BID ADDENDUM #4
07.27.2022

NARRATIVE OF CHANGE

SHEET NO.	DESCRIPTION
G-001	Sheet index updated
G-002	Interior entrance and storefront deferred submittal information and Alternate Design, Materials, & Methods of Construction updated
G-004	North wall rating updated to 1 hour
AS100	Building dimensions added for clarity
AS101	North fence, loading dock and main entry bollard details added.
A-100	Dock leveler clarifications
A-101	Shaft opening clarifications
A-102	Shaft opening clarifications
A-103	Shaft opening clarifications
A-110	North wall rating updated to 1 hour, fence and detail reference callouts added, wall base detail reference added at Reception, stair ratings clarified.
A-111	North wall rating updated to 1 hour, stair ratings clarified.
A-112	Doors changed at X31-1 & X60-1, north wall rating updated to 1 hour, stair ratings clarified, patio gate detail callout updated.
A-113	Parapet details added, north wall rating updated to 1 hour.
AC110	Ceiling detail callouts updated, ceiling height sheet note updated, ceiling types updated.
AC111	Ceiling height updated at Elevator Lobby Drink Alcove, ceiling detail callouts updated, ceiling height sheet note updated, ceiling types updated.
AC112	Ceiling height updated at Elevator Lobby Drink Alcove, ceiling detail callouts updated, ceiling height sheet note updated, ceiling types updated.
A-200	Bird frit extents clarified.
A-201	Bird frit extents clarified, CMU size clarified to 6".
A-402	Mop holder added.
A-411	North wall rating updated to 1 hour.
A-412	Soffit/wall detail added.
A-413	Stair fire rating terminations to curtainwall updated.
A-421	Sheet notes updated for reference for doors,windows, storefronts.
A-444	Student lounge wing wall/soffit details updated to light gauge framing and finishes.
A-450	Sheet notes updated for reference for doors,windows, storefronts.
A-460	Sheet notes updated for reference for doors,windows, storefronts.
A-461	Sheet notes updated for reference for doors,windows, storefronts.
A-462	Sheet notes updated for reference for doors,windows, storefronts.
A-463	Sheet notes updated for reference for doors,windows, storefronts.
A-464	Sheet notes updated for reference for doors,windows, storefronts. Whiteboard finish reference added to elevations.
A-465	Sheet notes updated for reference for doors,windows, storefronts.
A-466	Sheet notes updated for reference for doors,windows, storefronts.
A-501	Details A1/B1 updated for firesafing termination connection and drywall finishing to curtainwall.
A-502	Detail C1 updated for firesafing termination connection and drywall finishing to curtainwall.
A-512	Detail C1 updated for parapet conditions. New detail C3 added for elevator overrun parapet condition. Detail A2 updated for cement plaster soffit at North Stair.
A-520	Framing header schedule updated.
A-541	Detail C2 detail updated for scupper condition.
A-552	Partition acoustical termination at curtainwall mullion details updated. Head of wall details added at concrete slab and metal deck conditions at top of shear walls.
A-571	Detail C4 updated for drywall grid conditions. Details D4/D5 removed from project.
A-572	Details B2/B3 updated for soffit conditions. Detail C3 updated for ceiling termination trim detail.

BID ADDENDUM #4
07.27.2022

NARRATIVE OF CHANGE

SHEET NO.	DESCRIPTION
A-573	Details C4/C5/D4 updated for ceiling trim requirements. Details D1/D2 updated for ceiling clearances. Detail A2 updated for bracing requirements.
A-580	New detail A2 added for wall base condition at WPL1 locations.
A-601	Door sizes,rating, and frame material, finish, glazing types updated.
A-602B	Sheet updated to remove aluminum doors.
A-603B	New sheet added for aluminum doors.
A-610	Finish schedule updated for acoustical and wood ceiling systems, concrete finishes, and wall panels.
A-611	Corner guard locations clarified.
A-612	Corner guard locations clarified.
A-613	Corner guard locations clarified.
SG100	Seismic design criteria updated.
S110	4" CMU reinforcement requirements updated.
S111	4" CMU reinforcement requirements updated.
S112	4" CMU reinforcement requirements updated, Type F guardrail/davit combined embed at roof patio clarified.
S122	Reinforcement requirements at column line D, E.7 updated.
S123	Reinforcement requirements at column line D, E.7 updated.
S124	Reinforcement requirements at column line D, E.7 updated.
S125	Reinforcement requirements at column line D, E.7 updated.
S126	Reinforcement requirements at column line D, E.7 updated.
S127	Reinforcement requirements at column line E.7 updated.
S304	Drilled Pier schedule updated for P3/P4 pier lengths.
S501	Embed base plate type 'F' added.
FP1.0	Tyco CWS head added to sprinkler schedule.
FP2.1	Added window protection head in Classroom 1. L1 Sprinkler Schedule Updated.
FP3.1	Added window protection head in Classroom 1.
FP4.2	Added window protection head in Classroom 1.
Specifications	
00 01 10	Spec 09 67 23 removed from project. Appendix E added to project.
01 91 00	Formatting updated for clarity.
03 30 10	Spec updated for formwork, mockup, and finishing requirements.
03 37 00	Spec updated to align with finish schedule.
07 21 13	Manufacturer updated, curtain wall board insulation updated, mechanical fastener requirements updated.
07 26 00	Termination tape requirements added.
07 27 26	Fluid applied vapor permeable membrane air barrier requirement updated. High temperature flashing membrane requirements added.
07 54 23	Rigid insulation and welded seam control requirements updated. Air/vapor barrier(retarder) and protection requirements added.
08 41 13	Related sections updated. Deferred submittal requirements added. Product requirements clarified.
08 71 00	Electro-Mechanical Automatic Operators and keying requirements clarified.
08 71 13	Related sections updated. Swing door operator, activation, and installation requirements updated.
08 80 00	Glazing type GL-09 removed from project. GL-10 requirements updated.
08 91 00	Wall louver, component, fabrication, and finish requirements updated.
09 30 00	Ceramic tile products updated to align with finish schedule.
09 51 00	Acoustic-type ceiling panel installation requirements and ceiling system schedule updated.
09 54 23	Linear metal ceiling materials and finishes updated
09 54 26	Linear wood panel product and alternate manufacturers updated.
09 65 00	Resilient flooring product and base information updated.
09 68 13	Tile carpeting product requirements updated.
09 96 00	High performance coating scope and related sections updated.

BID ADDENDUM #4
07.27.2022

NARRATIVE OF CHANGE

SHEET NO.	DESCRIPTION
10 11 00	Tack strips and acoustical panels added to specification
10 14 36	Signage review durations updated.
10 28 00	Scope location changed from janitor to custodial closets and CFCI requirements updated. Baby changing station and soap dispenser product updated.
11 30 13	Coffee machine product information updated.
Appendix E	New spec section for Sanitary Accessory Cut Sheets

XL CONSTRUCTION

Peralta Community College District: Berkeley City College - West

Project #4668
Memo - Addendum #4
July 28, 2022

The following modifications have been made to the bidding documents:

1) Revised Drawing:

   a. Folder Name: 09 – Addendum No. 04 (All Trades)

   b. File Name: 07282022_Addendum 4 Drawings.pdf

2) Revised Specifications:

   a. Folder Name: 09 – Addendum No. 04 (All Trades)

   b. File Name: 07282022_Addendum 4 Specifications.pdf

3) Narrative of Changes:

   a. Folder Name: 09 – Addendum No. 04 (All Trades)

   b. File Name: 07282022_Bid Addendum 4 Narrative of Changes.pdf

BCC WEST

2118 MILVIA STREET
BERKELEY, CA. 94704

DSA FILE #1-C1, APPL #01-120312

DSA SUBMITTAL & BID SET
07/18/2022

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Alameda, Ca. 94501

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CONTACT: Ray Enriquez,
Theo Hartman and Nick Peters

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Lerch Bates & Associates
901 Battery Street
San francisco, Ca. 94111

PHONE: (415) 951-0670
CONTACT: Joey Bastelli / Arnold Pinkney

FACADE ACCESS
Versatile Systems
28258 Stanford Ave.,
Valencia, CA 91355

PHONE: (661) 877-4446
CONTACT: Spencer Oryan

ELECTRICAL
Rosendin Electric
2121 Oakdale Ave.
San francisco, Ca. 94124

PHONE: (415) 495-9300
CONTACT: Mitchel Shortlidge
Matthew Tennant

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Beyond Efficiency
P.O. Box 9279
Jackson, Wy. 83002

PHONE: (415) 236-1333
CONTACT: Katy Hollbacher / Dan Johnson

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Oakland, Ca. 94612

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DRAWING INDEX

DRAWING INDEX

DRAWING INDEX

DRAWING INDEX

TOTAL SHEET COUNT:: 476

DSA APPROVAL

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Tel 510 899 6400
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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
COVER SHEET

SCALE:
PROJECT NUMBER: 21415

SHEET NUMBER: G-001

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:30:46 AM

ANNOTATIONS

&	AND	(E)	EXISTING	KIT	KITCHEN	REINF	REINFORCED
@	AT	E	EAST	KPL	KICK PLATE	REQ	REQUIRE
Ø	DIAMETER OR ROUND	EA	EACH	KWY	KEYWAY	REQD	REQUIRED
#	POUND OR NUMBER	ECU	EVAPORATIVE COOLING UNIT			REST	RESTROOM
+/-	PLUS OR MINUS	ED	EMERGENCY DEPARTMENT			REV	REVISION
A/C	AIR CONDITION	EF	EACH FACE OR EXTERIOR FINISH	L	ANGLE OR LENGTH	RFG	ROOFING
AAP	ALARM ANNUNCIATOR PANEL	EHD	ELECTRIC HAND DRYER	LAB	LABORATORY	RH	ROOF HATCH
AB	ANCHOR BOLT	EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	LAD	LADDER	RLG	RAILING
ABC	AGGREGATE BASE COURSE	EJ	EXPANSION JOINT	LAM	LAMINATE	RM	ROOM
AC	ASBESTOS CEMENT OR	EL	ELEVATION	LAM GL	LAMINATED GLASS	RND	ROUND
	ASPHALTIC CONCRETE	ELAST	ELASTOMERIC	LAV	LAVATORY	RO	ROUGH OPENING
ACOUS	ACOUSTIC	ELAST CTG	ELASTOMERIC COATING	LED	LIGHT EMITTING DIODE	RS	ROUGH SAWN
ACP	ASPHALTIC CONCRETE PAVING	ELEC	ELECTRICAL	LF	LINEAR FOOT	R&S	ROD AND SEALANT
ACS DR	ACCESS DOOR	ELEV	ELEVATOR	LIB	LIBRARY	RTF	RUBBER TILE FLOOR
ACS FLR	ACCESS FLOOR	EMER	EMERGENCY	LIN	LINEAR	RTG	RATING
ACT	ACOUSTICAL CEILING TILE	ENAM	ENAMEL	LKR	LOCKER	RV	ROOF VENT
AD	AREA DRAIN	ENCL	ENCLOSURE	LNDSCP	LANDSCAPE	RWD	REDWOOD
ADA	AMERICANS WITH DISABILITIES ACT	ENGR	ENGINEER	LT	LIGHT	RWL	RAIN WATER LEADER
ADH	ADHESIVE	EP	EDGE OF PAVEMENT OR ELECTRICAL PANEL	LT GA	LIGHT GAUGE		
ADJ	ADJACENT OR ADJUSTABLE	EPB	ELECTRICAL PANEL BOARD	LTG	LIGHTING		
AFF	ABOVE FINISHED FLOOR	EQ	EQUAL	LTG PNL	LIGHTING PANEL	S	SOUTH
AGGR	AGGREGATE	EQUIP	EQUIPMENT	LVR	LOUVER	SA	SUPPLY AIR
ALT	ALTERNATE	ESMT	EASEMENT			SADM	SELF-ADHERED DETAL MEMBRANE
ALUM, AL	ALUMINUM	EST	ESTIMATE			SAFM	SELF-ADHERED FLASHING MEMBRANE
ANOD	ANODIZED	EW	EACH WAY	MACH	MACHINE	SBSTR	SUBSTRATE
AO	AUTO OPERATOR	EWC	ELECTRIC WATER COOLER	MAS	MASONRY	SC	SOLID CORE
APPROX	APPROXIMATE	EWH	ELECTRIC WATER HEATER	MATL	MATERIAL	SCD	TOILET SEAT COVER DISPENSER, SEE CIVIL
ARCH	ARCHITECTURAL	EXIST	EXISTING	MAX	MAXIMUM		DRAWINGS
ASB	ASBESTOS	EXP	EXPANSION OR EXPOSED	MB	MACHINE BOLT	SCHED	SCHEDULE
ASPH	ASPHALT	EXP BT	EXPANSION BOLT	MBR	MEMBER	SCP	SCUPPER
ASSY	ASSEMBLY	EXT	EXTERIOR	MC	MEDICINE CABINET	SCWD	SOLID CORE WOOD DOOR
AV	AUDIO VISUAL OR AIR VENT			MECH	MECHANICAL	SD	SMOKE DETECTOR, SOAP DISPENSER,
AVG	AVERAGE			MED	MEDIUM		OR STORM DRAIN
AWT	ACOUSTICAL WALL TREATMENT	FA	FIRE ALARM	MEMB	MEMBRANE	SECT	SECTION
		FAM	FLUID APPLIED MEMBRANE	MFD	MANUFACTURED	SED	SEE ELECTRICAL DRAWINGS
		FAAP	FIRE ALARM ANNUNCIATOR PANEL	MFR	MANUFACTURER	SF	SQUARE FOOT
BAT	BATTEN	FACP	FIRE ALARM CONTROL PANEL	MH	MAN HOLE	SGL	SINGLE
BB	BASEBOARD OR BULLETIN BOARD	FCTY	FACTORY	MID	MIDDLE	SH	STAINLESS STEEL SHELF
BD	BOARD	FD	FLOOR DRAIN	MIN	MINIMUM	SHR	SHOWER
BITUM	BITUMINOUS	FDTN	FOUNDATION	MIRR	MIRROR	SHT	SHEET
BKBD	BACKBOARD	FE	FIRE EXTINGUISHER	MISC	MISCELLANEOUS	SHV	SHELVING
BKG	BACKING	FEC	FIRE EXTINGUISHER CABINET	ML	METAL LATH	SIG	SIGNAL
BLDG	BUILDING	FF	FINISHED FACE	MLWK	MILLWORK	SIM	SIMILAR
BLK	BLOCKING	FH	FIRE HYDRANT	MO	MASONRY OPENING	SKLT	SKYLIGHT
BLT IN	BUILT-IN	FHC	FIRE HOSE CABINET	MOD BIT	MODIFIED BITUMIN	SLD	SEE LANDSCAPE DRAWINGS
BM	BEAM	FHMS	FLAT HEAD MACHINE SCREW	MS	MACHINE SCREW OR MOP SINK	SLNT	SEALANT
BO	BY OWNER	FHWS	FLAT HEAD WOOD SCREW	MTD	MOUNTED	SM	SHEET METAL
BP	BUILDING PAPER	FIN FLR	FINISHED FLOOR	MTL	METAL	SMD	SEE MECHANICAL DRAWINGS
BRG	BEARING	FIN GRD	FINISHED GRADE	MULL	MULLION	SMS	SHEET METAL SCREW
BRZ	BRONZE	FIXT	FIXTURE			SND	SANITARY NAPKIN DISPENSER
BUR	BUILT-UP ROOFING	FLASH	FLASHING			SND INS	SOUND INSULATION
		FLDG	FOLDING	(N)	NEW	SNDU	SANITARY NAPKIN DISPOSAL UNIT
		FLG	FLANGE	N	NORTH	SP	STANDPIPE
C&G	CURB AND GUTTER	FLR	FLOOR	NA	NOT APPLICABLE	SPD	SEE PLUMBING DRAWINGS
CAB	CABINET	FLR REG	FLOOR REGISTER	NAT	NATURAL	SPEC	SPECIFICATION
CB	CATCH BASIN	FLR SK	FLOOR SINK	NF	NEAR FACE	SPKLR	SPRINKLER
CC	CENTER TO CENTER	FLUOR	FLUORESCENT	NIC	NOT IN CONTRACT	SPKR	SPEAKER
CEM PLAS	CEMENT PLASTER	FO	FINISHED OPENING	NKL	NICKEL	SPT	SPECIMEN PASS-THROUGH
CER	CERAMIC	FO_	FACE OF	NM	NON METALLIC	SQ	SQUARE
CFCI	CONTRACTOR FURNISHED /	FR	FIRE RATING OR FIRE RESISTANT	NO	NUMBER	SS	SANITARY SEWER, SERVICE SINK,
	CONTRACTOR INSTALLED	FRG	FIBER REINFORCED GYPSUM	NOM	NOMINAL		STANDING SEAM, OR STORM SEWER
CFOI	CONTRACTOR FURNISHED /	FRMG	FRAMING	NR	NOISE REDUCTION	SSD	SEE STRUCTURAL DRAWINGS
	OWNER INSTALLED	FRP	FIBERGLASS REINFORCED PLASTIC	NTS	NOT TO SCALE	SST	STAINLESS STEEL
CFLG	COUNTERFLASHING	FRZ	FREEZER			STD	STANDARD
CG	CORNER GUARD	FS	FULL SCALE OR SIZE, FIRE SPRINKLER			STL	STEEL
CH	COAT HOOK	FSTNR	FASTENER	O/	OVER	STOR	STORAGE
CI	CAST IRON	FT	FEET	OA	OVERALL	STRUC	STRUCTURAL
CIP	CAST IN PLACE	FTG	FOOTING	OC	ON CENTER	SURF	SURFACE
CJ	CONSTRUCTION JOINT OR	FURG	FURRING	OCEW	ON CENTER EACH WAY	SUSP	SUSPENDED
	CONTROL JOINT	FURN	FURNISH OR FURNITURE	OCC	OCCUPANCY	SYS	SYSTEM
CL	CENTERLINE	FUT	FUTURE	OD	OUTSIDE DIAMETER OR DIMENSION		
CLG	CEILING	FWC	FABRIC WALL COVERING	OF	OUTSIDE FACE		
CLO	CLOSET			OFCI	OWNER FURNISHED /	T	TREAD
CLR	CLEAR				CONTRACTOR INSTALLED	T&G	TOUNGUE AND GROOVE
CMPTR	COMPUTER	G DISP	GARBAGE DISPOSER	OFOI	OWNER FURNISHED /	TB	THROUGH BOLT
CMU	CONCRETE MASONRY UNIT	GA	GAUGE		OWNER INSTALLED	TBD	TO BE DETERMINED
CNTR	COUNTER	GALV	GALVANIZED	OFF	OFFICE	TBR	TO BE REMOVED
CO	CASED OPENING OR CLEANOUT	GB	GRAB BAR	OH	OVERHANG	TBRL	TO BE RELOCATED
COL	COLUMN	GC	GENERAL CONTRACTOR	OPNG	OPENING	TD	TOWEL DISPENSER OR TRENCH DRAIN
CONC	CONCRETE	GDR	GUARD RAIL	OPP	OPPOSITE	TDR	TOWEL DISPENSER / RECEPTACLE
COND	CONDITION	GEN	GENERAL	OPT	OPTIONAL	TEL	TELEPHONE
CONN	CONNECT OR CONNECTION	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	OR	OPERATING ROOM	TEMP	TEMPORARY
CONSTR	CONSTRUCTION	GL	GLASS	ORD	OVERFLOW ROOF DRAIN	TER	TERRAZO
CONT	CONTINUOUS	GL BLK	GLASS BLOCK	ORIG	ORIGINAL	TH	THICK OR THICKNESS
CONTR	CONTRACT OR CONTRACTOR	GLU LAM	GLU LAMINATED WOOD	OSHA	OCCUPATIONAL SAFETY	THRES	THRESHOLD
COORD	COORDINATE	GLZ	GLAZING		AND HEALTH ADMINISTRATION	TMPD GL	TEMPERED GLASS
CORR	CORRIDOR	GPC	GYPSUM PLASTER CEILING	OVFL	OVERFLOW	TO_	TOP OF _
COTG	CLEANOUT TO GRADE	GRTG	GRATING			TP	TELEPHONE POLE
CP	CONTROL PANEL	GSM	GALVANIZED SHEET METAL			TRANS	TRANSPARENT
CPT	CARPET OR	GT	GREASE TRAP	PA	PUBLIC ADDRESS	TPD	TOILET PAPER DISPENSER
	COMMON PATH OF TRAVEL	GV	GRAVITY VENT	PAR	PARAPET	TRTD	TREATED
CR	CARD READER	GYM	GYMNASIUM	PB	PANEL BOARD, PANIC BAR, OR PULL BOX	TS	TUBE STEEL
CSK	COUNTERSUNK	GYP BD	GYPSUM BOARD	PBD	PARTICLE BOARD	TSTAT	THERMOSTAT
CT	CERAMIC TILE	GYP PLAS	GYPSUM PLASTER	PC	PORTLAND CEMENT	TV	TELEVISION
CTR	CENTER			PCP	PORTLAND CEMENT PLASTER	TYP	TYPICAL
CW	COLD WATER			PERF	PERFORATED		
		HB	HOSE BIB	PERIM	PERIMETER		
		HC	HANDICAP OR HOSE CABINET	PERM	PERMANENT	UNFIN	UNFINISHED
DBL	DOUBLE	HCWD	HOLLOW CORE WOOD DOOR	PERP	PERPENDICULAR	UON	UNLESS OTHERWISE NOTED
DCS	DIAPER CHANGING STATION	HD	HAND DRYER	PH	PANIC HARDWARE	UR	URINAL
DED	DEDICATED	HDBD	HARDBOARD	PL	PROPERTY LINE	UTIL	UTILITY
DEMO	DEMOLITION	HDR	HEADER	PLAM	PLASTIC LAMINATE		
DEPT	DEPARTMENT	HDW	HARDWARE	PLAS	PLASTER OR PLASTIC		
DET	DETAIL	HGR	HANGER	PLBG	PLUMBING	VAR	VARIES
DF	DRINKING FOUNTAIN	HIM	HEALTH INFORMATION MANAGEMENT	PLYWD	PLYWOOD	VB	VINYL BASE
DFJ	DEFLECTION JOINT	HLDN	HOLDDOWN	PNL	PANEL	VCT	VINYL COMPOSITION TILE
DIA	DIAMETER	HM	HOLLOW METAL	PR	PAIR	VENT	VENTILATE OR VENTILATION
DIM	DIMENSION	HNDRL	HANDRAIL	PRCST	PRECAST	VERT	VERTICAL
DISP	DISPENSER	HORIZ	HORIZONTAL	PREFAB	PREFABRICATED	VEST	VESTIBULE
DHO	DOOR HOLD OPEN	HOSP	HOSPITAL	PRELIM	PRELIMINARY	VFAT	VINYL FACED ACOUSTICAL TILE
DPTN	DEMOUNTABLE PARTITION	HP	HIGH POINT	PRKG	PARKING	VIF	VERIFY IN FIELD
DR	DOOR	HPC	HIGH-PERFORMANCE COATING	PROJ	PROJECT	VNR	VENEER
DS	DOWNSPOUT	HS	HAND SINK	PROP	PROPERTY	VR	VAPOR RETARDER
DSP	DRY STANDPIPE	HT	HEIGHT	PS	PULL STATION	VTR	VENT-THROUGH-ROOF
DW	DISHWASHER	HVY	HEAVY	PSF	POUND PER SQUARE FOOT	VWC	VINYL WALL COVERING
DWG	DRAWING	HW	HOT WATER	PSI	POUND PER SQUARE INCH	VWF	VINYL WALL FABRIC
DWR	DRAWER	HVAC	HEATING, VENTILATING, AND AIR	PT	PAINT		
			CONDITIONING	PTD	PAPER TOWEL DISPENSER		
		HYD	HYDRANT	PTN	PARTITION	W	WEST
				PTR	PAPER TOWEL RECEPTACLE	W/	WITH
				PVG	PAVING	W/O	WITHOUT
		ID	INSIDE DIAMETER	PWR	POWER	WBL	WOOD BLOCKING
		IDF	INTERMEDIATE DISTRIBUTION FRAME			WC	WALL COVERING OR WATER CLOSET
		IF	INSIDE FACE	QT	QUARRY TILE	WD	WOOD
		IN	INCH	QTY	QUANTITY	WDP	WOOD PANELING
		INC	INCANDESCENT			WGL	WIRED GLASS
		INSUL	INSULATION			WH	WATER HEATER
		INT	INTERIOR	R)	REMOVE	WM	WIRE MESH OR WATER METER
		IR	INSIDE RADIUS	R	RISER OR RADIUS	WP	WALL PROTECTION
		IWH	INSTANTANEOUS WATER HEATER	R&R	REMOVE AND REPLACE	WPT	WORKING POINT
				R&S	ROD AND SEALANT	WR	WASTE RECEPTACLE OR WATER RESISTANT
				RB	RUBBER BASE	WSCT	WAINSCOT
		JAN	JANITOR	RD	ROOF DRAIN	WT	WEIGHT
		J-BOX	JUNCTION BOX	RDG INS	RIGID INSULATION	WWF	WELDED WIRE MESH
		JT	JOINT	REF	REFERENCE		
				REFL	REFLECTED		
				REFR	REFRIGERATOR		
				REG	REGISTER		

