FOUNDATIONS

1. THE FOUNDATION DESIGN IS BASED UPON THE PROJECT GEOTECHNICAL MEMORANDUM PREPARED BY THE DEPARTMENT OF PUBLIC WORKS BUREAU OF ENGINEERING, DATED NOVEMBER 17, 2015.

2. REFER TO THE GEOTECHNICAL MEMORANDUM FOR DESIGN SOIL PARAMETERS AND ADDITIONAL INFORMATION AND RECOMMENDATIONS NOT NOTED HERE.

3. THE GEOTECHNICAL ENGINEER SHALL VERIFY THE CONDITIONS AND/OR ADEQUACY OF ALL SUBGRADES, ENGINEERED FILLS, AND BACKFILLS BEFORE PLACEMENT OF FILLS, FOOTINGS, SLABS, OR OTHER CONSTRUCTION DEPENDENT UPON THEM.

4. SIDES OF FOUNDATIONS SHOWN STRAIGHT ARE FORMED. IF SITE CONDITIONS ALLOW AND GEOTECHNICAL ENGINEER CONCURS, SIDES OF FOUNDATION MAY BE FORMED OR NOT FORMED AT CONTRACTOR'S OPTION.

5. WHERE FOUNDATIONS ARE CAST AGAINST EARTH, SLOPE SIDES OF EXCAVATIONS AS APPROVED BY GEOTECHNICAL ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN-UP OF SLOUGHED MATERIALS BEFORE AND DURING CONCRETE PLACEMENT. CONCRETE COVER FOR REINFORCEMENT MAY BE AFFECTED.

6. CONTRACTOR SHALL PROVIDE FOR DE-WATERING IF WATER IS PRESENT IN THE EXCAVATION. DE-WATERING PLANS SHALL BE SUBMITTED FOR REVIEW. DE-WATERING PLANS MAY INCLUDE A MONITORING PROGRAM TO EVALUATE SETTLEMENT IN THE ADJACENT IMPROVEMENTS. SEE GEOTECHNICAL MEMORANDUM.

7. ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED. DO NOT PLACE BACKFILL BEHIND RETAINING WALLS BEFORE THE CONCRETE OR GROUT HAS ATTAINED FULL DESIGN STRENGTH UNLESS SPECIFICALLY APPROVED BY THE ENGINEER IN WRITING. 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 STRENGTH. THE CONTRACTOR SHALL PROVIDE FOR THE DESIGN, PERMITS, AND INSTALLATION OF SUCH BRACING.

8. OVER-EXCAVATED FOOTINGS SHALL BE BACKFILLED WITH CONTROLLED LOW STRENGTH MATERIAL (CLSM) (fc'min = 100 PSI, fc'max = 1,200 PSI).

9. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF APPROPRIATE, ADEQUATE SHORING AND BRACING OF FOUNDATION EXCAVATION, AND UNDERPINNING OF EXISTING STRUCTURES TO ENSURE PROTECTION OF LIFE AND ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL ORDINANCES. UNDERPINNING, SHORING, LAGGING, ETC., SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA AND SHALL BE CONSTRUCTED UNDER SEPARATE PERMIT. SHORING PLAN TO BE SUBMITTED TO THE GEOTECHNICAL ENGINEER AND THE STRUCTURAL ENGINEER FOR REVIEW TO ENSURE CONFORMANCE WITH DESIGN DOCUMENTS.

10. THE CONTRACTOR SHALL NOT UNDERMINE EXISTING FOUNDATIONS AND STRUCTURES DURING EXCAVATION. IF UNDERMINING OCCURS, THE CONTRACTOR SHALL PROVIDE CORRECTIVE MEASURES FOR ENGINEER TO REVIEW AND APPROVE AT CONTRACTOR'S EXPENSE.

11. INSTALLATION OF CAST-IN-DRILLED HOLE PILES SHALL BE PERFORMED WHILE UNDER THE OBSERVATION OF THE GEOTECHNICAL ENGINEER OF RECORD.

12. THE GEOTECHNICAL ENGINEER SHALL PREPARE A LETTER FOR THE DEPARTMENT OF BUILDING INSPECTION GIVING AN OPINION REGARDING CONFORMANCE OF THE FOOTING EXCAVATIONS, ENGINEERED FILL COMPACTION, SUBGRADE PREPARATION, AND BACKFILL WITH THE REQUIREMENTS CONTAINED IN THE GEOTECHNICAL MEMORANDUM.

CONCRETE

1. MIXING, BATCHING, TRANSPORTING, PLACING, AND CURING OF ALL CONCRETE AND SPECIFICATION OF CONCRETE MATERIALS, SHALL CONFORM TO ACI 301 "SPECIFICATION FOR STRUCTURAL CONCRETE", EXCEPT AS NOTED BELOW.

