GENERAL STRUCTURAL NOTES

I. GENERAL

1. MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 2010 EDITION OF THE CALIFORNIA BUILDING CODE, WITH CITY OF SANTA MONICA AMENDMENTS AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
2. THESE GENERAL NOTES SUPPLEMENT THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN THE PLANS AND SPECIFICATIONS, FOLLOW THE MORE STRINGENT OF THE TWO, UNLESS OTHERWISE NOTED BY THE OWNER'S REPRESENTATIVE.
3. REFERENCE TO CODES, RULES, REGULATIONS, STANDARDS, MANUFACTURER'S INSTRUCTIONS OR REQUIREMENTS OF REGULATORY AGENCIES IS TO THE LATEST PRINTED EDITION OF EACH IN EFFECT AT THE DATE OF SUBMISSION OF BID UNLESS THE DOCUMENT DATE IS SHOWN.
4. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, USE SIMILAR DETAILS OF CONSTRUCTION, SUBJECT TO REVIEW BY THE OWNER'S REPRESENTATIVE.
5. DETAILS AND SHEETS TITLED "TYPICAL" APPLY TO SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY REFERENCED. SUCH DETAILS ARE NOT NOTED AT EACH LOCATION THAT THEY OCCUR.
6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND FOR CHECKING DIMENSIONS. NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES AND RESOLVE BEFORE PROCEEDING WITH THE WORK.
7. DO NOT SCALE THE DRAWINGS.
8. PROVIDE MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES INCLUDE, BUT MAY NOT BE LIMITED TO, BRACING AND SHORING FOR LOADS DURING CONSTRUCTION. RETAIN A REGISTERED CIVIL ENGINEER WHO IS PROPERLY QUALIFIED TO DESIGN BRACING, SHORING, ETC. VISITS TO THE SITE BY THE OWNER'S REPRESENTATIVE WILL NOT INCLUDE OBSERVATION OF THE ABOVE NOTED ITEMS.
9. INFORMATION SHOWN ON THE DRAWINGS RELATED TO EXISTING CONDITIONS REPRESENTS THE PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. REPORT CONDITIONS THAT CONFLICT WITH THE CONTRACT DOCUMENTS TO THE OWNER'S REPRESENTATIVE. DO NOT DEVIATE FROM THE CONTRACT DOCUMENTS WITHOUT WRITTEN DIRECTION FROM THE OWNER'S REPRESENTATIVE.
10. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF FLOOR, ROOF AND WALL OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE THE SIZE AND LOCATION OF OPENINGS ASSOCIATED WITH, BUT NOT LIMITED TO, ELECTRICAL, MECHANICAL AND PLUMBING TRADES. SUBMIT FINAL SIZING AND LOCATION REQUIREMENTS OF OPENINGS TO THE OWNER'S REPRESENTATIVE FOR REVIEW.
11. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING A SAFE PLACE TO WORK AND MEETING THE REQUIREMENTS OF ALL APPLICABLE JURISDICTIONS. EXECUTE WORK TO ENSURE THE SAFETY OF PERSONS AND ADJACENT PROPERTY AGAINST DAMAGE BY FALLING DEBRIS AND OTHER HAZARDS IN CONNECTION WITH THIS WORK.
12. COORDINATE THE MECHANICAL EQUIPMENT WITH ALL TRADES BEFORE INSTALLATION.
13. REFERENCE DATUM FOR THE ELEVATIONS IS FINISH FIRST FLOOR, ELEVATION = S.A.D.

II. FOUNDATION AND SITE WORK

1. THE DESIGN OF THE FOUNDATION SYSTEM IS BASED UPON THE CRITERIA AND RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL INVESTIGATION REPORT ENTITLED "GEOTECHNICAL ENGINEERING INVESTIGATION REPORT" BY COASTLINE GEOTECHNICAL CONSULTANTS, INC., DATED AUGUST 23, 2010. REPORT IS AVAILABLE FOR REVIEW.
2. GROUNDWATER ELEVATION IS ESTIMATED AT APPROXIMATELY ELEVATION 15 TO 30 FEET. PROVIDE SITE DE-WATERING IF REQUIRED.
3. LOCATE AND PROTECT EXISTING UTILITIES TO REMAIN DURING AND/OR AFTER CONSTRUCTION.
4. REMOVE ABANDONED FOOTINGS, UTILITIES, ETC. WHICH INTERFERE WITH NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED.
5. NOTIFY THE OWNER'S REPRESENTATIVE IF ANY BURIED STRUCTURES NOT INDICATED, SUCH AS CESSPOOLS, CISTERNS, FOUNDATIONS, ETC., ARE FOUND.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, UNDERPINNING AND PROTECTION OF EXISTING CONSTRUCTION.
7. REMOVE LOOSE SOIL AND STANDING WATER FROM FOUNDATION EXCAVATIONS PRIOR TO PLACING CONCRETE.
8. EXCAVATIONS FOR FOUNDATIONS MUST BE ACCEPTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING REINFORCING AND CONCRETE. NOTIFY THE GEOTECHNICAL ENGINEER WHEN EXCAVATIONS ARE READY FOR INSPECTION.
9. PLACE BACKFILL BEHIND RETAINING WALLS AFTER CONCRETE OR MASONRY HAS ATTAINED FULL DESIGN STRENGTH. BRACE BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHED FLOORS AND SLABS ON GRADE ARE COMPLETE AND HAVE ATTAINED FULL DESIGN STRENGTH.
10. SCARIFY SUBGRADE SURFACE TO A DEPTH OF 6 INCHES TO IDENTIFY SOFT SPOTS. CUT OUT SOFT AREAS OF SUBGRADE NOT CAPABLE OF COMPACTION IN PLACE. BACKFILL WITH GENERAL FILL. COMPACT SUBGRADE TO DENSITY EQUAL OR GREATER THAN REQUIREMENTS FOR SUBSEQUENT FILL MATERIAL. UNTIL READY TO FILL, MAINTAIN EXCAVATIONS AND PREVENT LOOSE SOIL FROM FALLING INTO EXCAVATION.