REFERENCE SYMBOLS

REFERENCE INDICATOR - COMMON

DETAIL NUMBER ON SHEET TYP. — B3
SHEET NUMBER TYP. — A401

DETAILS

PARALLEL VIEW

DETAIL AREA
DETAIL NUMBER TYP. — C3
SHEET NUMBER TYP. — A501

PERPENDICULAR VIEW

VIEW DIRECTION
DETAIL NUMBER TYP. — B2
SHEET NUMBER TYP. — A501

ELEVATIONS

EXTERIOR ELEVATION

VIEW DIRECTION
ELEVATION REFERENCE — A3
SHEET NUMBER TYP. — A401

INTERIOR ELEVATION

ELEVATION REFERENCE — 3
VIEW DIRECTION — A401
SHEET NUMBER TYP.

SECTIONS

BUILDING SECTION

SECTION DIRECTION — 3
SECTION REFERENCE — A301
SHEET NUMBER TYP.

3 A301

WALL SECTION

SECTION DIRECTION
SECTION REFERENCE — B2
SHEET NUMBER TYP. — A501

OTHER SYMBOLS

GRID LINES AND BUBBLES — 1 — A

REVISION — REVISION AREA — 1 — REVISION

NORTH — TRUE — N

PARTITION FIRE RATINGS

NON RATED
ONE HOUR
TWO HOUR
THREE HOUR

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL — ROOM NUMBER
WINDOW — XX — IDENTIFIER
CEILING HEIGHT — 10'-0"
WALL — 01 A 6A LEAD — 01 A 6A LEAD — WALL TYPE — WALL IS ACOUSTIC — LEAD LINING — WALL HEAD CONFIGURATION — WALL STUD SIZE
EQUIPMENT — F12 — IDENTIFIER
F12 — DESCRIPTION OR CLIENT CODE — IDENTIFIER
FURNITURE — F01 — IDENTIFIER

ROOM TAGS

ROOM — ROOM NAME — NAME — 101 — NUMBER
NAME — NAME — 101 — NUMBER — 750 SF — SQ FT — 100 — OCCUPANTS PER S.F. — B — 8 — OCCUPANTS — CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER
WS1A — MATERIAL EXTENTS ALONG WALL

CASEWORK

PL1	LOWER CABINETS
WALL	COUNTERTOP
FLOOR	UPPER CABINETS

MULTI FINISH TAG

ACT1	CEILING TYPE
PT1	WALL FINISH
RB1	BASE PRODUCT
RES1	FLOOR FINISH

NOTES

SYSTEM TAG — F1 — IDENTIFIER
KEYNOTE — 1

PROJECT DESCRIPTION

PROJECT CONSISTS OF DEMOLISHING EXISTING 3-STORY BUILDING AND CONSTRUCTING A NEW 6 STORY 59,604 GSF CLASSROOM AND ADMINISTRATION BUILDING. THE STRUCTURE IS ALL CONCRETE WITH POST-TENSIONED SLABS AND CONCRETE SHEAR WALLS. THE BUILDING IS FULL SPRINKLERED AND CONSISTS OF A2 AND B OCCUPANCIES. THE PROJECT ALSO INCLUDES A ROOFTOP PATIO. THE TOPMOST OCCUPIED FLOOR IS AT 71'-2" SO THE PROJECT IS NOT CONSIDERED A HIGHRISE.

GENERAL NOTES

1. THE CONSTRUCTION DOCUMENTS INCLUDE BUT ARE NOT LIMITED TO; THE GENERAL CONDITIONS, SUPPLEMENTAL CONDITIONS, DIVISION 1, THE MATERIAL AND PRODUCT SPECIFICATIONS. DEFINITIONS FOR THE COMPLETE CONSTRUCTION DOCUMENTS ARE DESCRIBED IN THE GENERAL AND SUPPLEMENTAL CONDITIONS. ALL OF THE CONSTRUCTION DOCUMENTS SHALL BE CONSIDERED TOGETHER AS A WHOLE FOR COMPLETE DESCRIPTION OF THE WORK.
2. THE DRAWINGS ARE DIAGRAMMATIC. INFORMATION SHOWN AT A LARGER SCALE SUPERSEDES THAT OF A SMALLER SCALE. IT IS NECESSARY TO REFER TO THE SPECIFICATIONS FOR COMPLETE DESCRIPTION OF THE BUILDING SYSTEMS.
3. EXISTING CONDITIONS ARE SHOWN FOR REFERENCE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND BE RESPONSIBLE FOR THE ACCURACY OF SUCH CONDITIONS PRIOR TO STARTING THE WORK.
4. WRITTEN DIMENSIONS TAKE PRECEDENCE. DO NOT SCALE THE DRAWINGS. IF UNABLE TO LOCATE DIMENSIONS FOR ANY ITEM OF WORK, CONSULT THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
5. VERIFY ALL DRAWING DIMENSIONS PRIOR TO STARTING THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR VARIATIONS. DO NOT PROCEED WITH THE AFFECTED OR RELATED WORK UNTIL THE DISCREPANCIES OR VARIATIONS ARE RESOLVED BY THE ARCHITECT.
6. ALL DIMENSIONS NOTED "VERIFY" AND "VIF" ARE TO BE CHECKED BY THE CONTRACTOR PRIOR TO STARTING THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR VARIATIONS.
7. THE NOTATION "TYP" CONVEYS THE MEANING THAT ALL ASSOCIATED CRITERIA FOR LIKE OR SIMILAR ITEMS BE CONSISTENT WHEREVER SUCH NOTE OCCURS.
8. THE ARCHITECT SHALL BE NOTIFIED IN WRITING OF ANY EXISTING MATERIALS SUSPECTED OF BEING HAZARDOUS. WORK CONFINED TO THE AFFECTED AREA SHALL BE SUSPENDED UNTIL APPROPRIATE STEPS TO TEST AND ABATE THE MATERIALS, AS REQUIRED.
9. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING CONDITIONS TO REMAIN. ANY EXISTING CONDITION THAT IS DAMAGED OR ALTERED DURING CONSTRUCTION SHALL BE RETURNED TO ITS PREVIOUS STATE.
10. ALL WORK SHALL BE IN ACCORDANCE WITH THE PROVISIONS OF THE CALIFORNIA CODE OF REGULATIONS AND ANY ALL GOVERNING AUTHORITIES HAVING JURISDICTION OVER THE WORK AS IDENTIFIED IN THE CONTRACT DOCUMENTS.
11. ALL DEMOLITION AND CONSTRUCTION WORK SHALL COMPLY WITH CFC CHAPTER 33 - FIRE SAFETY DURING CONSTRUCTION.
12. PER CFC 3310.1, APPROVED VEHICLE ACCESS FOR FIRE FIGHTING SHALL BE PROVIDED TO ALL CONSTRUCTION AND DEMOLITION SITES.
13. PER CFC 3312.1, AN APPROVED WATER SUPPLY FOR FIRE PROTECTION, EITHER TEMPORARY OR PERMANENT, SHALL BE MADE AVAILABLE AS SOON AS COMBUSTIBLE MATERIAL ARRIVES ON SITE.

DEFERRED SUBMITTAL

1. ELEVATOR GUIDERAIL AND SUPPORT BRACKETS
2. PER DSA IR 24-2, SECTION 08 41 13 INTERIOR ENTRANCES AND STOREFRONTS, AS FOLLOWS:

• CONNECTION DETAILS IN DEFERRED SUBMITTTAL SHALL TAKE PRECEDENCE.
• WINDOW SYSTEMS SHALL BE DESIGNED IN ACCORDANCE WITH 2019 CBC AND ASCE 7-10.
• WIND LOADS SHALL BE IN ACCORDANCE WITH CBC SECTION 1609A AND ASCE 7-10.
• WIND SPEED DETERMINED PER CBC SECTION 1609A.3 AND EXPOSURE CATEGORY DETERMINED PER CBC 1609A.4.
{NOTE FOR DSA, WIND LOADS & SPEED NOT APPLICABLE: ALL SYSTEMS SECTION 08 41 13 ARE INTERIOR TO BUILDING ENVELOPE.}
• WINDOW WALL FRAMING: OUT-OF-PLANE DEFLECTION LIMIT FOR INDIVIDUAL PANES OF GLASS SHALL BE IN ACCORDANCE WITH CBC SECTION 2409.3 (L/175, 3/4" MAX.).
• GLAZING: OUT-OF-PLANE DEFLECTION LIMIT FOR GLAZING SHALL NOT EXCEED L/60 WHERE "L" IS THE SHORTEST SPAN OF THE GLAZING.
• STORY DRIFT: SHALL BE ACCOMODATED IN EXTERIOR WALL SYSTEMS IN ACCORDANCE WITH ASCE 7 CHAPTER 13.
{NOTE FOR DSA, STORY DRIFT NOT APPLICABLE: ALL SYSTEMS SECTION 08 41 13 ARE INTERIOR TO BUILDING ENVELOPE.}
• FASTENERS: DESIGN VALUES SHALL BE BASED ON ACCEPTABLE REFERENCE STANDARDS. PRODUCT APPROVALS IN COMPLIANCE WITH DSA IR A-5 OR TESTING DONE BY THIRD PARTY TESTING LABORATORY IN ACCORDNACE WITH APPROPRIATE ASTM STANDARDS.
• THERMAL BREAKS IN ALUMINUM EXTRUSIONS ARE ACCEPTABLE IF MEETING AAMA TIR A8.
{NOTE FOR DSA, THERMAL BREAKS NOT APPLICABLE: ALL SYSTEMS SECTION 08 41 13 ARE INTERIOR TO BUILDING ENVELOPE.}
• DEFERRED SUBMITTAL SHALL BE STAMPED AND SIGNED IN ACCORDANCE WITH DSA IR A-19.

[NOTE: SECTION 08 44 13 GLAZED ALUMINUM CURTANWALLS HAS BEEN ENGINEERED AS PART OF THE ORIGINAL DSA APPLICATION AND DOES NOT REQUIRE A DEFERRED SUBMITTAL.]

ALTERNATE DESIGN, MATERIALS & METHODS OF CONSTRUCTION

PER DSA PR 18-01: REQUEST FOR ALTERNATE DESIGN, MATERIALS & METHODS OF CONSTRUCTION ("AMM"). THE FOLLOWING AMMs WERE SUBMITTED TO DSA (FORM 1-AMM) AND HAVE BEEN INCORPORATED INTO THESE CONSTRUCTION DRAWINGS AND SUBMITTED TO DSA AS SUPPORTING DOCUMENTATION:

1. AMM AMP-B.1 & B.2: REQUEST FOR ALTERNATE MEANS OF PROTECTION EXIT STAIR EXTERIOR WALL EXPOSURE PROTECTION, 2019 CBC SECTION 1023.7:
• THIS ALTERNATE MEANS OF PROTECTION DESCRIBES THE PROPOSED APPROACH TO PROTECT THE OPENINGS IN THE EXTERIOR WALLS IN CLOSE PROXIMITY TO THE NORTH AND SOUTH EXTERIOR WALLS. THE SPRINKLER PROTECTION AT THE EXTERIOR OPENING WILL PROVIDE A LEVEL OF PROTECTION EQUAL TO A RATED WALL, LIMITING THE POTENTIAL EXPOSURE HAZARD FOR THE STAIRS.

2. AMM AMP-C: REQUEST FOR ALTERNATE MEANS OF PROTECTION SOUTH STAIR GLASS WALL PROTECTION, 2019 CBC SECTIONS 1023.2 & 1023.4:
• THIS ALTERNATE MEANS OF PROTECTION DESCRIBES THE PROPOSED APPROACH TO PROTECT THE GLAZED OPENING AT LEVEL 1 OF THE SOUTH STAIR. THE SPRINKLER PROTECTION WILL PROVIDE PROTECTION FOR THE STAIR WALL EQUIVALENT TO A 2-HOUR RATED WALL.

CODE SUMMARY

PROJECT INFORMATION

PROJECT NAME — BCC West
PROJECT ADDRESS — 2118 Milvia Street, berkeley, Ca. 94704

APPLICABLE CODES

LOCAL

GENERAL — 2019 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, CALIFORNIA CODE OF REGULATIONS (C.C.R.), TITLE 24, PART 1

BUILDING — 2019 CALIFORNIA BUILDING CODE, VOLUMES 1 AND 2 (CCR TITLE 24, PART 2; PREASSEMBLED WITH 2015 INTERNATIONAL BUILDING CODE)

ELECTRICAL — 2019 CALIFORNIA ELECTRICAL CODE (CCR TITLE 24, PART 3, PREASSEMBLED WITH 2014 NATIONAL ELECTRIC CODE, NFPA)

MECHANICAL — 2019 CALIFORNIA MECHANICAL CODE (CCR TITLE 24, PART 4, PREASSEMBLED WITH 2015 UNIFORM MECHANICAL CODE, IAPMO)

PLUMBING — 2019 CALIFORNIA PLUMBING CODE (CCR TITLE 24, PART 5; PREASSEMBLED WITH 2015 UNIFORM PLUMBING CODE, IAPMO)

ENERGY — 2019 CALIFORNIA ENERGY CODE (CCR TITLE 24, PART 6)

FIRE — 2019 CALIFORNIA FIRE CODE (CCR TITLE 24, PART 9; PREASSEMBLED WITH 2006 INTERNATIONAL FIRE CODE)
2019 NFPA 13 - STANDARD FOR INSTALLATION OF AUTOMATIC FIRE SPRINKLER SYSTEMS; AS
AMENDED — 2019 NFPA 72 - NATIONAL FIRE ALARM CODE; AS AMENDED

ELEVATOR — 2019 CALIFORNIA ELEVATOR CODE

DISABILITY — 2010 AMERICANS WITH DISABILITIES ACT (28 CFR, PART 36)

WORKER SAFETY — CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF OCCUPATIONAL SAFETY AND HEALTH (CAL/OSHA) (CCR, TITLE 8)

GREEN BUILDING — 2019 CALIFORNIA GREEN BUILDING STANDARDS
2019 CALIFORNIA REFERENCED STANDARDS (CCR TITLE 24, PART 12)

OCCUPANCIES: A2 & B

CONSTRUCTION TYPE: TYPE IB - FULLY SPRINKLERED

FLOOR AREAS (GROSS): 59,604 GSF

OCCUPANT LOAD: 1,350 OCCUPANTS

REQUIRED EXIT WIDTHS STAIRS: 106.8" REQUIRED. 192" PROVIDED.

REQUIRED STAIRWAY DOOR WIDTHS: 71.2" REQUIRED. 144" PROVIDED.

NUMBER OF EXITS: 2 REQUIRED. 2 PROVIDED.

SPRINKLERS: FULLY SPRINKLERED

REQUIRED PLUMBING FIXTURES: WATER CLOSETS - 22 MALE & FEMALE REQUIRED. 27 MALE AND FEMALE PROVIDED
(INCLUDES 5 WATER CLOSETS IN PLACE OF 4 URINALS);
URINALS - 4 REQUIRED. 0 PROVIDED (ALL RESTROOMS TO BE GENER NEUTRAL).
LAVATORIES - 11 REQUIRED. 15 PROVIDED.
DRINKING FOUNTAINS - 4 REQUIRED. 12 PROVIDED.
SERVICE SINKS - 2 REQUIRED. 6 PROVIDED.
ACCESSIBLE STALLS - 9 PROVIDED.

FIRE PUMP: THE PROJECT WILL HAVE A FIRE PUMP SIZED TO OPERATE THE FIRE SPRINKLER SYSTEM. THE STANDPIPES WILL BE A MANUALLY CHARGED WET STANDPIPE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT — DANIEL D. RATCLIFF — No. C-25627 — REN. 12-31-22 — STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

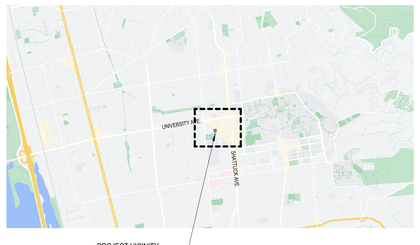
PLAN AND SECTION

EARTH
AGGREGATE BASE COURSE
CONCRETE
CONCRETE MASONRY UNIT
BRICK MASONRY
LIMESTONE, SANDSTONE, GRANITE
MARBLE
STEEL, STAINLESS STEEL (LARGE SCALE)
ALUMINUM (LARGE SCALE)
OTHER METALS (LARGE SCALE)
WOOD FRAMING - CONTINUOUS (LARGE SCALE)
WOOD FRAMING - DISCONTINUOUS (LARGE SCALE)
PLYWOOD (LARGE SCALE)
FINISH WOOD (LARGE SCALE)
SEMI-RIGID INSULATION (LARGE SCALE)
BATT INSULATION (LARGE SCALE)
MORTAR, SAND, FIREPROOFING, STUCCO, GYPSUM BOARD
TERRAZZO (LARGE SCALE)
COMPOSITE BOARD (LARGE SCALE)
ACOUSTIC TILE (LARGE SCALE)
PROTECTION BOARD (LARGE SCALE)
CERAMIC TILE (LARGE SCALE)
GLASS (LARGE SCALE)
THERMA -FIBER

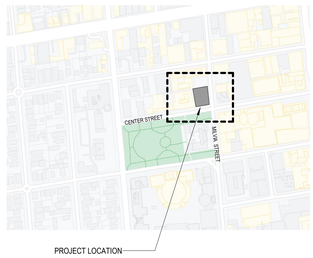
ELEVATION

PANEL FORMED CONCRETE
SCREEN WALL METAL PANEL
METAL PANEL
VISION GLASS, G1
SPANDREL GLASS, G1B

VICINITY MAP



LOCATION MAP



PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

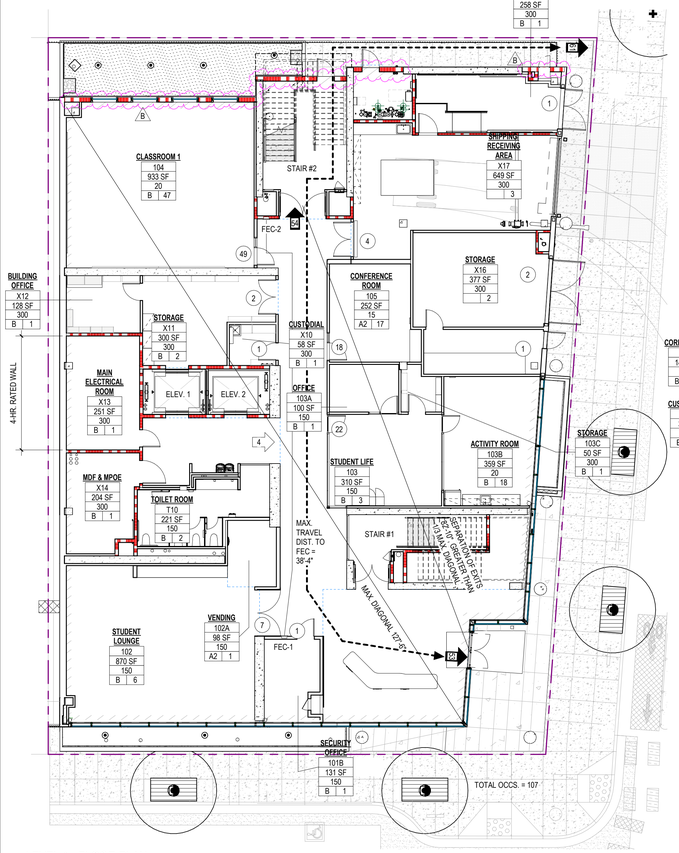
ABBREVIATIONS, NOTES, VICINITY MAP AND LOCATION MAP

