Building Name: Hellen Diller Family

Cancer Research







FORM 1

CERTIFICATE OF SEISMIC PERFORMANCE LEVEL

UC-Designed & Constructed Facility

Campus-Acquired or Leased Facility

BUILDING DATA

Building Name: Helen Diller Family Cancer Research

Address: 1450 Third St. San Francisco

Site location coordinates: Latitude 37.7703 Longitudinal -122.3897

UCOP SEISMIC PERFORMANCE LEVEL (OR "RATING"): |||

ASCE 41-17 Model Building Type:

a. Longitudinal Direction: C1 and C2: Concrete Moment Frames and Concrete Shear Wallsb. Transverse Direction: C1 and C2: Concrete Moment Frames and Concrete Shear Walls

Gross Square Footage: 160,540 Number of stories *above* grade: 0

Number of basement stories below grade: 5

Year Original Building was Constructed: 2008
Original Building Design Code & Year: CBC- 1998

Retrofit Building Design Code & Code (if applicable): NA

SITE INFORMATION

Site Class: E Basis: (Nabih Youssef & Assoc., 11/4/2005, S0.01)

Geologic Hazards:

Fault Rupture: No
Liquefaction: No
Basis: UCSF Presumptive Buildings – Geotechnical Assessment, Egan (2019)
Basis: UCSF Presumptive Buildings – Geotechnical Assessment, Egan (2019)
Landslide: No
Basis: UCSF Presumptive Buildings – Geotechnical Assessment, Egan (2019)

ATTACHMENT

Original Structural Drawings: (Hellen Diller Family Cancer Research Building, Nabih Youssef & Assoc.,

11/4/2005, S0.01) or Seismic Evaluation: NA

Retrofit Structural Drawings: NA

Building Name: Hellen Diller Family

Cancer Research

CAAN ID: 2316





CERTIFICATION & PRESUMPTIVE RATING VERIFICATION STATEMENT

I, Maryann T. Phipps, a California-licensed structural engineer, am responsible for the completion of this certificate, and I have no ownership interest in the property identified above. My scope of review to support the completion of this certificate included both of the following ("No" responses must include an explanation): a) the review of structural drawings indicating that they are as-built or record drawings, or that they otherwise are the basis for the construction of the building: ✓ Yes □ No b) visiting the building to verify the observable existing conditions are reasonably consistent with those shown on the structural drawings: ✓ Yes □ No Based on my review, I have verified that the UCOP Seismic Performance Level (SPL) is presumptively permitted by the following UC Seismic Program Guidebook provision (choose one of the following): ☑ 1) Contract documents indicate that the original design and construction of the aforementioned building is in accordance with the benchmark design code year (or later) building code seismic design provisions for UBC or IBC listed in Table 1 below. ☐ 2) The existing SPL rating is based on an acceptable basis of seismic evaluation completed in 2006 or later. □ 3) Contract documents indicate that a comprehensive building seismic retrofit design was fullyconstructed with an engineered design based on the 1997 UBC/1998 or later CBC, and (choose one of the following): ☐ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1E (or BSE-R) and BSE-2E (or BSE-C) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 CBC or later for EXISTING buildings, and is presumptively assigned an SPL rating of IV.

☐ the retrofit project was not completed by the UC campus following UC policies, and is

□ the retrofit project was completed by the UC campus. Further, the design was based on ground motion parameters, at a minimum, corresponding to BSE-1 (or BSE-1N) and BSE-2 (or BSE-2N) as defined in ASCE 41, or the full design basis ground motion required in the 1997 UBC/1998 *or later*

CBC for NEW buildings, and is presumptively assigned an SPL rating of III.

presumptively assigned an SPL rating of IV.

Date: 8/16/2019

¹ A comprehensive retrofit addresses the entire building structural system as indicated by the associated seismic evaluation, as opposed to addressing selective portions of the structural system.

Building Name: Hellen Diller Family

Cancer Research

CAAN ID: 2316

Auxiliary Building ID: NA



Date: 8/16/2019

CERTIFICATION SIGNATURE

Maryann T. Phipps
President

Title

S2995
CA Professional Registration No.
License Expiration Date

8/16/2019
Date

AFFIX SEAL HERE

AFFIX SEAL HERE

PROFESS/ONA

PROFESS/ONA

No. 2995
EXP. 6/30/20

Signature

9/4/2019

Estructure, (510) 235-3116, 1144 65th St Suite A, Oakland

Firm Name, Phone Number, and Address

Building Name: Hellen Diller Family

Cancer Research



Auxiliary Building ID: NA Date: 8/16/2019

UNIVERSITY

CALIFORNIA

Table 1: Benchmark Building Codes and Standards

	Building Seismic Design Provisions		
Building Type a,b	UBC	IBC	
Wood frame, wood shear panels (Types W1 and W2)	1976	2000	
Wood frame, wood shear panels (Type W1a)	1976	2000	
Steel moment-resisting frame (Types S1 and S1a)	1997	2000	
Steel concentrically braced frame (Types S2 and S2a)	1997	2000	
Steel eccentrically braced frame (Types S2 and S2a)	1988 ^g	2000	
Buckling-restrained braced frame (Types S2 and S2a)	f	2006	
Metal building frames (Type S3)	f	2000	
Steel frame with concrete shear walls (Type S4)	1994	2000	
Steel frame with URM infill (Types S5 and S5a)	f	2000	
Steel plate shear wall (Type S6)	f	2006	
Cold-formed steel light-frame construction—shear wall system (Type CFS1)	1997 ^h	2000	
Cold-formed steel light-frame construction—strap-braced wall system (Type CFS2)	f	2003	
Reinforced concrete moment-resisting frame (Type C1) ⁱ	1994	2000	
Reinforced concrete shear walls (Types C2 and C2a)	1994	2000	
Concrete frame with URM infill (Types C3 and C3a)	f	f	
Tilt-up concrete (Types PC1 and PC1a)	1997	2000	
Precast concrete frame (Types PC2 and PC2a)	f	2000	
Reinforced masonry (Type RM1)	1997	2000	
Reinforced masonry (Type RM2)	1994	2000	
Unreinforced masonry (Type URM)	f	f	
Unreinforced masonry (Type URMa)	f	f	
Seismic isolation or passive dissipation	1991	2000	

Note: This table has been adapted from ASCE 41-17 Table 3-2. Benchmark Building Codes and Standards for Life Safety Structural Performed at BSE-1E.

Note: UBC = Uniform Building Code. IBC = International Building Code.

^a Building type refers to one of the common building types defined in Table 3-1 of ASCE 41-17.

^b Buildings on hillside sites shall not be considered Benchmark Buildings.

c not used

^d not used

e not used

^f No benchmark year; buildings shall be evaluated in accordance with Section III.J.

g Steel eccentrically braced frames with links adjacent to columns shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.

 $^{^{\}it h}$ Cold-formed steel shear walls with wood structural panels only.

 $^{^{\}it i}$ Flat slab concrete moment frames shall not be considered Benchmark Buildings.

CONCRETE MOISTURE BARRIERS.

2. DETAILS DENOTED AS "TYPICAL" SHALL APPLY THROUGHOUT CONSTRUCTION, UNLESS DETAILED OTHERWISE ON THE DRAWINGS.

3. REFERENCING OF DRAWINGS IS FOR CONVENIENCE ONLY. LACK OF A REFERENCE SHALL NOT LIMIT APPLICATION OF ANY DRAWING OR DETAIL. 4. NOTES CONTAINED WITHIN THESE PLANS ARE PART OF THE CONTRACT DOCUMENTS. CONFORM TO THE

REQUIREMENTS OF ALL NOTES. 5. QUESTIONS OR DISCREPANCIES SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR RESOLUTION PRIOR TO PERFORMING THE WORK. IF THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, THE REQUIREMENTS OF THE DRAWINGS SHALL APPLY.

6. SHOULD ADDITIONAL ENGINEERING OR INVESTIGATIVE WORK BE REQUIRED DUE TO SITE OR ENVIRONMENTAL CONDITIONS, NOTIFY THE OWNER IMMEDIATELY. ENGINEERING SERVICES REQUIRED FOR CHANGES OR MODIFICATIONS TO THESE DOCUMENTS WILL BE SECURED BY THE OWNER.

7. NO CHANGES AND MODIFICATIONS TO THE WORK SHALL BE MADE WITHOUT PRIOR APPROVAL BY THE ARCHITECT AND REGULATORY AUTHORITIES. FAILURE TO OBTAIN APPROVALS SHALL CAUSE THE CONTRACTOR TO ASSUME ALL RESPONSIBILITY FOR ANY SUBSEQUENT MODIFICATION OF THE WORK REQUIRED BY THE ARCHITECT OR REGULATORY AUTHORITIES.

