- 12. ALL CONCRETE EXCEPT SLABS-ON-GRADE 6"THICK OR LESS SHALL BE MECHANICALLY VIBRATED AS TO COMPLETELY FILL THE FORM WITHOUT CAUSING UNDUE SEGREGATION.
- 13. 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 SAN FRANCISCO PUBLIC WORKS MATERIAL TESTING LABORATORY OR INDEPENDENT. ACCREDITED. AND APPROVED MATERIALS TESTING LABORATORY — ONE TO BE TESTED AT 7 DAYS. TWO AT 28 DAYS. AND THE FOURTH HELD IN RESERVE
- 14. 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.
- 15. PROJECTING CORNERS SHALL BE FORMED WITH A $\frac{3}{4}$ " CHAMFER UNLESS OTHERWISE NOTED.
- 16. 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.
- WHERE NEW CONCRETE IS TO BE CAST AGAINST EXISTING CONCRETE, THE EXISTING CONCRETE SURFACE SHALL BE ROUGHENED TO A MINIMUM OF 1/2" 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.
- 18. CURE CONCRETE FOR 7 DAYS MINIMUM, UNLESS OTHERWISE APPROVED BY CITY REPRESENTATIVE. APPLY CURING COMPOUND CONFORMING TO THE ASTM C309. TYPE 1. CLASS A OR B. PER MANUFACTURER'S DIRECTIONS. CURING SHALL COMMENCE IMMEDIATELY FOLLOWING OF CONCRETE SURFACES.

REINFORCING STEEL

- REINFORCING STEEL DETAILING, FABRICATION, AND PLACEMENT SHALL CONFORM TO THE ACI 318, CHAPTER 25.
- REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS:

DEFORMED BARS	ASTM	A615	OR	ASTM	A706,	GRADE	60
DEFORMED BARS USED IN SHEAR WALLS AND							
MOMENT-RESISTING-FRAMES				ASTM	A706,	GRADE	60
WELDED REINFORCEMENT, WHEN SPECIFIED BY THE EN	GINEER			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		

- ALL STEEL REINFORCING BAR BENDS SHALL BE MADE COLD.
- 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.
- PROVIDE CONTINUOUS REINFORCEMENT WHEREVER POSSIBLE. SPLICE ONLY AS SHOWN OR
- 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.
- WELDING (INCLUDING TACK WELD) OF REINFORCING BARS IS PROHIBITED EXCEPT WHERE DETAILED OR APPROVED IN WRITING BY ENGINEER.
- REINFORCEMENT CROSSING CONSTRUCTION JOINTS SHALL BE CONTINUOUS OR LAP SPLICED PER TENSION LAP TABLE OR APPROVED COUPLERS.

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

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:

CONCRETE EXPOSED TO EARTH OR WEATHER: #6 THROUGH #18 BARS #5 BAR, W31 OR D31 WIRE, AND SMALLER

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:

SLABS, WALLS, JOISTS #14 AND #18 BARS #11 BAR AND SMALLER BEAMS. COLUMNS

10. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS SHALL INCLUDE ELEVATION OF ALL BEAMS AND COLUMNS SHOWING BAR AND LAP LOCATIONS. SUBMIT MILL CERTIFICATES FOR REINFORCING STEEL PRIOR TO REBAR PLACEMENT.

STRUCTURAL STEEL AND MISCELLANEOUS IRON

- 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.
- 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 A572, GRADE 50
TAPERED POLE, MAST ARM, LUMINAIRE ARM	ASTM A572, GRADE 55
(CALTRANS OR CUSTOM)	

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 F3125, GRADE A325 OR A490
ANCHOR RODS AND THREADED RODS	ASTM F1554, GRADE 55
NUTS	ASTM A563
WASHERS	ASTM F436
SHEAR STUD CONNECTORS	ASTM A108