SCALE: As indicated
PROJECT NUMBER: 21415

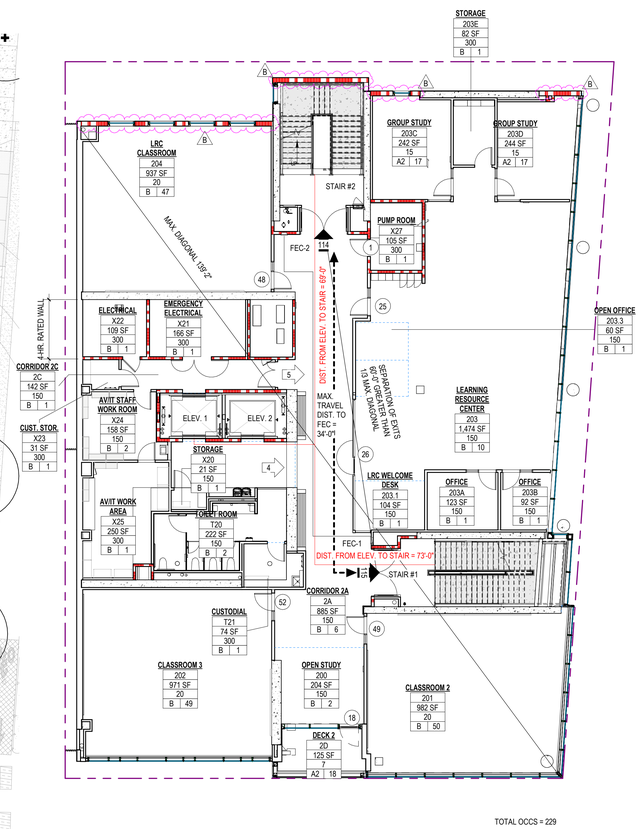
SHEET NUMBER: G-002

07/18/2022 DSA SUBMITTAL & BID SET

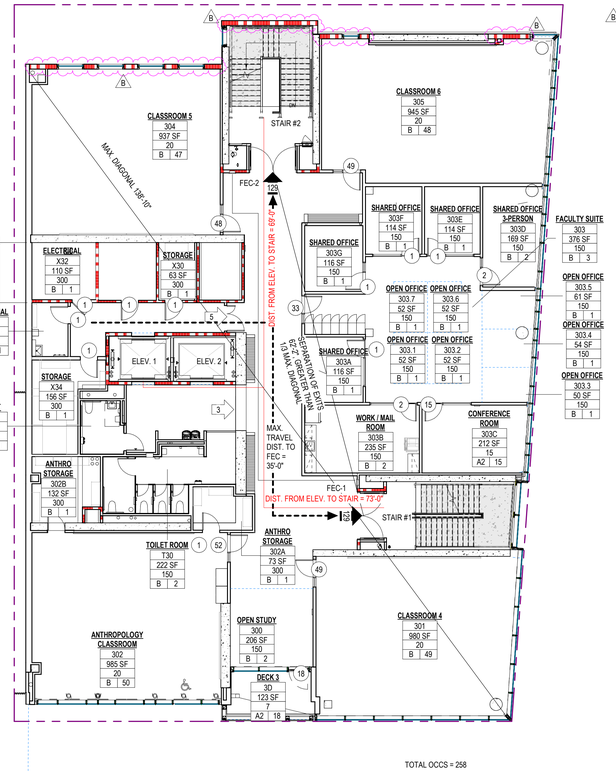
7/26/2022 9:33:50 AM



C1 LEVEL 1 - FLOOR PLAN
3/32" = 1'-0"



C2 LEVEL 2 - FLOOR PLAN
3/32" = 1'-0"



C3 LEVEL 3 - FLOOR PLAN
3/32" = 1'-0"

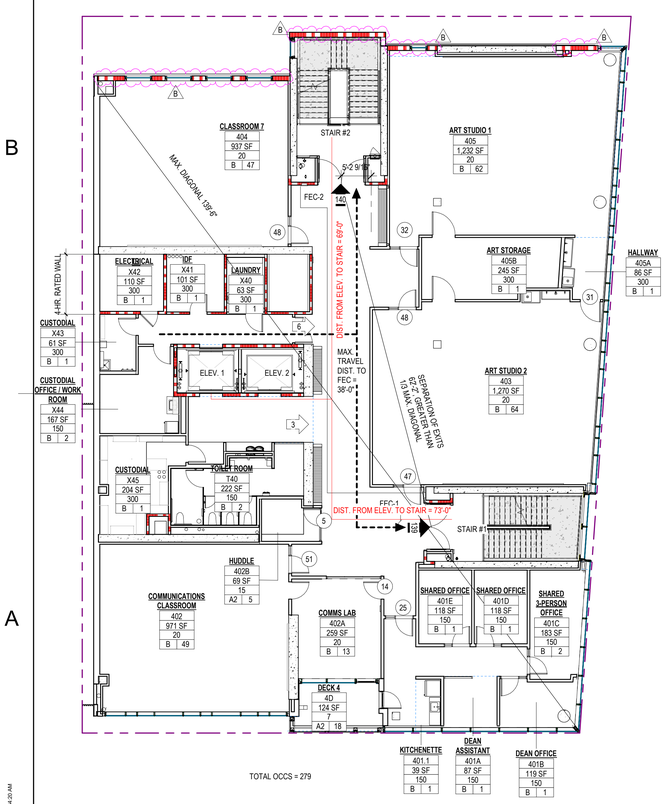
FIRE LIFE SAFETY LEGEND

WALL RATINGS AND PROTECTIONS

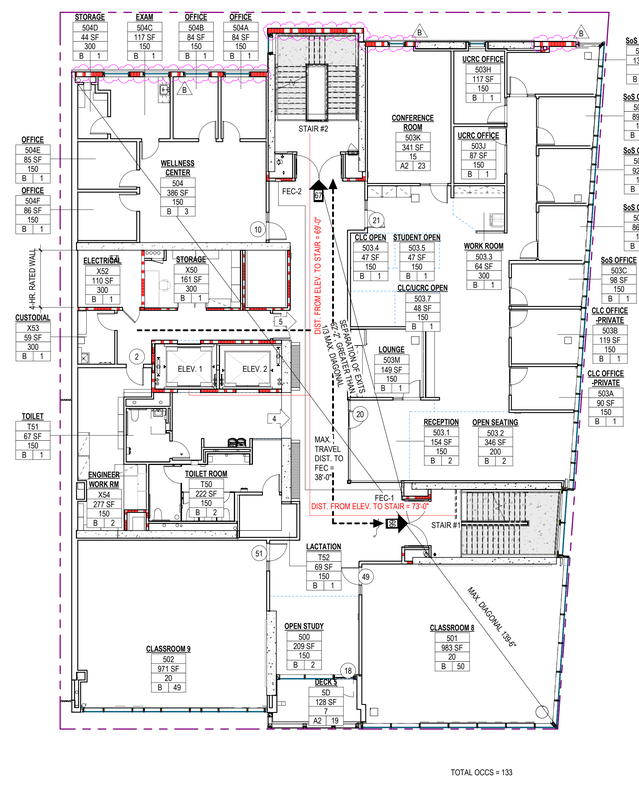
- NON RATED PARTITION
- 1 HOUR RATED PARTITION/WALL
- 2 HOUR RATED PARTITION

TAGS

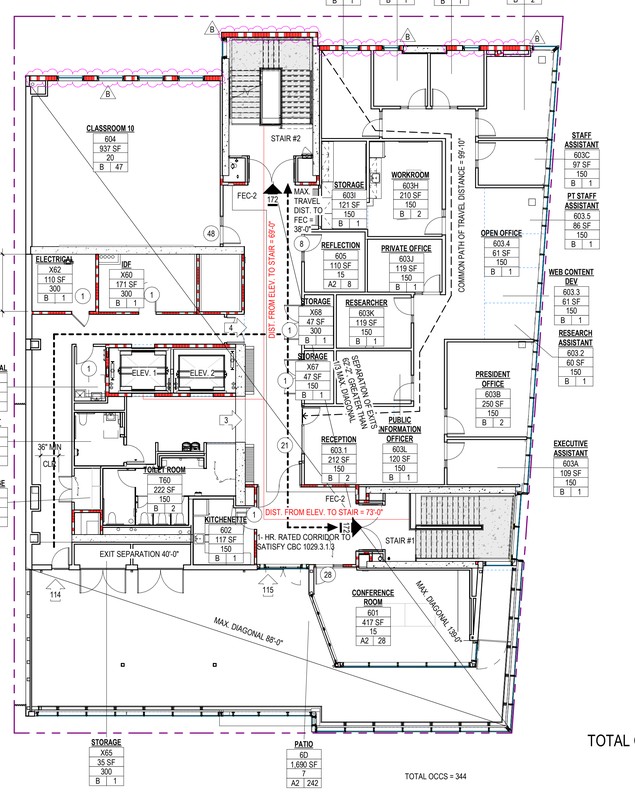
- NAME — ROOM NAME
- 101 — ROOM NUMBER
- 750 SF — ROOM SQUARE FOOTAGE
- 100 — OCCUPANCY LOAD FACTOR
- B — CODE USE CLASSIFICATION (CHAPTER 3)
- 8 — NUMBER OF OCCUPANTS
- 10 — # OF OCCUPANTS AT DOOR OR AT HALL
- 10 — ASSUMED DIRECTION OF TRAVEL EXIT ACCESS
- 4 — # OF OCCUPANTS AT DOOR
- REQUIRED EXIT
- ASSUMED DIRECTION OF TRAVEL EXIT ACCESS
- 255 — # OF OCCUPANTS AT EXIT
- EGRESS: COMMON PATH OF TRAVEL



A1 LEVEL 4 - FLOOR PLAN
3/32" = 1'-0"



A2 LEVEL 5 - FLOOR PLAN
3/32" = 1'-0"



A3 LEVEL 6 - FLOOR PLAN
3/32" = 1'-0"

TOTAL OCCS.: 1350

DSA APPROVAL

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LICENSED ARCHITECT
RONALD D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FIRE AND LIFE SAFETY PLAN

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: G-004

07/18/2022 DSA SUBMITTAL & BID SET

7/25/2022 9:34:20 AM

1 SITE PLAN
1" = 10'-0"

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

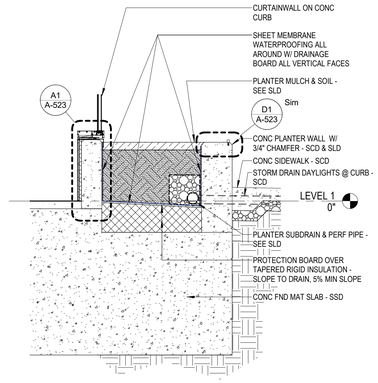
SHEET TITLE:

SITE PLAN

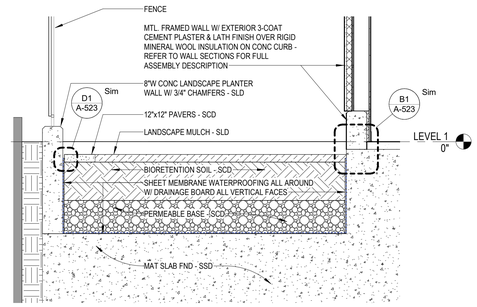
SCALE: 1" = 10'-0"
PROJECT NUMBER: 21415

SHEET NUMBER: AS100

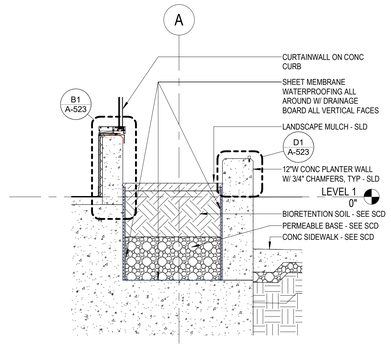
07/18/2022 DSA SUBMITTAL & BID SET



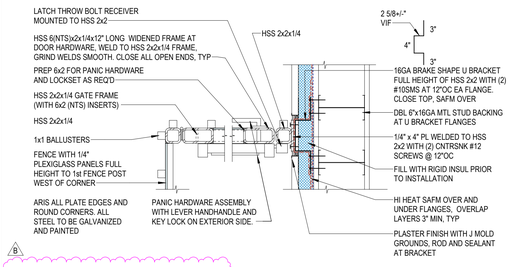
D5 LANDSCAPE PLANTER SECTION
1/2" = 1'-0"



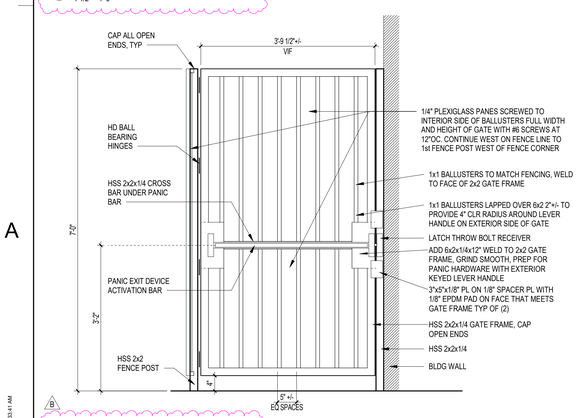
C5 BIORETENTION 1 SECTION
1/2" = 1'-0"



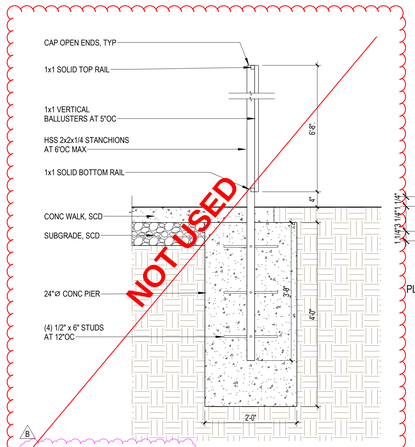
B5 BIORETENTION 2 SECTION
1/2" = 1'-0"



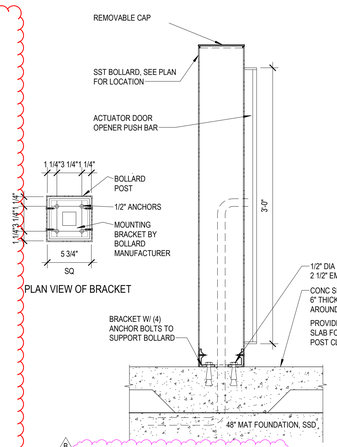
B1 NORTH FENCE GATE PLAN DETAIL
1 1/2" = 1'-0"



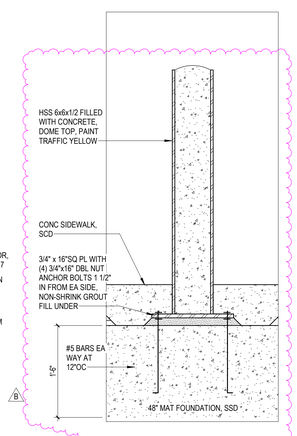
A1 NORTH FENCE GATE ELEVATION
3/4" = 1'-0"



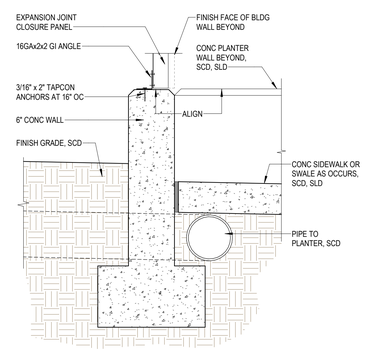
A2 NORTH FENCE SECTION
3/4" = 1'-0"



A3 ACTUATOR BOLLARD POST
1 1/2" = 1'-0"



A4 BOLLARD
1" = 1'-0"



A5 WEST EXPANSION JOINT AT GRADE
1 1/2" = 1'-0"

DSA APPROVAL

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ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
SITE DETAILS

SCALE: As indicated
PROJECT NUMBER: 21415

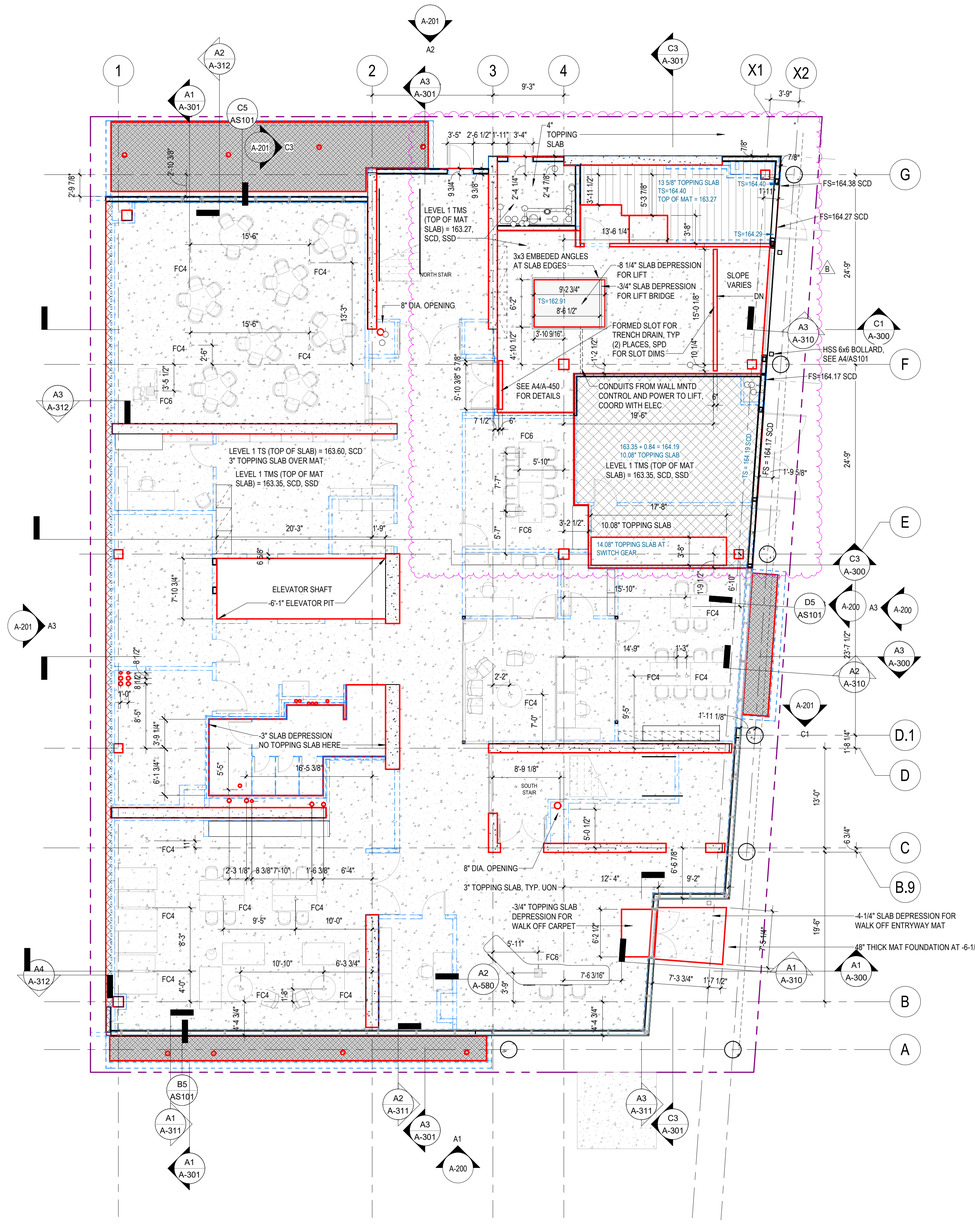
SHEET NUMBER: AS101

07/18/2022 DSA SUBMITTAL & BID SET

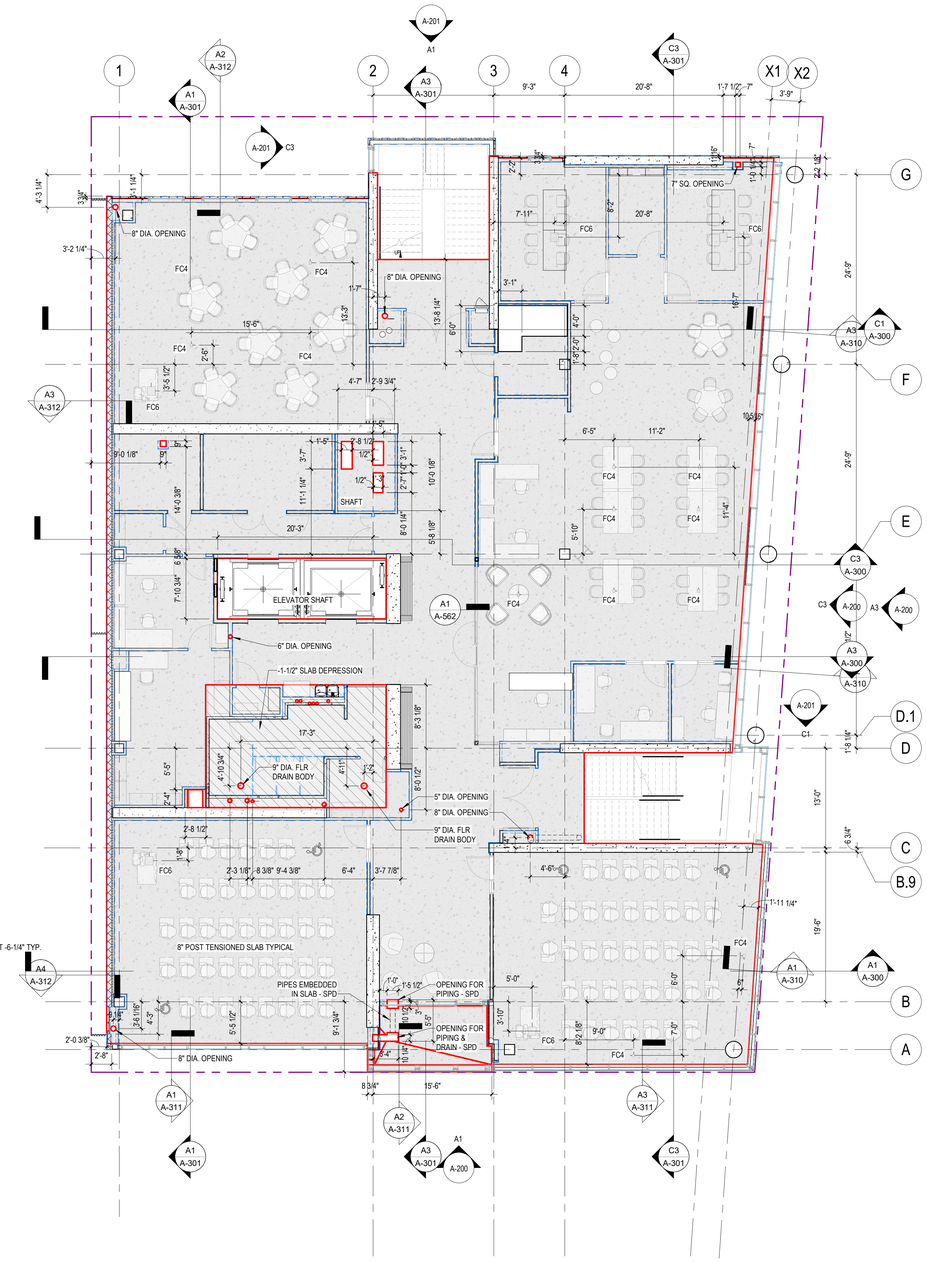
7/26/2022 9:30:41 AM

SLAB LEGEND

- 3" TOPPING SLAB OR MAT SLAB AS NOTED
- 7" TOPPING SLAB
- -8 1/4" SLAB DEPRESSION
- 7.56" TOPPING SLAB
- 5" TOPPING SLAB
- 1-1/2" SLAB DEPRESSION
- MAT SLAB AT -3"
- 8" PT SLAB
- EOS BOUNDARY, RED WHEN PRINTED IN COLOR
- INTERIOR PARTITIONS, SEE FLOOR PLANS
- PROPERTY BOUNDARY, SCD