8. SEE ARCHITECTURAL/MECHANICAL/ELECTRICAL DRAWINGS FOR SIZE AND LOCATIONS OF WALL/ROOF/FLOOR OPENINGS, SLEEVES, AND CONCRETE EQUIPMENT PADS. VERIFY EXACT SIZE AND LOCATION WITH EQUIPMENT MANUFACTURER. 9. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND LOCATIONS OF DEPRESSED SLABS, CURBS, AND

10. VERIFY ALL DIMENSIONS AND FIELD-VERIFYING EXISTING CONDITIONS BEFORE STARTING WORK OR FABRICATION. NOTIFY THE UNIVERSITY'S REPRESENTATIVE OF ANY DISCREPANCIES FOUND.

11. PERFORM ALL WORK UNDER THE GUIDELINES OF CURRENT CODES AND SAFETY STANDARDS.

12. VERIFY THAT ALL PERMITS AND APPROVALS HAVE BEEN CLEARED WITH APPROPRIATE AGENCIES PRIOR TO START OF CONSTRUCTION. NO CONSTRUCTION OR FABRICATION OF ANY ITEMS SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED ALL PLANS AND ANY OTHER DOCUMENTATION FROM ALL OF THE PERMITTING AND ANY OTHER REGULATORY AUTHORITIES. FAILURE OF THE CONTRACTOR TO FOLLOW ITS PROCEDURE SHALL CAUSE THE CONTRACTOR TO ASSUME FULL RESPONSIBILITY FOR ANY SUBSEQUENT MODIFICATION OF THE WORK MANDATED BY ANY REGULATORY AUTHORITY.

13. DRAWINGS AND SPECIFICATIONS DETAIL THE COMPLETED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC.

14. SPREAD OUT CONSTRUCTION MATERIALS IF PLACED ON THE FLOOR. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING AND/OR BRACING WHERE STRUCTURE HAS NOT ATTAINED DESIGN STRENGTH AND AS REQUIRED FOR ERECTION.

16. ERECT WORK BARRICADES AS REQUIRED TO PROTECT THE PUBLIC FROM ANY FORM OF HAZARD AT ALL

15. THE GENERAL CONTRACTOR SHALL INCLUDE THE PATCHING AND REPAIRING OF ALL EXISTING SURFACES

17. CLEAN ALL SOILED OR DISCOLORED SURFACES WITHIN THE AREA OF CONSTRUCTION AFTER

18. THE GENERAL CONTRACTOR SHALL COORDINATE ALL WORK BETWEEN TRADES.

19. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY SHORES, BRACES AND GUYS REQUIRED TO SUPPORT ALL LOADS TO WHICH THE BUILDING STRUCTURE AND COMPONENTS. SOILS, OTHER STRUCTURES AND UTILITIES MAY BE SUBJECTED DURING CONSTRUCTION SHORING SYSTEMS SHALL BE DESIGNED AND STAMPED BY A CIVIL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.

20. THE CONTRACTOR SHALL PROVIDE MEANS MEANS, METHOD, TECHNIQUES, SEQUENCE AND PROCEDURE OF CONSTRUCTION AS REQUIRED.

21. THE CONTRACTOR SHALL PROTECT ALL WORK, MATERIALS AND EQUIPMENT FROM DAMAGE AND SHALL PROVIDE PROPER STORAGE FACILITIES FOR MATERIALS AND EQUIPMENT DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR SAFETY OF THE WORK SITE.

STRUCTURAL TESTS AND INSPECTIONS

AND MATERIALS DISTURBED BY NEW WORK.

1. SPECIAL INSPECTION IS REQUIRED PER CBC SECTION 1701. SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING WORK AS DESCRIBED IN CBC SECTION 1701.5:

- A. ALL CONCRETE WORK.
- B. BOLTS INSTALLED IN CONCRETE. C. MECHANICAL SPLICES OF REINFORCING BARS. D. EXPANSION AND ADHESIVE ANCHORS.
- E. SPECIAL MOMENT-RESISTING CONCRETE FRAME F. REINFORCING STEEL
- G. STRUCTURAL WELDING. H. WELDING OF REINFORCING STEEL.
- I. HIGH STRENGTH BOLTING. J. ALL STRUCTURAL MASONRY WORK.
- K. PILING L. SPECIAL GRADING, EXCAVATION, AND BACKFILLING, M. OTHER INSPECTION REQUIRED BY THE BUILDING OFFICIAL.

BUILDING CODE

1998 CALIFORNIA BUILDING CODE

DESIGN LOADS

1. LIVE LOADS: A. ROOF

B. OFFICE FLOOR 80 PSF* 80 PSF* LABORATORIES

D. EXTERIOR TERRACE 100 PSF* *LIVE LOAD REDUCTIONS HAVE BEEN TAKEN AS PERMITTED BY CBC.

2. SEISMIC LOADS:

3. WIND LOADS

A. LATERAL FORCE RESISTING SYSTEM:

DUAL SYSTEM OF CONCRETE SPECIAL MOMENT RESISTING FRAMES AND CONCRETE SHEAR WALLS (R=8.5)

B. SEISMIC ZONE FACTOR: Z = 0.40C. IMPORTANCE FACTOR: I = 1.25

D. SEISMIC SOURCE TYPE: A E. SOIL PROFILE TYPE: F. SEISMIC COEFFICIENT: $C_0 = 0.36* N_0$

 $C_v = 0.96* N_v$

G. NEAR SOURCE FACTOR: $N_Q=1.00$ $N_{v} = 1.10$

A. BASIC WIND SPEED: 70MPH B. EXPOSURE TYPE: C (FOR OPEN, FLAT TERRAIN) WIND PRESSURE: METHOD 2 (PROJECTED AREA METHOD)

D. IMPORTANCE FACTOR: I = 1.15

STRUCTURAL STEEL WELDING

 ALL WELDING SHALL BE IN STRICT CONFORMANCE WITH THE 2001 CALIFORNIA BUILDING CODE AND AWS D1.1-98 INCLUDING:

SECTION 6.3 FOR QUALIFIED WELDERS SECTION 4.2 AND AISC SECTION J2-7 FOR JUMBO SECTIONS FOR PREHEAT AND INTERPASS TEMPERATURE REQUIREMENTS SECTION 4 PARTS 8. C AND D TECHNIQUE FOR ARC WELDING

SECTION 6 AND SECTION 8, PART D FOR INSPECTION 2. A PRE-CONSTRUCTION MEETING BETWEEN THE ENGINEER OF RECORD. THE FABRICATOR, THE ERECTOR, THE CONTRACTOR AND THE INSPECTORS SHALL TAKE PLACE TO DISCUSS THE WELDING PROCEDURE SPECIFICATION (WPS). THE WELDING ELECTRODE MANUFACTURERS' SPECIFICATIONS SHOULD BE ATTACHED TO THE WPS ON ALL JOBS. ALL WELDERS AND INSPECTORS SHALL BE INFORMED OF AND MUST ADHERE TO THE WPS AND SHALL RETAIN A

THE CONTRACTOR SHALL PROVIDE WELDING PROCEDURE SPECIFICATION (WPS) AND DETAILED SEQUENCE OF WELDING SKETCH FOR REVIEW AND APPROVAL PRIOR TO STARTING OF FABRICATION. THE SEQUENCE OF WELDING SHALL BE PLANNED TO MINIMIZE LOCKED IN

STRESSES AND DISTORTION 4. ALL WELDING ELECTRODES (FILLER METAL) SHALL BE E7XXX (70 KSI), U.N.O., EXCEPT E8XXX (80 KSI) SHALL BE USED AT COLUMN SPLICES BETWEEN TWO HIGH STRENGTH (65

KSI) COLUMNS. 5. COMPLETE PENETRATION GROOVE WELDS SHALL HAVE A FILLER METAL WITH CHARPY V-NOTCH TOUGHNESS OF 20 FT/LBS AVERAGE AT -20 DEGREES FAHRENHEIT.

