REINFORCING LENGTHS, DETAILS, ELEVATIONS, BEND DETAILS, ETC. SUBMIT TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW PRIOR TO FABRICATION. PROMPTLY NOTIFY ARCHITECT (STRUCTURAL ENGINEER) PRIOR TO DEVELOPING REINFORCING STEEL SHOP DRAWINGS IF INSUFFICIENT CLEAR DISTANCES BETWEEN REINFORCING STEEL OR OTHER CONGESTION IS ENCOUNTERED. DEVIATIONS FROM THE CONTRACT DOCUMENTS SHALL BE CLEARLY IDENTIFIED ON THE SHOP DRAWINGS. IF SUBMITTAL IS PARTIAL, CLEARLY INDICATE ITEMS EXCLUDED FROM SUBMITTAL. SHOP DRAWINGS WILL BE REJECTED IF NOT PREPARED TO THE STANDARDS STATED ABOVE.

10. REINFORCING STEEL SHALL BE SPLICED AS SHOWN ON THE DRAWINGS. IF NOT SHOWN, LOCATE SPLICES IN AREAS OF MINIMUM STRESS. LAP (SPLICE) LENGTHS ARE AS INDICATED ON THE DRAWINGS.

11. MINIMUM CLEARANCES BETWEEN PARALLEL REINFORCING STEEL INCLUDING SPLICED BARS SHALL BE ONE INCH, ONE BAR DIAMETER, OR 4/3 TIMES THE MAXIMUM SIZE AGGREGATE, WHICHEVER IS GREATER. PROVIDE 1 1/2 INCHES OR 1 1/2 BAR DIAMETERS, WHICHEVER IS GREATER, AT COLUMNS ONLY. FOR BUNDLED BARS, MINIMUM CLEAR DISTANCES BETWEEN UNITS OF BUNDLED BARS SHALL BE SAME AS SINGLE BARS EXCEPT BAR DIAMETER IS DERIVED FROM EQUIVALENT TOTAL AREA OF BUNDLE.

12. PROVIDE THE FOLLOWING CONCRETE COVERAGE FOR REINFORCING STEEL PLACED IN CAST-IN-PLACE CONCRETE:

   A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO
      EARTH..3"
   B. CONCRETE EXPOSED TO EARTH OR WEATHER:
      NO. 6 THROUGH NO. 18 BARS..2"
      NO. 5 BARS, W31 OR D31 WIRE, AND SMALLER..1-1/2"
   C. CONCRETE NOT EXPOSED WEATHER OR IN CONTACT WITH GROUND:
      SLAB, WALLS, JOISTS:
      NO. 14 AND NO. 18 BARS..1-1/2"
      NO. 11 BARS AND SMALLER (*)..1"
      BEAMS AND COLUMNS
      PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS..1-1/2"
   D. SLAB-ON-GRADE..MID-HEIGHT OF SLAB

   (*) CONCRETE COVERAGE ADEQUATE FOR FIRE-RESISTIVE PERIOD OF 2 HOURS.

13. WALL AND COLUMN DOWELS SHALL MATCH SIZE, GRADE, AND SPACING OF RESPECTIVE VERTICAL REINFORCING, UNLESS OTHERWISE NOTED.

14. USE PLASTIC OR PLASTIC COATED SPACERS AND CHAIRS IF RESTING ON EXPOSED CONCRETE SURFACES.

15. WELDING OF REINFORCING STEEL SHALL BE MADE WITH LOW HYDROGEN ELECTRODES IN CONFORMANCE WITH AMERICAN WELD SOCIETY AWS D1.4 "STRUCTURAL WELDING CODE - REINFORCING STEEL".