III. FORMWORK

1. PROVIDE POUR POCKETS IN FORMS AND UNDER EXISTING STRUCTURAL MEMBERS AS REQUIRED TO PREVENT AIR POCKETS AND/OR "HONEYCOMB" UNDER OR AROUND THE EXISTING MEMBERS. CONCRETE CAST WITH AIR POCKETS AND/OR "HONEYCOMB" UNDER OR AROUND THE MEMBERS IS NOT ACCEPTABLE.
2. REMOVE FORMS AND SHORES IN ACCORDANCE WITH THE FOLLOWING:

LOCATION	REMOVE FORMS AND SHORES NO SOONER THAN
BOTTOM FORMS AND SHORES FOR MILDLY REINFORCED SLABS, BEAMS AND GIRDERS	7 DAYS, AND F'C = 3500 PSI MINIMUM
SIDE FORMS FOR BEAMS AND GIRDERS	72 HOURS
COLUMNS AND WALLS	72 HOURS
FOOTINGS, PILE CAPS, AND GRADE BEAMS	48 HOURS

LOOSEN FORMS CAREFULLY. DO NOT WEDGE PRY BARS, HAMMERS, OR TOOLS AGAINST FINISH CONCRETE SURFACES SCHEDULED FOR EXPOSURE TO VIEW.

3. PROVIDE CURING WHERE FORMS ARE REMOVED IN LESS THAN 7 DAYS, INCLUDING BUT NOT LIMITED TO WALLS, COLUMNS, AND UNDERSIDE OF ELEVATED SLABS.
4. DESIGN FORMWORK UNDER DIRECT SUPERVISION OF A PROFESSIONAL CIVIL ENGINEER EXPERIENCED IN DESIGN OF CONCRETE FORMWORK AND LICENSED IN THE STATE OF THE LOCAL JURISDICTION. COMPLY WITH APPLICABLE STATE AND LOCAL CODES WITH RESPECT TO DESIGN, FABRICATION, ERECTION, AND REMOVAL OF FORMWORK.
5. VERIFY LINES, LEVELS, AND CENTERS BEFORE PROCEEDING WITH FORMWORK. ENSURE THE DIMENSIONS AGREE WITH DRAWINGS.
6. ERECT FORMWORK, SHORING AND BRACING TO ACHIEVE DESIGN REQUIREMENTS, IN ACCORDANCE WITH REQUIREMENTS OF ACI 301. PROVIDE BRACING TO ENSURE STABILITY OF FORMWORK. SHORE OR STRENGTHEN FORMWORK SUBJECT TO OVERSTRESSING BY CONSTRUCTION LOADS.
7. PROVIDE FORMED OPENINGS WHERE REQUIRED FOR ITEMS TO BE EMBEDDED IN PASSING THROUGH CONCRETE WORK.
8. CLEAN FORMS AS ERECTION PROCEEDS, TO REMOVE FOREIGN MATTER WITHIN FORMS. CLEAN FORMED CAVITIES OF DEBRIS PRIOR TO PLACING CONCRETE.
9. CONSTRUCT FORMWORK TO MAINTAIN TOLERANCES REQUIRED BY ACI 117.

IV. REINFORCING STEEL

1. REINFORCING TO CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:

LOCATION	TYPE
REINFORCING STEEL #7 AND SMALLER	ASTM A615, 60 KSI
REINFORCING STEEL #8 AND LARGER AND REINFORCING STEEL TO BE WELDED	ASTM A706, 60 KSI
SMOOTH STEEL WIRE FOR SPIRALS	ASTM A82, 70 KSI
WELDED STEEL WIRE FABRIC	ASTM A185, 70 KSI
SMOOTH DOWELS IN SLAB ON GRADE	ASTM A36, 36 KSI
DEFORMED BAR ANCHORS: NELSON/TRW TYPE "D2L" PER ICBO REPORT ER-5217 OR APPROVED EQUIVALENT	ASTM A496, 70 KSI

