STRUCTURAL STEEL AND MISCELLANEOUS IRON

1. STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL BE FABRICATED AND ERECTED ACCORDING TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S "SPECIFICATIONS FOR DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION, AND THE "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES", LATEST EDITION.

2. UNLESS OTHERWISE NOTED, STRUCTURAL STEEL MATERIAL SHALL CONFORM TO THE FOLLOWING:

WIDE FLANGE BEAMS AND COLUMNS	ASTM A992, FY = 50 KSI
OTHER HOT-ROLLED STRUCTURAL SHAPES	ASTM A36
HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500, GRADE C
PIPE	ASTM A53, GRADE B
PLATES AND BARS	ASTM A36 OR ASTM A572
TAPERED STEEL TUBE	ASTM A572

3. UNLESS OTHERWISE NOTED, BOLTS WASHERS, NUTS, AND SHEAR STUDS SHALL CONFORM TO THE FOLLOWING:

MACHINE BOLTS (M.B.)	ASTM A307, GRADE A
HIGH-STRENGTH BOLTS (H.S.B.)	ASTM A325 OR ASTM A490
ANCHOR RODS AND THREADED RODS	ASTM A36 OR ASTM F1554
NUTS	ASTM A563
WASHERS	ASTM F436
SHEAR STUD CONNECTORS	ASTM A108

4. ALL STEEL TO STEEL BOLTED CONNECTIONS SHALL BE BOLTED WITH HIGH-STRENGTH BOLTS CONFORMING TO ASTM A325 OR ASTM A490. OTHER BOLTED CONNECTIONS, INCLUDING ANCHOR BOLTS, SHALL BE BOLTED WITH UNFINISHED BOLTS CONFORMING TO ASTM A307.

5. ALL WELDED CONNECTIONS SHALL BE WELDED ACCORDING TO THE "STRUCTURAL WELDING CODE – STEEL", AWS D1.1. WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED FOR THE WELDS TO BE MADE. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, UNLESS OTHERWISE NOTED.

6. THE WELD LENGTHS CALLED FOR ON THE STRUCTURAL DRAWINGS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE FILLET WELD SYMBOL IS GIVEN WITHOUT INDICATION OF SIZE, USE THE MINIMUM SIZE WELDS AS SPECIFIED IN THE AISC "MANUAL OF STEEL CONSTRUCTION".

7. PROVIDE GALVANIZED STEEL IN ACCORDANCE WITH ASTM A123 "STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS" WHERE INDICATED.

8. ADDITIONAL MISCELLANEOUS METAL ITEMS SUCH AS EMBEDS, RAILINGS, AND SUPPORTS FOR INTERIOR FINISHES MAY BE SHOWN ON DRAWINGS PREPARED BY OTHERS. SEE ARCHITECTURAL DRAWINGS AS REQUIRED.

9. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.

10. COMPLETE JOINT PENETRATION (C.J.P.) AND PARTIAL JOINT PENETRATION (P.J.P.) WELDS SHALL BE EXAMINED BY ULTRASONIC TESTING. ALL TESTING AND INSPECTION SHALL CONFORM TO CBC REQUIREMENTS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

11. ERECTION CLIPS, TEMPORARY BRACING, ETC., REQUIRED BY THE CONTRACTOR ARE NOT SHOWN.

12. METAL DECKING SHALL BE COLD-FORMED OF STEEL SHEET CONFORMING TO ASTM A653 "STANDARD SPECIFICATION FOR STEEL SHEET, ZINC -COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS". THE REQUIRED MINIMUM STRUCTURAL PROPERTIES ARE SHOWN ON THE STRUCTURAL DRAWINGS, AS DETERMINED IN ACCORDANCE WITH THE AISI "NORTH AMERICAN SPECIFICATION FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS". METAL DECKING SHALL BE LISTED BY ICC EVALUATION SERVICE WITH VALID EVALUATION REPORT. EQUIVALENT DECKING WITH EQUAL OR GREATER PROPERTIES MAY BE USED WITH WRITTEN APPROVAL FROM THE ENGINEER.