   A. EXCEPT FOR REINFORCING STEEL CONFORMING TO ASTM A706/A706M, DETERMINE CARBON EQUIVALENT OF ALL REINFORCING STEEL TO BE WELDED. SUBMIT WPS FOR ALL REINFORCING STEEL TO BE WELDED TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND TO GOVERNING CODE AUTHORITY FOR APPROVAL PRIOR TO EXECUTION. WPS SHALL INCLUDE:
      1) SKETCH OF JOINT DESCRIBING GEOMETRY AND APPLICABLE DIMENSIONS, WELD TYPE AND SIZE, SEQUENCE OF WELD DEPOSITION, AND MAXIMUM LAYER THICKNESS AND BEAD WIDTHS.
      2) APPLICABLE WELD PROCESS.
      3) FILLER METAL PER AWS STANDARD AND ELECTRODE SPECIFICATION AND CLASSIFICATION, AS WELL AS DETAILS OF SHIELDING MATERIAL.
      4) ELECTRICAL CHARACTERISTICS FOR WELD PROCESS USED SUCH AS TYPE OF CURRENT AND ACCEPTABLE RANGE OF CURRENT MEASURED IN AMPERAGE, VOLTAGE RANGE, AND ELECTRODE DIAMETER. FOR WELD FEED PROCESS, INDICATE MANUFACTURER RECOMMENDED WIRE SPEED, MELT OFF RATE AND DEPOSITION RATE.
      5) PREHEAT TEMPERATURES.
      6) PROCEDURE QUALIFICATION RECORDS (PQR) FOR ALL WPS'S QUALIFIED BY TESTING.
   B. WELDERS SHALL BE CERTIFIED TO CONFORM WITH AWS STANDARDS AND APPROVED BY THE GOVERNING CODE AUTHORITY.

16. REINFORCING STEEL BENDS SHALL BE MADE COLD. RE-BENDING OF PREVIOUSLY BENT REINFORCING IS NOT PERMITTED.

17. ALL REINFORCING STEEL, INCLUDING WELDED WIRE REINFORCING, SHALL BE SECURELY HELD IN PLACE WHILE PLACING CONCRETE. IF REQUIRED, ADDITIONAL BARS, CONCRETE BLOCKS, CHAIRS, BOLSTERS, ETC., SHALL BE PROVIDED BY CONTRACTOR TO FURNISH SUPPORT FOR ALL REINFORCING. HOOKING AND WALKING-IN IS NOT PERMITTED.

18. ALL REINFORCING STEEL SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN FINAL INSPECTION IS CONDUCTED.

19. CONTACTOR SHALL PROVIDE FOR AN ALLOWANCE OF 5 TONS OR 2%, WHICHEVER IS GREATER, OF REINFORCING STEEL TO BE FABRICATED AND/OR PLACED DURING THE PROGRESS OF WORK AS MAY BE DIRECTED BY THE ARCHITECT (STRUCTURAL ENGINEER). THE UNUSED PORTION SHALL BE CREDITED TO THE OWNER AT THE COMPLETION OF CONCRETE WORK.

POST-TENSIONED CONCRETE

1. POST-TENSIONED STRANDS SHALL BE 7-WIRE, LOW RELAXATION, CONFORMING TO ASTM A416 AND THE FOLLOWING:

1/2 INCH DIAMETER STRAND	0.153 SQ IN
ULTIMATE STRENGTH	270 KSI
TEMPORARY JACKING STRESS TO OVERCOME FRICTION	216 KSI
ANCHOR STRESS	189 KSI

2. MILL TEST CERTIFICATES FOR EACH REEL OR HEAT SHALL BE SUBMITTED TO THE ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY FOR REVIEW BEFORE STRESSING. CERTIFICATES SHALL REPORT AS A MINIMUM THE CHEMICAL ANALYSIS OF STEEL, ULTIMATE TENSILE STRENGTH, YIELD STRENGTH AT ONE PERCENT EXTENSION UNDER LOAD, ELONGATION AT FAILURE, DIAMETER AND NET AREA OF STRAND, MODULUS OF ELASTICITY, AND TYPE OF MATERIAL. UNIDENTIFIED MATERIAL SHALL BE TESTED BY AN APPROVED LABORATORY. TEST RESULTS SHALL BE SUBMITTED TO THE ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY FOR REVIEW BEFORE STRESSING.

3. ALL STRANDS SHALL HAVE THEIR HEAT OR REEL NUMBER MARKED ON TAGS WIRE-TIED TO THE STRAND.

4. ANCHORS, WEDGES, COUPLERS AND MISCELLANEOUS HARDWARE SHALL BE STANDARD AND SHALL POSSESS A CURRENT ICC-ES EVALUATION REPORT. SUBMIT REPORT TO THE ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY BEFORE FABRICATING TENDONS.