2. CONCRETE SHALL BE READY-MIXED CONFORMING TO ASTM C94. CEMENT SHALL BE PORTLAND CEMENT TYPE I/II, CONFORMING TO ASTM C150. ALL CONCRETE USED IN SLABS-ON-GRADE SHALL BE DESIGNED WITH A SHRINKAGE LIMITATION OF 0.04% AFTER 28 DAYS OF DRYING.

3. CONCRETE MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER AND APPROVED PRIOR TO USE. SELECTION OF CONCRETE MIX PROPORTIONS SHALL BE IN ACCORDANCE WITH ACI 301. MIX PROPORTIONS SHALL MEET OR EXCEED THE REQUIREMENTS LISTED BELOW FOR THE LOCATIONS NOTED. THE MORE STRINGENT OF THE REQUIREMENTS LISTED SHALL GOVERN.

4. SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCM), SUCH AS SLAG, FLY ASH, SILICA FUME, AND CALCINED CLAY, AS A PERCENTAGE OF TOTAL WEIGHT OF CEMENTITIOUS MATERIAL SHALL BE A MINIMUM OF 25 PERCENT AND A MAXIMUM OF 50 PERCENT. COAL FLY ASH, AS A PERCENTAGE OF TOTAL WEIGHT OF CEMENTITIOUS MATERIAL, SHALL BE A MAXIMUM OF 20 PERCENT. COAL FLY ASH SHALL BE CLASS F, MEETING ASTM C618 REQUIREMENTS. FINELY GROUND GRANULATED BLAST-FURNACE SLAG SHALL CONFORM TO ASTM C989. WATER/CEMENT RATIO SHALL BE BASED ON TOTAL CEMENTITIOUS MATERIAL, INCLUDING SUPPLEMENTARY CEMENTITIOUS MATERIALS.

5. PROPORTIONS OF AGGREGATE TO CEMENTITIOUS PASTE SHALL BE SUCH AS TO PRODUCE A DENSE, WORKABLE MIX THAT CAN BE PLACED WITHOUT SEGREGATION OR EXCESS FREE SURFACE WATER. SUPERPLASTICIZERS MAY BE USED TO IMPROVE WORKABILITY IN THIN OR CONGESTED SECTIONS.

6. ALL CONCRETE USED IN HORIZONTAL SURFACES EXPOSED TO THE WEATHER SHALL CONTAIN AN ACCEPTABLE ADMIXTURE TO PRODUCE AIR-ENTRAINED CONCRETE WITH TOTAL AIR CONTENT OF 4.5 PERCENT +/- 1 PERCENT. AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE OF THE TRUCK. IF CONCRETE IS PUMPED, AIR CONTENT SHALL BE MEASURED AT THE DISCHARGE END OF THE PUMP LINE. TESTS FOR AIR CONTENT SHALL MEET ASTM C172 REQUIREMENTS.

7. CONCRETE SHALL HAVE THE FOLLOWING CHARACTERISTICS:

LOCATION	STRENGTH, fc' MIN	TEST AGE	MAXIMUM AGGREGATE SIZE	MAXIMUM WATER/CEMENT RATIO	MAX SLUMP
CIDH PILES	4,000 PSI	28 DAYS	1"	0.45	4"
SLAB	4,000 PSI	28 DAYS	¾"	0.45	4"
BASEMENT ROOF SLAB, LWC	4,000 PSI	28 DAYS	¾"	0.45	3½"
COLUMNS	4,000 PSI	28 DAYS	1"	0.45	4"
SIDEWALK TOPPING SLAB	3,000 PSI	28 DAYS	¾"	0.4	4"

8. FOR LIGHTWEIGHT CONCRETE (LWC), AGGREGATE SHALL BE VACUUM SATURATED AND CONFORM TO ASTM C330 STANDARD SPECIFICATION FOR LIGHTWEIGHT AGGREGATES FOR STRUCTURAL CONCRETE. DRY WEIGHT SHALL BE 110 PCF +/- 3PCF.