6. CERTIFY CONFORMANCE TO CHARPY V-NOTCH TOUGHNESS REQUIREMENTS WITH TESTS BY AN INDEPENDENT TESTING LABORATORY FOR EACH AWS CLASSIFICATION, MANUFACTURER AND TRADE NAME. THE SIZES SPECIFIED BY AWS AS SHALL BE TESTED

7. LENGTHS OF WELDS ARE EFFECTIVE LENGTHS AS SPECIFIED IN THE CALIFORNIA BUILDING CODE. WHERE LENGTH OF WELD IS NOT SHOWN IT SHALL BE FULL LENGTH OF JOINT. ALL BUTT WELDS SHALL BE FULL PENETRATION, UNLESS NOTED OTHERWISE. 8. ALL SHOP WELDS SHALL BE PERFORMED BY A FABRICATOR APPROVED BY THE GOVERNING

9. WELDERS SHALL BE QUALIFIED FOR THE WORK THEY WILL BE DOING & SHALL HAVE CERTIFICATIONS CURRENT.

10. FACES OF FILLET WELDS EXPOSED TO VIEW SHALL HAVE AS-WELDED SURFACES THAT ARE REASONABLY SMOOTH AND UNIFORM. NO FINISHING OR GRINDING SHALL BE REQUIRED, EXCEPT WHERE CLEARANCES OR FIT OF OTHER ITEMS MAY SO NECESSITATE. 11. ALL PARTIAL AND FULL PENETRATION WELDS WHICH ARE EXPOSED TO VIEW SHALL BE GROUND SMOOTH AND FLUSH WITH FINISH SURFACE OF STEEL. HOLES SHALL BE FILLED WITH WELD METAL OR BODY SOLDER AND SMOOTHED BY GRINDING OR FILING.

12. CLEAN GROOVE PREPARATION THERMAL CUTS BY GRINDING. 13. WELDS SHALL BE TERMINATED AT THE END OF A JOINT IN A MANNER THAT WILL ENSURE SOUND WELDS. WHENEVER NECESSARY THIS SHALL BE DONE BY USE OF EXTENSION BARS

AND RUN OFF TABS. 14. TO ASSURE THE PROPER AMPERAGE AND VOLTAGE OF THE WELDING PROCESS, THE USE OF A HAND HELD CALIBRATED AMP AND VOLT METER SHALL BE USED. THIS EQUIPMENT SHALL BE USED BY THE FABRICATOR, ERECTOR AND THE INSPECTORS. AMPERAGE AND VOLTAGE SHALL BE MEASURED AT THE ARC WITH THIS EQUIPMENT. TRAVEL SPEED AND ELECTRODE STICK OUT SHALL BE VERIFIED TO BE IN COMPLIANCE WITH THE ELECTRODE

MANUFACTURER'S RECOMMENDATIONS AND WITH THE APPROVED WPS. 15. ADHERE TO SECTION 4.5.2 OF AWS D1.1-98 FOR STORAGE OF ELECTRODES. 16. EACH FLANGE OF A MOMENT FRAME BEAM TO COLUMN CONNECTION SHALL BE WELDED IN

ONE CONTINUOUS PROCESS WITHOUT COOLING BELOW THE PRE-HEAT TEMPERATURE. 17. WELDING OF A913 MATERIALS SHALL BE PERFORMED PER THE REQUIREMENTS OF THE MOST CURRENT AWS REQUIREMENTS, THE STRUCTURAL DRAWINGS AND SPECIFICATIONS, WHICHEVER IS MORE STRINGENT

18. AFTER FULL PENETRATION WELDING, THE BACKING BAR IS TO BE REMOVED, THE WELD ROOT INSPECTED AND TESTED FOR IMPERFECTIONS, WHICH IF FOUND, ARE TO BE REMOVED BY BACKGOUGING TO SOUND MATERIAL. THE BACKGOUGED AREA IS TO BE WELDED AND A FILLET WELD SHALL BE APPLIED TO REINFORCE THE JOINT. THE SIZE OF THE REINFORCING FILLET WELD SHALL BE EQUAL TO 1/4 THE PLATE THICKNESS, BUT NOT LESS THAN 1/4"

WELD TESTING AND INSPECTION

1. APART FROM VISUAL INSPECTION AND REVIEW OF FABRICATION AND ERECTION REPORTS OF THE FABRICATOR/ERECTOR'S OWN QUALITY CONTROL TESTING AND INSPECTION, THE UNIVERSITY'S TESTING AGENCY SHALL PERFORM THE INDICATED SHOP AND FIELD INSPECTION AND TESTING. THE TESTING AGENCY SHALL BE AWS Q.C.-1 CERTIFIED AND SHALL PROVIDE INSPECTORS FOR CONTINUOUS INSPECTION OF ALL STEEL FABRICATION AND ERECTION, STRUCTURAL WELDING, HIGH STRENGTH BOLTING, ETC. SHOP AND FIELD TESTING OF MATERIALS. WELDS AND BOLTS SHALL BE AS FOLLOWS:

1.1. ULTRASONIC TESTING IS REQUIRED FOR ALL (100%) PARTIAL AND COMPLETE PENETRATION WELDS. TEST GROOVE WELDING ON CONTINUITY PLATES BY ULTRASONIC TESTING AFTER BEAM FLANGE WELD CONNECTION. TESTING SHALL BE PERFORMED 24 HOURS OR MORE AFTER COMPLETION OF WELDING. WELD BACKING REMOVAL AREAS AND FILLET WELDS SHALL BE SUBJECTED TO MAGNETIC PARTICLE EXAMINATION. 1.2. BASE METAL THICKER THAN 1-1/2", SUBJECTED TO THROUGH THICKNESS WELD SHRINKAGE.

SHALL BE ULTRASONICALLY TESTED DIRECTLY BEHIND SUCH WELDS 48 HOURS OR MORE AFTER COMPLETION OF WELDING. 1.3. ALL WELDS SHALL BE VISUALLY INSPECTED AND PERIODICALLY MEASURED (15% MIN)

1.4. CHECK BY CALIBRATED TORQUE WRENCH ALL SLIP—CRITICAL BOLTS. 1.5. CHECK A MINIMUM OF 10% OF FILLET WELDS BY MAGNETIC PARTICLE (ASTM 109 METHOD). CHECK A MINIMUM OF 25% OF CONTINUITY PLATE FILLET WELDS AND BEAM FILLET WELDS

(100% IN MOMENT ZONES) BY MAGNETIC PARTICLE. 1.6. AMPERAGE, VOLTAGE, POLARITY AND ELECTRODE STICK OUT SHALL BE BE VERIFIED TO BE IN COMPLIANCE WITH THE ELECTRODE MANUFACTURES' RECOMMENDATIONS.

PRE-ENGINEERED STRUCTURES AND ITEMS TO BE ANCHORED TO THE BUILDING

1. STRUCTURES SHALL BE DESIGNED BY OTHERS. PRIOR TO FABRICATION AND INSTALLATION, SUBMIT DESIGN PLANS, DETAILS AND CALCULATIONS, PERFORMED BY A CIVIL ENGINEER. LICENCED IN THE STATE OF CALIFORNIA TO THE UNIVERSITY'S REPRESENTATIVE FOR REVIEW AND APPROVAL.

2. DESIGN STRUCTURES IN ACCORDANCE WITH THE 1998 CBC, APPLICABLE SECTIONS OF THE AISI SPECIFICATIONS, AND THE MBMA RECOMMENDED DESIGN PRACTICE MANUAL.

3. CONNECTIONS OF THE STRUCTURES TO MAIN STRUCTURAL MEMBERS SHALL NOT RESULT IN TORSION IN THE SUPPORTING STRUCTURAL MEMBERS.

4. THE FOLLOWING STRUCTURE ITEMS ARE NOT COVERED BY THIS SET OF DRAWINGS AND SHALL BE DESIGNED BY OTHERS. CALCULATIONS AND DRAWINGS SIGNED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA SHALL BE SUBMITTED TO THE UNIVERSITY'S REPRESENTATIVE FOR REVIEW AND TO THE CITY FOR APPROVAL.

A. EXTERIOR CLADDING AND GLAZING PANELS B. STEEL STAIRS

C. LIGHT GAGE FRAMING

D. ANCHORAGE FOR ALL ELECTRICAL AND MECHANICAL AND PLUMBING EQUIPMENT WITH WEIGHT OF 400 LBS OR MORE E. INTERIOR GLAZED WALLS WITH ALUMINUM FRAMING.