5. UNBONDED TENDON SHALL BE SHEATHED IN DURABLE POLYETHYLENE PLASTIC SLIPPAGE TUBING CAPABLE OF PREVENTING WATER INTRUSION OVER THE ENTIRE STRAND LENGTH, CHEMICALLY STABLE WITHOUT EMBRITTLEMENT OR SOFTENING, AND NON-REACTIVE WITH CONCRETE, STEEL AND GREASE COATING. THE TUBING SHALL CONTAIN A RUST-INHIBITING GREASE COATING. REPAIR TEARS IN THE TUBING LONGER THAN 4 INCHES.

6. SHOP DRAWINGS SHALL INDICATE PENETRATIONS AND OPENINGS THROUGH POST-TENSIONED MEMBER, TENDON LAYOUT, DEAD-END AND STRESSING-END LOCATIONS, ANCHORAGE DETAILS, TENDON SUPPORT LAYOUT WITH DETAILS NECESSARY FOR INSTALLATION, AND MEMBER IDENTIFICATION MARKS. SUBMIT SHOP DRAWINGS TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW.

7. GENERAL CONTRACTOR SHALL COORDINATE LOCATION OF OPENINGS AND PENETRATIONS WITH TENDON SUPPLIER. SHOP DRAWINGS WILL BE REJECTED IF OPENINGS AND PENETRATIONS ARE NOT LOCATED. OPENINGS AND PENETRATIONS OTHER THAN THOSE SHOWN ON APPROVED SHOP DRAWINGS ARE NOT PERMITTED.

8. FRICTION LOSSES SHALL BE BASED ON EXPERIMENTALLY DETERMINED WOBBLE AND CURVATURE FRICTION COEFFICIENTS AND SHALL BE VERIFIED DURING STRESSING OPERATIONS. VALUES OF WOBBLE AND CURVATURE FRICTION COEFFICIENTS SHALL BE SHOWN ON THE SHOP DRAWINGS.

9. TENDON SUPPLIER SHALL SUBMIT LOSS AND ELONGATION CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA TO ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY FOR REVIEW. CALCULATIONS SHALL INDICATE ANCHORAGE DESIGN AND LOSSES FOR SPECIFIC STRESSING LENGTHS TO ENSURE THAT MINIMUM FINAL EFFECTIVE FORCES ARE MAINTAINED. ELONGATION CALCULATIONS SHALL BE BASED UPON AN AVERAGE MODULUS OF ELASTICITY INDICATED ON MILL CERTIFICATES FOR TENDONS FURNISHED TO THE SITE. FRICTION LOSS, CONCRETE CREEP, ELASTIC SHORTENING OF CONCRETE, SHRINKAGE OF CONCRETE, RELAXATION OF POST-TENSION STEEL STRESS, ANCHORAGE SLIP AND STRESSING SEQUENCE SHALL BE CONSIDERED WHEN DETERMINING EFFECTIVE STRESSES. CERTIFIED TEST DATA JUSTIFYING LOSS PROPERTY ASSUMPTIONS SHALL BE INCLUDED IN THE SUBMITTAL.

10. MAXIMUM EFFECTIVE STRESS AFTER ALL LOSSES HAVE BEEN CONSIDERED SHALL NOT EXCEED 174 KSI (26.6 KIPS) FOR SLABS AND 169 KSI (25.9 KIPS) FOR BEAMS. LOWER EFFECTIVE STRESS SHALL BE USED IF LOSSES ARE DETERMINED TO BE GREATER. SUBMITTALS WITH EFFECTIVE STRESS GREATER THAN 174 PSI FOR SLABS AND 169 KSI FOR BEAMS WILL BE RETURNED NOT REVIEWED AND NOTED AS NOT RESPONSIVE TO THE CONTRACT REQUIREMENTS.

11. TENDONS SHALL BE PLACED IN AN APPROXIMATE PARABOLIC DRAPE BETWEEN SUPPORTS IN COMPLIANCE WITH CONTROLLING POINTS SHOWN ON DRAWINGS UNLESS NOTED OTHERWISE. DIMENSIONS INDICATED ON THE DRAWINGS LOCATE CENTER OF GRAVITY OF TENDON OR GROUP OF TENDONS. LOW POINTS ARE AT MID SPAN UNLESS NOTED OTHERWISE. TENDON PLACEMENT AT A HORIZONTAL RADIUS LESS THAN 10'-0" IS NOT PERMITTED UNLESS NOTED OTHERWISE.