2. FABRICATE CONCRETE REINFORCING IN ACCORDANCE WITH CURRENT CRSI (DA4) – MANUAL OF STANDARD PRACTICE AND ACI 318.
3. PLACE REINFORCING BARS IN ACCORDANCE WITH CURRENT CRSI (P1).
4. MECHANICALCOUPLERS: LENTON THREADED OR INTERLOCK COUPLERS BY ERICO, ICBO #3967, CADWELD BY ERICO, ICBO #3967, OR XTENDER BY HEADED REINFORCEMENT CORPORATION, ICBO #2764 OR BAR-LOCK, DAYTON SUPERIOR CORPORATION, ICBO#2495. COUPLERS FOR BEAM AND SLAB BARS AT FORMED CONSTRUCTION JOINTS MAY BE LENTON FORM SAVERS BY ERICO, ICBO #3967.
5. WELD REINFORCING STEEL IN ACCORDANCE WITH AWS D1.4 USING QUALIFIED WELDERS.
6. WELDABILITY TEST OF EXISTING REINFORCING STEEL SHALL BE PERFORMED PRIOR TO WELDING. PROPER WELDING PROCEDURE SHALL BE SELECTED BASED ON THE CHEMICAL COMPOSITION OF EXISTING REINFORCING STEEL AND RECOMMENDATION FROM AWS D1.4.
7. TERMINATE REINFORCING STEEL IN STANDARD HOOKS, UNLESS OTHERWISE SHOWN.
8. PROVIDE REINFORCING SHOWN OR NOTED CONTINUOUS IN LENGTHS AS LONG AS PRACTICAL.
9. TIE WIRE TO BE ANNEALED, MINIMUM 16 GAGE. CHAIRS, BOLSTERS, BAR SUPPORTS, SPACERS ARE TO BE SIZED AND SHAPED FOR ADEQUATE SUPPORT OF REINFORCEMENT DURING CONCRETE PLACEMENT.

V. CAST-IN-PLACE CONCRETE

1. CONCRETE IS REINFORCED AND CAST-IN-PLACE UNLESS OTHERWISE NOTED. WHERE REINFORCING IS NOT SPECIFICALLY SHOWN OR WHERE DETAILS ARE NOT GIVEN, PROVIDE REINFORCING SIMILAR TO THAT SHOWN FOR SIMILAR CONDITIONS, SUBJECT TO REVIEW BY THE OWNER'S REPRESENTATIVE.
2. ROUGHEN CONCRETE SURFACES OF CONSTRUCTION JOINTS TO ¼ INCH AMPLITUDE AND CLEAN OF LAITANCE, FOREIGN MATTER, AND LOOSE PARTICLES. LOCATE CONSTRUCTION JOINTS AS SHOWN ON THE DRAWINGS. SUBMIT ALTERNATE JOINT LOCATIONS OR JOINTS NOT SHOWN TO THE OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL PRIOR TO PROCEEDING WITH THE WORK.
3. AT LOCATIONS WHERE CONCRETE IS CAST AGAINST EXISTING CONCRETE, ROUGHEN CONTACT SURFACES TO ¼ INCH AMPLITUDE AND CLEAN OF LAITANCE, FOREIGN MATTER, AND LOOSE PARTICLES.
4. AT LOCATIONS WHERE CONCRETE IS CAST AGAINST EXISTING MASONRY, THOROUGHLY ROUGHEN CONTACT SURFACES BY LIGHT SANDBLASTING OR OTHER SUITABLE MEANS AND CLEAN OF LAITANCE, FOREIGN MATTER, AND LOOSE PARTICLES.
5. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS OF ADDITIONAL CONCRETE CURBS AND HOUSEKEEPING PADS NOT SHOWN.
6. CONCRETE CLEAR COVER TO REINFORCING BARS IS AS FOLLOWS, UNLESS OTHERWISE NOTED:

LOCATION	CLEAR COVER
CONCRETE PLACED AGAINST EARTH	3 INCHES
FORMED SURFACES EXPOSED TO WEATHER OR IN CONTACT WITH EARTH: #6 BARS AND LARGER #5 BARS AND SMALLER	 2 INCHES 1 1/2 INCHES
SLABS ON GRADE (TOP CLEARANCE)	1 1/2 INCHES
BEAMS, GIRDERS AND COLUMNS NOT EXPOSED TO WEATHER OR EARTH	1 1/2 INCHES
WALL OR SLAB SURFACES NOT EXPOSED TO WEATHER OR EARTH: #5 & SMALLER #6 & #7 #8,#9, #10 & #11 #14 & #18	 3/4 INCH 1 INCH 1 1/2 INCHES 2 1/2 INCHES

7. CONCRETE TYPES:

CLASS	28-DAY STRENGTH	TYPE	LOCATION
A	4000 PSI	NORMAL WEIGHT	FOUNDATIONS, GRADEBEAMS MISC. CURBS, HOUSE-KEEPING PADS, ETC.
B	4000 PSI	NORMAL WEIGHT	SLABS ON GRADE
C	4000 PSI	NORMAL WEIGHT	WALLS AND COLUMNS
D	4000 PSI	NORMAL WEIGHT	FILL ON METAL DECK