5. FOR DESIGN OF ELEMENTS THAT ARE ATTACHED TO THE BUILDING, THE FOLLOWING BUILDING FLOOR DISPLACEMENT SHALL BE CONSIDERED PER 1998 CBC:

LEVEL	\triangle s (in.)	\triangle m (in.)
2ND	0.4	2.38
3RD	1.18 7.02	
4TH	1.84	10.95
5TH	2.39	14.22
6TH (MAIN ROOF)	3.04	18.09
7TH	3.54	21.06
8TH	3.70	22.02

/\s = ELASTIC LEVEL DISPLACEMENT

/m = INELASTIC LEVEL DISPLACEMENT 6. DESIGN LOADS FOR METAL PLATE STAIRS:

> A. DEAD LOAD: B. LIVE LOADS:

10 PSF IN ADDITION TO SELF-WT. OF STRUCTURE

C. SEISMIC LOAD: D. WIND LOAD:

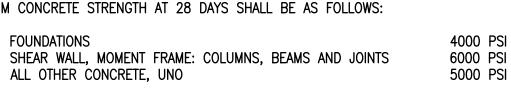
Z=0.4, lp=1.25, SEISMIC SOURCE TYPE A WIND SPEED 70 MPH, EXPOSURE C, Iw =1.15 METHOD 2 FOR WIND PRESSURE

7. ALL DESIGN ANALYSES SHALL BE STAMPED BY PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.

REINFORCED CONCRETE NOTES

1. MINIMUM CONCRETE STRENGTH AT 28 DAYS SHALL BE AS FOLLOWS:

SHEAR WALL, MOMENT FRAME: COLUMNS, BEAMS AND JOINTS 6000 PSI



2. PROVIDE CONCRETE MIX DESIGNS INCLUDING ADMIXTURE DATA, AGGREGATE GRADATIONS, WATER TESTS, CEMENT DATA. CEMENT CUBE STRENGTH AND CYLINDER STRENGTH TEST RESULTS FOR THE CONCRETE. ALL DATA SHALL BE

SUBMITTED FOR REVIEW AT LEAST 45 DAYS PRIOR TO ITS USE. CONCRETE MIXES SHALL BE DESIGNED BY A QUALIFIED TESTING LABORATORY AND CERTIFIED BY A PROFESSIONAL ENGINEER. 3. THE CONCRETE SHALL CONTAIN AN ACCEPTABLE WATER REDUCING/PLASTISIZING ADMIXTURE. NO CALCIUM CHLORIDE SHALL BE USED IN CONCRETE. 4. ALL CONCRETE AGGREGATES AND CEMENT SHALL BE FROM A SINGLE SOURCE ACCEPTABLE TO THE ARCHITECT.

ALL CEMENT SHALL CONFORM TO ASTM C150, TYPE II LOW ALKALI, AGGREGATES FOR STONE CONCRETE SHALL CONFORM TO ALL REQUIREMENTS AND TESTS OF ASTM C-33 AND PROJECT SPECIFICATIONS. 5. CONCRETE MIXING OPERATION SHALL CONFORM TO ASTM C-94. CONCRETE PLACEMENT SHALL CONFORM TO ACI

STANDARD 304 AND PROJECT SPECIFICATIONS. BE RESPONSIBLE FOR ALL CONCRETE PLACING SEQUENCES AND CONSTRUCTION PROCEDURES FOR ALL CONCRETE WORK TO ACCOUNT FOR TEMPERATURE DIFFERENTIALS AND SHRINKAGE OCCURRING DURING THE CONSTRUCTION

PHASE UNTIL THE BUILDING IS PERMANENTLY IN A MECHANICALLY CONTROLLED ENVIRONMENT, 7. REVIEW ARCHITECURAL, MECHANICAL, ELECTRICAL, PLUMBING AND BUILDING SERVICES DRAWINGS. COORDINATE AND VERIFY SIZE, NUMBER AND LOCATION OF ALL SLEEVES OR OPENINGS REQUIRED. SLEEVES SHALL BE SET FOR ALL SERVICES PRIOR TO CONCRETE PLACEMENT. NO CORING OR CUTTING OF CONCRETE AFTER PLACEMENT WILL BE PERMITTED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE UNIVERSITY'S REPRESENTATIVE

8. PROVIDE TO THE UNIVERSITY'S REPRESENTATIVE FOR REVIEW. SHOP DRAWINGS INDICATING THE PLACING SEQUENCE AND THE EXACT LOCATION AND DETAILS OF ALL CONSTRUCTION JOINTS FOR EVERY PLACEMENT OF CONCRETE. THE DRAWINGS SHALL ALSO INDICATE) ALL OPENINGS, SLEEVES, CURBS, AND CONCRETE DIMENSIONS. ALL CONCRETE FOR CURBS, PADS, FILLS, ETC. ABOVE GROUND LEVEL SHALL BE SEMI LIGHTWEIGHT (110 PCF MAX.) 9. PLACE CONCRETE FOR ALL SLABS-ON-GRADE IN AN ALTERNAL FASHION BETWEEN CONSTRUCTION JOINTS IN AREAS NOT TO EXCEED 2000 SQ. FT. WITH A MINIMUM OF 24 HOURS BETWEEN ADJACENT AREAS OF PLACEMENT.

CONSTRUCTION JOINTS IN SLABS-ON-GRADE SHALL NOT BE FURTHER APART THAN 45 FT. IN ANY DIRECTION. PROVIDE MIX DESIGN. PLACEMENT METHODS SAW CUTTING, ETC. TO CONTROL AND MINIMIZE CRACKING AND CURLING. LIMIT CONSTRUCTION TRAFFIC ON SLAB TO AVOID CRACKING. ETC. 10. CONSTRUCTION JOINTS IN ALL FOUNDATIONS, WALLS, SUPPORTED SLABS AND CONCRETE FRAMING BEAMS SHALL

11. ALL CONSTRUCTION JOINTS SHALL BE WIRE BRUSHED, ROUGHEND TO A MINIMUM 1/4" AMPLITUDE, CLEANED AND MOISTENED IMMEDIATELY PRIOR TO PLACEMENT OF NEW CONCRETE. 12. SEE ARCHITECTURAL DRAWINGS FOR ALL REQUIRED WATERPROOFING, DAMP PROOFING, FLASHING, REGLETS, MAILERS. ROOFING, TYPE AND LOCATION OF FLOOR FINISHES, FLOOR DEPRESSIONS. CURBS, PADS AND OTHER DETAILS.

13. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ALL CONDUITS IN SLABS. CONDUITS SHALL BE RUN GENERALLY AT MID-BAY. PARALLEL CONDUITS SHALL BE SPACED AT THREE DIAMETERS ON CENTERS MINIMUM. CONDUIT SIZES SHALL NOT EXCEED 1/4TH OF THE SLAB THICKNESS AND SHALL BE LOCATED AT MID. THICKNESS OF THE SLAB. PREPARE AND SUBMIT TO THE ARCHITECT FOR REVIEW, LOCATION OF CONDUITS, PULL BOXES AND OTHER ITEMS EMBEDDED IN STRUCTURAL CONCRETE. CONDUITS SHALL NOT BE PLACED IN METAL DECK. SLABS. 14. ALL MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION EQUIPMENT SHALL BE SECURELY ANCHORED TO

STRUCTURAL CONCRETE WITH CAST-IN-PLACE ANCHORS. ANCHORS SHALL BE DESIGNED FOR A MINIMUM LATERAL

FORCE OF 0.5 TIMES THE WEIGHT OF THE EQUIPMENT APPLIED AT CENTER OF MASS, IN ADDITION TO OTHER

LOADING CONDITIONS. 15. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

NOT BE FURTHER APART THAN 60 FEET IN LENGTH.

ADHESIVE AND EXPANSION ANCHORS TESTING

1. EXPANSION ANCHORS SHALL BE HILTI CARBON STEEL KWIK-BOLT II. ICBO #4627 OR SIMPSON WEDGE ALL, ICBO #ER-3631, OR EQ WITH DIAMETER AND EMBEDMENT LENGTH AS NOTED ON THE DRAWINGS. INSTALL PER THE MANUFACTURERS RECOMMENDATIONS. 2. ADHESIVE ANCHORS SHALL BE COVERT CIA-GEL 7000, ICBO #4846, OR SIMPSON SET, ICBO #5279, OR EQ

WITH DIAMETER AND EMBEDMENT LENGTH AS NOTED ON THE DRAWINGS. INSTALL PER THE MANUFACTURER'S RECOMMENDATIONS. 3. WHEN INSTALLING ANCHORS IN EXISTING REINFORCED CONCRETE OR MASONRY, EXERCISE CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS.