A1 LEVEL 1 - EDGE OF SLAB PLAN
1/8" = 1'-0"



A3 LEVEL 2 - EDGE OF SLAB PLAN
1/8" = 1'-0"

DSA APPROVAL

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Emeryville, CA 94608
Tel 510 899 6400
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LICENSED ARCHITECT RONALD D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

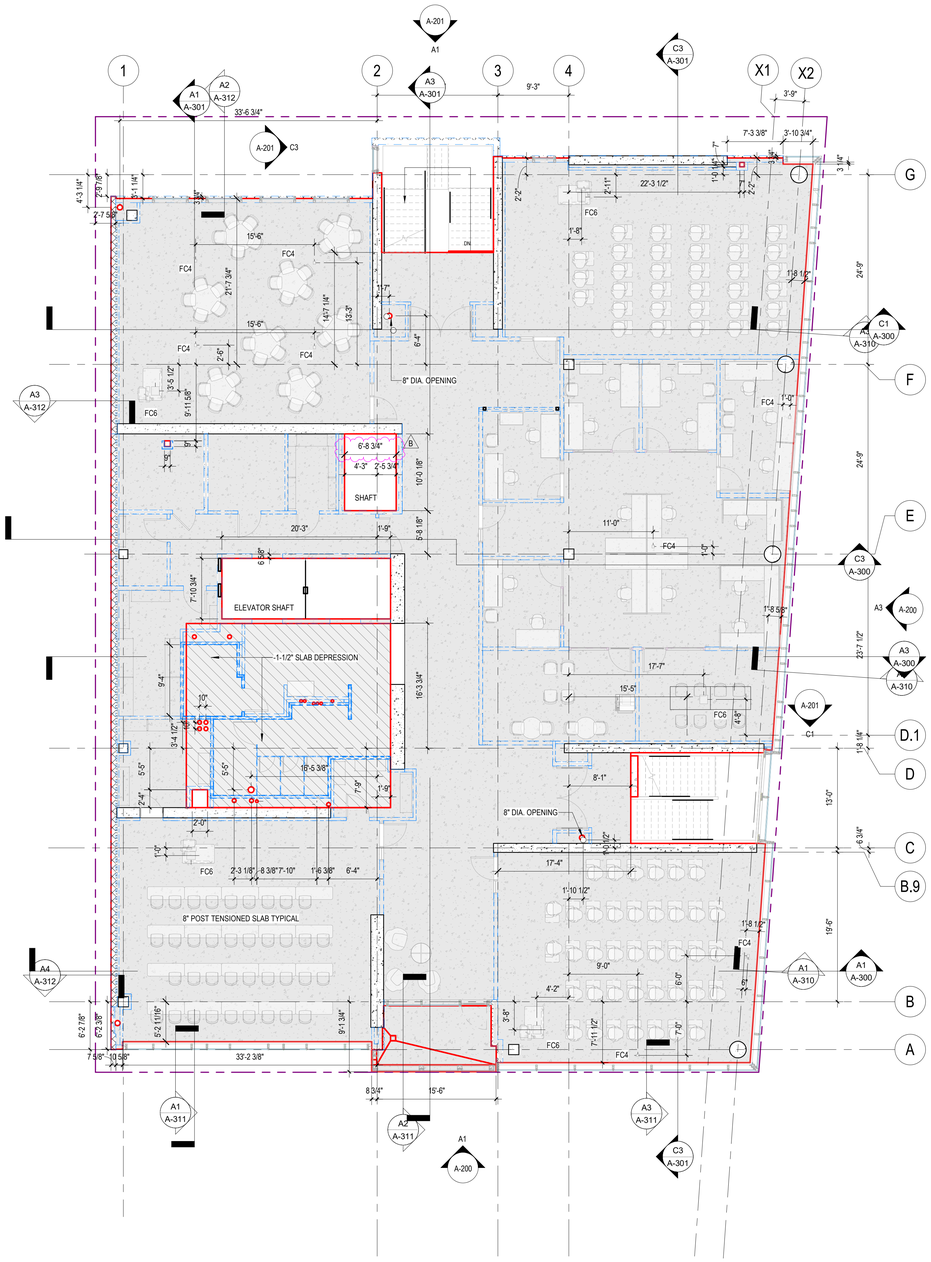
EDGE OF SLAB PLANS - LEVELS 1 & 2

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

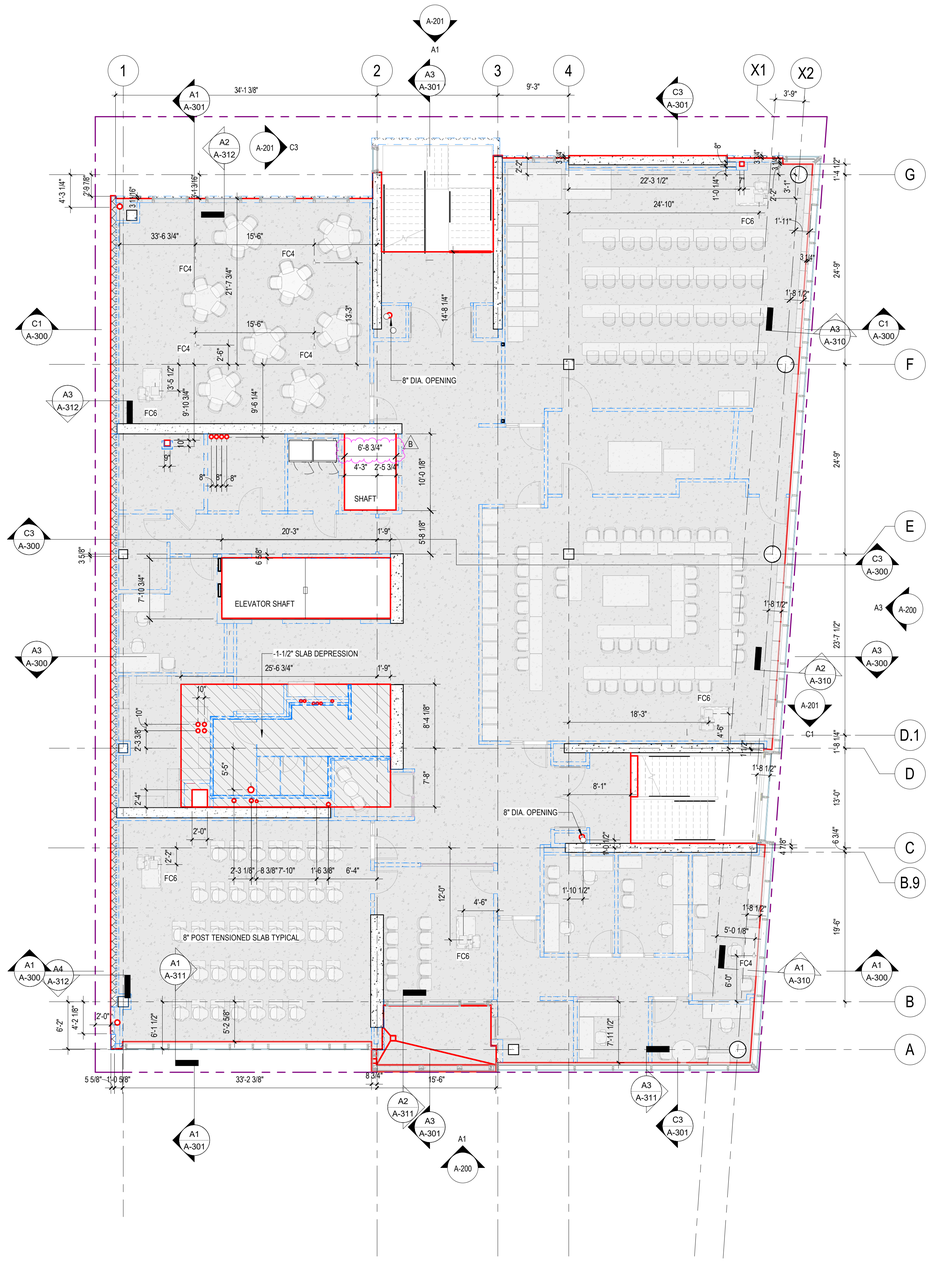
SHEET NUMBER: A-100

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:14:11 AM



A1 LEVEL 3 - EDGE OF SLAB PLAN
1/8" = 1'-0"



A3 LEVEL 4 - EDGE OF SLAB PLAN
1/8" = 1'-0"

SLAB LEGEND

- 3" TOPPING SLAB OR MAT SLAB AS NOTED
- 7" TOPPING SLAB
- -8 1/4" SLAB DEPRESSION
- 7.56" TOPPING SLAB
- 5" TOPPING SLAB
- 1-1/2" SLAB DEPRESSION
- MAT SLAB AT -3"
- 8" PT SLAB
- EOS BOUNDARY, RED WHEN PRINTED IN COLOR
- INTERIOR PARTITIONS, SEE FLOOR PLANS
- PROPERTY BOUNDARY, SCD

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

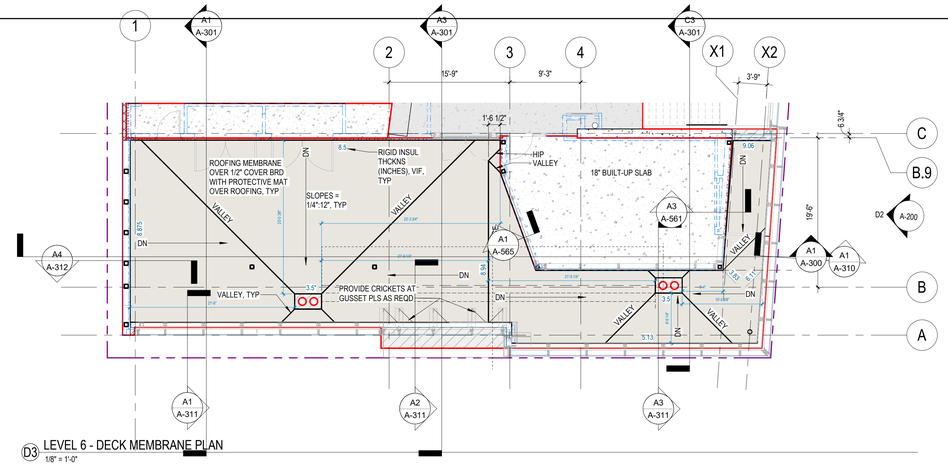
EDGE OF SLAB PLANS - LEVELS 3 & 4

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

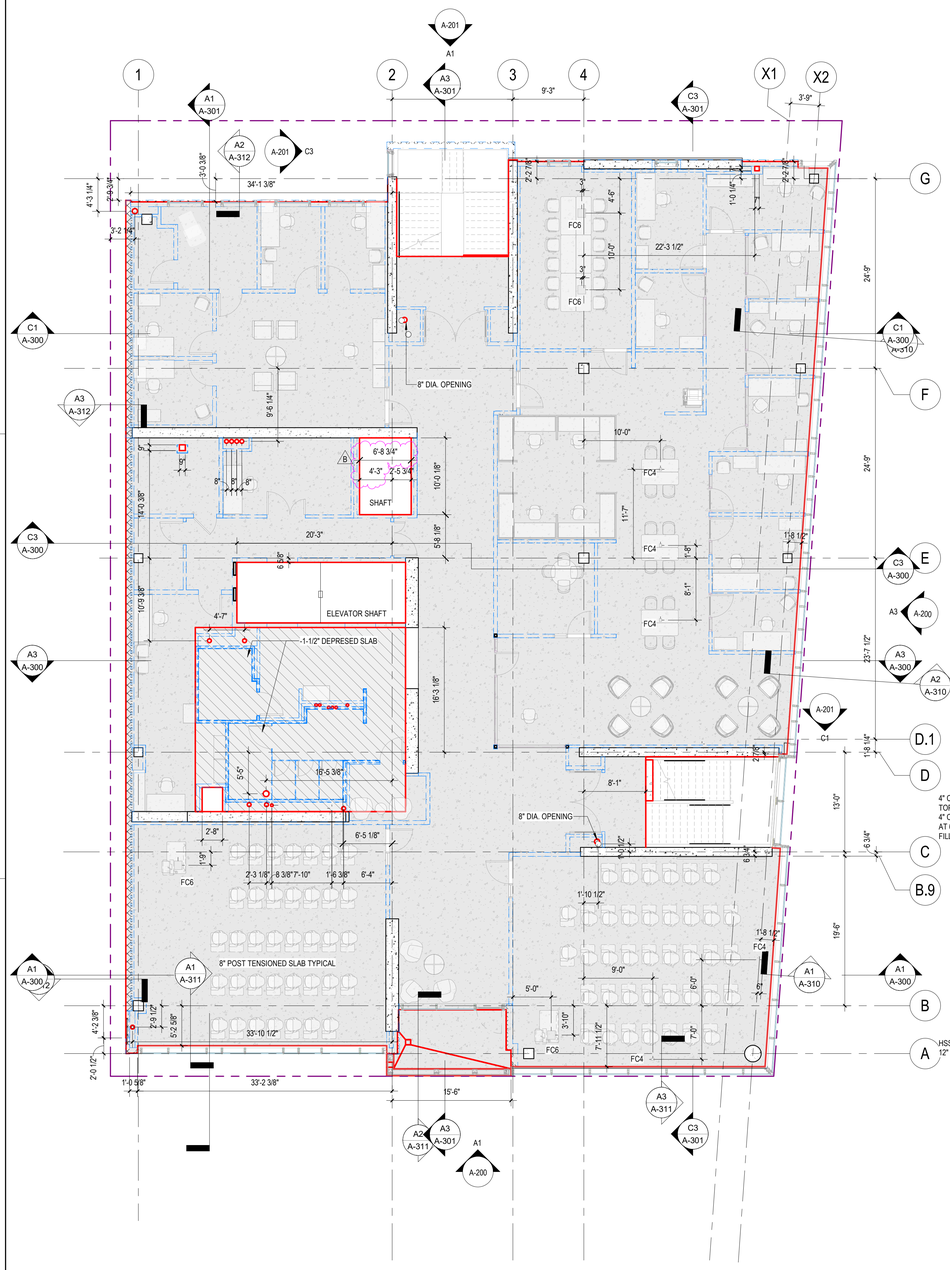
SHEET NUMBER: A-101

DSA SUBMITTAL & BID SET
07/18/2022

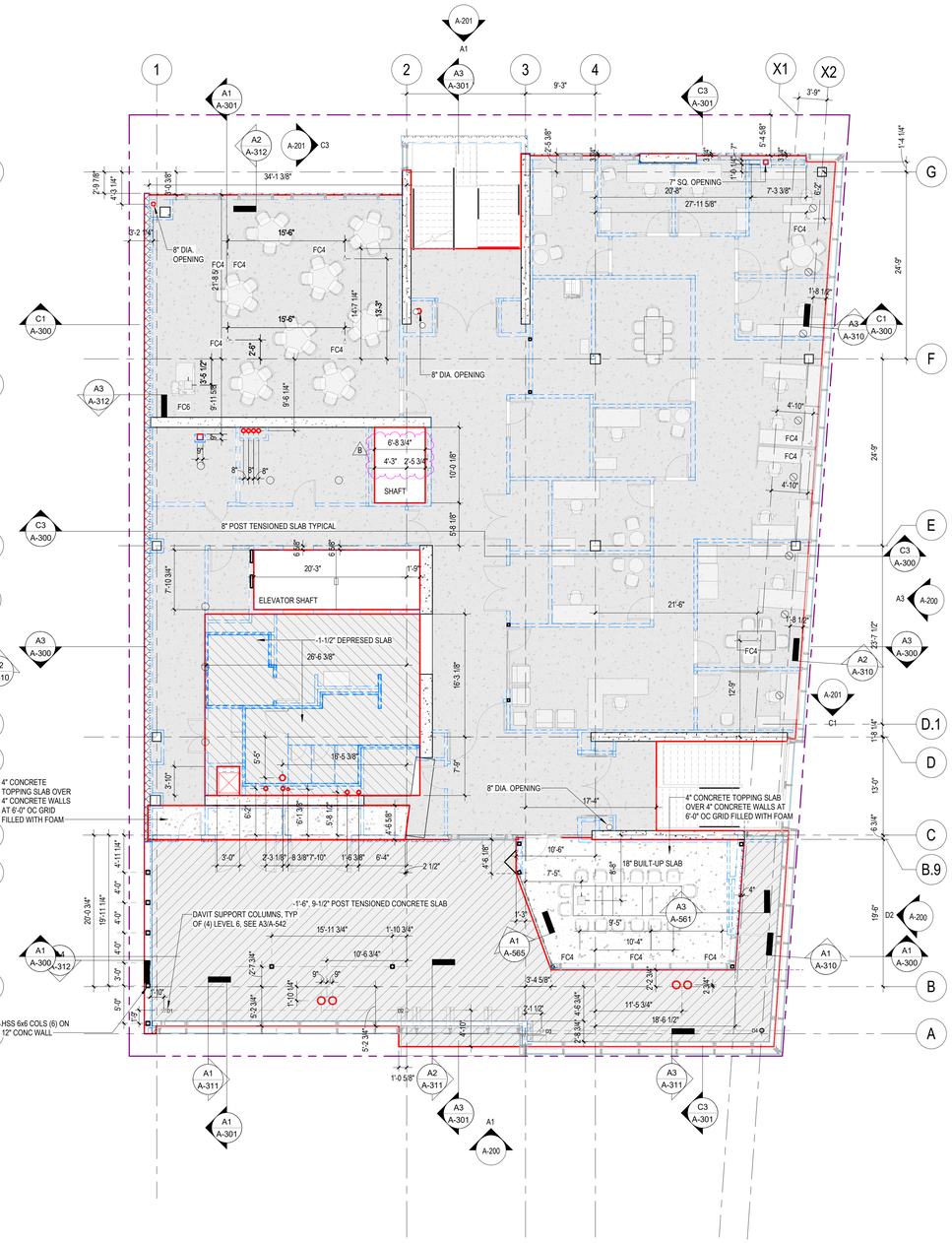
7/26/2022 9:15:35 AM



D3 LEVEL 6 - DECK MEMBRANE PLAN
1/8" = 1'-0"



A1 LEVEL 5 - EDGE OF SLAB PLAN
1/8" = 1'-0"



A3 LEVEL 6 - EDGE OF SLAB PLAN
1/8" = 1'-0"

SLAB LEGEND

- 3" TOPPING SLAB OR MAT SLAB AS NOTED
- 7" TOPPING SLAB
- -8 1/4" SLAB DEPRESSION
- 7.56" TOPPING SLAB
- 5" TOPPING SLAB
- 1-1/2" SLAB DEPRESSION
- MAT SLAB AT -3"
- 8" PT SLAB
- EOS BOUNDARY, RED WHEN PRINTED IN COLOR
- INTERIOR PARTITIONS, SEE FLOOR PLANS
- PROPERTY BOUNDARY, SCD

DSA APPROVAL

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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