- ALL STEEL TO STEEL BOLTED CONNECTIONS SHALL BE BOLTED WITH HIGH-STRENGTH BOLTS CONFORMING TO ASTM F3125, GRADE A325 OR A490. OTHER BOLTED CONNECTIONS, INCLUDING ANCHOR BOLTS, SHALL BE BOLTED WITH UNFINISHED BOLTS CONFORMING TO ASTM A307.
- ALL WELDED CONNECTIONS SHALL BE WELDED ACCORDING TO THE "STRUCTURAL WELDING CODE -STEEL", AWS D1.1. IN ADDITION, WELDED CONNECTIONS IN THE SEISMIC FORCE-RESISTING SYSTEM SHALL CONFORM TO AWS D1.8. WELDING SHALL BE PERFORMED BY WELDERS CERTIFIED FOR THE WELDS TO BE MADE. ALL WELDING SHALL BE DONE USING E70XX ELECTRODES, UNLESS OTHERWISE NOTED.
- 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".
- ALL STRUCTURAL STEEL SURFACES THAT ARE ENCASED IN CONCRETE, MASONRY, SPRAY-ON FIREPROOFING, OR BUILDING FINISH SHALL BE LEFT UNPAINTED.
- PROVIDE GALVANIZED STEEL IN ACCORDANCE WITH ASTM A123 "STANDARD SPECIFICATION FOR ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS" WHERE INDICATED.
- ADDITIONAL MISCELLANEOUS METAL ITEMS SUCH AS EMBEDS, RAILINGS, AND SUPPORTS FOR INTERIOR FINISHES MAY BE SHOWN ON DRAWINGS PREPARED BY OTHERS. SEE LANDSCAPE ARCHITECTURAL DRAWINGS AS REQUIRED.

- 10. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
- 11. UNLESS OTHERWISE SHOWN OR NOTED:
 - a. STIFFNER PLATES AND CONTINUITY PLATES SHALL BE 3/8"THICK MINIMUM AND THE SAME GRADE AS THE GIRDER OR COLUMN.
 - DOUBLER PLATES SHALL BE THE SAME GRADE AS THE COLUMN.
 - ALL OTHER PLATES SHALL BE ASTM A572. GR 50.
 - BOLTS FOR NON-MOMENT CONNECTIONS SHALL BE 7/8" DIAMETER HIGH-STRENGTH BOLTS (H.S.B.) IN CONFORMANCE WITH ASTM A325X.
 - BOLTS FOR MOMENT CONNECTION SHALL BE 7/8" DIAMETER H.S.B. IN CONFORMANCE WITH ASTM A490X.
 - f. BUTT WELDS SHALL BE COMPLETE JOINT PENETRATION (C.J.P.) WELDS.
- 12. 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.
- 13. ERECTION CLIPS, TEMPORARY BRACING, ETC., REQUIRED BY THE CONTRACTOR ARE NOT SHOWN.

1. NON-SHRINK GROUT SHALL BE "SIKAGROUT 212", AS MANUFACTURED BY SIKA CORPORATION, LYNDHURST, NEW JERSEY; OR "1428 HP", AS MANUFACTURED BY W. R. MEADOWS, HAMPSHIRE, ILLINOIS; OR "MASTERFLOW 928", AS MANUFACTURED BY BASE CORPORATION; OR APPROVED EQUAL. NON-SHRINK GROUT SHALL BE NON-METALLIC AND CONTAIN NO CHLORIDES AND SHALL MEET THE REQUIREMENTS OF ASTM C1107.

ADHESIVE AND MECHANICAL ANCHORS

- 1. ALL POST-INSTALLED ANCHORS AND DOWELS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTION (MPII) IN CONJUNCTION WITH EDGE DISTANCE, SPACING AND EMBEDMENT DEPTH AS INDICATED ON THE DRAWINGS.
- HOLFS DRILLED IN EXISTING CONCRETE OR MASONRY SHALL BE OF THE SIZE RECOMMENDED BY AND SHALL BE CLEANED AND OTHERWISE PREPARED PER THE RECOMMENDATIONS OF THE ADHESIVE OR EXPANSION ANCHOR MANUFACTURER.
- 3. DO NOT CUT EXISTING STEEL REINFORCEMENT UNDER ANY CIRCUMSTANCES WITHOUT PRIOR WRITTEN CONSENT FROM THE CITY REPRESENTATIVE. CONTACT THE CITY REPRESENTATIVE IMMEDIATELY TO RESOLVE CONFLICTS.
- 4. ADHESIVE ANCHORS INSTALLED IN HORIZONTAL OR UPWARDLY INCLINED ORIENTATION TO SUPPORT SUSTAINED TENSION LOADS SHALL BE INSTALLED BY A CERTIFIED ADHESIVE ANCHOR INSTALLER. PROOF OF CURRENT CERTIFICATION SHALL BE SUBMITTED TO THE CITY REPRESENTATIVE FOR APPROVAL PRIOR TO COMMENCEMENT OF INSTALLATION.
- ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS.
- ADHESIVE USED FOR POST-INSTALLED ANCHORS IN CONCRETE CONSTRUCTION SHALL BE "HILTI HIT-HY 200" ADHESIVE (ICC-ES ESR-3187), 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 "PURE 110+" EPOXY ADHESIVE (ICC-ES ESR-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.
- ADHESIVE USED FOR POST-INSTALLED ANCHORS IN CONCRETE CONSTRUCTION SHALL BE "HILTI HIT-RE 500 V3" ADHESIVE (ICC-ES ESR-3814), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS; 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. ADHESIVE ANCHORS SHALL CONFORM TO ICC-ES ACCEPTANCE CRITERIA AC308 FOR CRACKED AND UNCRACKED CONCRETE.