13. DECKING SHALL BE CONTINUOUS OVER 3 SPANS WHERE STRUCTURAL STEEL LAYOUT PERMITS. DIRECTION OF THE DECK CORRUGATION IS DENOTED ON THE STRUCTURAL DRAWINGS BY THE SYMBOL.

14. FINISHING AND CLOSURE PLATES SHALL BE 18 GAGE MINIMUM AND SHALL BE PROVIDED AT THE ENDS OF ALL UNITS, AROUND COLUMNS, AND AT ALL PERIMETER LOCATIONS REQUIRING CONCRETE.

15. ALL WELDING OF STEEL DECK SHALL BE DONE BY CERTIFIED LIGHT GRADE WELDERS IN ACCORDANCE WITH AWS D1.3 "STRUCTURAL WELDING CODE – SHEET STEEL".

GROUT AND ADHESIVES

1. NON-SHRINK GROUT SHALL BE "SIKAGROUT 212", AS MANUFACTURED BY SIKA CORPORATION, LYNDHURST, NEW JERSEY, OR APPROVED EQUAL. NON-SHRINK GROUT SHALL BE NON-METALLIC AND CONTAIN NO CHLORIDES.

ADHESIVE AND MECHANICAL ANCHORS

1. ADHESIVE ANCHORS FOR CONCRETE CONSTRUCTION SHALL USE "HILTI HIT-RE 500 V3" ADHESIVE (ICC-ES ESR-3814), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS OR "SIMPSON SET-XP" EPOXY ADHESIVE (ICC-ES ESR-2508), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA, OR APPROVED EQUAL. ADHESIVE ANCHORS SHALL CONFORM TO ICC-ES ACCEPTANCE CRITERIA AC308 FOR CRACKED AND UNCRACKED CONCRETE.

2. ADHESIVE ANCHORS IN CONCRETE SHALL BE INSTALLED WITH THE FOLLOWING MINIMUM EMBEDMENT AND DIRECT TENSION TEST LOAD AND/OR TORQUE TEST LOAD, U.O.N.:

REBAR OR THREADED BOLT	MIN EMBED	TENSION TEST LOAD	MIN TORQUE
#3 OR ⅜" DIA	3⅜"	2,000 POUNDS	20 FOOT-POUNDS
#4 OR ½" DIA	4½"	4,000 POUNDS	40 FOOT-POUNDS
#5 OR ⅝" DIA	5⅝"	6,000 POUNDS	60 FOOT-POUNDS
#6 OR ¾" DIA	6¾"	9,000 POUNDS	90 FOOT-POUNDS
#7 OR ⅞" DIA	7⅞"	12,000 POUNDS	
#8 OR 1" DIA	9"	15,000 POUNDS	

5 PERCENT OF ALL NEW ADHESIVE ANCHORS IN EXISTING CONCRETE, BUT NOT LESS THAN TWO ANCHORS, SHALL BE SUBJECT TO DIRECT TENSION TEST, AND AN ADDITIONAL 20 PERCENT, BUT NOT LESS THAN THREE ANCHORS, SHALL BE TESTED USING A TORQUE CALIBRATED WRENCH. IF ANY ONE ANCHOR FAILS, THEN ALL ANCHORS INSTALLED BY THAT CREW SHALL BE TESTED. ANCHORS THAT FAIL THE TEST LOAD SHALL BE REPLACED AND RE-TESTED AT CONTRACTOR'S EXPENSE.

4. ADHESIVE ANCHORS FOR MASONRY CONSTRUCTION SHALL USE "HILTI HIT-HY 70" ADHESIVE (ICC-ES ESR-2682), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS, OR APPROVED EQUAL.

5. MECHANICAL EXPANSION ANCHORS FOR CONCRETE AND MASONRY CONSTRUCTION SHALL BE "HILTI KWIK BOLT TZ" ANCHOR (ICC-ES ESR-1917), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS, OR "SIMPSON STRONG-BOLT 2" WEDGE ANCHOR (ICC-ES ESR-3037), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA, OR APPROVED EQUAL.