9. PIPES OTHER THAN ELECTRICAL CONDUITS SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE EXCEPT WHERE SPECIFICALLY APPROVED BY THE ENGINEER. OUTSIDE DIAMETER OF CONDUIT EMBEDDED IN CONCRETE SHALL NOT EXCEED 1/6 TIMES THE MEMBER THICKNESS, OR 1¼", WHICHEVER IS LESS, WITHOUT APPROVAL OF THE ENGINEER. MINIMUM CLEAR DISTANCE BETWEEN CONDUITS OR REBAR SHALL BE 3 TIMES CONDUIT-DIAMETER (LARGER CONDUIT) OR 1 INCH, WHICHEVER IS GREATER. CONDUIT EMBEDDED IN SLABS SHALL BE EMBEDDED IN ONE LAYER AT MID-DEPTH OF SLABS. CONDUITS SHALL BE FIRMLY CHAIRED AND TIED TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. CONDUIT CAN BE TIED TO REBAR WHEN ORIENTED ERPENDICULAR TO THEM, PROVIDE THE LOCATION OF THE REBAR IS NOT AFFECTED BY THE CONDUIT. PLACE #3 AT 12 INCHES ADDED REINFORCEMENT PERPENDICULAR TO CONDUITS WHERE REQUIRED TO SUPPORT CONDUIT. CONDUITS WITHOUT CLEARANCE NOTED ABOVE SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION. ADDED TRIM REINFORCEMENT WILL BE REQUIRED WHERE CLEARANCES CANNOT BE MET, SUCH AS ELECTRICAL PANEL ROOMS.

10. SLEEVES, WHEN EMBEDDED IN CONCRETE, SHALL BE SPACED WITH ONE SLEEVE-DIAMETER (LARGER SLEEVE) CLEAR BETWEEN ADJACENT SLEEVES OR REBAR, OR 1 INCH, WHICHEVER IS GREATER. SLEEVES WITHOUT CLEARANCE NOTED ABOVE SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR TO INSTALLATION. ADDED TRIM REINFORCEMENT WILL BE REQUIRED WHERE CLEARANCES CANNOT BE MET, SUCH AS ELECTRICAL PANEL ROOMS.

11. ALUMINUM PIPES, CONDUITS, AND SLEEVES SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE.

12. THE CONTRACTOR SHALL INFORM THE ENGINEER AT LEAST 3 DAYS PRIOR TO POURING ANY STRUCTURAL CONCRETE SO THAT THE ENGINEER MAY HAVE THE OPPORTUNITY OF REVIEWING THE WORK PRIOR TO CONCRETE PLACEMENT.

13. ALL CONCRETE EXCEPT SLABS-ON-GRADE 6" THICK OR LESS SHALL BE MECHANICALLY VIBRATED AS TO COMPLETELY FILL THE FORM WITHOUT CAUSING UNDUE SEGREGATION.

14. FOR EACH CLASS OF CONCRETE, FOUR TEST CYLINDERS FROM EACH 150 CUBIC YARDS OR 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS, PLACED IN ANY ONE DAY, SHALL BE SECURED AND TESTED BY THE BUREAU OF CONSTRUCTION MANAGEMENT – ONE TO BE TESTED AT 7 DAYS, TWO AT 28 DAYS, AND THE FOURTH HELD IN RESERVE. FOR POST-TENSIONED CONCRETE, SECURE FIVE CYLINDERS PER 150 CUBIC YARDS OR 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS, PLACE IN ANY ONE DAY, TWO SETS MINIMUM – ONE TO BE TESTED AT 4 DAYS, TWO AT 28 DAYS, AND TWO HELD IN RESERVE.

15. THE CONTRACTOR SHALL REMOVE AND REPLACE ANY CONCRETE WHICH FAILS TO ATTAIN SPECIFIED STRENGTH IN 28 DAYS IF SO DIRECTED BY THE ENGINEER. ANY DEFECTS IN THE HARDENED CONCRETE SHALL BE SATISFACTORILY REPAIRED OR THE HARDENED CONCRETE SHALL BE REPLACED.

16. PROJECTING CORNERS SHALL BE FORMED WITH A ¾" CHAMFER UNLESS OTHERWISE NOTED ON THE ARCHITECTURAL DRAWINGS.

17. ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ACI 318 AND THE TYPICAL CONSTRUCTION JOINT DETAILS SHOWN ON THE STRUCTURAL DRAWINGS. ALL SURFACES OF CONSTRUCTION JOINTS SHALL BE CLEANED TO REMOVE DUST, CHIPS, OR OTHER FOREIGN MATTER PRIOR TO PLACING THE ADJACENT CONCRETE. THE CONTRACTOR SHALL SUBMIT THE PROPOSED LOCATIONS OF CONSTRUCTION JOINTS TO THE ARCHITECT FOR REVIEW PRIOR TO START OF CONSTRUCTION.

18. WHERE NEW CONCRETE IS TO BE CAST AGAINST EXISTING CONCRETE, THE EXISTING CONCRETE SURFACE SHALL BE ROUGHENED TO A MINIMUM OF ¼" AMPLITUDE BY SANDBLASTING OR BUSH HAMMERING. THE EXISTING SURFACE SHALL BE CLEANED AND LAITANCE REMOVED. APPLY "SIKADUR 32, HI-MOD" EPOXY BONDING ADHESIVE, AS MANUFACTURED BY SIKA CORPORATION, LYNDHURST, NEW JERSEY, OR APPROVED EQUAL, TO EXISTING CONCRETE SURFACE PRIOR TO PLACEMENT OF NEW CONCRETE.