8. ADHESIVE ANCHORS IN CONCRETE AND MASONRY SHALL BE INSTALLED WITH THE FOLLOWING MINIMUM EMBEDMENT AND DIRECT TENSION TEST LOAD AND/OR TORQUE TEST LOAD.

REBAR OR THREADED BOLT	MIN EMBED	TENSION TEST LOAD	MIN TORQUE	
#3 OR ¾" DIA	3¾"	2,000 POUNDS	20 FOOT-POUNDS	
#4 OR ½" DIA	4½"	4,000 POUNDS	40 FOOT-POUNDS	
#5 OR 5⁄8" DIA	5 ⁵ ⁄8"	6,000 POUNDS	60 FOOT-POUNDS	
#6 OR 3/4" DIA	6¾"	9,000 POUNDS	130 FOOT-POUNDS	
#7 OR 1/8" DIA	7 ½"	12,000 POUNDS		
#8 OR 1" DIA	9"	15.000 POUNDS		

5 PERCENT OF ALL NEW ADHESIVE ANCHORS IN EXISTING CONCRETE AND MASONRY, 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.

- ADHESIVE USED FOR POST-INSTALLED ANCHORS IN MASONRY CONSTRUCTION SHALL BE "HILTI HIT-HY 70" ADHESIVE (ICC-ES ESR-2682), 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 "AC100+ GOLD" EPOXY ADHESIVE (ICC-ES- ESR-3298), AS MANUFACTURED BY DEWALT/POWERS, TOWSON, MARYLAND; OR APPROVED EQUAL.
- 10. ADHESIVE USED FOR POST-INSTALLED ANCHORS IN UNREINFORCED MASONRY (BRICK) CONSTRUCTION SHALL BE "HILTI HIT-HY 70" ADHESIVE (ICC-ES ESR-3342), AS MANUFACTURED BY HILTI INC., PLANO, TEXAS; OR "SIMPSON ET-HP" EPOXY ADHESIVE (ICC-ES ESR-3372), AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC., PLEASANTON, CALIFORNIA: OR "AC100+ GOLD" VINYLESTER ADHESIVE (ICC-ES- ESR-3298), AS MANUFACTURED BY DEWALT/POWERS, TOWSON, MARYLAND; OR APPROVED EQUAL.
- 11. 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 "STUD + SD2" WEDGE ANCHOR (ICC-ES ESR-2502), AS MANUFACTURED BY DEWALT/POWERS, TOWSON, MARYLAND; OR APPROVED EQUAL.
- 12. MECHANICAL EXPANSION ANCHORS IN CONCRETE AND MASONRY SHALL BE INSTALLED PER MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS. 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.

REFERENCE INFORMATION & FILE NO. OF SURVEYS NO. | DATE DESCRIPTION TABLE OF REVISIONS THIS DRAWING WAS LAST MODIFIED: 10/26/21 10:41, BY: VYU

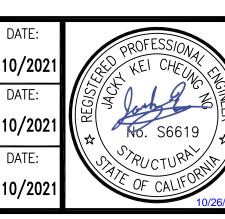




ARTIKE **WORKS**

BUREAU OF ENGINEERING CITY & COUNTY OF SAN FRANCISCO SAN FRANCISCO PUBLIC WORKS 49 SOUTH VAN NESS AVENUE, SUITE 900 SAN FRANCISCO, CA 94103

	Date:	DESIGNED:	
Acting Section Mgr: RAYMOND LUI	10/28/2021	JN	1
Deputy Bureau Mgr: FERNANDO CISNEROS		DRAWN:	
Feed L. Cim	12/09/2021	VY	1
Acting Bureau Mgr: IQBAL DHAPA	12/10/2021	CHECKED:	
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MISSION ST AND GENEVA AVE IMPROVEMENT PROJECT STRUCTURAL GENERAL NOTES

SOURCING ID NO. 0000005626 RAWING NO. ST-1.02120,732 REV. NO.

ESH JO: 1171i **CONTRACT NO. 10035213**