4. ALL ADHESIVE AND EXPANSION ANCHORS SHALL REQUIRE SPECIAL INSPECTION.

'''-''			ISION A	NCHOR E	BOLTS
3000PS	<u> (MIN)</u>	NORM	AL WEIG	HT CON	CRETE.
TYPE	DIA. OF	EMBED	ALLOWAE	BLE LOAD	PROOF TEST
	ANCHORS		TENSION (lbs.)	SHEAR (lbs.)	LOAD (lbs.)
KWIK BOLT-3	1/4"	1 ½" 2" 3	270 535 571	359 359 359	541 1070 1142
KWIK BOLT-3	³ /8"	1 ⁵ / ₈ " 2 ¹ / ₂ " 3 ¹ / ₂ "	677 1139 1248	850 1004 1004	1354 2278 2496
KWIK BOLT-3	1/2"	2 ¹ / ₄ " 3 ¹ / ₂ " 4 ³ / ₄ "	1027 1638 1766	1396 1494 1466	2054 3277 3531
KWIK BOLT-3	5/8"	2 ³ / ₄ " 4" 5 ¹ / ₂ "	1518 2244 2770	2062 2659 2659	3037 4488 5539
KWIK BOLT-3	3/4"	3 ¹ / ₄ " 4 ³ / ₄ " 6 ¹ / ₂ "	1784 3165 4295	3067 3761 3761	3568 6330 8590
KWIK BOLT-3	1"	4 ¹ / ₂ " 6" 9"	2920 4248 5640	5300 6900 6900	5840 8496 11280

	ALLED IN 40		ANCHOR SYSTEM MIN) NORMAL ETE.
REBAR SIZE	MIN. EMBED	ALLOWABLE LOAD TENSION (lbs.)	PROOF TEST LOAD (lbs.)
#3	4"	1925	3850
#4	5"	3700	7400
# 5	7"	4870	9740
#6	8"	7270	14500
# 7	9"	8720	17400
#8	12"	12200	24400

	LLED IN 40	IESIVE ANCHO 100PSI (MIN) 1 CONCRETE	
DIA OF ANCHORS STANDARD HAS E ROD (in)	MIN. EMBED (in)	ALLOWABLE LOAD TENSION (Ibs.)	PROOF TEST LOAD (lbs.)
3/8	1 3/4	1185	2370
	3 1/2	2540	5080
	5 1/4	2625	5250
1/2	2 1/8	1475	2950
	4 1/4	3690	7380
	6 3/8	4700*	9400*
5/8	2 1/2	1865	3730
	5	4920	9840
	7 1/2	7340*	14680*
3/4	3 3/8	3680	7360
	6 5/8	8330	16660
	10	10570*	21140*
7/8	3 3/4	4560	9120
	7 1/2	10250	20500
	11 1/4	14385*	28770*
1	4 1/8	4560	9120
	8 1/8	10910	21820
	12 3/8	18305*	36610*

5. TESTS & INSPECTION FOR EXPANSION & ADHESIVE ANCHORS:

SPALLING OF THE CONCRETE IN WHICH THEY ARE SET.

ACCEPTANCE.

5.1. QUALIFICATION TESTING: REQUIRED TO BE DONE FOR THE UNIVERSITYS REPRESENTATIVES ACCEPTANCE PRIOR TO COMMENCEMENT OF THE ACTUAL WORK.

a. PREPARE AND SET 3 SPECIMENTS OF EACH SIZE OR TYPE OF EXPANSION ANCHOR OR DOWEL IN EACH KIND OF EPOXY RESIN IN CONCRETE UNDER CONDITIONS TYPICAL OF ACTUAL USE. b. TEST ANCHORS TO 125% OF THEORETICAL YIELD OF THE ANCHORS. c. THERE SHALL BE NO LOOSENING OR MOVEMENT OF THE ANCHOR OUT OF THE HOLE OR CRACKING OR

5.2. PROOF TESTING: REQUIRED THROUGHOUT WORK AS ANCHORS ARE SET, TESTING SHALL BE REPRESENTATIVE OF ALL ANCHORS PLACED. a. TEST, AFTER CURING, ONE OUT OF EVERY 3 ANCHORS OF EACH TYPE PLACED,

b. THERE SHALL BE NO LOOSENING OR MOVEMENT OF THE ANCHOR OUT OF THE HOLE AND NO CRACKING OR SPALLING OF THE CONCRETE IN WHICH THE ANCHOR IS SET. c. ANCHORS FAILING THE PROOF TESTS SHALL HAVE ANOTHER, SIMILAR ITEM TESTED. 20 CONSECUTIVE ANCHORS OF SIMILAR TYPE SHALL PASS TEST BEFORE RESUMING INITIAL FREQUENCY OF TESTING. d. IF THE FAILURE RATE IS 25% OR MORE, TEST EVERY OTHER MEMBER. IF THE FAILURE RATE IS CONSISTENTLY 5% OR LESS, TEST FREQUENCY MAY BE DECREASED TO ONE ANCHOR OF EVERY 10 PLACED.

5.3. TESTING WILL BE PERFORMED BY THE UNIVERSITYS TESTING LABORATORY USING CALIBRATED HYDRAULIC HOLE JACKS OR DUAL JACKS OPERATING AGAINST A SUITABLE PULLING FIXTURE. a. JACKS AND FIXTURE SHALL BE PLACED SO THAT THEY DO NOT APPLY RESTRAINT TO OR CONFINE THE CONRETE ADJACENT TO THE HOLE.

b. TEST EQUIPMENT, METHOD AND LAYOUT ARE SUBJECT TO THE UNIVERSITYS REPRESENTATIVE'S

PILE FOUNDATION NOTES

1. PILES SHALL BE 14- INCH SQUARE PRESTRESSED. PRECAST CONCRETE WITH:

A. MINIMUMULTIMATE AXIAL CAPACITY — PER 1/S4.01 B. MINIMUM PILE LENGTH *

NORTH SOIL PROFILE -133° MIDDLE SOIL PROFILE -108° SOUTH SOIL PROFILE -80°

> *PILE LENGTHS FOR ESTIMATING PURPOSES ONLY. SEE 1/S4.01. FINAL PILE LENGTHS TO BE DETERMINED FROM INDICATOR PILE PROGRAM.

C. MINIMUM ALLOWABLE AXIAL TENSION CAPACITY: -PER 1/S4.01

2. PILE MATERIALS SHALL BE AS FOLLOWS:

PILES AS NECESSARY DURING DRIVING.

A. CONCRETE SHALL HAVE A MINIMUM 28-DAY CYLINDER STRENGTH OF 7000 PSI, TYPE II CEMENT AND CONTAIN A WATER REDUCING, PLASTICIZING ADMIXTURE, W/C = 0.40 MAX. B. MILD REINFORCING - ASTM A706, GRADE-60 DEFORMED BARS

C. PRESTRESSING STEEL - ASTM A416 WITH ULTIMATE TENSILE STRENGTH OF 270 KSI. D. SPIRAL WIRE WINDING — AST'M A-82 WITH A YIELD STRENGTH OF 70 KSI.

SUBMIT ENGINEERED SHOP DRAWINGS AND STRUCTURAL DESIGN CALCULATIONS BY CALIF. REGISTERED STRUCTURAL ENGINEER FOR THE PILE INCLUDING PRESTRESSING STRANDS. DRIVING EQUIPIMENT. DRIVING PROCEDURE AND SEQUENCES. REINFORCING SHOWN ARE MINIMUM AND SHALL BE INCREASED AS REQUIRED.

4. PILE DRIVING HAMMERS SHALL BE OF A SIZE AND TYPE CAPABLE TO DELIVER CONSISTENTLY A MINIMUM ENERGY ON THE BASIS OF INDICATOR PILE RECORDS. 5. ALL PILES SHALL BE DRIVEN TO PROVIDE A MINIMUM EMBEDMENT INTO DESIGNATED BEARING STRATA OR TO THE MINIMUM DESIGN TIP ELEVATION AS SHOWN, OR INDICATOR PILE DEPTH, WHICHEVER IS

DEEPER, AND TO A DRIVING RESISTANCE EQUAL TO OR GREATER THAN THE INDICATOR PILES. FRESH HEAD

6. PILES MAY BE DRIVEN IN PRE-DRILLED HOLES TO THE BASE OF BAY MUD (10 FEET TO 35 FEET THICK) TO A DIAMETER NO GREATER THAN THE LEAST SIDE DIMENSION OF THE PILE.

7. DRIVE A MINIMUM OF TWENTY (20) INDICATOR PILES WITH PILE

10. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

DRIVING ANALYZER (PDA) ON THREE (3) PILES PER GEOTECHNICAL CONSULTANT'S RECOMMENDATIONS 8. THE OWNER'S GEOTECHNICAL CONSULTANT SHALL VISUALLY INSPECT AND RECORD ALL PILE DRIVING OPERATIONS FOR EACH PILE, AND MONITOR THE TESTING OF THE TEST/INDICATOR PILES.