12. TENDONS SHALL BE SECURED WITH A SUFFICIENT NUMBER OF POSITIONING DEVICES TO ENSURE CORRECT LOCATION DURING AND AFTER CONCRETE PLACEMENT. POSITIONING DEVICES SHALL NOT BE SPACED GREATER THAN 4 FEET. CHAIRS GREATER THAN ONE INCH SHALL BE STAPLED TO THE FORM. POSITIONING DEVICES AND SUPPORTS SHALL BE PLASTIC OR PLASTIC COATED WHEN RESTING ON EXPOSED SURFACES.

13. THE LOW POINT OF TENDON DRAPES, WITHIN 2 1/2" CLEAR FROM THE BOTTOM OF SLABS OR BEAMS, SHALL BE SPRAY-PAINTED ONTO THE FORMWORK WITH AN INDELIBLE PAINT IMMEDIATELY PRIOR TO PLACING CONCRETE.

14. IF CONCRETE IS PLACED BY THE PUMP METHOD, PROVIDE HORSES TO SUPPORT CONCRETE HOSE. CONCRETE HOSE SHALL NOT BE PERMITTED TO RIDE ON THE TENDONS.

15. SPACING OF SLAB TENDONS IS PERMITTED TO SLIGHTLY DEVIATE WHEN REQUIRED TO AVOID OPENINGS, INSERTS, AND EMBEDS THAT ARE SPECIFICALLY LOCATED. WHERE LOCATION OF TENDONS INTERFERES WITH EACH OTHER, ONE TENDON MAY BE MOVED HORIZONTALLY TO AVOID INTERFERENCE.

16. MAXIMUM NUMBER OF STRANDS IN ANY ONE BUNDLE SHALL NOT EXCEED FOUR IN SLABS AND EIGHT IN BEAMS. INDIVIDUAL TENDONS WITHIN A BUNDLE SHALL NOT BE TWISTED OR ENTWINED.

17. MAXIMUM TENDON SPACING OF SINGLE OR BUNDLED STRANDS IN UNIFORMLY STRESSED SLABS SHALL NOT EXCEED 8 TIMES THE SLAB THICKNESS, OR FIVE FEET. A MINIMUM OF TWO TENDONS IN EACH DIRECTION SHALL PASS DIRECTLY OVER EACH SUPPORT COLUMN.

18. PROVIDE TWO NO. 5 CONTINUOUS REINFORCING BARS PLACED DIRECTLY BEHIND TENDON ANCHORS IN SLABS. POSITION BARS AS NEAR TOP AND BOTTOM CORNERS OF TENDON ANCHOR AS POSSIBLE.

19. TENDONS ANCHORS SHALL BE INSTALLED PERPENDICULAR TO THE TENDON AXIS AND SHALL BE SECURELY ATTACHED TO THE BULKHEAD FORM. POCKET FORMERS USED AT STRESSING ANCHORS SHALL POSITIVELY PRECLUDE INTRUSION OF CEMENT PASTE INTO THE WEDGE CAVITY. THE DEPTH OF POCKET FORMER FROM THE EDGE OF CONCRETE TO THE FACE OF ANCHOR SHALL NOT BE LESS THAT 2 INCHES. CONCRETE SHALL BE COMPLETELY CONSOLIDATED AND DENSIFIED BEHIND TENDON ANCHORS.

20. FIELD STRENGTH OF CONCRETE AT TIME OF TENSIONING SHALL NOT BE LESS THAN 3000 PSI AND NOT LESS THAN 3 DAYS OLD.

21. UNIFORMLY DISTRIBUTED TENDONS SHALL BE STRESSED BEFORE BANDED TENDONS. SLAB TENDONS SHALL BE STRESSED BEFORE BEAM TENDONS. TENDONS STRESSED FROM BOTH ENDS DO NOT NEED TO BE STRESSED SIMULTANEOUS FROM BOTH ENDS.

22. A CERTIFIED POST-TENSIONING INSPECTOR SHALL MAINTAIN AN ELONGATION AND STRESSING FORCE LOG. FIELD READINGS OF ELONGATIONS AND/OR STRESSING FORCES SHALL NOT VARY BY MORE THAN 7 PERCENT FROM CALCULATED REQUIRED VALUES. THE CAUSE OF ANY DIFFERENCES BETWEEN FIELD READINGS AND THE CALCULATED REQUIRED VALUES IN EXCESS OF ±7 PERCENT SHALL BE ASCERTAINED AND CORRECTED IMMEDIATELY. PROMPTLY SUBMIT LOG TO THE ARCHITECT (STRUCTURAL ENGINEER).