8. CEMENT SHALL CONFORM TO ASTM C150 TYPE II.
9. FINE AND COARSE AGGREGATES SHALL CONFORM TO ASTM C33. LIGHTWEIGHT AGGREGATE SHALL CONFORM TO ASTM C330.
10. WATER SHALL BE CLEAN AND NOT DETRIMENTAL TO CONCRETE.
11. FLY ASH USED IN CONCRETE MIX SHALL CONFORM TO ASTM C618 CLASS C OR F, CALCINED POZZOLAN SHALL CONFORM TO ASTM C 618, CLASS N, SILICA FUME SHALL CONFORM TO ASTM C 1240, PROPORTIONED IN ACCORDANCE WITH ACI 211.1, AND AIR ENTRAINMENT ADMIXTURE SHALL CONFORM TO ASTM C 260. LIQUID CURING SHALL CONFORM TO ASTM C309 TYPE 1-D.
12. FOR EACH CLASS OF CONCRETE, A CONCRETE MIX DESIGN SHALL BE PREPARED BASED ON FIELD EXPERIENCE OR TRIAL MIXTURES IN CONFORMANCE TO ACI 211 AND ACI 301.
13. CONCRETE MIX DESIGNS SHALL BE REVIEWED BY THE OWNER'S TESTING AGENCY. CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGN FOR EACH CLASS OF CONCRETE, INCLUDING LETTER OF CONFORMANCE FROM OWNER'S TESTING AGENCY, TO OWNER'S REPRESENTATIVE FOR REVIEW. AS AN ALTERNATE TO THE LETTER OF CONFORMANCE FROM THE OWNER'S TESTING AGENCY, THE CONCRETE MIX DESIGN MAY BE PREPARED BY A CIVIL ENGINEER LICENSED IN STATE OF CALIFORNIA. THE MIX DESIGN SHALL BEAR THE STAMP AND SIGNATURE OF THE CIVIL ENGINEER.
14. CONCRETE SHALL BE TESTED IN ACCORDANCE WITH ASTM C 39/C 39 M.
15. PERFORM WORK IN ACCORDANCE WITH ACI 301 AND ACI 318. FOLLOW RECOMMENDATIONS OF ACI 305R WHEN CONCRETING DURING HOT WEATHER AND ACI 306R WHEN CONCRETING DURING COLD WEATHER.
16. CONTINUOUSLY MOIST CURE CONCRETE SLABS-ON-GRADE FOR 7 DAYS MINIMUM. WATER FOG SPRAYS, PONDING, SATURATED ABSORPTIVE COVERS, MOISTURE RETAINING COVERS OR CURING COMPOUNDS MAY BE USED.
17. VAPOR BARRIER SHALL BE 6 MIL THICK CLEAR POLYTHYLENE FILM TYPE RECOMMENDED FOR BELOW GRADE APPLICATION. LAP JOINTS MINIMUM 6 INCHES AND SEAL WATERTIGHT BY TAPING EDGES AND ENDS. PROVIDE SAND AS INDICATED ON DRAWINGS.
18. REPAIR UNDERSLAB VAPOR RETARDER DAMAGE DURING PLACEMENTS OF CONCRETE REINFORCING. REPAIR WITH VAPOR RETARDER MATERIAL; LAP OVER DAMAGED AREAS 6 INCHES AND SEAL WATERTIGHT.
19. CONCRETE FILL THICKNESS SHOWN ON THE FRAMING PLANS ARE MINIMUM THICKNESSES. NO ALLOWANCES HAVE BEEN SHOWN FOR ADDITIONAL CONCRETE FILL REQUIRED TO COMPENSATE FOR FRAME, DECK, OR FORMWORK DEFLECTIONS TO MAINTAIN SURFACE TOLERANCES SPECIFIED.
20. PLACE CONCRETE IN ACCORDANCE WITH ACI 304R, PLACE CONCRETE FOR FLOOR SLABS IN ACCORDANCE WITH ACI 302.1R, DO NOT INTERRUPT SUCCESSIVE PLACEMENT; DO NOT PERMIT COLD JOINTS TO OCCUR. SAW CUT JOINTS WITHIN 24 HOURS AFTER PLACING.
21. SEPARATE SLABS ON GRADE FROM VERTICAL SURFACES WITH JOINT FILLER UNLESS OTHERWISE INDICATED IN THE DRAWINGS.
22. PLACE JOINT FILLER IN FLOOR SLAB PATTERN PLACEMENT SEQUENCE. SET TOP TO REQUIRED ELEVATIONS. SECURE TO RESIST MOVEMENT BY WET CONCRETE.
23. EXTEND JOINT FILLER FROM BOTTOM OF SLAB TO WITHIN ½ INCH OF FINISHED SLAB SURFACE.
24. INSTALL JOINT DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
25. NON-SHRINK GROUT SHALL CONFORM TO ASTM C 1107/C 1107M, 7000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: EUCLID CHEMICAL COMPANY'S "EUCO-NS", L&M CRYSTEX, MASTER BUILDERS' "MASTERFLOW 713", OR FIVE STAR GROUT. WHERE HIGH FLUIDITY OR INCREASED PLACING TIME IS REQUIRED, USE EUCLID CHEMICAL COMPANY'S "EUCO HI-FLOW GROUT" OR MASTER BUILDERS' "MASTERFLOW 928".