9. COMPLY WITH ALL REQUIREMENTS CONTAINED IN THE GEOTECHNICAL CONSULTANT'S REPORT AND RECOMMENDATIONS OF THE GEOTECHNICAL CONSULTANT.

SOIL AND FOUNDATIONS

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION — CLINICAL LABORATORY RESEARCH BUILDING 2 (BUILDING 17C) PREPARED BY MACTEC ENGINEERING AND CONSULTING, INC., DATED NOVEMBER 18, 2002, AND ALL SUPPLEMENTS THERE TO. THE ABOVE SOILS REPORT AND ITS RECOMMENDATIONS SHALL BE FOLLOWED AND SHALL BE CONSIDERED MINIMUM REQUIREMENTS UNLESS MORE STRINGENT REQUIREMENTS ARE PRESENTED IN SPECIFICATIONS OR ON THE DRAWINGS.

2. FOR RETAINING WALL FOUNDATION AND MISCELLANEOUS CONCRETE STRUCTURES, SCARIFY SOILS 6" MIN. AND COMPACT TO 90% OF THE MAXIMUM DRY DENSITY.

3. ALL SPREAD FOUNDATION AND SOIL COMPACTION SHALL BE INSPECTED AND APPROVED BY THE SOILS ENGINEER PRIOR TO PLACEMENT OF ANY REBAR OR CONCRETE.

4. THE SUBGRADE SHALL BE PREPARED AS INDICATED IN THE SPECIFICATIONS AND SHALL BE APPROVED BY THE SOILS ENGINEER BEFORE COMMENCING FOUNDATION CONSTRUCTION.

5. WITHIN THE AREA OF THE PROPOSED BUILDING. ALL EXISTING FILL AND ANY REMAINING ABANDONED UTILITIES AND/OR STRUCTURES SHALL BE REMOVED TO UNDISTURBED NATURAL SOIL AND REPLACED WITH PROPERLY COMPACTED BACKFILL. 6. ALL FOUNDATIONS SHALL BE POURED AGAINST COMPETENT NATIVE SOILS OR COMPACTED FILL

COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY OBTAINABLE BY ASTM D1557-91. COMPACTED FILL SHALL EXTEND BEYOND THE FOUNDATION A DISTANCE EQUAL TO THE DEPTH OF FILL BELOW THE FOUNDATION.

FILL SHALL BE MOISTURE CONDITIONED TO OR SLIGHTLY ABOVE OPTIMUM MOISTURE CONTENT AND

7. THE GEOTECHNICAL ENGINEER SHALL INSPECT AND APPROVE ALL EXCAVATIONS, SHORING INSTALLATIONS, BACKFILL MATERIALS AND BACKFILLING PROCEDURES.

8. FOUNDATIONS SHALL BE PLACED AND ESTIMATED ACCORDING TO THE DEPTHS SHOWN ON THE DRAWINGS. SHOULD SOIL ENCOUNTERED AT THESE DEPTHS NOT BE APPROVED BY THE GEOTECHNICAL ENGINEER, CONTRACTOR SHALL INFORM THE UNIVERSITY'S REPRESENTATIVE IN WRITING.

9. TRENCHES OR EXCAVATIONS FIVE (5) FEET DEEP OR MORE INTO WHICH A PERSON IS REQUIRED TO DESCEND. OBTAIN NECESSARY PERMIT FROM THE STATE OF CALIFORNIA DIVISION OF INDUSTRIAL SAFETY PRIOR TO THE ISSUANCE OF A BUILDING OR GRADING PERMIT.

REINFORCEMENT

1. ALL TYPICAL REINFORCING BARS SHALL CONFORM TO ASTM A-615, GRADE 60, UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL PRIMARY REINFORCING FOR MOMENT FRAME BEAMS AND COLUMNS AND SHEAR WALL BOUNDARY ELEMENTS SHALL BE ASTM A-706 [Fy=60 ksi]. SPIRALS SHALL BE COLD DRAWN BARS CONFORMING TO ASTM A-82.

2. WELDED REBAR TO COMPLY WITH ASTM A-706 [Fy=60 KSI] AND WELDING SHALL CONFORM TO AWS 01.4. WELDING TO BE DONE BY WELDERS CERTIFIED BY BUILDING DEPARTMENT. 3. WELDED WIRE FABRIC SHALL BE MADE OF COLD DRAWN WIRE AND SHALL CONFORM TO ASTM A-185 [Fv=65 KSI]. MINIMUM LAP AT SPLICES OF 12 INCHES. PROVIDE MESH IN FLAT SHEETS ONLY. ROLLED MESH IS NOT ACCEPTABLE. OFFSET END-LAPS IN ADJACENT SHEETS TO PREVENT CONTINUOUS LAPS.

4. REINFORCING STEEL SHALL HAVE THE FOLLOWING MINIMUM COVERAGE. PLACE BARS AS NEAR TO THE CONCRETE SURFACE AS THESE MINIMUMS PERMIT WHEREVER POSSIBLE, UNLESS NOTED

OTHERWISE: CONCRETE POURED AGAINST EARTH FORMED CONCRETE IN CONTACT WITH EARTH EXTERIOR FACE OF WALLS ALL OTHER WALL FACES 1-1/2" (2" FOR EXTERIOR) SLABS (INCLUDING SLAB SUPPORTING EARTH) 1-1/2" (2" FOR EXTERIOR)

5. #5 AND LARGER REINFORCING BARS SHALL NOT BE SPLICED EXCEPT AS LOCATED AND DETAILED ON THE DRAWINGS. #4 AND SMALLER BARS WITH LENGTHS NOT SHOWN SHALL BE CONTINUOUS. PROVIDE CLASS 'B' SPLICE UNLESS NOTED OTHERWISE. ALL BARS IN MASONRY SHALL BE CONTINUOUS, LAPPING 48 BAR DIAMETERS, 2'-0" MINIMUM. HORIZONTAL WALL SPLICES SHALL BE STAGGERED. VERTICAL BARS SHALL NOT BE SPLICED EXCEPT AT HORIZONTAL SUPPORTS, SUCH AS FLOOR OR ROOF, UNLESS DETAILED OTHERWISE. ALL BARS ENDING AT THE FACE OF A WALL, COLUMN, OR BEAM SHALL EXTEND TO WITHIN 2" OF THE FAR FACE AND HAVE A 90 DEGREE HOOK, UNLESS OTHERWISE SHOWN.

ACCURATE PLACING. PROVIDE DOWELS TO MATCH ALL REINFORCEMENT AT POUR JOINTS, UNLESS SHOWN OR NOTED OTHERWISE. ALL DOWELS AND BOLTS SHALL BE ACCURATELY SET IN PLACE BEFORE PLACING CONCRETE. NO WELDING OF REINFORCEMENT (INCLUDING TACK WELDING) SHALL BE DONE UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER. 7. IN WALL REINFORCING, CURTAINS CONTAINING VERTICAL AND HORIZONTAL BARS OF THE SAME SIZE,

VERTICAL BARS MAY BE PLACED OUTSIDE OF HORIZONTALS.. IN CURTAINS WHICH VERTICAL AND HORIZONTAL

USING TIE AND SUPPORT BARS IN ADDITION TO REINFORCEMENT SHOWN WHERE NECESSARY FOR FIRM AND

6. BARS SHALL BE FIRMLY SUPPORTED AND ACCURATELY PLACED AS REQUIRED BY THE ACI STANDARDS,

BARS ARE OF DIFFERENT SIZES OR SPACING, THE LAYER WITH THE MOST STEEL SHALL BE PLACED CLOSEST TO THE NEAR SURFACE. 8. ALL BARS INTERRUPTED BY STRUCTURAL STEEL SHALL EXTEND TO WITHIN 1" OF STRUCTURAL STEEL

FLANGE OR WEB AND HAVE A 90 DEGREE HOOK, UNLESS OTHERWISE SHOWN. 9. DRAWINGS SHOW TYPICAL REINFORCING CONDITIONS. CONTRACTOR SHALL PREPARE DETAILED PLACEMENT DRAWINGS OF ALL CONDITIONS SHOWING QUANTITY, SPACING, SIZES, CLEARANCES, LAPS, INTERSECTIONS, AND COVERAGE REQUIRED BY THE STRUCTURAL DETAILS, APPLICABLE CODE, AND TRADE STANDARDS. CONTRACTOR SHALL NOTIFY REINFORCING INSPECTOR OF ANY ADJUSTMENTS FROM TYPICAL CONDITIONS WHICH ARE PROPOSED IN PLACEMENT DRAWINGS TO FACILITATE FIELD PLACEMENT OF REINFORCING STEEL AND CONCRETE.