REINFORCING STEEL

1. REINFORCING STEEL DETAILING, FABRICATION, AND PLACEMENT SHALL CONFORM TO THE ACI 318, CHAPTER 7.

2. REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS:

DEFORMED BARS	ASTM A615 OR ASTM A706, GRADE 60
WELDED REINFORCEMENT, WHEN SPECIFIED BY THE ENGINEER	ASTM A706, GRADE 60
WELDED WIRE FABRIC (WWF) (SMOOTH WIRE)	ASTM A185
WELDED WIRE REINFORCEMENT (DEFORMED WIRE)	ASTM A496, ASTM A497
SPIRAL REINFORCEMENT	ASTM A615

3. ALL STEEL REINFORCING BAR BENDS SHALL BE MADE COLD.

4. REINFORCEMENT AND EMBEDMENTS SHALL BE ACCURATELY POSITIONED AND SECURED AGAINST DISPLACEMENT BEFORE AND DURING CONCRETE PLACEMENT. PROVIDE SUFFICIENT SUPPORTS TO PREVENT DAMAGE OR DISPLACEMENT DUE TO CONSTRUCTION TRAFFIC ON REINFORCEMENT.

5. PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE. SPLICE ONLY AS SHOWN OR APPROVED.

6. WHERE NOTED ON PLANS, PROVIDE THREADED COUPLERS CAPABLE OF DEVELOPING 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING STEEL. THREADED COUPLERS SHALL BE "LENTON COUPLERS", AS MANUFACTURED BY ERICO COMPANY, SOLON, OHIO, OR APPROVED EQUAL WITH CURRENT ICC-ES EVALUATION REPORT.

7. WELDING (INCLUDING TACK WELD) OF REINFORCING BARS IS PROHIBITED EXCEPT WHERE DETAILED OR APPROVED IN WRITING BY ENGINEER.

8. REINFORCEMENT CROSSING CONSTRUCTION JOINTS SHALL BE CONTINUOUS OR LAP SPLICED PER TENSION LAP TABLE OR APPROVED COUPLERS.

9. MINIMUM CLEAR COVER DISTANCES FROM FINISHED FACE OF CONCRETE TO STEEL REINFORCEMENT SHALL BE AS FOLLOWS:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3"
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THROUGH #18 BARS	2"
#5 BAR, W31 OR D31 WIRE, AND SMALLER	1 ½"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, JOISTS	
#14 AND #18 BARS	1 ½"
#11 BAR AND SMALLER	¾"
BEAMS, COLUMNS	1 ½"

10. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION. SUBMIT MILL CERTIFICATES FOR REINFORCING STEEL PRIOR TO REBAR PLACEMENT.

NO.	DATE	DESCRIPTION	BY	APP.

TABLE OF REVISIONS
CHECK WITH TRACING TO SEE IF YOU HAVE LATEST REVISION

REFERENCE INFORMATION & FILE NO. OF SURVEYS

REGISTERED PROFESSIONAL ENGINEER JOHN C. SPRINKLE No. S 4716 STRUCTURAL STATE OF CALIFORNIA
9/12/16

DESIGN AND ENGINEERING DIVISION
PUBLIC WORKS
CITY & COUNTY OF SAN FRANCISCO
30 VAN NESS AVENUE, 5TH FLOOR
SAN FRANCISCO, CA 94102 - 6028

		Date:
Section Mgr:	RAYMOND LUI	9/12/16
Deputy Division Mgr:	FERNANDO CISNEROS	9/20/16
Division Mgr:	PATRICK RIVERA	9/21/16

DESIGNED JN
DRAWN VY
CHECKED JS
REVIEWED
RECOMMENDED
APPROVED
DATE

SCALE: AS SHOWN

SHEET OF SHEETS

2ND STREET STREETSCAPE IMPROVEMENTS PROJECT

STRUCTURAL GENERAL NOTES

SPECIFICATION NO. 1064J (R)
DRAWING NO. S-002
FILE NO. 106,292
REV. NO.

Drawing Path: V:\1064J_SECOND_STREET_STREETSCAPE_IMPROVEMENTS\2_Design\Working_Drawings\EST\Current\1064J_S-001.dwg, Login: YTU
Plot Time: Mon, 12 Sep 2016 - 9:48am
Measurement Units are English Model Units: Inches Dimension Scale: 40
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