23. DO NOT BURN/CUT OFF TENDON ENDS UNTIL THE ENTIRE SLAB HAS BEEN SATISFACTORILY STRESSED AND THE ELONGATION AND STRESSING FORCE LOG REVIEWED BY THE ARCHITECT (STRUCTURAL ENGINEER). AFTER BURNING/CUTTING TENDON ENDS, EXPOSED STRAND AND ANCHOR END SHALL BE COATED WITH A SUITABLE MATERIAL TO ENSURE CORROSION PROTECTION. STRESSING POCKET SHALL BE PACKED SOLID WITH NON-SHRINK GROUT.

POST-TENSIONED CONCRETE (CONTINUED)

24. CONCRETE OR GROUT CONTAINING CHLORIDE SHALL NOT BE USED.

25. SHORING DESIGN SHALL BE COMPATIBLE WITH POST-TENSIONING SEQUENCE.

26. SLABS OR BEAMS MAY BE DE-SHORED AFTER ALL TENDONS HAVE BEEN STRESSED UNLESS SHORING IS REQUIRED TO CARRY FLOORS ABOVE.

27. ALL POCKETS/BLOCKOUTS REQUIRED FOR TENDON ANCHORS SHALL BE ADEQUATELY REINFORCED TO NOT DECREASE THE STRENGTH OF THE STRUCTURE AND SHALL BE WATERPROOFED TO ELIMINATE WATER INTRUSION THROUGH OR INTO THE POCKETS/BLOCKOUTS.

28. EMBEDDED ITEMS, SLEEVES, AND OTHER INSERTS SHALL BE CAST-IN-PLACE. CUTTING OR CORING OF POST-TENSIONED CONCRETE AND USE OF DRILLED OR POWDER DRIVEN FASTENERS IS NOT PERMITTED EXCEPT AS ACCEPTED BY ARCHITECT (STRUCTURAL ENGINEER).

29. GROUNDING OF EQUIPMENT TO PRESTRESSING STRANDS IS NOT PERMITTED.

30. STRESSING JACK AND ATTENDANT GAUGES TO BE USED SHALL HAVE BEEN CALIBRATED WITHIN 30 DAYS OF ITS USE.

31. CONTRACTOR SHALL PROVIDE A WORK PLATFORM WITH WIDTH ADEQUATE FOR STRESSING AT ALL STRESSING LOCATIONS.

32. REFER TO CAST-IN-PLACE CONCRETE AND REINFORCING STEEL NOTES FOR REMAINDER OF REQUIREMENTS.

EXCAVATION SHORING (DESIGN-BUILD)

1. DESIGN OF EXCAVATION SHORING SYSTEM SHALL BE BASED ON RECOMMENDATIONS IN GEOTECHNICAL ENGINEERING INVESTIGATION REPORT BY COASTLINE GEOTECHNICAL CONSULTANTS, DATED AUGUST 23, 2010 AND ALL SUBSEQUENT ADDENDA. GEOTECHNICAL REPORT AND ADDENDA SHALL BE CONSIDERED PART OF THESE CONTRACT DOCUMENTS AND SHALL BE KEPT AT JOB SITE AT ALL TIMES.

2. SUBMIT EXCAVATION SHORING SHOP DRAWINGS AND STRUCTURAL CALCULATIONS TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND GOVERNING CODE AUTHORITY FOR APPROVAL. STRUCTURAL CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.

3. SOIL ANCHORS SHALL BE TESTED AS RECOMMENDED IN GEOTECHNICAL ENGINEERING INVESTIGATION REPORT TO CONFIRM DESIGN CAPACITIES.

4. INSTALLATION AND TESTING OF SOIL ANCHORS SHALL BE OBSERVED A QUALIFIED GEOTECHNICAL ENGINEER, RETAINED BY OWNER AND SATISFACTORY TO ARCHITECT (STRUCTURAL ENGINEER) AND GOVERNING CODE AUTHORITY.

5. CONTRACTOR SHALL PROVIDE FOR DEWATERING OF EXCAVATIONS FROM GROUND WATER. DEWATERING SHALL EFFECTIVELY ELIMINATE ANY HYDROSTATIC PRESSURE ON SHORING. ENSURE THAT CONTAMINATED WATER IS NOT DISPOSED OF IN PUBLIC SEWER OR STORM DRAIN SYSTEM AND ENSURE THAT DIRTY WATER IS NOT DISPOSED OF INTO PUBLIC RIGHT-OF-WAY.