10. REBAR BENDS SHALL BE MADE COLD. REBARS SHALL NOT BE BENT AFTER ANY PORTION OF THE BAR IS ENCASED IN CONCRETE.

11. ALL LAP SPLICES ARE CLASS 'B' LAP SPLICES UNLESS NOTED OTHERWISE. 12. ALL WALL FOOTING REINFORCEMENT SHALL BEND AROUND ALL CORNERS AND EXTEND 36 BAR DIAMETERS

13. ALL SLABS ON GRADE LESS THAN 6" IN THICKNESS SHALL BE REINFORCED WITH #4 REBARS AT 16 INCHES ON CENTERS EACH WAY, UNLESS NOTED OTHERWISE. PROVIDE ONE (1) LAYER OF 6X6/W2.9XW2.9 WELDED WIRE FABRIC CONTINUOUS FOR EVERY 3" ARCHITECTURAL CONCRETE FILLS ABOVE THE STRUCTURAL SLAB. PROVIDE SINGLE LAYER OF 6x6-W4xW4 IN AVERAGE 4" THICK ARCHITECTURAL TOPPING AT 3RD. 4TH AND 5TH FLOOR TERRACE DECK.

14. ALL MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT PADS LESS THAN 4" THICK SHALL BE

OR 18 INCHES WHICHEVER IS LARGER. UNLESS NOTED OTHERWISE.

GREATER THAN 4 INCHES THICK, USE REINFORCING AS SHOWN ON THE DETAIL. 15. ADDITIONAL REINFORCEMENT SHALL BE PROVIDED AROUND ALL SLAB AND WALL OPENINGS INCLUDING DIAGONAL BARS WITHOUT EXCEPTION.

USED. ALL CONCRETE SLABS SHALL HAVE A MINIMUM REINFORCEMENT PERCENTAGE OF 0.18 EACH WAY

16. ALL STRUCTURAL CONCRETE ELEMENTS REQUIRE REINFORCEMENT SINCE NO PLAIN CONCRETE ELEMENTS ARE

CONTINUOUS. ALL CONCRETE WALLS SHALL HAVE MINIMUM REINFORCING PER UNIFORM BUILDING CODE AND ACI

REINFORCED WITH AT LEAST ONE (1) LAYER OF 6X6/W2.9XW2.9 WELDED WIRE FABRIC AND HAVE HOOKED

DOWELS (#3 AT 12' ON CENTERS) INTO THE STRUCTURAL SLAB. UNLESS NOTED OTHERWISE. FOR PADS

LIST OF STRUCTURAL DRAWINGS

GENERAL NOTES S0.02 GENERAL NOTES

TYPICAL CONCRETE DETAILS TYPICAL CONCRETE DETAILS TYPICAL STEEL DETAILS

TYPICAL METAL DECK DETAILS FOUNDATION / LEVEL ONE FRAMING PLAN LEVEL TWO FRAMING PLAN LEVEL THREE FRAMING PLAN LEVEL FOUR FRAMING PLAN

LEVEL EIGHT FRAMING PLAN MOMENT FRAME AND SHEAR WALL ELEVATIONS MOMENT FRAME AND SHEAR WALL ELEVATIONS

LEVEL FIVE FRAMING PLAN

LEVEL SEVEN FRAMING PLAN

LEVEL SIX ROOF PLAN

TYPICAL MOMENT FRAME BEAM DETAILS MOMENT FRAME BEAM SCHEDULE MOMENT FRAME COLUMN SCHEDULE S3.13 MOMENT FRAME COLUMN DETAILS

ENLARGED WALL ELEVATIONS ENLARGED WALL ELEVATIONS **ENLARGED WALL ELEVATIONS** ENLARGED WALL ELEVATIONS ENLARGED WALL ELEVATIONS ENLARGED WALL ELEVATIONS AND COUPLING BEAM SCHEDULE/SECTIONS/DETAILS

SHEAR WALL SECTIONS AND DETAILS SHEAR WALL SECTIONS AND DETAILS

S3.40 SECTIONS AND DETAILS FOUNDATION SCHEDULE AND DETAILS

S4.02 FOUNDATION DETAILS

S4.10 GRAVITY BEAM DETAILS AND SCHEDULE TYPICAL TWO WAY SLAB AND JOIST DETAILS

CONCRETE BEAM AND SLAB SECTION AND DETAILS S5.01A FOUNDATION / LEVEL ONE EAST-WEST REBAR PLAN S5.01B FOUNDATION / LEVEL ONE NORTH-SOUTH REBAR PLAN

ONE-WAY SLAB SCHEDULE AND DETAILS

GRAVITY COLUMN SCHEDULE AND DETAILS

S5.02A LEVEL TWO EAST-WEST REBAR PLAN S5.02B LEVEL TWO NORTH-SOUTH REBAR PLAN S5.03A LEVEL THREE EAST-WEST REBAR PLAN S5.03B LEVEL THREE NORTH-SOUTH REBAR PLAN S5.04A LEVEL FOUR EAST—WEST REBAR PLAN S5.04B LEVEL FOUR NORTH-SOUTH REBAR PLAN

S5.06A ROOF / LEVEL SIX EAST—WEST REBAR PLAN S5.06B ROOF / LEVEL SIX NORTH—SOUTH REBAR PLAN S6.01 SECTIONS AND DETAILS

S6.02 SECTIONS AND DETAILS

S5.05A LEVEL FIVE EAST-WEST REBAR PLAN

S5.05B LEVEL FIVE NORTH-SOUTH REBAR PLAN

S6.04 SECTIONS AND DETAILS S7.01 STAIR PLANS S7.02 STAIR FRAMING DETAILS

ATRIUM STAIR PLAN AND DETAILS

S6.03 LEVEL SIX ATRIUM ELEVATIONS / SECTIONS & DETAILS

S7.04 ELEVATOR PLAN, ELEVATION AND DETAILS S7.10 TYPICAL LAB STEEL FRAMING PLAN S7.11 LAB FRAMING DETAILS

S8.01 DETAILS S8.02 DETAILS S8.03 DETAILS S8.04 DETAILS

STRUCTURAL OBSERVATION

TO PREVENT ROTATION DURING TIGHTENING.

PERIODIC STRUCTURAL OBSERVATION SHALL BE PROVIDED IN ACCORDANCE WITH CBC 1702. CONTRACTOR SHALL NOTIFY UNIVERSITY'S REPRESENTATIVE 48 HOURS BEFORE REQUIRED OBSERVATIONS. DELINQUENT NOTIFICATION MAY REQUIRE DEMOLITION OF COVERING MATERIAL TO FACILITATE OBSERVATION.

STRUCTURAL STEEL

A-588 GR50.

1. DETAIL, FABRICATE, AND ERECT STRUCTURAL STEEL IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (LATEST EDITION AND SUPPLEMENTS).

2. ALL STRUCTURAL STEEL, UNLESS NOTED OTHERWISE: ASTM A-572, GRADE 50. 3. STEEL TUBES: ASTM A500, GRADE B (FY=46,000 PSI), STEEL PIPES: ASTM A500 GRADE B (FY=42,000 4. STEEL ANGLES AND CHANNELS: ASTM A572 GR50; ALTERNATE FOR ROOF SCREEN SUPPORT C8x18.75:

5. ALL THREADED RODS: ASTM A572 (GRADE 50, FY=50ksi) BOLTED CONNECTIONS, UNLESS NOTED OTHERWISE: 7/8-INCH DIAMETER A325-X BOLTS. PROVIDE HARDENED WASHERS UNDER NUTS AT ALL HIGH STRENGTH BOLTS. 8. INSTALL HIGH STRENGTH BOLTS IN ACCORDANCE WITH PARAGRAPH 8D OF THE "SPECIFICATIONS FOR

9. PROVIDE BEVELED WASHERS ON ALL CONNECTION TO SLOPING FLANGES OF W SECTIONS AND CHANNELS WHERE SLOPE EXCEEDS 1:20. 10. HOOKED ANCHOR RODS: THE HOOKED PORTION SHALL BE A MINIMUM OF 3 INCHES LONG. THE HOOKED PORTION SHALL BE POINTED DIAGONALLY TOWARDS THE CENTER OF THE COLUMN. 11. THREADED ANCHOR RODS WITH NUT: THE EMBEDDED NUT SHALL BE TACK WELDED TO THE ANCHOR ROD

STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS". 1985 EDITION.