VI. SHOTCRETE

1. USE SHOTCRETE ONLY WHERE DESIGNATED ON THE DRAWINGS. NO SUBSTITUTION OF SHOTCRETE FOR CAST-IN-PLACE CONCRETE IS ALLOWED.
2. COMPLY WITH THE REQUIREMENTS OF THE CONCRETE AND REINFORCING STEEL GENERAL NOTES EXCEPT AS MODIFIED IN THIS SECTION.
3. USE WET MIX SHOTCRETE WITH THE FOLLOWING:

CLASS	28-DAY STRENGTH	LOCATION
S1	4000 PSI	WALLS

4. A PREQUALIFICATION TEST PANEL IS REQUIRED FOR EACH NOZZLEMAN. A MEAN TEST PANEL CORE GRADE EQUAL TO OR LESS THAN 2.5, AND NOT MORE THAN 3 ON ANY SINGLE CORE, IN ACCORDANCE WITH ACI 506.2 GRADING IS REQUIRED FOR EACH NOZZLEMAN.
5. CLEAN SUBSTRATES AND FORMS OF LOOSE OR UNSOUND MATERIAL PRIOR TO THE PLACEMENT OF SHOTCRETE. WET CEMENTITIOUS OR ABSORPTIVE SUBSTRATES AND FORMS TO THE SATURATED SURFACE DRY CONDITION PRIOR TO SHOOTING. DO NOT PLACE SHOTCRETE AGAINST SURFACES WITH STANDING OR RUNNING WATER.
6. COMPLETELY FILL AREAS AND COMPLETELY ENCASE REINFORCEMENT. REMOVE REBOUND AND OTHER LOOSE MATERIAL FROM NEW CONSTRUCTION.
7. DO NOT REUSE REBOUND OR OVERSPRAY.
8. UNFINISHED WORK SHALL NOT STAND FOR MORE THAN 30 MINUTES UNLESS A CONSTRUCTION JOINT IS PROVIDED. THE FILM OF LAITANCE WHICH FORMS ON THE SURFACE OF THE SHOTCRETE SHALL BE REMOVED WITHIN 2 HOURS OF APPLICATION BY BRUSHING WITH A STIFF BRUSH. CONSTRUCTION JOINTS OVER 8 HOURS OLD SHALL BE THOROUGHLY CLEANED WITH AIR AND WATER PRIOR TO RECEIVING SHOTCRETE.
9. KEEP SHOTCRETE CONTINUOUSLY MOIST BY DIRECT WATER APPLICATION FOR 24 HOURS AFTER SHOOTING. FOLLOW BY CURING THE SHOTCRETE WITH A FOG SPRAY OR AN APPROVED MOISTURE-RETAINING COVER, MEMBRANE, OR COMPOUND UNTIL 7 DAYS AFTER SHOOTING. IF CURING COMPOUNDS ARE USED, APPLY THE COMPOUND AT TWICE THE MANUFACTURER'S SPECIFIED COVERAGE.
10. IN-PLACE SHOTCRETE WHICH EXHIBITS SAGS OR SLOUGHS, SEGREGATION, HONEYCOMBING, SAND POCKETS, OR OTHER OBVIOUS DEFECTS SHALL BE REMOVED, REPLACED, OR REPAIRED AT THE CONTRACTORS EXPENSE. SHOTCRETE ABOVE SAGS AND SLOUGHS SHALL BE REMOVED AND REPLACED WHILE STILL PLASTIC.
11. SHOTCRETE APPLICATION SHALL BE DONE UNDER CONTINUOUS INSPECTION BY A REGISTERED DEPUTY INSPECTOR.

VII. STRUCTURAL STEEL

1. STRUCTURAL STEEL TO CONFORM TO THE FOLLOWING UNLESS OTHERWISE NOTED:

SECTIONS	TYPE
ROLLED SHAPES WIDE FLANGES CHANNELS, ANGLES, & OTHER	 ASTM A992 (50 KSI) ASTM A36
PLATES COLUMN BASE PLATES BRACE GUSSET PLATES BEAM SHEAR CONNECTION PLATES COLUMN CONTINUITY PLATES BEAM STIFFENER PLATES DECK CLOSURE PLATES OTHER	 ASTM A572, GR 50 ASTM A572, GR 50 ASTM A572, GR 50 ASTM A572, GR 50 ASTM A572, GR 50 ASTM A572, GR 50 ASTM A572, GR 50
STEEL PIPE	ASTM A53 GRADE B
COLD FORMED HOLLOW STRUCTURAL SECTION (HSS)	ASTM A500 GRADE B
STAINLESS STEEL SHAPES, PLATES AND BARS	ASTM A276
BOLTS	ASTM A325X
MACHINE BOLTS	ASTM A307
ANCHOR BOLTS AND RODS	ASTM F1554, GR 55
THREADED AND HANGER ROD	ASTM A572, GR 50
WELDED SHEAR CONNECTORS NELSON/TRW PER ICBO REPORT ER-2614 OR APPROVED EQUIVALENT	ASTM A 108, GRADE 1015 THROUGH 1020 (50 KSI)
WELDED THREADED STUDS NELSON/TRW OR APPROVED EQUIVALENT	ASTM A 108, GRADE 1015 THROUGH 1020
NUTS FOR BOLTS AND MACHINE BOLTS	ASTM A563
HARDENED WASHERS	ASTM F436
UNHARDENDED WASHERS	ASTM F844
PLAIN WASHERS	ANSI B18.22.1
BEVELED WASHERS	ANSI B18.23.1