EDGE OF SLAB PLANS - LEVELS 5 & 6

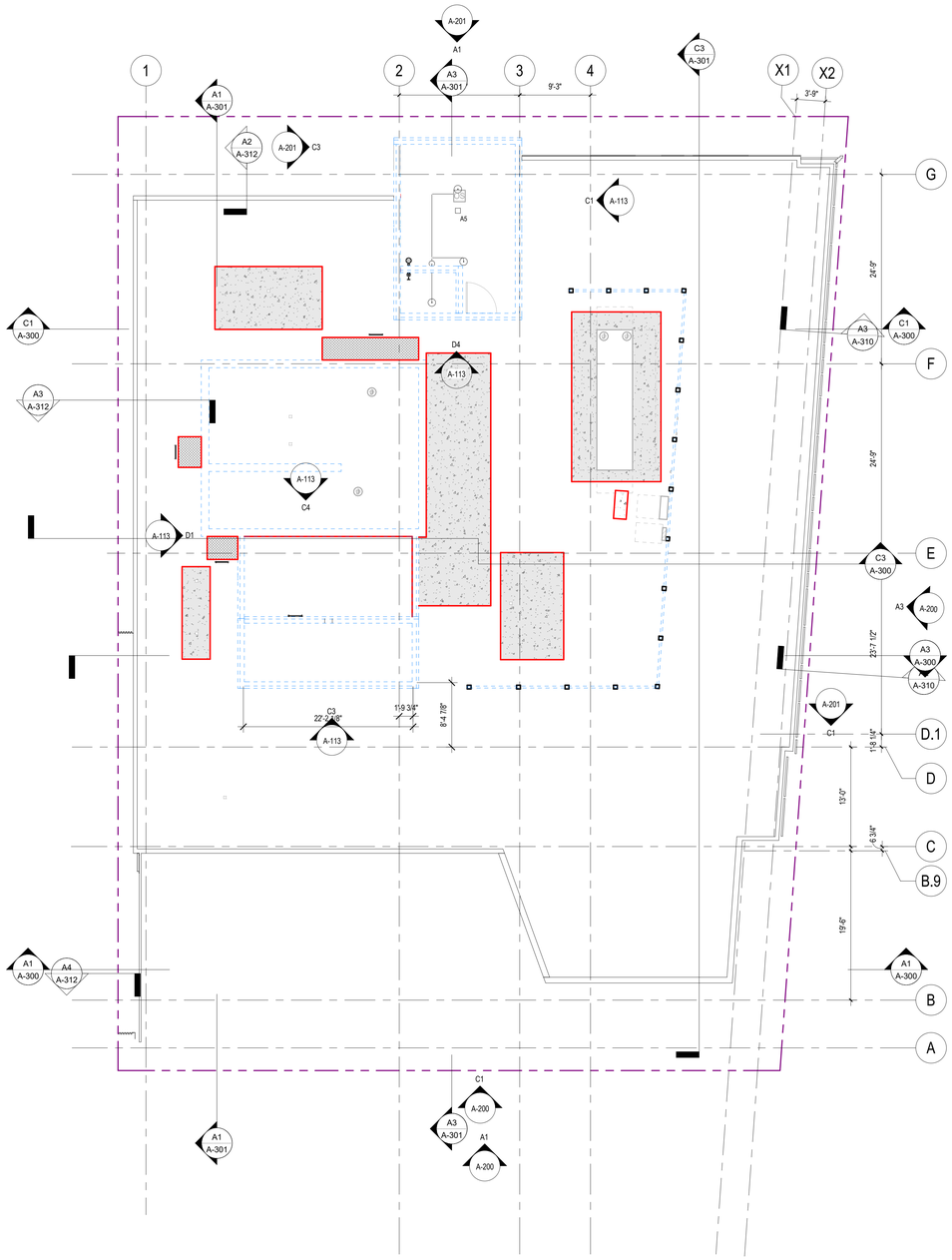
SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

SHEET NUMBER: A-102

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 5:15:29 AM

A1 ROOF - EDGE OF SLAB PLAN
1/8" = 1'-0"



A3 MECHANICAL ROOF - EDGE OF SLAB PLAN
1/8" = 1'-0"

SLAB LEGEND

- 3" TOPPING SLAB OR MAT SLAB AS NOTED
- 7" TOPPING SLAB
- -8 1/4" SLAB DEPRESSION
- 7.56" TOPPING SLAB
- 5" TOPPING SLAB
- 1-1/2" SLAB DEPRESSION
- MAT SLAB AT -3"
- 8" PT SLAB
- EOS BOUNDARY, RED WHEN PRINTED IN COLOR
- INTERIOR PARTITIONS, SEE FLOOR PLANS
- PROPERTY BOUNDARY, SCD

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

EDGE OF SLAB PLANS - ROOF & MECH ROOF

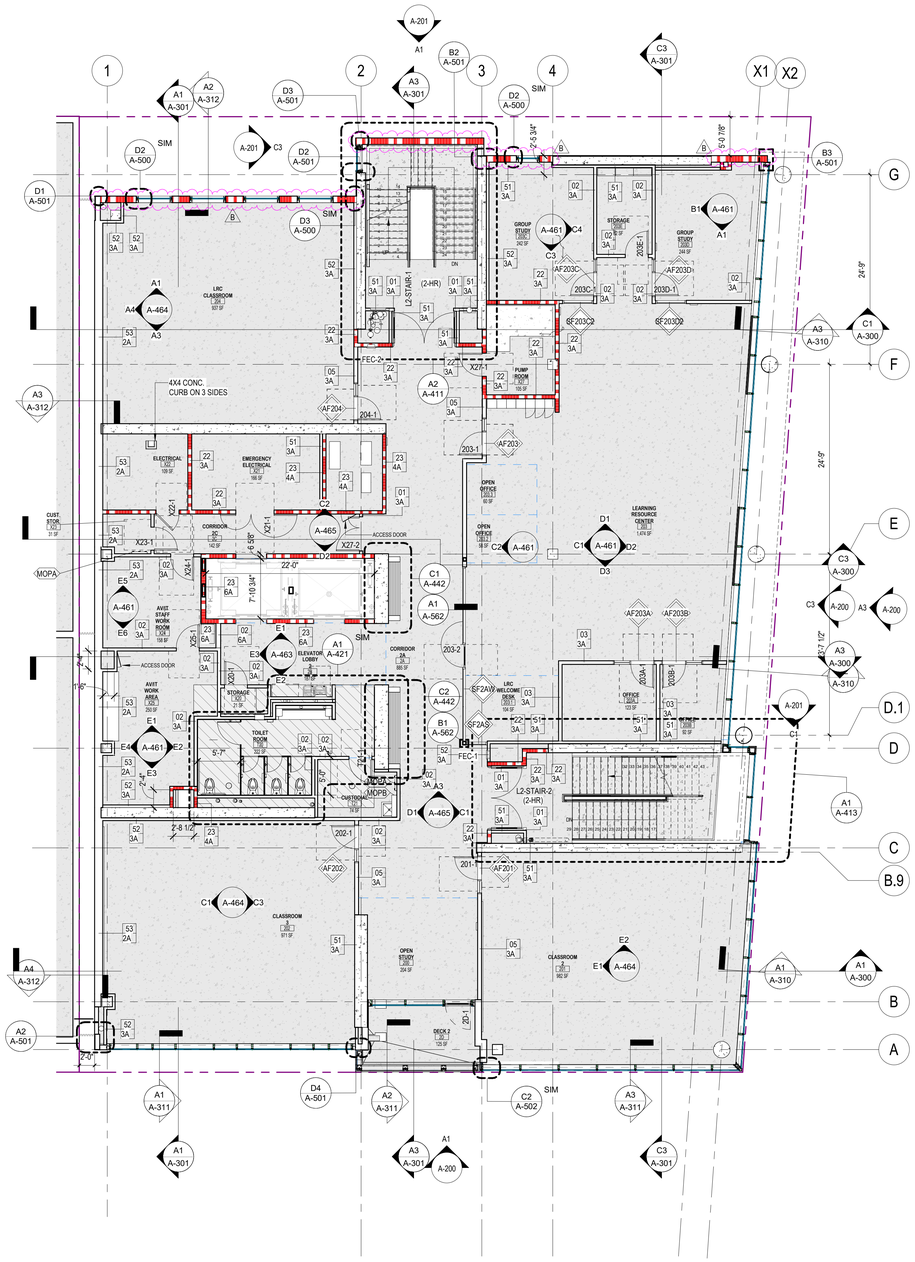
SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

SHEET NUMBER: A-103

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:15:33 AM

A1 LEVEL 1 - FLOOR PLAN
1/8" = 1'-0"



A3 LEVEL 2 - FLOOR PLAN
1/8" = 1'-0"

LEGEND

OBJECT TAGS

- NON-RATED WALL PARTITION
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- FEC-2 — FIRE EXTINGUISHER CABINET, FIRE RATED AND NON-RATED

DOOR

- 101-X — IDENTIFIER; ROOM NUMBER

CURTAINWALL (CW) / STOREFRONT (SF)

- IDENTIFIER
- SEE SHEET A-602 FOR INTERIOR STOREFRONT ELEVATIONS AND SCHEDULE
- PROPERTY BOUNDARY, SCD

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

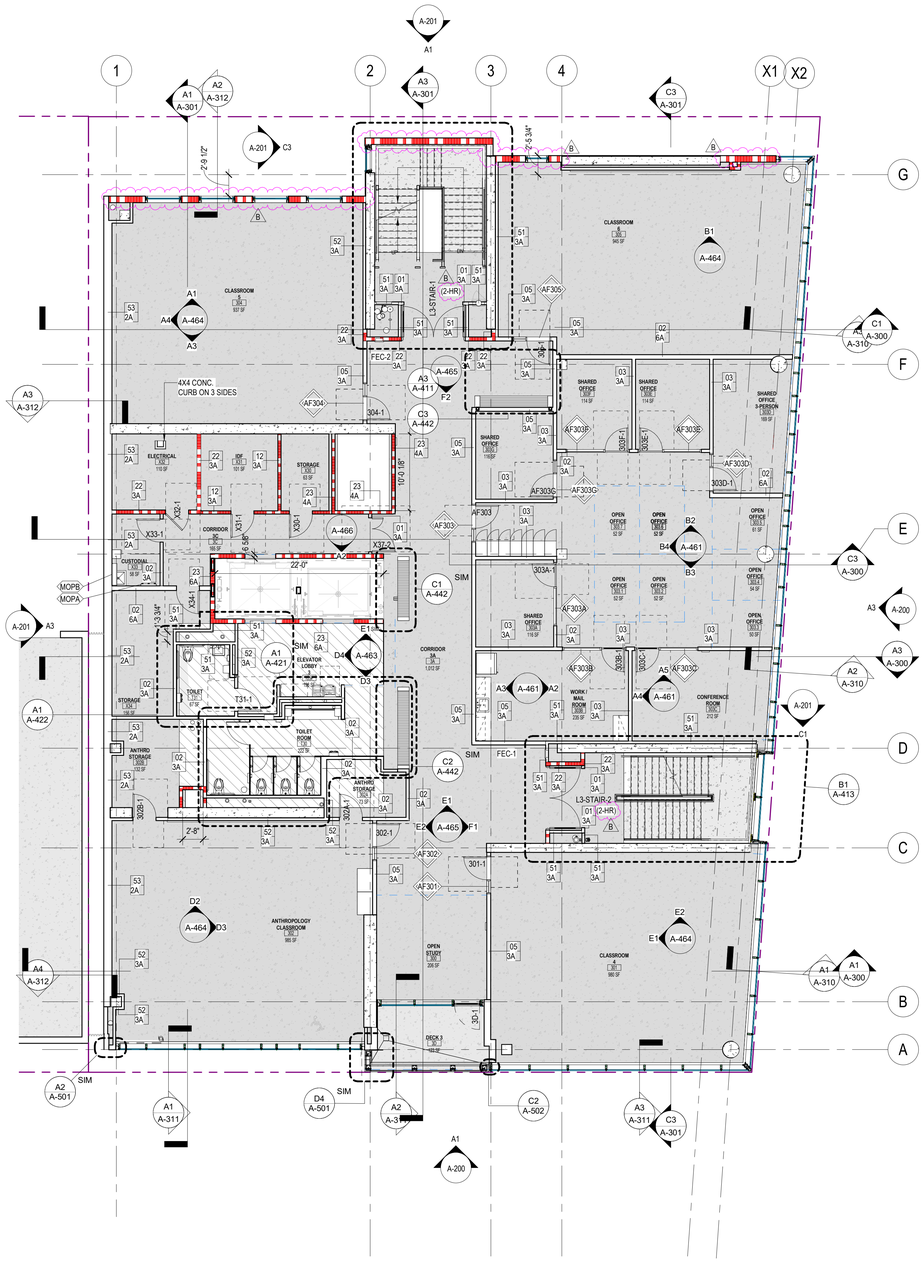
FLOOR PLANS - LEVELS 1 & 2

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

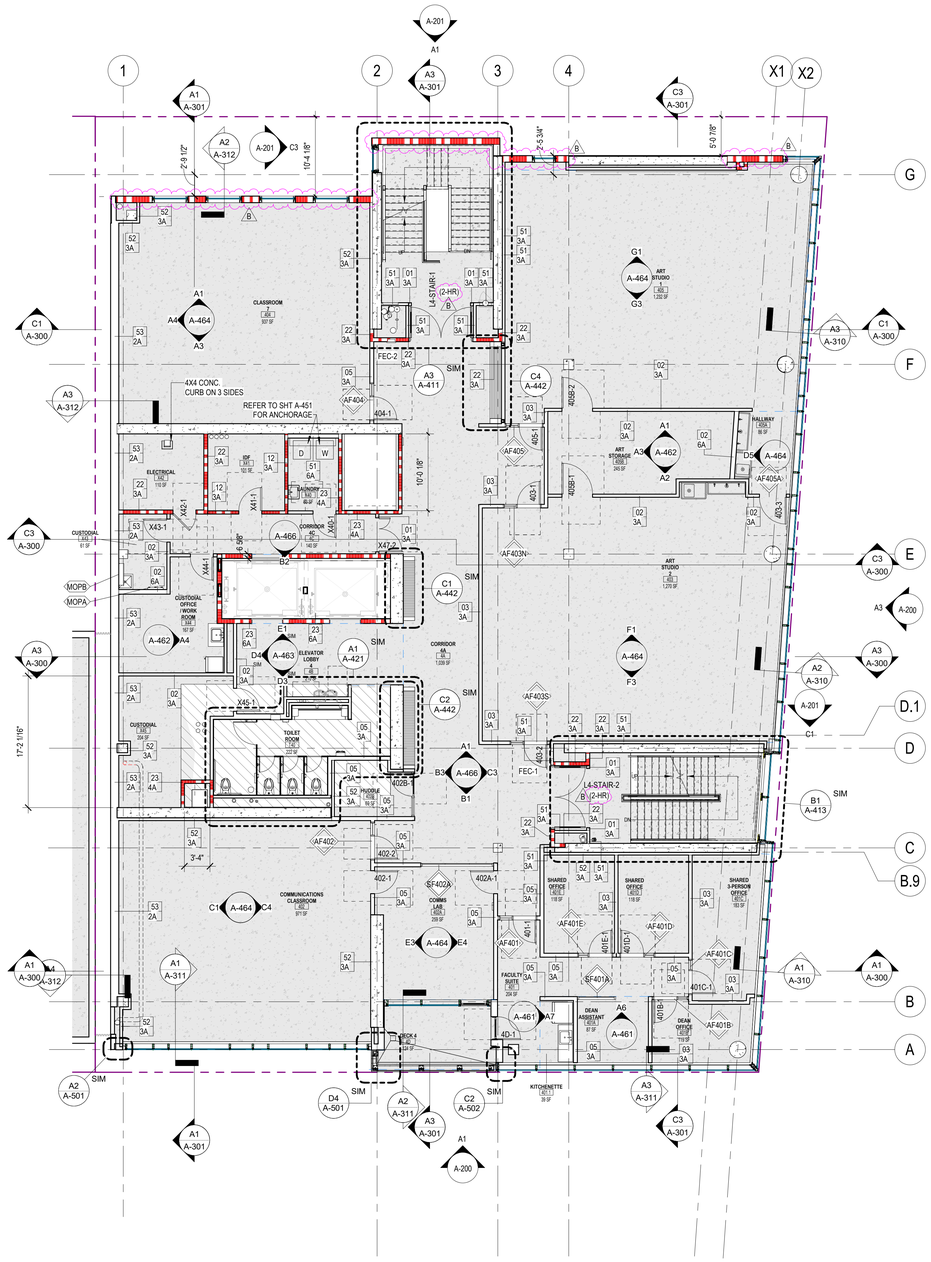
SHEET NUMBER: A-110

07/18/2022 DSA SUBMITTAL & BID SET

7/28/2022 9:15:45 AM



A1 LEVEL 3 - FLOOR PLAN
1/8" = 1'-0"



A3 LEVEL 4 - FLOOR PLAN
1/8" = 1'-0"

LEGEND

OBJECT TAGS

- NON-RATED WALL PARTITION
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- FEC-2 — FIRE EXTINGUISHER CABINET, FIRE RATED AND NON-RATED

DOOR

101-X — IDENTIFIER; ROOM NUMBER

CURTAINWALL (CW) / STOREFRONT (SF)

11 — IDENTIFIER

SEE SHEET A-602 FOR INTERIOR STOREFRONT ELEVATIONS AND SCHEDULE

PROPERTY BOUNDARY, SCD

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

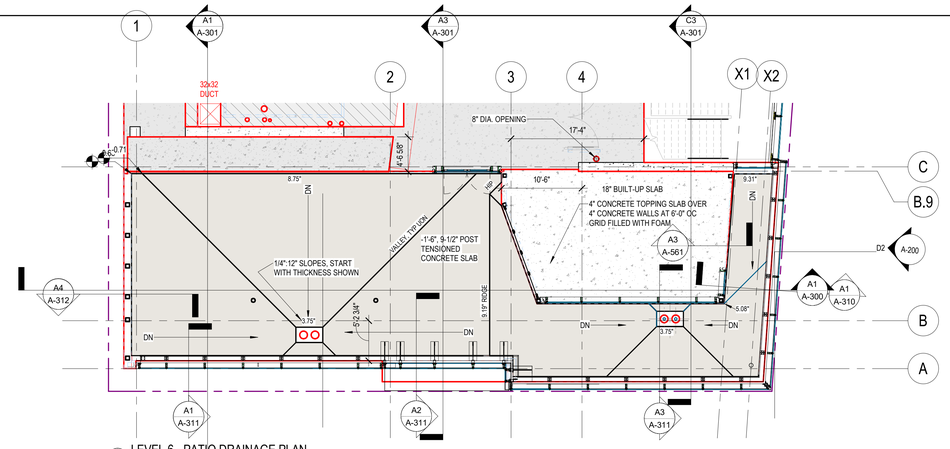
FLOOR PLANS - LEVELS 3 & 4

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

SHEET NUMBER: A-111

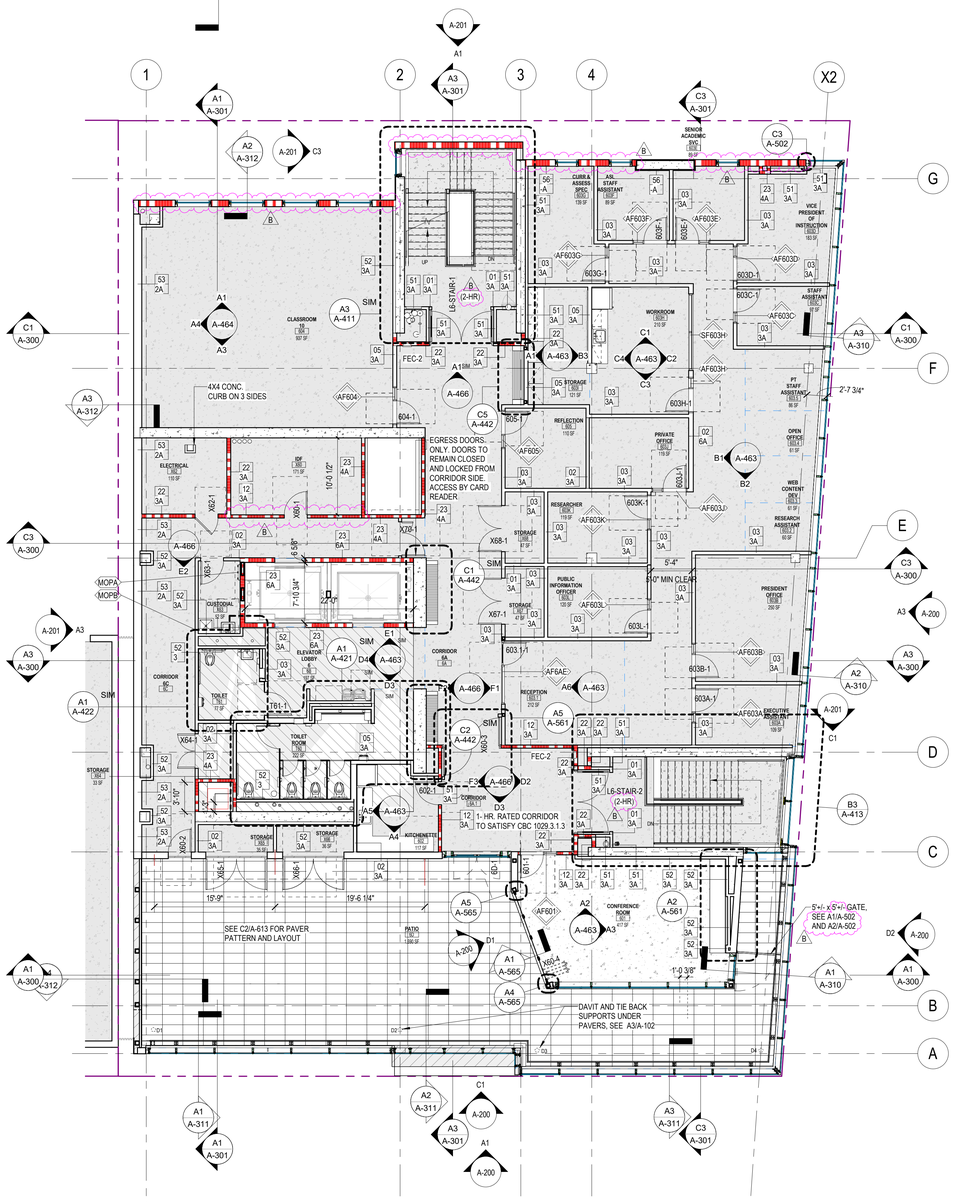
07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:15:08 AM



D3 LEVEL 6 - PATIO DRAINAGE PLAN
1/8" = 1'-0"

A1 LEVEL 5 - FLOOR PLAN
1/8" = 1'-0"



A3 LEVEL 6 - FLOOR PLAN
1/8" = 1'-0"

