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
PLATES AND BARS	ASTM A36 OR ASTM A572

3. 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.

4. 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".

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

6. SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY REPRESENTATIVE FOR REVIEW PRIOR TO FABRICATION.

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

HEADED STUDS

1. ALL HEADED STUDS WELDED TO BEAMS OR CONCRETE CONNECTIONS SHALL BE "TRU-WELD STUDS", AS MANUFACTURED BY TRU-WELD – A DIVISION OF TRU-FIT PRODUCTS CORPORATION, MEDINA, OHIO, OR "NELSON STUDS", AS MANUFACTURED BY NELSON STUD WELDING – A DONCASTERS GROUP LIMITED COMPANY, ELYRIA, OHIO, OR APPROVED EQUAL WITH VALID ICC EVALUATION SERVICES REPORT.

2. ALL HEADED STUDS SHALL BE AUTOMATICALLY END WELDED IN THE SHOP OR FIELD WITH EQUIPMENT RECOMMENDED BY THE MANUFACTURER OF THE HEADED STUDS.

3. STEEL SHEAR STUDS MATERIAL, WELDING, AND INSPECTION SHALL BE IN ACCORDANCE WITH AWS D.1.1, "STRUCTURAL WELDING CODE – STEEL". ALL STUDS SHALL BE ¾" DIAMETER BY 5" LONG, SPACED AT 12" O.C. MAXIMUM, UNLESS OTHERWISE NOTED.

4. SHOP DRAWINGS, WHICH ALSO INDICATE HEADED STUD LAYOUT, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO ERECTION.

5. DEFORMED BAR ANCHORS SHALL CONFORM TO ASTM A496.

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 EPOXY" (ICC-ES ESR-3814), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS, OR "SIMPSON SET-XP" (ICC-ES ESR-2508), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA, OR "PURE 110+" EPOXY ADHESIVE (ICC-ES-3298), AS MANUFACTURED BY DEWALT/POWERS, TOWSON, MARYLAND; 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	

25 PERCENT OF ALL NEW ADHESIVE ANCHORS IN EXISTING CONCRETE, BUT NOT LESS THAN THREE 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.

3. ADHESIVE ANCHORS FOR MASONRY CONSTRUCTION SHALL USE "HILTI HIT HY-200 EPOXY" (ICC-ES ESR-1967), AS MANUFACTURED BY HILTI INC., TULSA, OKLAHOMA, OR APPROVED EQUAL.

4. MECHANICAL EXPANSION ANCHORS FOR CONCRETE AND MASONRY CONSTRUCTION SHALL BE "HILTI KWIK BOLT TZ" WEDGE ANCHORS (ICC-ES ESR-1917), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS, OR "SIMPSON STRONG-BOLT 2" WEDGE ANCHORS (ICC-ES ESR-3037), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA, OR "STUD + SD2" WEDGE ANCHORS (ICC-ES ESR-2502), AS MANUFACTURERED BY DEWALT/POWERS, TOWSON, MARYLAND; APPROVED EQUAL.

5. 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			
2. INSPECTION OF HIGH-STRENGTH BOLTING: 2.1. BEARING-TYPE CONNECTIONS 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		X	
5.7. WELDED SHEET STEEL FOR COLD-FORMED STEEL FRAMING MEMBERS SUCH AS STUDS AND JOISTS		X	
5.8. WELDING OF STAIRS AND RAILING SYSTEMS			
6. INSPECTION OF STEEL FRAME JOINT			
DETAILS FOR AND COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS			INCLUDES MEMBER LOCATIONS, DETAILS SUCH AS JOINTS, BRACING & STIFFENING

VERIFICATION AND INSPECTION	C	P	NOTES
CONCRETE CONSTRUCTION			
1. INSPECTION OF REINFORCING STEEL PLACEMENT		X	
2. INSPECTION OF REINFORCING 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		X	BY GEOTECHNICAL ENGINEER
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND REACHED PROPER MATERIAL		X	BY GEOTECHNICAL ENGINEER
3. PERFORM CLASSIFICATION AND TESTING OF ENGINEERED FILL MATERIAL		X	BY GEOTECHNICAL ENGINEER
4. VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF ENGINEERED FILL		X	BY GEOTECHNICAL ENGINEER
5. PRIOR TO PLACEMENT OF ENGINEERED FILL, OBSERVE SUBGRADE & VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X	BY GEOTECHNICAL ENGINEER

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, fM' AND fAAC'		
CONCRETE		
1. COMPRESSIVE STRENGTH TESTS FOR CONCRETE WITH SPECIFIED MINIMUM COMPRESSIVE STRENGTH, fc', 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

3. THE ENGINEER OF RECORD SHALL PROVIDE VISUAL OBSERVATION OF THE STRUCTURAL SYSTEM, BELOW, FOR GENERAL CONFORMANCE TO THE APPROVED PLANS AND INDICATED WITH AN "X" SPECIFICATIONS AT SIGNIFICANT CONSTRUCTION STAGES AND AT THE COMPLETION OF THE STRUCTURAL SYSTEM. STRUCTURAL OBSERVATION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR THE INSPECTIONS AND SPECIAL INSPECTIONS REQUIRED BY THE SFBC.

REFERENCES
GATE BOOK PAGES, PLANS, SURVEY NOTES, ETC, USED

GATE BOOK PAGES NO.

REGISTERED PROFESSIONAL ENGINEER WILLIAM W. LI AND No. S5157 STRUCTURAL STATE OF CALIFORNIA 12/18/18

PLAN APPROVAL DATE	CONTRACT No.	PROJECT ID	DISTRICT	COUNTY	ROUTE	POST MILES TOTAL PROJECT
	04-0G3501	0400000325	04	SF	1	R0.94/4.05

CITY AND COUNTY OF SAN FRANCISCO
SAN FRANCISCO PUBLIC WORKS
BUREAU OF DESIGN AND ENGINEERING

SECTION MANAGER	DRAWN BH	01/2019
DEPUTY BUREAU MANAGER	DESIGNED WY	01/2019
BUREAU MANAGER	CHECKED WL	01/2019

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
WATER ENTERPRISE
CITY DISTRIBUTION DIVISION

19TH AVENUE (STATE ROUTE 1)
COMBINED CITY PROJECT

AUXILIARY WATER SUPPLY SYSTEM WORK

STRUCTURAL GENERAL NOTES III

APPROVED	APPROVED	SCALE
ENGINEERING MANAGER	MANAGER, CITY DISTRIBUTION DIVISION	NONE
		DATE 01/2019

SHEET	PLAN NO.	FILE NO.	REVISION NO.
292 OF 356	MA-S1.3	111,590	0

SFPW JOB ORDER NO. 2652J

FILE: FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 4

PLOT: EXTENTS
SCALE: 1:1
BORDER: 22,34
COLOR: No.
RED 0.70MM
YELLOW 0.20MM
GREEN 0.25MM
CYAN 0.40MM
BLUE 0.50MM
MAGENTA 0.20MM
WHITE 0.35MM
GRAY 0.15MM
9 0.15MM
10 1.00MM
100 0.50MM
210 0.50MM

SAVE:Monday, December 17, 2018 9:25:44 AM
FILE NAME:w:\2652j_19th_avenue_combined_city_project\2_Design\working_drawings\CME\current_awss\structural drawings\2652J_19thAve-S0-GEN-NT-.dwg