2. HOT DIP GALVANIZE IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STRUCTURAL STEEL AND FASTENERS THAT ARE PERMANENTLY EXPOSED TO THE WEATHER. REPAIR GALVANIZING AFTER WELDING IN ACCORDANCE WITH ASTM A780.
3. STRUCTURAL STEEL AND CONNECTIONS EXPOSED TO VIEW IN THE COMPLETED BUILDING ARE DESIGNATED ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS).
4. ARC-WELDING ELECTRODES/FILLER METALS TO BE LOW HYDROGEN TYPES E7XTX, E7XTXX OR E70XXX MINIMUM AS APPLICABLE. ELECTRODES WITH CHARPY V-NOTCH (CVN) TESTS VALUES OF A MINIMUM 20 FOOT-POUNDS AT -20 DEGREES FAHRENHEIT ARE TO BE USED AT THE FOLLOWING LOCATIONS:

   - COMPLETE JOINT PENETRATION WELDS
   - BEAM TO COLUMN MOMENT CONNECTIONS – INCLUDING FLANGE, WEB, AND CONTINUITY PLATE FILLET AND PARTIAL JOINT PENETRATION WELDS
   - BRACE CONNECTIONS – INCLUDING BRACE, GUSSET, BASE PLATES, BEAM STIFFENER PLATES, AND CONTINUITY PLATE FILLET AND PARTIAL JOINT PENETRATION WELDS
   - WELDS NOTED "CVN" ON THE DRAWINGS

5. WELDERS TO BE CERTIFIED BY AWS AND THE GOVERNING JURISDICTION.
6. WHERE FIELD WELDING IS NOTED, THE DESIGNATION IS GIVEN AS A SUGGESTED CONSTRUCTION PROCEDURE ONLY.
7. PROVIDE NATURAL CAMBER UP, UNLESS NOTED OTHERWISE, EXCEPT AT CANTILEVERS. AT CANTILEVERS PROVIDE CAMBER SUCH THAT TIP OF CANTILEVER IS ABOVE FINAL ELEVATION.
8. SPLICE MEMBERS ONLY WHERE INDICATED.

VIII. METAL DECKING

1. METAL FLOOR AND ROOF DECK TO HAVE MINIMUM SECTION PROPERTIES SHOWN ON SHEET "TYPICAL DETAILS."
2. ALL FLOOR AND ROOF DECK TO BE GALVANIZED IN ACCORDANCE WITH ASTM A653 COATING CLASS G60. REPAIR DAMAGED COATING.
3. WHERE POSSIBLE, LAYOUT METAL DECK TO SPAN AT LEAST THREE SPANS CONTINUOUSLY. TERMINATE ENDS OVER SUPPORTS EXCEPT AT OPENINGS OR BUILDING EDGES WHERE METAL DECKS MAY BE CANTILEVERED AS SHOWN.
4. SECURE FLOOR AND ROOF METAL DECK TO THE STEEL FRAMEWORK AND TOGETHER AS SHOWN ON THE DRAWINGS.
5. UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS, MINIMUM DECK ATTACHMENT SHALL BE AS FOLLOWS:

   A. 1/2" EFFECTIVE DIAMETER PUDDLE WELDS AT 12" O.C. AT TRANSVERSE AND PERIMETER SUPPORTS
   B. 1/2" EFFECTIVE DIAMETER PUDDLE WELDS AT 16" O.C. AT LONGITUDINAL SUPPORTS
   C. 3/16" BUTTON PUNCH OR 1-1/2" TOP SEAM WELD AT 36" O.C. AT SIDE LAP CONNECTIONS.

6. TYPE B ROOF DECK ATTACHMENT:

   A. (7) 1/2" EFFECTIVE DIAMETER PUDDLE WELDS PER 36" WIDE SECTION AT TRANSVERSE SUPPORTS
   B. 1/2" EFFECTIVE DIAMETER PUDDLE WELDS AT 16" O.C. AT PERIMETER AND LONGITUDINAL SUPPORTS
   C. 1-1/2" TOP SEAM WELD AT 12" O.C. AT SIDE LAP CONNECTIONS.