LEGEND

OBJECT TAGS

- NON-RATED WALL PARTITION
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- FEC-2 — FIRE EXTINGUISHER CABINET, FIRE RATED AND NON-RATED

DOOR

- 101-X — IDENTIFIER; ROOM NUMBER

CURTAINWALL (CW) / STOREFRONT (SF)

- 1i — IDENTIFIER; SEE SHEET A-602 FOR INTERIOR STOREFRONT ELEVATIONS AND SCHEDULE

- PROPERTY BOUNDARY, SCD

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

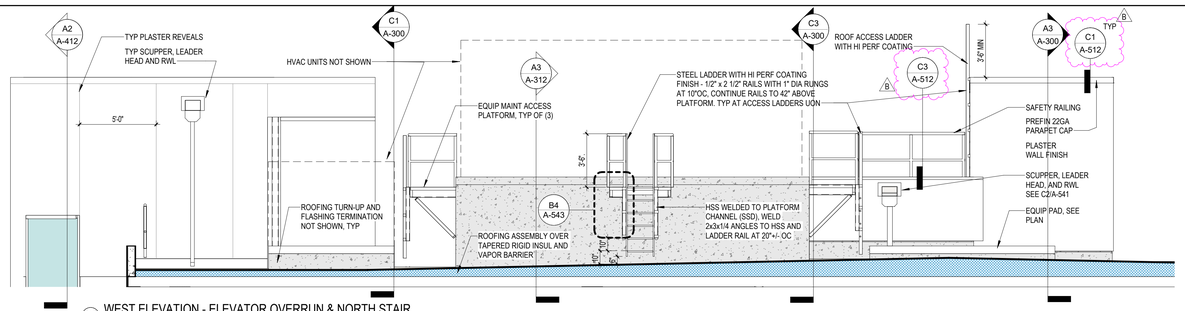
FLOOR PLANS - LEVELS 5 & 6

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

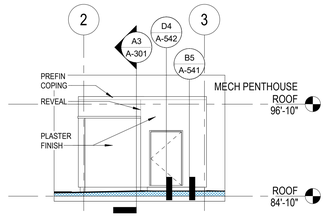
SHEET NUMBER: A-112

07/18/2022 DSA SUBMITTAL & BID SET

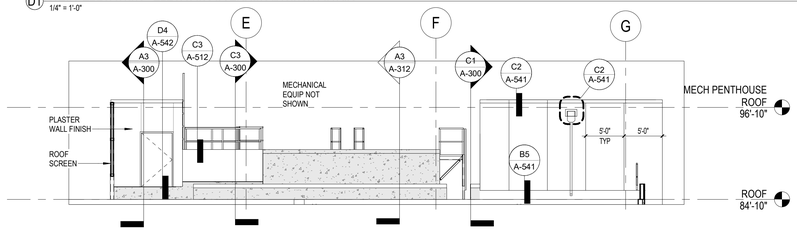
7/26/2022 9:16:18 AM



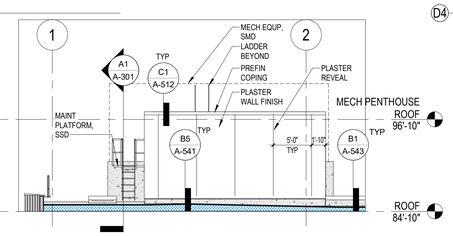
D1 WEST ELEVATION - ELEVATOR OVERRUN & NORTH STAIR
1/4" = 1'-0"



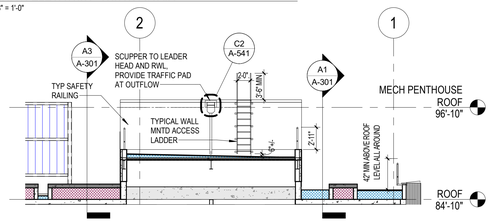
D4 SOUTH ELEVATION - NORTH STAIR
1/8" = 1'-0"



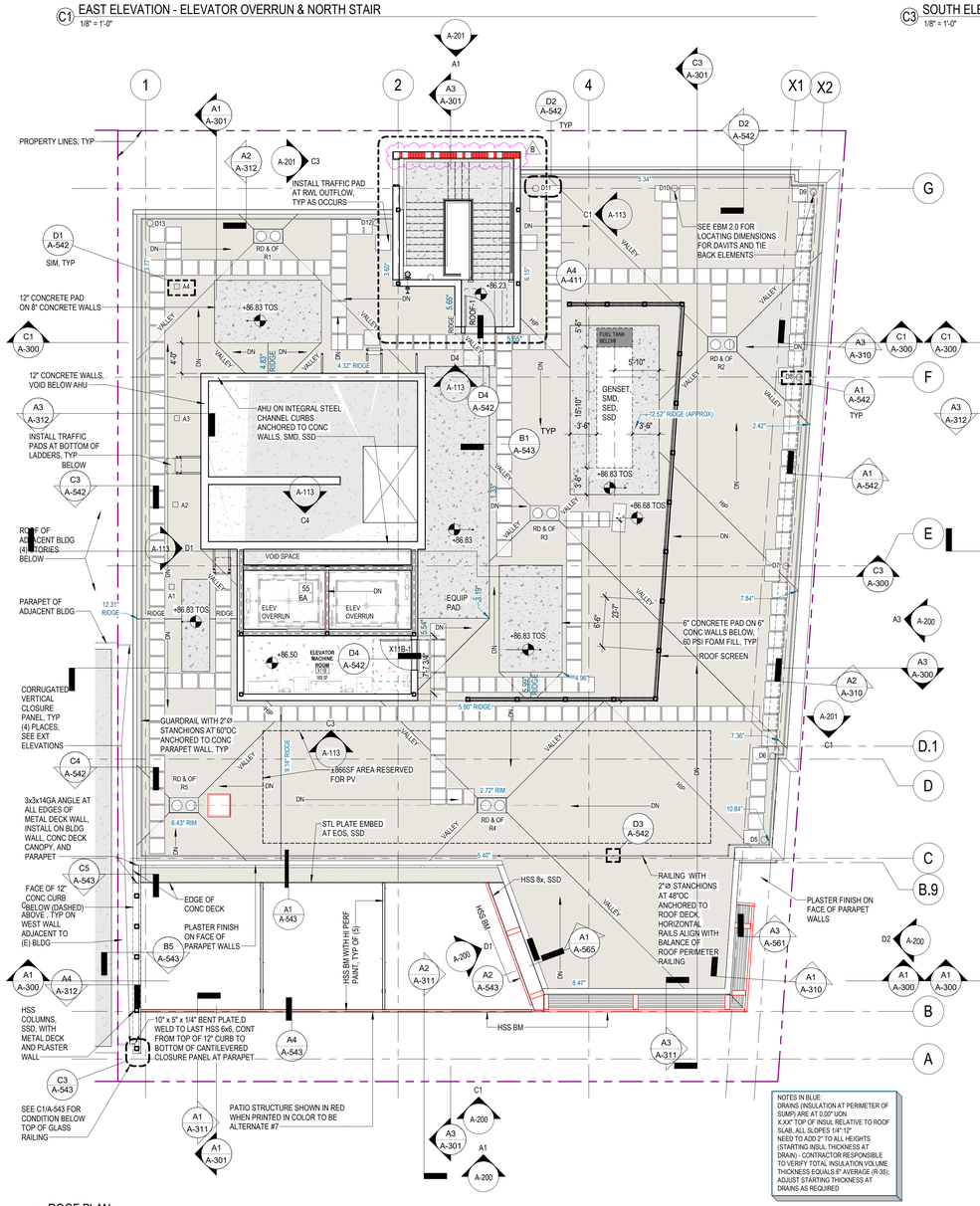
C1 EAST ELEVATION - ELEVATOR OVERRUN & NORTH STAIR
1/8" = 1'-0"



C3 SOUTH ELEVATION - ELEVATOR OVERRUN - SOUTH
1/8" = 1'-0"

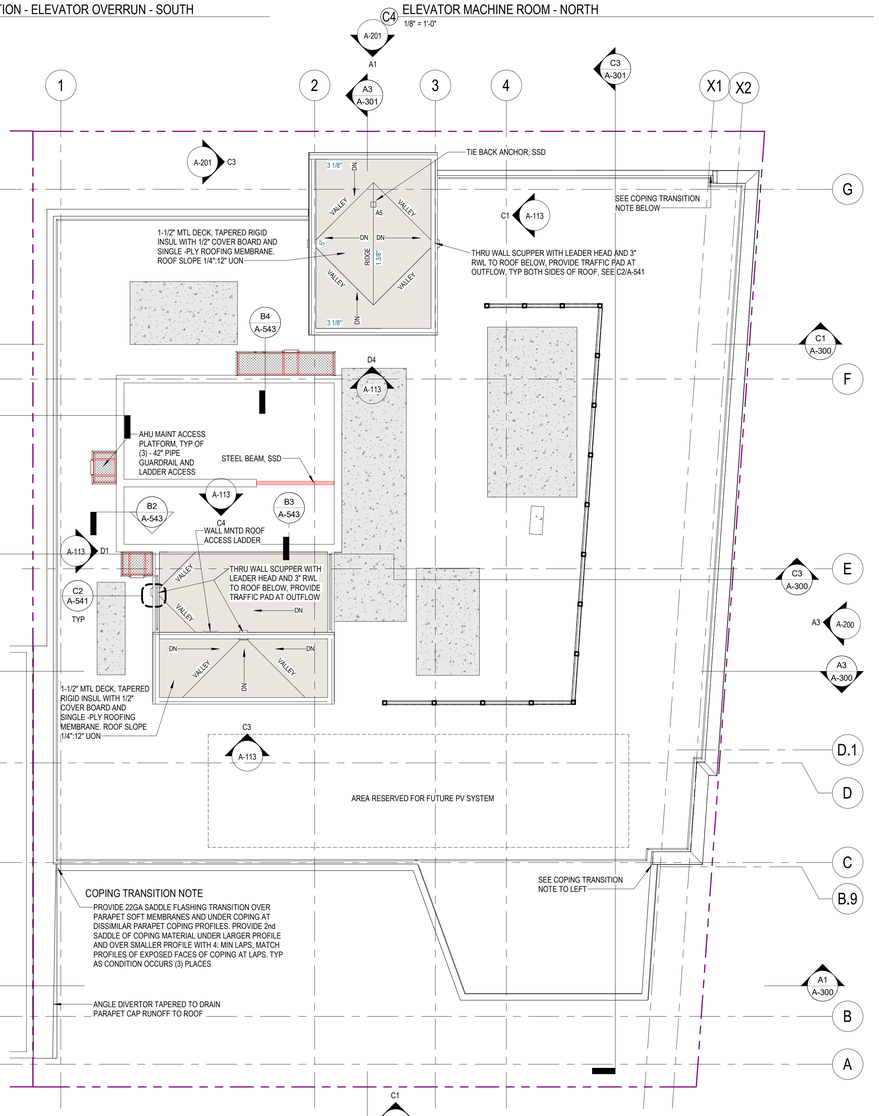


C4 ELEVATOR MACHINE ROOM - NORTH
1/8" = 1'-0"



A1 ROOF PLAN
1/8" = 1'-0"

NOTES IN BLUE:
DRAINS (INSULATION AT PERIMETER OF SUMP) ARE AT 0.00" UON
X.XX" TOP OF INSUL RELATIVE TO ROOF SLAB, ALL SLOPES 1/4":12"
NEED TO ADD 2" TO ALL HEIGHTS (STARTING INSUL THICKNESS AT DRAIN) - CONTRACTOR RESPONSIBLE TO VERIFY TOTAL INSULATION VOLUME THICKNESS EQUALS 6" AVERAGE (R-35); ADJUST STARTING THICKNESS AT DRAINS AS REQUIRED



A3 MECHANICAL ROOF PLAN
1/8" = 1'-0"

LEGEND

OBJECT TAGS

- NON-RATED WALL PARTITION
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- FEC-2 — FIRE EXTINGUISHER CABINET, FIRE RATED AND NON-RATED

DOOR

- 101-X — IDENTIFIER; ROOM NUMBER

CURTAINWALL (CW) / STOREFRONT (SF)

- 1i — IDENTIFIER; SEE SHEET A-602 FOR INTERIOR STOREFRONT ELEVATIONS AND SCHEDULE

PROPERTY BOUNDARY, SCD

DSA APPROVAL

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Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

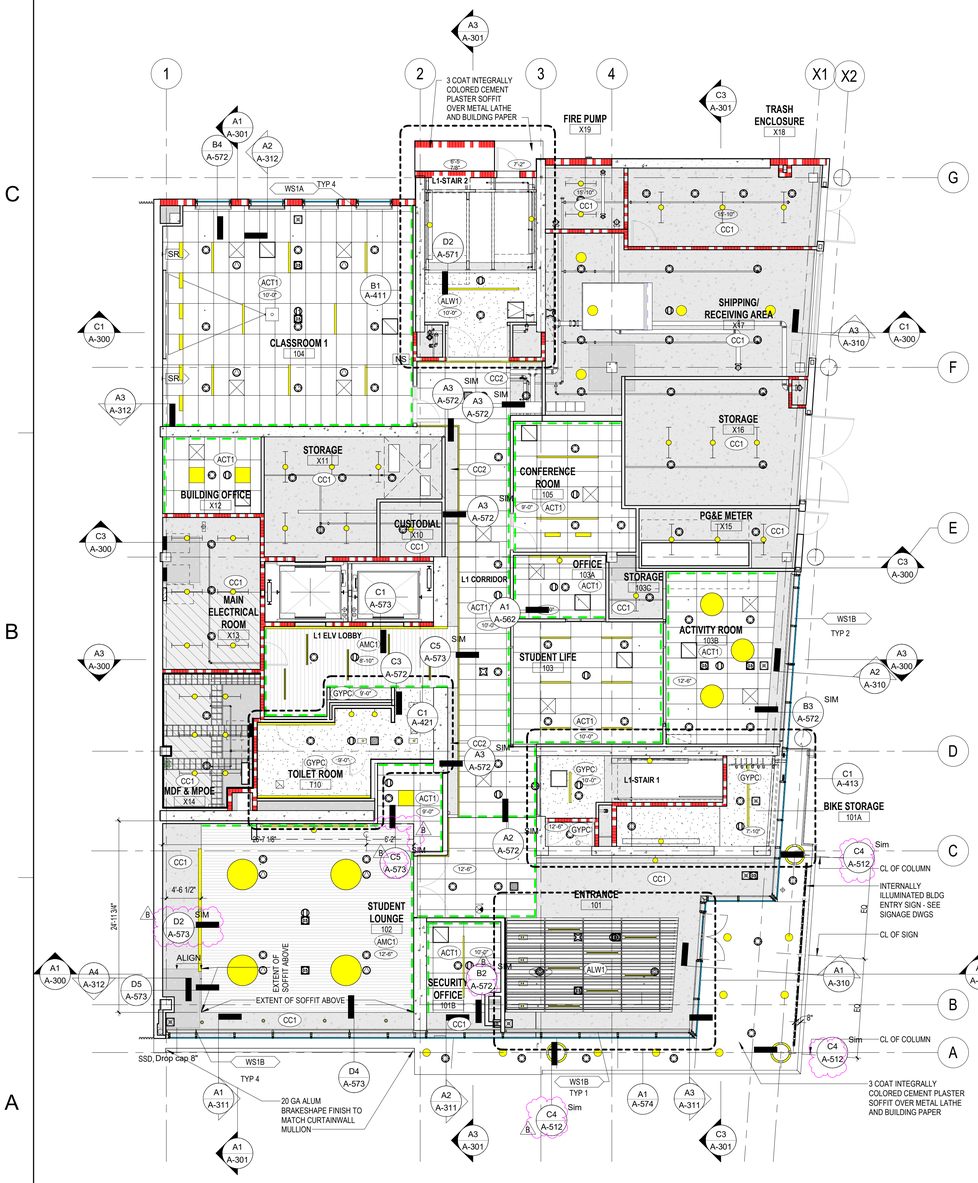
FLOOR PLANS - ROOF & MECH ROOF

SCALE: As indicated
PROJECT NUMBER: 21415

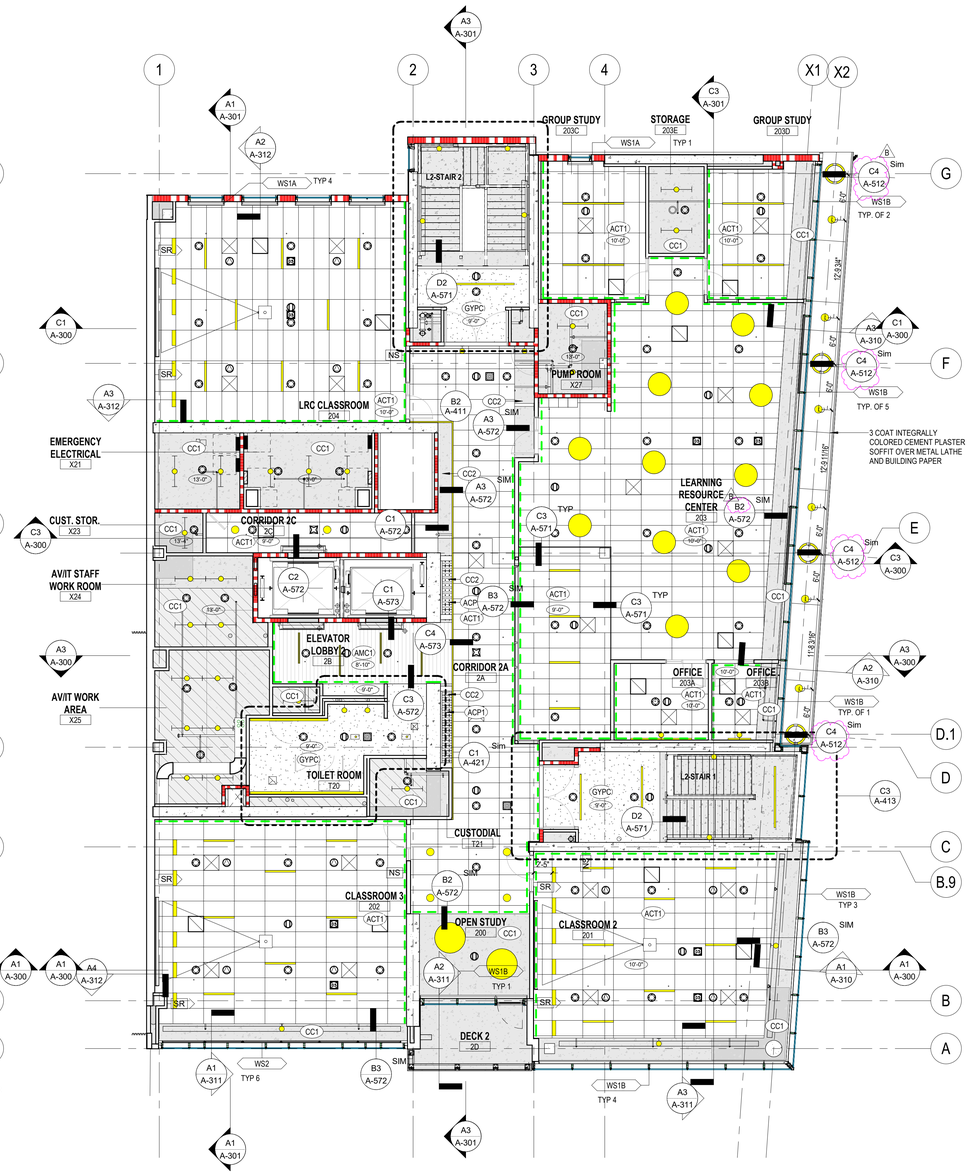
SHEET NUMBER: A-113

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:16:29 AM



A1 LEVEL 1 - REFLECTED CEILING PLAN
1/8" = 1'-0"



A3 LEVEL 2 - REFLECTED CEILING PLAN
1/8" = 1'-0"

LEGEND

- PARTITION - NON RATED
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- PARTITION (3-HOUR RATED)
- CEILING FIXED EDGE SYMBOL GYPC - SEE DETAIL C2/A-570 ACT1/ACT2/ACP1/AMC1 - SEE DETAIL C4/A-570 (ALW1 SIMILAR)
- ACT1 ACOUSTICAL CEILING GRID - 2X4
- GYB BD CEILING
- ALW1 ACOUSTICAL LINEAR WOOD CEILING
- AMC1 ACOUSTICAL LINEAR METAL CEILING
- OPEN CEILING, SEE FINISH PLANS A-611, A-612 & A-613, AND SCHEDULE A-610 FOR FINISH AT EACH OPEN CEILING LOCATION
- CEILING ELEVATION
- CEILING FINISH TAG
- EXIT SYMBOL
- EXHAUST AIR REGISTER
- RETURN AIR REGISTER
- SUPPLY AIR REGISTER
- SUPPLY AIR REGISTER
- MECHO. SOLAR SHADES. SOLAR & BLACKOUT AT ANTHROPOLOGY AND ART CLASSROOMS
- DAYLIGHT SENSOR, SED
- OCCUPANCY SENSOR, SED
- SPEAKER, SEE AUDIOVISUAL DWGS
- 1-WAY CAMERA, SEE ELEC SECURITY DWGS
- 3-WAY CAMERA, SEE ELEC SECURITY DWGS
- 4-WAY CAMERA, SEE ELEC SECURITY DWGS
- MOTION DETECTOR SENSOR, SEE ELEC SECURITY DWGS
- GLASS BREAK SENSOR, SEE ELEC SECURITY DWGS
- FIRE SPRINKLER, SEE FIRE PROTECTION DWGS
- (F1) LIGHT FIXTURE, SED
- (F3) LIGHT FIXTURE, SED
- (F4 OR F5 OR F13 OR F25 OR F29) LIGHT FIXTURE, SED
- (F6) LIGHT FIXTURE, SED
- (F8 OR F9) LIGHT FIXTURE, SED
- (F12) LIGHT FIXTURE, SED
- (F14 OR F17 OR F38) LIGHT FIXTURE, SED
- (F15) LIGHT FIXTURE, SED
- (F22) LIGHT FIXTURE, SED
- (F24A OR F24B) LIGHT FIXTURE, SED
- (F30) LIGHT FIXTURE, SED
- (F32) LIGHT FIXTURE, SED
- (F33 OR F37) LIGHT FIXTURE, SED
- (F34 OR F35 OR F41) LIGHT FIXTURE, SED
- (F36) LIGHT FIXTURE, SED
- (F39) LIGHT FIXTURE, SED