OF WELD IS NOT SHOWN IT SHALL BE THE FULL LENGTH OF THE JOINT.

12. BOLT HOLES IN STEEL SHALL BE "STANDARD" (1/16-INCH LARGER IN DIAMETER THAN THE NOMINAL BOLT SIZE. UNLESS NOTED OTHERWISE.) 13. WELDING ELECTRODES (FILLER METAL): E70XX (70 KSI), WITH EXACT FILLER METAL SELECTED BY THE 14. WELD LENGTHS CALLED FOR ON THE PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE LENGTH

15. COMPLETE PENETRATION WELDS SHALL BE MADE WITH PROPER BACKING WHEREVER POSSIBLE. FULL PENETRATION WELDS MADE WITHOUT PROPER BACKING SHALL HAVE THE ROOT GOUGED BEFORE WELDING IS STARTED FROM THE OTHER SIDE EXCEPT AS PROVIDED IN AWS D1.1. 16. ALL BUTT AND GROOVE WELDS SHALL BE FULL PENETRATION, UNLESS NOTED OTHERWISE. 17. ALL SPLICING OF MEMBERS SHALL BE AS SHOWN ON THE DRAWINGS. ANY SPLICING OF THE STEEL

MEMBERS PROPOSED BY THE STEEL FABRICATOR SHALL BE SHOWN ON SHOP DRAWINGS AND APPROVED BY

THE ARCHITECT PRIOR TO FABRICATION. 18. ALL STEEL FABRICATION SHALL BE PERFORMED BY A FABRICATOR APPROVED BY THE UNIVERSITY'S REPRESENTATIVE.

19. HOT DIP GALVANIZE ALL STEEL PERMANENTLY EXPOSED TO WEATHER. 20. ALL TS ARE EXPOSED TO WEATHER SHALL HAVE ENDS CLOSED. 21. ALL STRUCTURAL STEEL MEMBER SHALL BE FIREPROOFED.

22. SEE ARCHITECTURAL PLANS AND SPECIFICATIONS FOR DETAILS OF FIREPROOFING AT INTERIOR STRUCTURAL

STEEL FRAMING.

METAL DECK SHOP DRAWINGS.

METAL DECK SHORING MAY BE REQUIRED DEPENDING ON THE BRAND AND TYPE OF METAL DECK SELECTED. REFER TO THE DECK MANUFACTURER'S LITERATURE FOR SPECIFIC GUIDELINES. PROVIDE SHORING

AS RECOMMENDED BY THE METAL DECK MANUFACTURER. INDICATE SPANS TO BE SHORE ON

2. METAL DECK SHALL BE FORMLOCK (36" WIDE). COMPOSITE METAL DECK WITH CONCRETE FILL AND GAGE AS SHOWN ON THE DRAWINGS. DECK SHALL BE BY VERCO, ICBO #2078. THE METAL DECKING SHALL BE OF THE TYPE AND GAUGE AS CALLED FOR ON THE DRAWINGS. DECKING AND ALL ACCESSORIES SHALL BE FORMED FROM STEEL SHEETS HAVING A MINIMUM YIELD STRENGTH OF FY=33,000 PSI AND CONFORMING TO A-446. THE STEEL SHALL BE ZINC-COATED CONFORMING TO A525, CLASS [G60] - AS REQUIRED IN THE SPECIFICATIONS.

DECK UNITS SHALL BE CONTINUOUS OVER THREE OR MORE SPANS WHERE POSSIBLE. 4. ALL METAL DECK SHALL HAVE HAD ALL VERTICAL AND LATERAL LOAD CAPACITIES SUBMITTED BY AN ICBO REPORT. DIAPHRAGM ACTION SHALL BE PROVIDED FOR IN ALL AREAS WITH WELDING PATTERN IN

ACCORDANCE WITH SPECIFIED MANUFACTURER'S RECOMMENDATIONS (DOCUMENTED BY I.C.B.O. RESEARCH REPORTS) TO PROVIDE 2,000 PLF SHEAR CAPACITY.

ANCHOR ROOF DECK UNITS TO RESIST A NET UPLIFT OF 20 PSF. ALL WELDING OF METAL DECK SHALL BE ACCORDANCE WITH AWS D1.3.

8. ALL WELDING OF METAL DECK SHALL BE PERFORMED BY WELDERS CERTIFIED BY THE BUILDING DEPARTMENT FOR LIGHT-GAUGE STEEL WELDING. 9. HANGERS SUPPORTED BY METAL DECKING ONLY OR METAL DECKING WITH INSULATING FILL SHALL BE ATTACHED TO STEEL BARS, 3/8" DIA. X 12" OR 1/8" X 1 1/2" X 12" FLAT PLACED PERPENDICULAR TO FLUTES. ONLY LIGHT DUCT WORK (12" X 16" MAX). (1 1/2" DIA. PIPE MAX). CEILINGS MAY BE HUNG FROM SUCH INSTALLATIONS. HANGERS SHALL BE TWO FLUTES APART ON

SAME DECK SPAN. 2"Ø PWP LINE RUNNING WEST OF GRID F BETWEEN 4 AND 10 ON LEVEL 6 WITH 3'-6" O.C. SUPPORT SPACING IS PERMITTED. 10. CONTINUOUS INSPECTION IS REQUIRED FOR ALL DECK WELDING IN THE FIELD.

HELEN DILLER FAMILY CANCER RESEARCH BUILDING

RAFAFI VIÑOLY ARCHITECTS PC 50 VANDAM STREET NEW YORK, NY 10013 TEL: 212 924 5060 FAX: 212 924 5858 ASSOCIATE ARCHITECT GICKLHORN LAZZAROTTO PARTNERS 645 HARRISON STREET, SUITE 101 SAN FRANCISCO, CA 94107

TEL: 415 512 7795 FAX: 415 512 7796 STRUCTURAL ENGINEER: NABIH YOUSSEF AND ASSOCIATES 800 WILSHIRE BOULEVARD, SUITE 200 LOS ANGELES, CA 90017 TEL: 213 362 0707 FAX: 213 618 3099 M/E/P ENGINEER: FLACK + KURTZ. INC.

405 HOWARD STREET, SUITE 500 SAN FRANCISCO CA 94105 TEL: 415 398 3833 FAX: 415 433 5311 TELECOM, A/V, SECURITY, ACOUSTICS AND VIBRATION: SHEN. MILSOM AND WILKE, INC. 33 NEW MONTGOMERY STREE

SAN FRANCISCO. CA 94105 TEL: 415 391 7610 FAX: 415 391 0171 CIVIL ENGINEER: KCA ENGINEERS, INC. 318 BRANNAN STREET SAN FRANCISCO. CA 94107 TEL: 415 546 7111 FAX: 415 546 9472

LABORATORY PLANNER

IRVINE, CA 92612

GPR PLANNERS COLLABORATIVE

2402 MICHELSON DRIVE, SUITE 160

TEL: 949 553 9181 FAX: 949 553 9182

UNIVERSITY OF CALIFORNIA SAN FRANCISCO

FIRE MARSHAL

CDF-OFFICE OF STATE FIRE MARSHAL

APPROVED

Approval of this plan does not authorize or approve

One set of approved plans shall be available on the

any omission or deviation from applicable regula-

tions. Final approval is subject to field inspection

project site at all times.

Reviewed by: _



UCSF PROJECT NUMBER: MO431 UCSF FILE NUMBER: 10649 RVA PROJECT NUMBER: 00439.00

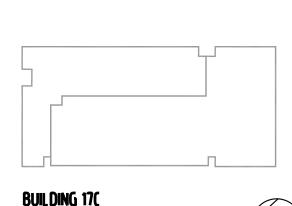
VE01 2005/07/12



CĎ01 2004/06/04 DD05 2003/04/21 DD04 2003/03/31 DD03 2003/03/14 RECORD DOCUMENTS 2009/10/01 <u>DD02</u> 2003/02/14 DD01 2003/01/31 BD02 2005/11/04

ISSUE ISSUE ISSUE ISSUE ISSUE

NO. DATE NO. DATE NO. DATE



IF THIS DRAWING IS NOT 36" X 48" IT IS A REDUCED PRINT

REFER TO GRAPHIC SCALE

KEY PLAN AND NORTH SIGN

GENERAL NOTES