IX. MECHANICAL ANCHORS

1. EXPANSION OR WEDGE ANCHORS INTO CONCRETE: HILTI KWIK BOLT TZ (ICC #ESR-1917), SIMPSON STRONG-TIE STRONG BOLT (ICC #ESR-1771), OR APPROVED EQUAL. INSTALL ANCHORS IN ACCORDANCE WITH ICC REPORT. EMBEDMENT DEPTH, MINIMUM EDGE DISTANCE, AND MINIMUM SPACING FOR ANCHORS AND DOWELS ARE AS FOLLOW, UNLESS OTHERWISE NOTED IN DRAWINGS. PROVIDE SPECIAL INSPECTION AS REQUIRED BY THE ICC EVALUATION REPORT:

EXPANSION ANCHORS INTO CONCRETE:

ANCHOR DIAMETER	ANCHOR EMBEDMENT	ANCHOR EDGE DISTANCE	ANCHOR SPACING	BASE MATERIAL THICKNESS
1/2"	4"	8"	3"	6"
5/8"	4"	9"	3"	7"
3/4"	5"	9"	4"	8"

2. EXPANSION ANCHORS INTO GROUTED CONCRETE MASONRY UNIT: HILTI KWIK BOLT 3 (ICC #ESR-1385), SIMPSON WEDGE-ALL (ICC #ESR-1396), OR APPROVED EQUAL. INSTALL ANCHORS IN ACCORDANCE WITH ICC REPORT. EMBEDMENT DEPTH, MINIMUM EDGE DISTANCE, AND MINIMUM SPACING FOR ANCHORS AND DOWELS ARE AS FOLLOW, UNLESS OTHERWISE NOTED IN DRAWINGS. PROVIDE SPECIAL INSPECTION AS REQUIRED BY THE ICC EVALUATION REPORT:

EXPANSION ANCHORS INTO GROUTED MASONRY UNITS:

ANCHOR DIAMETER	ANCHOR EMBEDMENT	ANCHOR EDGE DISTANCE	ANCHOR SPACING	BASE MATERIAL THICKNESS
3/8"	3"	12"	11"	8" NOMINAL
1/2"	4"	14"	14"	12" NOMINAL
5/8"	5"	18"	18"	12"
3/4"	6"	21"	21"	14"

UNLESS OTHERWISE NOTED, LOCATE EXPANSION ANCHORS 1-3/8" MINIMUM FROM THE VERTICAL MORTAR HEAD JOINT.

3. SCREW ANCHORS INTO CONCRETE: SIMPSON TITEN HD (ICC #ESR-2713), OR APPROVED EQUAL. SCREW ANCHORS INTO GROUTED CONCRETE MASONRY UNIT: HILTI HUS-H (ICC #ESR-2369), SIMPSON TITEN HD SCREWS (ICC #ESR-1056), OR APPROVED EQUAL. INSTALL ANCHORS IN ACCORDANCE WITH ICC REPORT. EMBEDMENT DEPTH, MINIMUM EDGE DISTANCE, AND MINIMUM SPACING FOR ANCHORS AND DOWELS ARE AS FOLLOW, UNLESS OTHERWISE NOTED IN DRAWINGS. PROVIDE SPECIAL INSPECTION AS REQUIRED BY THE ICC EVALUATION REPORT:

SCREW ANCHORS INTO CONCRETE:

ANCHOR DIAMETER	ANCHOR EMBEDMENT	ANCHOR EDGE DISTANCE	ANCHOR SPACING	BASE MATERIAL THICKNESS
3/8"	3"	4"	3"	5"
1/2"	4"	5"	3"	7"
5/8"	6"	8"	3"	10"

SCREW ANCHORS INTO GROUTED MASONRY UNITS:

ANCHOR DIAMETER	ANCHOR EMBEDMENT	ANCHOR EDGE DISTANCE	ANCHOR SPACING	BASE MATERIAL THICKNESS
3/8"	3"	12"	8"	8" NOMINAL
1/2"	4"	12"	8"	8" NOMINAL
5/8"	5"	12"	10"	8" NOMINAL

UNLESS OTHERWISE NOTED, LOCATE EXPANSION ANCHORS 1-1/4" MINIMUM FROM THE VERTICAL MORTAR HEAD JOINT.

4. HEAVY DUTY SLEEVE ANCHORS INTO CONCRETE: HILTI HDA-P UNDERCUT ANCHOR (ICC #ESR-1546), HILTI HSL-3 ANCHORS (ICC #ESR-1545) OR APPROVED EQUAL. INSTALL ANCHORS IN ACCORDANCE WITH ICC REPORT. EMBEDMENT DEPTH, MINIMUM EDGE DISTANCE, AND MINIMUM SPACING FOR ANCHORS AND DOWELS ARE AS FOLLOW, UNLESS OTHERWISE NOTED IN DRAWINGS. PROVIDE SPECIAL INSPECTION AS REQUIRED BY THE ICC EVALUATION REPORT:

SLEEVE ANCHORS INTO CONCRETE:

ANCHOR SIZE	ANCHOR EMBEDMENT	ANCHOR EDGE DISTANCE	ANCHOR SPACING	BASE MATERIAL THICKNESS
M10	4"	5"	10"	7"
M12	5"	5"	11"	8"
M16	8"	6"	13"	11"
M20	10"	9"	14"	14"

5. POWDER-ACTUATED FASTENERS: HILTI X-U WITH .157 "SHANK DIAMETER, SIMPSON PDP .300" HEADED FASTENERS WITH .145" SHANK DIAMETER, OR APPROVED EQUAL. INSTALL FASTENERS IN ACCORDANCE WITH ICC REPORT.