SHEET NOTES

1. SED & SHEETS AC110, AC111, AC112 FOR LIGHTING TYPES AND LAYOUTS, NOT ALL LIGHTS ARE SHOWN ON RCPS, LIGHTING TYPES ARE TYPICAL PER SPACE TYPE AND SHOULD BE INFERRED FOR SIMILAR SPACES.
2. NOT ALL FIRE SPRINKLERS SHOWN ON RCPS, SEE FIRE PROTECTION DWGS
3. REFER TO SPECS FOR WINDOW COVERINGS. WINDOW COVERINGS TYPICAL AT ALL CLASSROOMS AND OFFICES ADJOINING EXTERIOR GLAZING.
4. ON ROOMS WITH NO CEILINGS, IT IS TO BE EXPOSED CONCRETE
5. CEILING TYPE ACT1 IN ROOM TYPE "OFFICE" & "EXAM" ARE CENTERED EACH WAY IN ROOM AS SHOWN ON RCP UON, TYPICAL
6. AT CORRIDORS WHERE THERE IS NO CEILING WALLS ARE TO BE PAINTED PT1 FULL HEIGHT AS WELL AS ALL EXPOSED MEP AND UNDERSIDE OF SLAB FOR 4'-0" MIN OVERSPRAY AREA
7. B DEFAULT CEILING HT IS 9'-0" AFF UON

DSA APPROVAL

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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

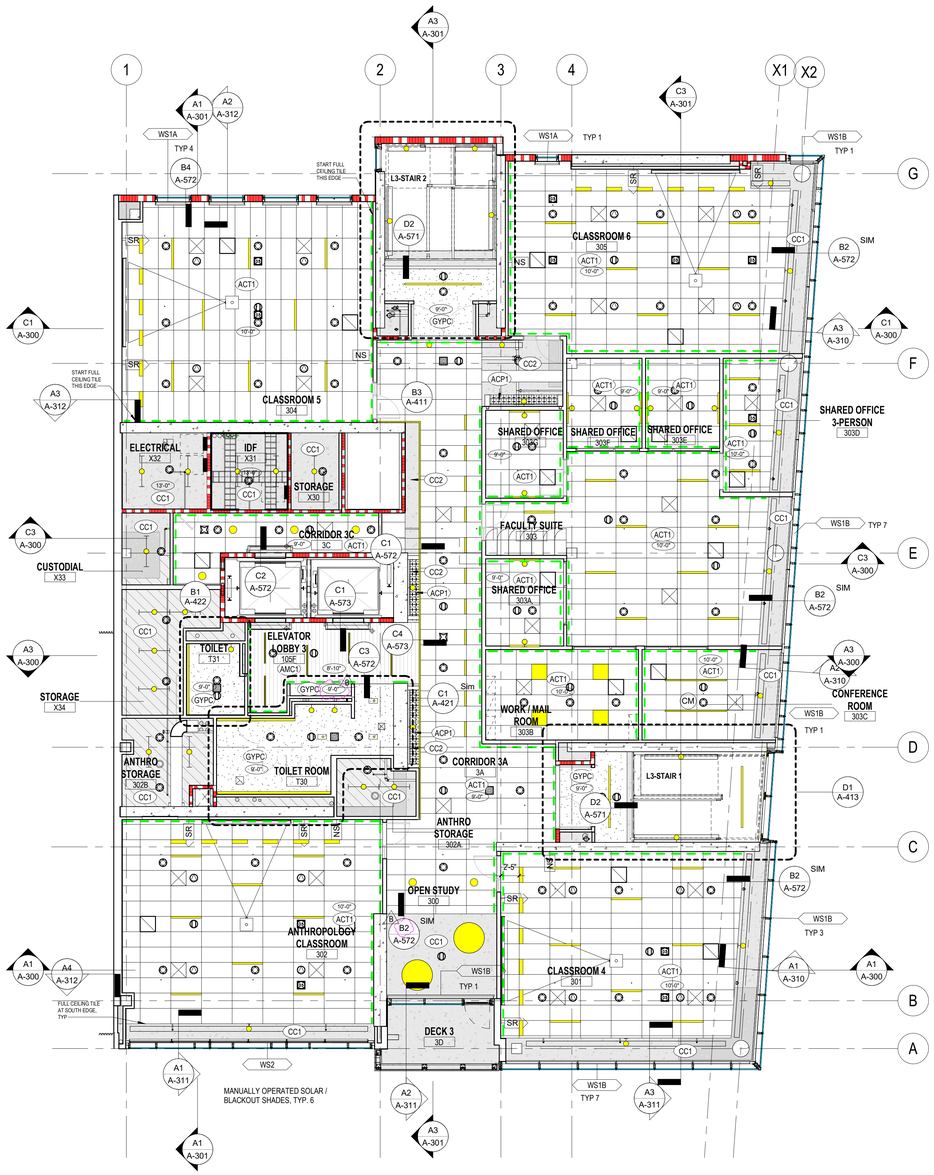
REFLECTED CEILING PLANS - LEVELS 1 & 2

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

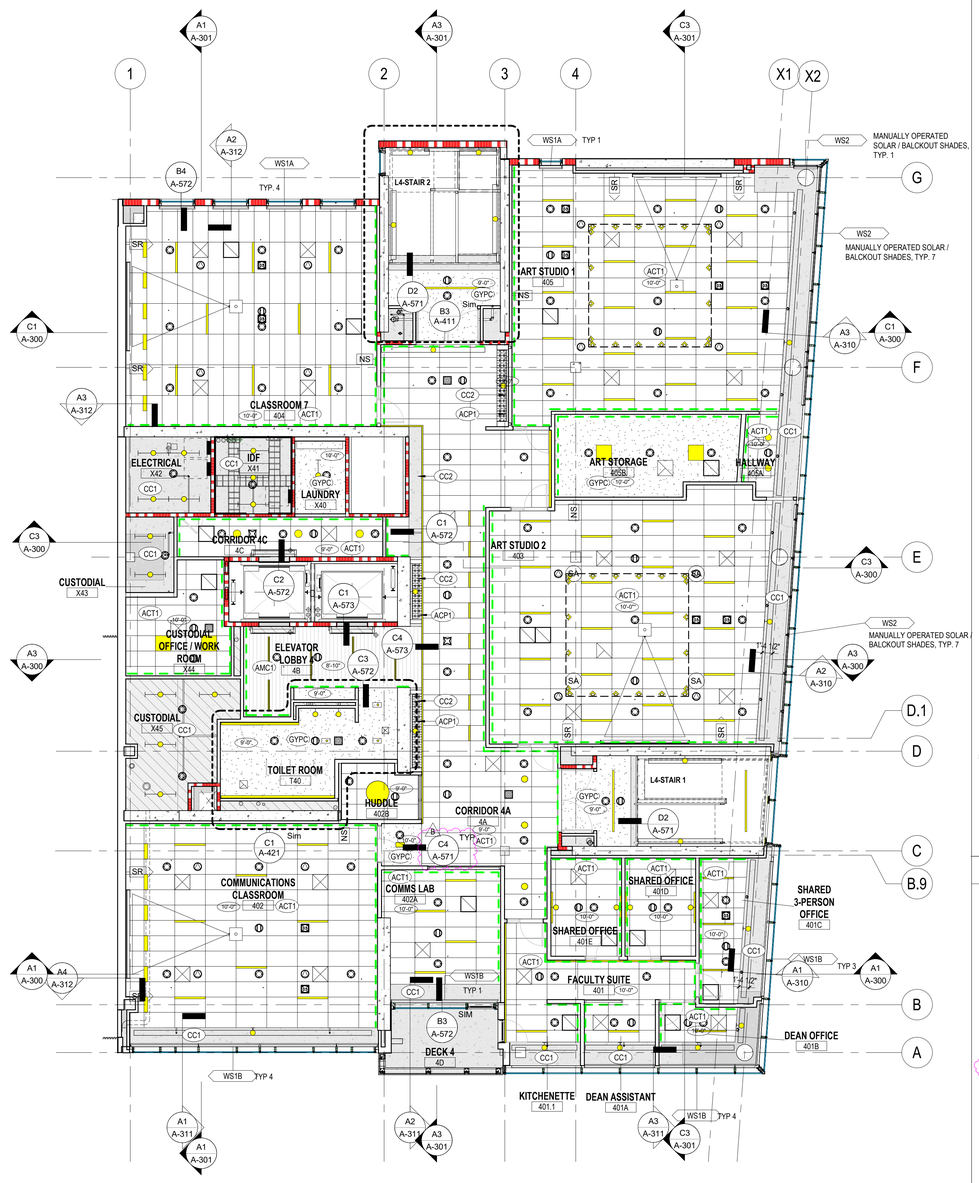
SHEET NUMBER: AC110

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:32:24 AM



A1 LEVEL 3 - REFLECTED CEILING PLAN
1/8" = 1'-0"



A3 LEVEL 4 - REFLECTED CEILING PLAN
1/8" = 1'-0"

LEGEND

- PARTITION - NON RATED
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- PARTITION (3-HOUR RATED)
- CEILING FIXED EDGE SYMBOL GYPC - SEE DETAIL C2/A-570 ACT1/ACT2/ACP1/AMC1 - SEE DETAIL C4/A-570 (ALW1 SIMILAR)
- ACT1 ACOUSTICAL CEILING GRID - 2X4
- GYB BD CEILING
- ALW1 ACOUSTICAL LINEAR WOOD CEILING
- AMC1 ACOUSTICAL LINEAR METAL CEILING
- OPEN CEILING, SEE FINISH PLANS A-611, A-612 & A-613, AND SCHEDULE A-610 FOR FINISH AT EACH OPEN CEILING LOCATION
- CEILING ELEVATION
- CEILING FINISH TAG
- EXIT SYMBOL
- EXHAUST AIR REGISTER
- RETURN AIR REGISTER
- SUPPLY AIR REGISTER
- SUPPLY AIR REGISTER
- MECHO. SOLAR SHADES. SOLAR & BLACKOUT AT ANTHROPOLOGY AND ART CLASSROOMS
- DAYLIGHT SENSOR, SED
- OCCUPANCY SENSOR, SED
- SPEAKER, SEE AUDIOVISUAL DWGS
- 1-WAY CAMERA, SEE ELEC SECURITY DWGS
- 3-WAY CAMERA, SEE ELEC SECURITY DWGS
- 4-WAY CAMERA, SEE ELEC SECURITY DWGS
- MOTION DETECTOR SENSOR, SEE ELEC SECURITY DWGS
- GLASS BREAK SENSOR, SEE ELEC SECURITY DWGS
- FIRE SPRINKLER, SEE FIRE PROTECTION DWGS
- (F1) LIGHT FIXTURE, SED
- (F3) LIGHT FIXTURE, SED
- (F4 OR F5 OR F13 OR F25 OR F29) LIGHT FIXTURE, SED
- (F6) LIGHT FIXTURE, SED
- (F8 OR F9) LIGHT FIXTURE, SED
- (F12) LIGHT FIXTURE, SED
- (F14 OR F17 OR F38) LIGHT FIXTURE, SED
- (F15) LIGHT FIXTURE, SED
- (F22) LIGHT FIXTURE, SED
- (F24A OR F24B) LIGHT FIXTURE, SED
- (F30) LIGHT FIXTURE, SED
- (F32) LIGHT FIXTURE, SED
- (F33 OR F37) LIGHT FIXTURE, SED
- (F34 OR F35 OR F41) LIGHT FIXTURE, SED
- (F36) LIGHT FIXTURE, SED
- (F39) LIGHT FIXTURE, SED

SHEET NOTES

1. SED & SHEETS AC110, AC111, AC112 FOR LIGHTING TYPES AND LAYOUTS, NOT ALL LIGHTS ARE SHOWN ON RCPS, LIGHTING TYPES ARE TYPICAL PER SPACE TYPE AND SHOULD BE INFERRED FOR SIMILAR SPACES.
2. NOT ALL FIRE SPRINKLERS SHOWN ON RCPS, SEE FIRE PROTECTION DWGS
3. REFER TO SPECS FOR WINDOW COVERINGS. WINDOW COVERINGS TYPICAL AT ALL CLASSROOMS AND OFFICES ADJOINING EXTERIOR GLAZING.
4. ON ROOMS WITH NO CEILINGS, IT IS TO BE EXPOSED CONCRETE
5. CEILING TYPE ACT1 IN ROOM TYPE "OFFICE" & "EXAM" ARE CENTERED EACH WAY IN ROOM AS SHOWN ON RCP UON, TYPICAL
6. AT CORRIDORS WHERE THERE IS NO CEILING WALLS ARE TO BE PAINTED PT1 FULL HEIGHT AS WELL AS ALL EXPOSED MEP AND UNDERSIDE OF SLAB FOR 4'-0" MIN OVERSPRAY AREA
7. (B) DEFAULT CEILING HT IS 9'-0" AFF UON

DSA APPROVAL

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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

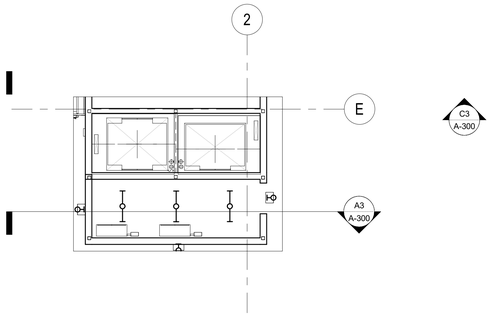
SHEET TITLE:
REFLECTED CEILING PLANS - LEVELS 3 & 4

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

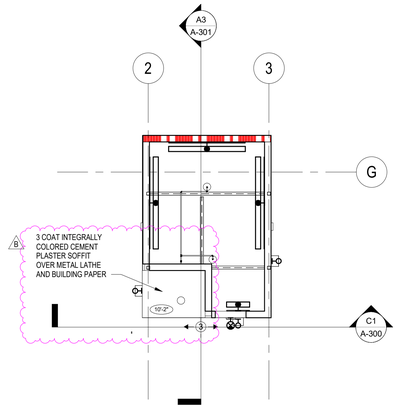
SHEET NUMBER: AC111

07/18/2022 DSA SUBMITTAL & BID SET

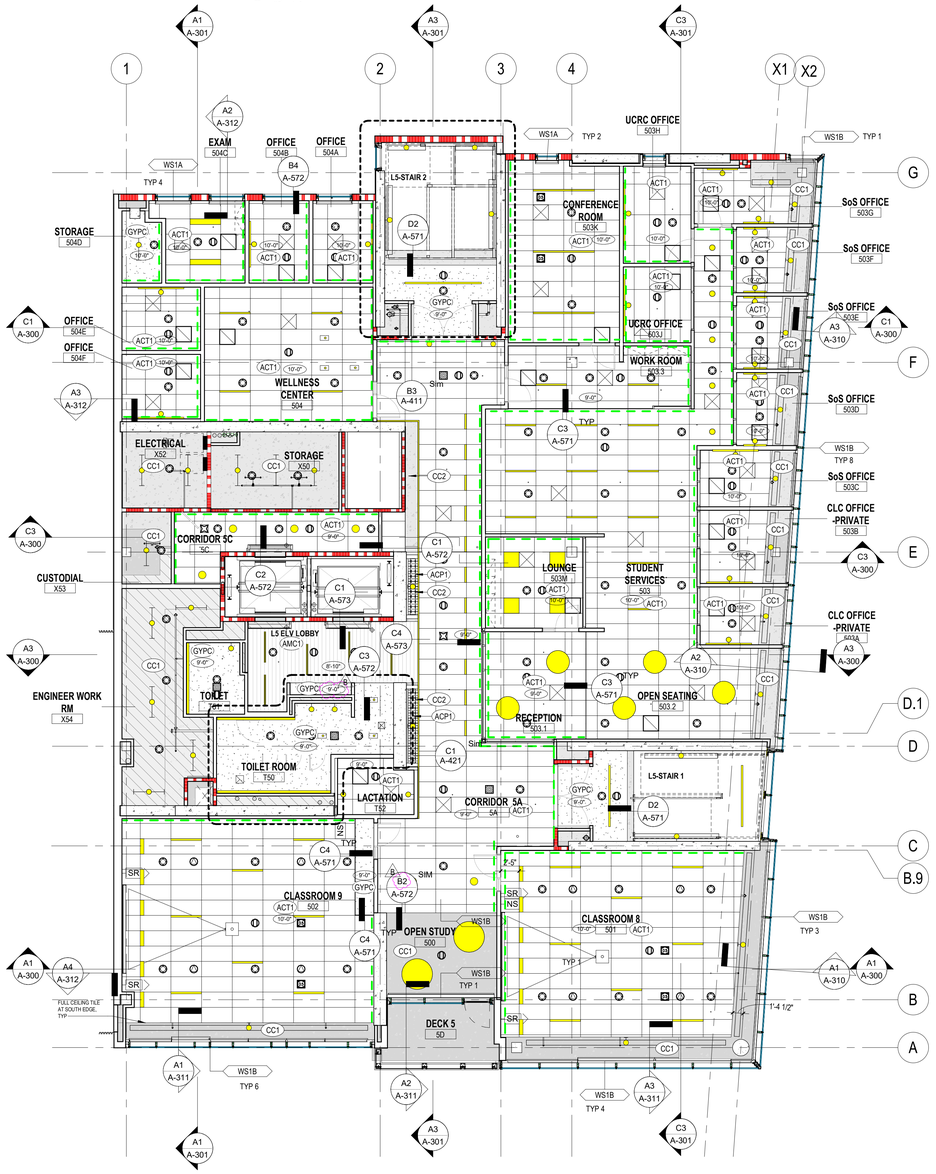
7/26/2022 9:36:36 AM



D4 ROOF - ELEVATOR MACHINE ROOM - REFLECTED CEILING PLAN
1/8" = 1'-0"



D3 ROOF - REFLECTED CEILING PLAN STAIR 2
1/8" = 1'-0"



A1 LEVEL 5 - REFLECTED CEILING PLAN
1/8" = 1'-0"

A3 LEVEL 6 - REFLECTED CEILING PLAN
1/8" = 1'-0"

LEGEND

- PARTITION - NON RATED
- PARTITION (1-HOUR RATED)
- PARTITION (2-HOUR RATED)
- PARTITION (3-HOUR RATED)
- CEILING FIXED EDGE SYMBOL GYPC - SEE DETAIL C2/A-570 ACT1/ACT2/ACP1/AMC1 - SEE DETAIL C4/A-570 (ALW1 SIMILAR)
- ACT1 ACOUSTICAL CEILING GRID - 2X4
- GYB BD CEILING
- ALW1 ACOUSTICAL LINEAR WOOD CEILING
- AMC1 ACOUSTICAL LINEAR METAL CEILING
- OPEN CEILING, SEE FINISH PLANS A-611, A-612 & A-613, AND SCHEDULE A-610 FOR FINISH AT EACH OPEN CEILING LOCATION
- 10'-0" CEILING ELEVATION
- ? CEILING FINISH TAG
- EXIT SYMBOL
- EXHAUST AIR REGISTER
- RETURN AIR REGISTER
- SUPPLY AIR REGISTER
- SUPPLY AIR REGISTER
- MECHO. SOLAR SHADES. SOLAR & BLACKOUT AT ANTHROPOLOGY AND ART CLASSROOMS
- DAYLIGHT SENSOR, SED
- OCCUPANCY SENSOR, SED
- SPEAKER, SEE AUDIOVISUAL DWGS
- 1-WAY CAMERA, SEE ELEC SECURITY DWGS
- 3-WAY CAMERA, SEE ELEC SECURITY DWGS
- 4-WAY CAMERA, SEE ELEC SECURITY DWGS
- MOTION DETECTOR SENSOR, SEE ELEC SECURITY DWGS
- GLASS BREAK SENSOR, SEE ELEC SECURITY DWGS
- FIRE SPRINKLER, SEE FIRE PROTECTION DWGS
- (F1) LIGHT FIXTURE, SED
- (F3) LIGHT FIXTURE, SED
- (F4 OR F5 OR F13 OR F25 OR F29) LIGHT FIXTURE, SED
- (F6) LIGHT FIXTURE, SED
- (F8 OR F9) LIGHT FIXTURE, SED
- (F12) LIGHT FIXTURE, SED
- (F14 OR F17 OR F38) LIGHT FIXTURE, SED
- (F15) LIGHT FIXTURE, SED
- (F22) LIGHT FIXTURE, SED
- (F24A OR F24B) LIGHT FIXTURE, SED
- (F30) LIGHT FIXTURE, SED
- (F32) LIGHT FIXTURE, SED
- (F33 OR F37) LIGHT FIXTURE, SED
- (F34 OR F35 OR F41) LIGHT FIXTURE, SED
- (F36) LIGHT FIXTURE, SED
- (F39) LIGHT FIXTURE, SED

SHEET NOTES

1. SED & SHEETS AC110, AC111, AC112 FOR LIGHTING TYPES AND LAYOUTS, NOT ALL LIGHTS ARE SHOWN ON RCPS, LIGHTING TYPES ARE TYPICAL PER SPACE TYPE AND SHOULD BE INFERRED FOR SIMILAR SPACES.
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5. CEILING TYPE ACT1 IN ROOM TYPE "OFFICE" & "EXAM" ARE CENTERED EACH WAY IN ROOM AS SHOWN ON RCP UON, TYPICAL
6. AT CORRIDORS WHERE THERE IS NO CEILING WALLS ARE TO BE PAINTED PT1 FULL HEIGHT AS WELL AS ALL EXPOSED MEP AND UNDERSIDE OF SLAB FOR 4'-0" MIN OVERSPRAY AREA
7. (B) DEFAULT CEILING HT IS 9'-0" AFF UON

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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

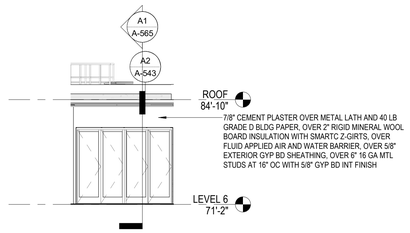
SHEET TITLE:
REFLECTED CEILING PLANS - LEVELS 5 & 6 & ROOF