6. MECHANICAL EXPANSION ANCHORS IN CONCRETE AND MASONRY SHALL BE INSTALLED PER MANUFACTURER'S DIRECTIONS. 25 PERCENT OF ALL ANCHORS, BUT NOT LESS THAN THREE ANCHORS, SHALL BE TESTED USING A TORQUE CALIBRATED WRENCH TO LOADS RECOMMENDED BY THE MANUFACTURER. IF ANY ONE ANCHOR FAILS, THEN ALL ANCHORS INSTALLED BY THAT CREW SHALL BE TESTED. ANCHORS THAT FAIL THE TEST LOAD SHALL BE REPLACED AND RE-TESTED AT CONTRACTOR'S EXPENSE.

SPECIAL INSPECTION, TESTING, STRUCTURAL OBSERVATION, AND SUBMITTALS

1. WHERE INDICATED WITH AN "X", THE FOLLOWING ITEMS SHALL BE INSPECTED IN ACCORDANCE WITH SFBC 1704 BY A CERTIFIED SPECIAL INSPECTOR FROM AN ESTABLISHED SPECIAL INSPECTION AGENCY. "C" INDICATES CONTINUOUS SPECIAL INSPECTION AND "P" INDICATES PERIODIC SPECIAL INSPECTION. THE SPECIAL INSPECTION AGENCY SHALL SEND COPIES OF ALL SPECIAL INSPECTION REPORTS DIRECTLY TO THE RESIDENT ENGINEER, ARCHITECT, ENGINEER, AND BUILDING OFFICIAL. ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATIONS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

VERIFICATION AND INSPECTION	C	P	NOTES
STEEL CONSTRUCTION			
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X	
2. INSPECTION OF HIGH-STRENGTH BOLTING:			
2.1. BEARING-TYPE CONNECTIONS		X	
2.2. SLIP-CRITICAL CONNECTIONS			
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL		X	
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS		X	
5. INSPECTION OF STRUCTURAL STEEL WELDING:			
5.1. COMPLETE & PARTIAL PENETRATION GROOVE WELDS	X		
5.2. MULTI-PASS FILLET WELDS	X		
5.3. SINGLE-PASS FILLET WELDS > 5/16"	X		
5.4. SINGLE-PASS FILLET WELDS ≤ 5/16"		X	
5.5. FLOOR AND ROOF DECK WELDS			
5.6. WELDED STUDS WHEN USED FOR STRUCTURAL DIAPHRAGMS			
5.7. WELDED SHEET STEEL FOR COLD-FORMED STEEL FRAMING MEMBERS SUCH AS STUDS AND JOISTS			
5.8. WELDING OF STAIRS AND RAILING SYSTEMS			
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR AND COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS			

VERIFICATION AND INSPECTION	C	P	NOTES
CONCRETE CONSTRUCTION			
1. INSPECTION OF REINFORCING STEEL PLACEMENT		X	INSPECTION OF REINFORCING
2. STEEL WELDING			
2.1. VERIFICATION OF WELDABILITY			
2.2. REINFORCING STEEL RESISTING FLEXURAL & AXIAL FORCES IN INTERMEDIATE AND SPECIAL MOMENT FRAMES, AND BOUNDARY ELEMENTS OF SPECIAL REINFORCED CONCRETE SHEAR WALLS			
2.3. SHEAR REINFORCEMENT			
2.4. OTHER REINFORCING STEEL			
3. INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE	X		
4. VERIFY USE OF REQUIRED DESIGN MIX		X	
5. FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF CONCRETE		X	
6. INSPECTION OF CONCRETE & SHOTCRETE PLACEMENT	X		
7. INSPECTION OF CONCRETE CURING		X	
8. INSPECTION OF PRESTRESSED CONCRETE			
8.1. APPLICATION OF PRESTRESSING FORCES			
8.2. GROUTING OF BONDED PRESTRESSING TENDONS			
9. ERECTION OF PRECAST CONCRETE MEMBERS			
10. VERIFICATION OF IN-SITU CONCRETE STRENGTH			PRIOR TO PRESTRESSING OF TENDONS & REMOVAL OF FORMS
11. INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X	