FASTENERS INTO CONCRETE:

ANCHOR SIZE	ANCHOR EMBEDMENT	ANCHOR EDGE DISTANCE	ANCHOR SPACING	BASE MATERIAL THICKNESS
SEE ABOVE	2"	3"	4"	6"

6. PROVIDE STAINLESS STEEL FASTENERS FOR EXTERIOR USE OR WHEN EXPOSED TO WEATHER. PROVIDE GALVANIZED CARBON STEEL ANCHORS AT OTHER LOCATIONS, UNLESS OTHERWISE NOTED.
7. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON AND SHIFT THE HOLE LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF 2 ANCHOR DIAMETERS OR 1 INCH, WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE DOWEL AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT. IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, NOTIFY THE OWNER'S REPRESENTATIVE FOR FURTHER DIRECTION.
8. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH MECHANICAL ANCHORS.
9. MINIMUM EMBEDMENT OF ANCHORS, UNLESS OTHERWISE NOTED:

ANCHOR DIAMETER	EXPANSION OR WEDGE ANCHOR EMBEDMENT	HEAVY DUTY SLEEVE ANCHOR EMBEDMENT	UNDERCUT ANCHOR EMBEDMENT
3/8"	2 5/8"	2 3/2"	4"
1/2"	4"	3 1/4"	5"
5/8"	5"	4"	7 1/2"
3/4"	6"	5"	9 7/8"
1"	NA	6"	–

10. THE MINIMUM EMBEDMENT OF HSL ANCHORS IS PER THE ICC REPORT, UNLESS OTHERWISE NOTED.
11. ANCHORS WILL BE PROOF_TESTED BY OWNER'S TESTING AND INSPECTION AGENCY.
12. IF ANY ANCHOR FAILS TESTING, REPLACE ANCHOR AND TEST ADDITIONAL ANCHORS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE PASS, THEN RESUME INITIAL TESTING FREQUENCY.
13. APPLY TEST LOAD BY ANY METHOD THAT WILL EFFECTIVELY MEASURE THE TENSION ON THE ANCHOR SUCH AS DIRECT PULL WITH A HYDRAULIC JACK, TORQUE WRENCH, OR CALIBRATED SPRING_LOADING DEVICES, ETC.
14. TEST ANCHORS NO SOONER THAN 24 HOURS AFTER INSTALLATION.
15. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY A BASE PLATE OR OTHER FIXTURE. IF RESTRAINT IS FOUND, LOOSEN AND SHIM OR REMOVE THE FIXTURE PRIOR TO TESTING.
16. TEST 10% WEDGE OR SLEEVE ANCHORS PER ONE OF THE FOLLOWING METHODS:

   A. HYDRAULIC RAM METHOD: APPLY PROOF TEST LOAD WITHOUT REMOVING THE NUT. IF IT IS NOT POSSIBLE TO TEST WITH THE NUT INSTALLED, REPLACE THE NUT WITH A THREADED COUPLER TO THE SAME TORQUE MEASURED WITH A TORQUE WRENCH, AND THEN APPLY THE LOAD. ANCHOR IS ACCEPTABLE IF NO MOVEMENT IS OBSERVED AT THE TEST LOAD. MOVEMENT MAY BE DETERMINED WHEN THE WASHER UNDER THE NUT BECOMES LOOSE.

   B. TORQUE WRENCH METHOD: TEST ANCHORS TO THE TORQUE LOAD INDICATED IN THE TABLE BELOW WITHIN THE FOLLOWING LIMITS:

      1. FOR 3/8" SLEEVE ANCHORS, ONE-QUARTER TURN OF THE NUT. FOR OTHER SLEEVE ANCHORS, ONE-HALF TURN OF THE NUT.
      2. FOR WEDGE ANCHORS, ONE-HALF TURN OF THE NUT.

17. TEST VALUES FOR MECHANICAL ANCHORS:

TEST VALUES: (HARD ROCK CONCRETE)						
	EXPASION OR WEDGE		HEAVY DUTY SLEEVE		UNDERCUT	
ANCHOR DIA (IN)	TENSION LOAD (LBS)	TORQUE LOAD (FT-LBS)	TENSION LOAD (LBS)	TORQUE LOAD (FT-LBS)	TENSION LOAD (LBS)	TORQUE LOAD (FT-LBS)
3/8"	1640	25	3980	50	6500	37
1/2"	1740	60	4850	80	8120	59
5/8"	3400	60	6790	120	16250	89
3/4"	4920	110	9470	200	24370	221
1"	5800	250	10350	250	–	–

18. TEST 10% OF HSL ANCHORS IN ACCORDANCE WITH THE MANUFACTURERS' RECOMMENDATIONS.

DEFERRED SUBMITTALS

1. NAME OF TESTING AGENCY & SPECIAL INSPECTORS.
2. ROOF TOP MECHANICAL UNIT ANCHORAGES, DESIGN CALCULATIONS & DRAWINGS.
3. ROOF TOP DAVIT SYSTEM DRAWINGS AND DESIGN CALCULATIONS.
4. SHADE STRUCTURE DRAWINGS AND DESIGN CALCULATIONS.

DRAWING INDEX

REVISIONS

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

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GENERAL STRUCTURAL NOTES & DRAWING INDEX

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWN
CHECKED –
APPROVED –
SCALE AS NOTED
SHEET LM-S-001
DATE JUNE 25, 2013
PROJECT NUMBER 10129