6. SURFACE WATER SHALL NOT BE ALLOWED TO POND ON TOP OF EXCAVATIONS AND SHALL BE PREVENTED FROM ENTERING EXCAVATION OVER TOP OF SHORING.

7. EXCAVATE TO LOCATION OF SOIL ANCHOR AND INSTALL SOIL ANCHOR AS SOON AS REQUIRED LAGGING REACHES LEVEL OF ANCHOR. CONTINUE EXCAVATION TO NEXT SOIL ANCHOR BELOW ONLY AFTER ANCHOR HAS BEEN CERTIFIED BY THE GEOTECHNICAL ENGINEER.

8. EXCAVATION SHORING SHALL BE MONITORED AS FOLLOWS:

   A. ESTABLISH CONTROL POINTS AT THE TOP OF ALL PILES TO MONITOR HORIZONTAL AND VERTICAL MOVEMENTS. LATERAL MOVEMENT ALONG THE ENTIRE LENGTH OF PILES SELECTED BY THE GEOTECHNICAL ENGINEER SHALL ALSO BE MONITORED. A SURVEYOR LICENSED IN THE STATE OF CALIFORNIA SHALL OBTAIN ALL MOVEMENT READINGS. SUBMIT INITIAL READINGS TO ARCHITECT (STRUCTURAL ENGINEER), GEOTECHNICAL ENGINEER, AND GOVERNING CODE AUTHORITY, PRIOR TO EXCAVATING. SUBMIT MOVEMENT REPORTS WEEKLY AS EXCAVATION PROGRESSES AND THROUGHOUT CONSTRUCTION PERIOD UNTIL PERMANENT SUPPORT IS PROVIDED. OBTAIN ADDITIONAL READINGS WHEN REQUESTED BY ARCHITECT (STRUCTURAL ENGINEER), GEOTECHNICAL ENGINEER, OR GOVERNING CODE AUTHORITY.
   B. IF HORIZONTAL OR VERTICAL MOVEMENT AT THE TOP OF SHORED EMBANKMENT EXCEEDS 1/2 INCH, DISCONTINUE EXCAVATING IMMEDIATELY. ARCHITECT (STRUCTURAL ENGINEER) AND GEOTECHNICAL ENGINEER WILL EVALUATE SUCH MOVEMENT AND RECOMMEND CORRECTIVE MEASURES, IF NECESSARY, BEFORE CONTINUING WITH EXCAVATION.
   C. LOADS ON SELECTED ANCHORS SHALL BE CHECKED PERIODICALLY AS REQUIRED BY GEOTECHNICAL ENGINEER.

DEFERRED APPROVALS

DEFERRED SUBMITTALS(S) SHALL BE PROVIDED FOR THE FOLLOWING BUILDING COMPONENTS/ELEMENTS:

1. COLD-FORMED STUD FRAMING.
2. METAL STAIRS
3. PIPE & TUBE RAILINGS
4. GLASS FIBER REINFORCED CONCRETE (GRFC) PANELS
5. UNITIZED CURTAINWALL
6. ELEVATORS
7. FIRE-SUPPRESSION PIPING/SPRINKLERS
8. FIRE ALARM
9. ROOF DAVITS & STABALIZATION BUTTONS
10. MECHANICAL VIBRATION ISOLATION AND SEISMIC CONTROLS
11. ELECTRICAL VIBRATION ISOLATION AND SEISMIC CONTROLS
12. INTERIOR AND EXTERIOR SIGNAGE
13 CURTAIN WALLS

REVISIONS

BY	DATE	DESCRIPTION
=	05/07/2015	Addendum 02
-	09/04/2015	Addendum 03
-	10/30/2015	Addendum 04
-	05/27/2016	Addendum 05

hla

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710 WILSHIRE BOULEVARD
MIXED-USE HOTEL PROJECT
SANTA MONICA - CALIFORNIA, 90401

GENERAL NOTES

C. BOUQUET
SE 4007
EXP. 09/30/16

DRAWN –
CHECKED –
APPROVED –
SCALE NTS
SHEET **S-001**
DATE June 25, 2013
PROJECT NUMBER HLA 0000000–00000