VERIFICATION AND INSPECTION	C	P	NOTES
SOILS			
1. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIRED BEARING CAPACITY			BY GEOTECHNICAL ENGINEER
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND REACHED PROPER MATERIAL			BY GEOTECHNICAL ENGINEER
3. PERFORM CLASSIFICATION AND TESTING OF ENGINEERED FILL MATERIAL			BY GEOTECHNICAL ENGINEER
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF ENGINEERED FILL			BY GEOTECHNICAL ENGINEER
5. PRIOR TO PLACEMENT OF ENGINEERED FILL, OBSERVE SUBGRADE & VERIFY THAT SITE HAS BEEN PREPARED PROPERLY			BY GEOTECHNICAL ENGINEER

VERIFICATION AND INSPECTION	C	P	NOTES
CIDH PILE/PIER FOUNDATIONS			
1. OBSERVE DRILLING OPERATIONS AND MAINTAIN RECORDS FOR EACH PIER/CIDH PILE	X		BY GEOTECHNICAL ENGINEER
2. VERIFY LOCATIONS OF PILES AND PLUMBNESS	X		BY GEOTECHNICAL ENGINEER
2.1. CONFIRM PIER DIAMETERS			
2.2. BELL DIAMETERS (IF APPLICABLE)			
2.3. LENGTHS, EMBEDMENT INTO BEDROCK (IF APPLICABLE)			
2.4. ADEQUATE END STRATA BEARING CAPACITY			

2. WHERE INDICATED WITH AN "X", THE FOLLOWING ITEMS SHALL BE SAMPLED AND/OR TESTED BY A CERTIFIED TECHNICIAN FROM AN ESTABLISHED MATERIALS TESTING LABORATORY IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, GENERAL NOTES, OR PREVAILING BUILDING, WHICHEVER IS MORE STRINGENT. ALL MATERIAL SAMPLING AND TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM REQUIREMENTS. THE MATERIALS TESTING LABORATORY SHALL SEND COPIES OF ALL STRUCTURAL TESTING REPORTS DIRECTLY TO THE RESIDENT ENGINEER, ARCHITECT, ENGINEER, AND BUILDING OFFICIAL. ANY MATERIALS WHICH FAIL TO MEET THE PROJECT SPECIFICATION SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

STRUCTURAL TESTING FOR SEISMIC RESISTANCE		
ITEMS	REQ'D	NOTES
MASONRY		
1. COMPRESSIVE STRENGTH TESTS FOR MINIMUM COMPRESSIVE STRENGTH, f'M' AND f'AAC'		
CONCRETE		
1. COMPRESSIVE STRENGTH TESTS FOR CONCRETE WITH SPECIFIED MINIMUM COMPRESSIVE STRENGTH, f'c', OF 3,000 PSI OR GREATER AT 28 DAYS	X	
2. SHOTCRETE TEST PANELS AND CORE SAMPLES		
REINFORCING AND PRESTRESSING STEEL		
1. WELDABILITY OF REINFORCEMENT, EXCEPT THAT WHICH CONFORMS WITH ASTM A706		
STRUCTURAL STEEL		
1. TESTING CONTAINED IN THE QUALITY ASSURANCE PLAN		THIS INCLUDES NON-DESTRUCTIVE TESTING (NDT) OF WELDS
2. BASE METAL THICKER THAN 1½"		ULTRASONIC TESTING FOR DISCONTINUITIES BEHIND & ADJACENT TO WELDS SUBJECT TO THROUGH-THICKNESS WELD SHRINKAGE STRAINS
POST-INSTALLED ANCHOR BOLTS IN CONCRETE AND MASONRY		
1. TENSILE TEST	X	MINIMUM OF 5% OF ALL ANCHOR BOLTS

NO.	DATE	DESCRIPTION	BY	APP.

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

REFERENCE INFORMATION & FILE NO. OF SURVEYS

CITY AND COUNTY OF SAN FRANCISCO

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

SAN FRANCISCO PUBLIC WORKS

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-003
FILE NO. 106,293
REV. NO.

Drawing Path: V:\1064J_SECOND_STREET_STREETSCAPE_IMPROVEMENTS\2_Design\Working_Drawings\EST\Current\1064J_S-001.dwg, Login: YYU
Plot Time: Mon, 12 Sep 2016 - 9:47am Measurement Units are English Model Units: Inches Dimension Scale: 40
Xrefs: V:\1064J_SECOND_STREET_STREETSCAPE_IMPROVEMENTS\2_Design\Working_Drawings\EST\Current\1064J_TBD.dwg