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

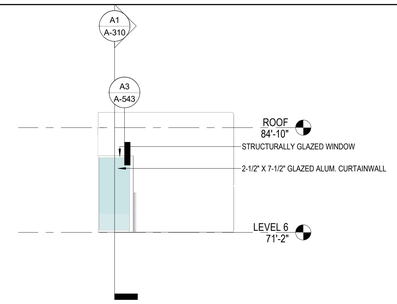
SHEET NUMBER: AC112

07/18/2022 DSA SUBMITTAL & BID SET

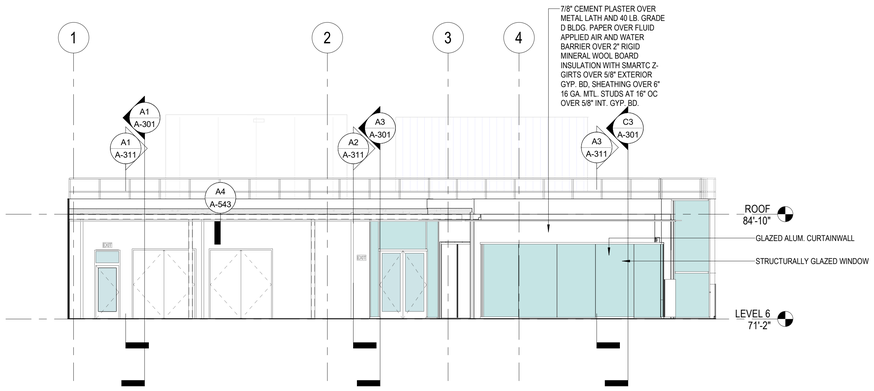
7/26/2022 9:32:55 AM



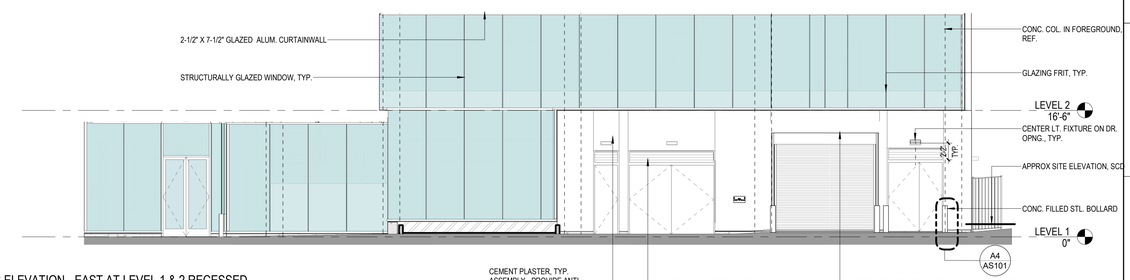
D1 BUILDING ELEVATION - SOUTHWEST - LEVEL 6 PATIO AT CONFERENCE RM
1/8" = 1'-0"



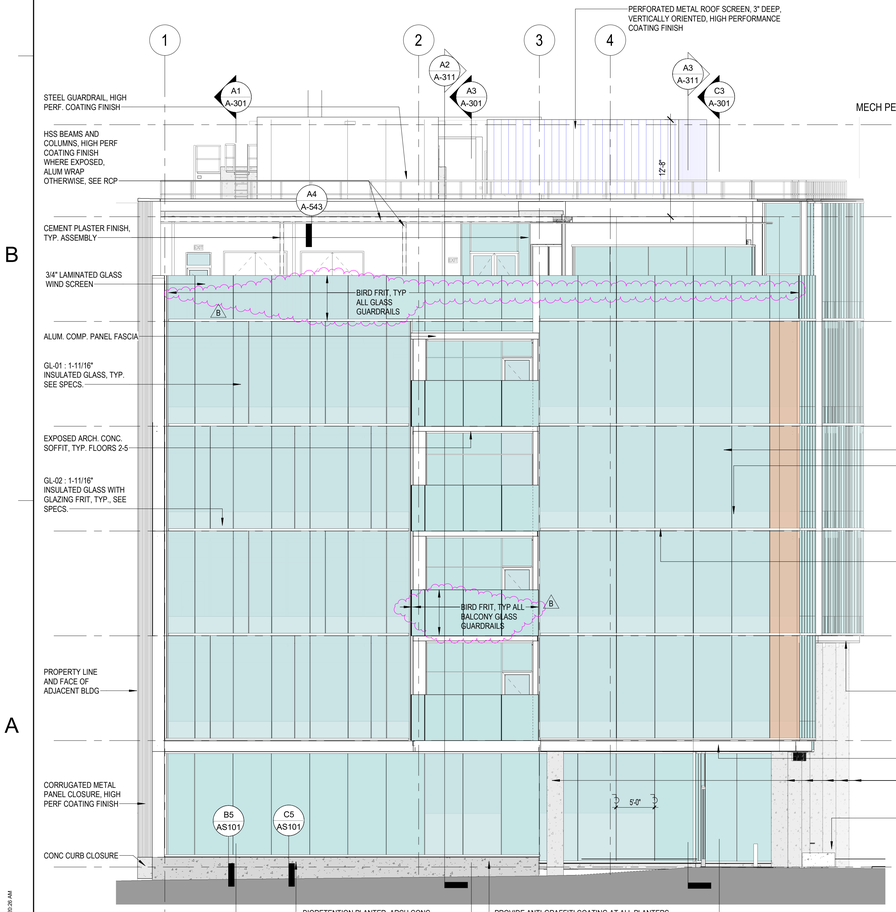
D2 BUILDING ELEVATION - SOUTHEAST - LEVEL 6 PATIO AT CONFERENCE RM
1/8" = 1'-0"



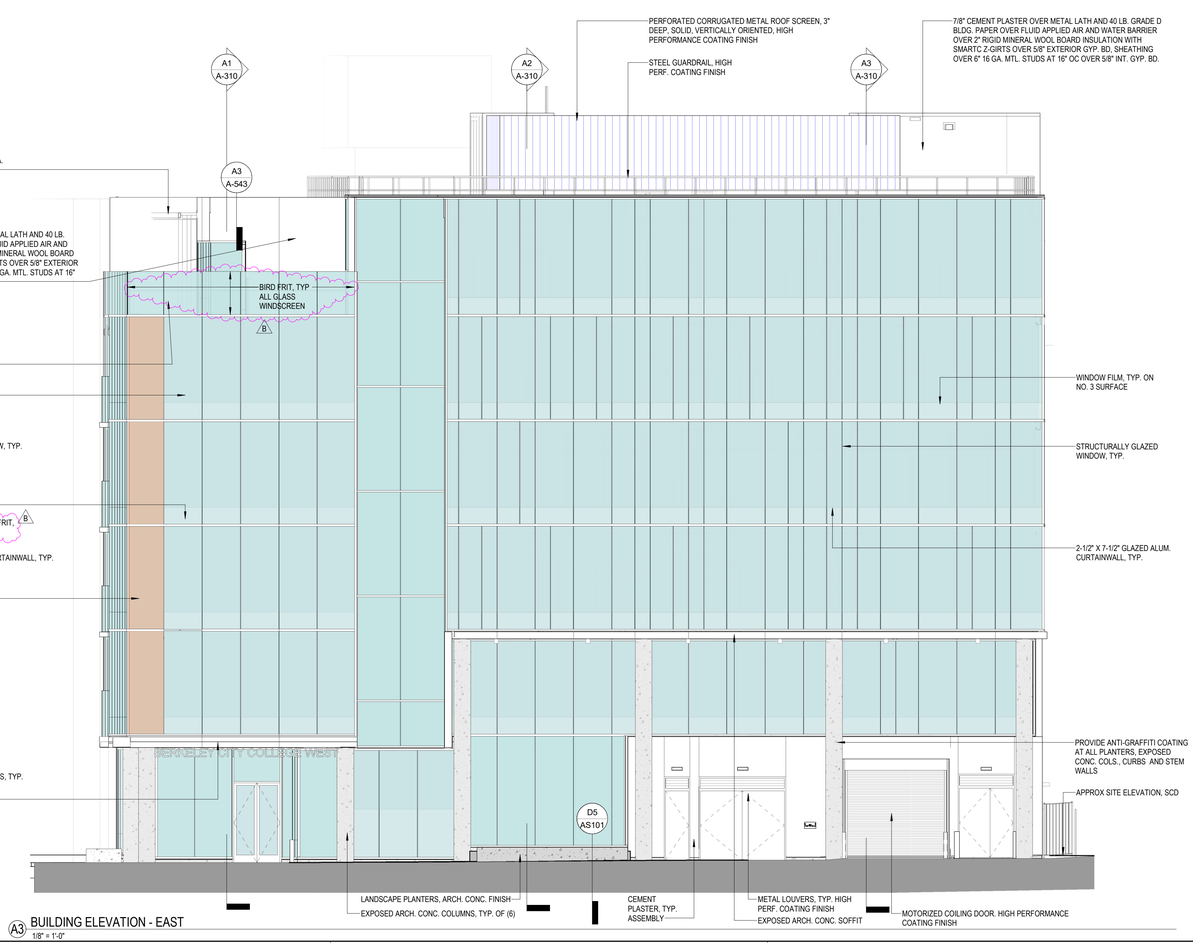
C1 BUILDING ELEVATION - SOUTH - LEVEL 6 PATIO
1/8" = 1'-0"



C3 BUILDING ELEVATION - EAST AT LEVEL 1 & 2 RECESSED FACADE
1/8" = 1'-0"



A1 BUILDING ELEVATION - SOUTH
1/8" = 1'-0"



A3 BUILDING ELEVATION - EAST
1/8" = 1'-0"

GENERAL NOTES

1. ALL EXTERIOR GLAZING IS TO BE GL-01 OR GL-02, HEAT STRENGHTNED SAFETY GLASS.

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

EXTERIOR ELEVATIONS - SOUTH & EAST

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

SHEET NUMBER: A-200

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:20:28 AM

GENERAL NOTES

1. ALL EXTERIOR GLAZING IS TO BE GL1, HEAT STRENGHTNED SAFETY GLASS.

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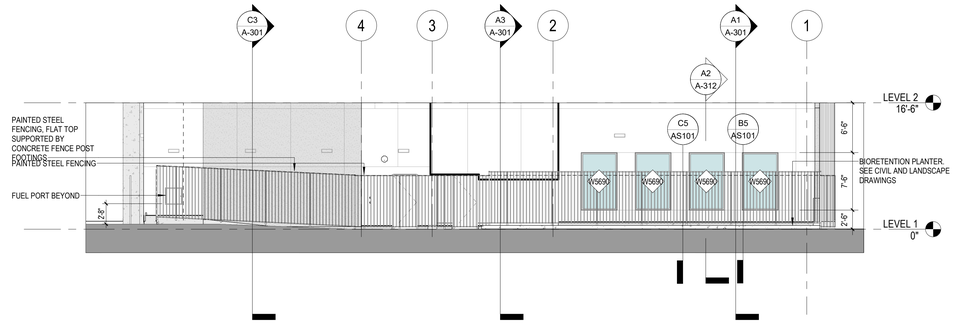
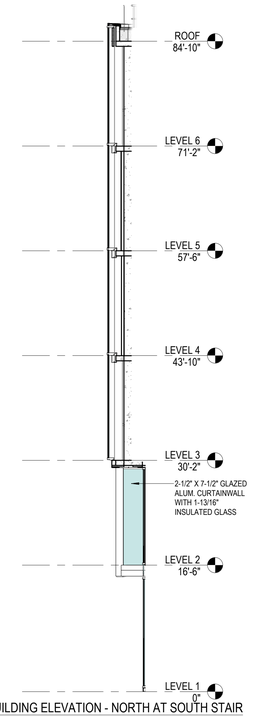
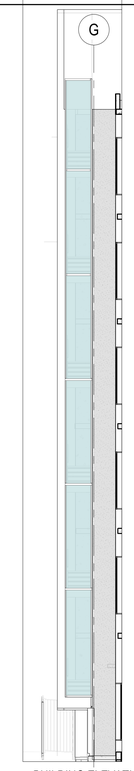


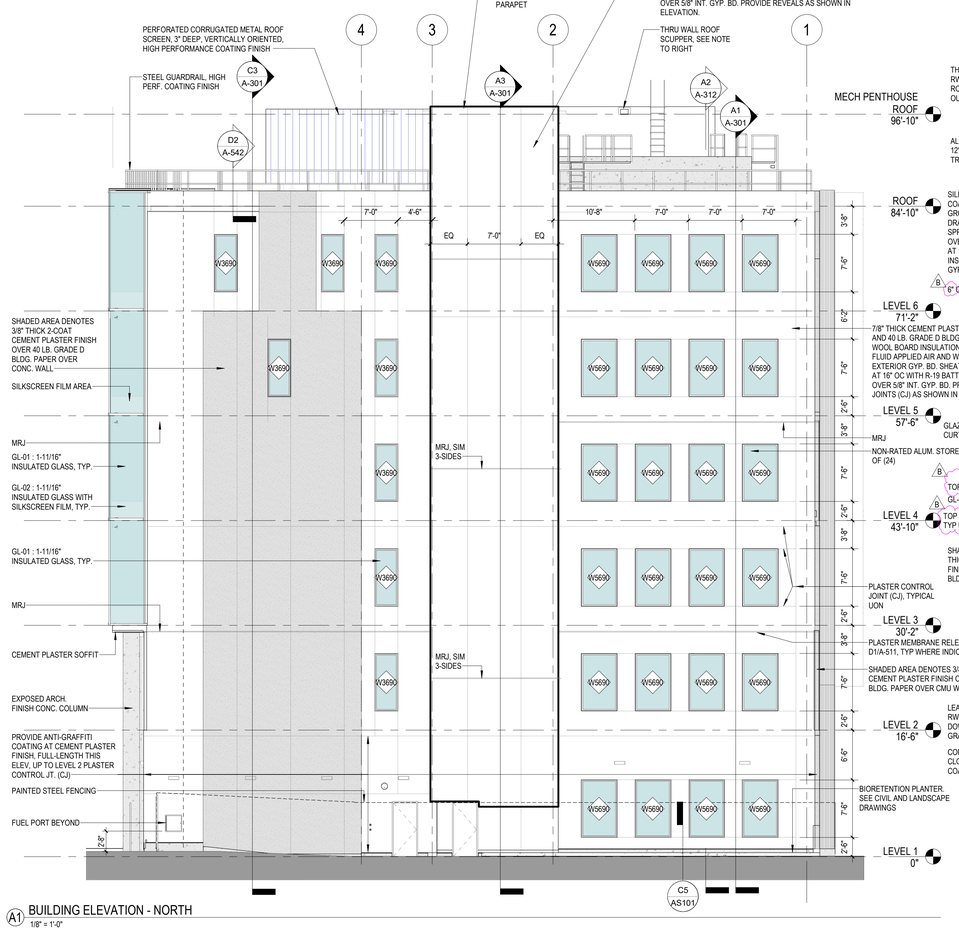
A2 BUILDING ELEVATION - NORTH SITE RAILING
1/8" = 1'-0"



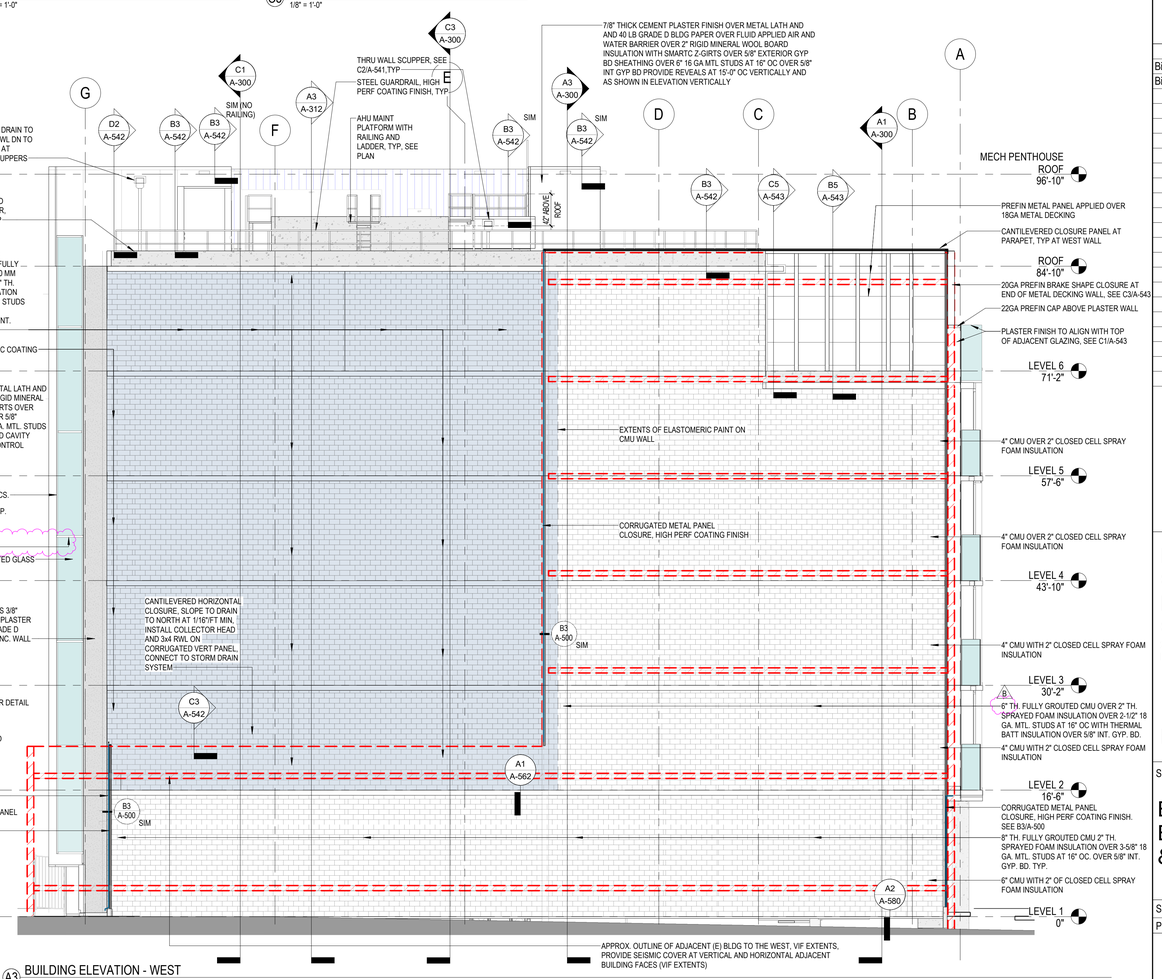
C1 BUILDING ELEVATION - NORTH AT SOUTH STAIR
1/8" = 1'-0"



C3 BUILDING ELEVATION - WEST AT NORTH STAIR
1/8" = 1'-0"



A1 BUILDING ELEVATION - NORTH
1/8" = 1'-0"



A3 BUILDING ELEVATION - WEST
1/8" = 1'-0"

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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

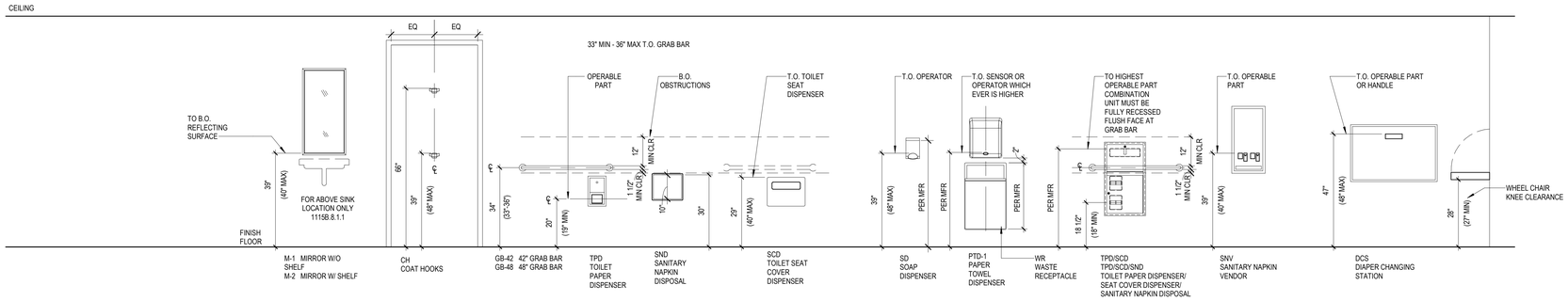
EXTERIOR ELEVATIONS - NORTH & WEST

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: 21415

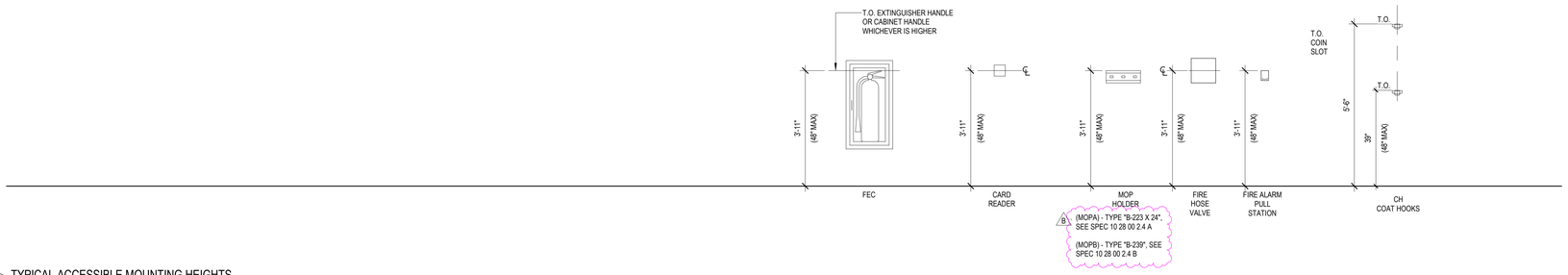
SHEET NUMBER: A-201

07/18/2022 DSA SUBMITTAL & BID SET

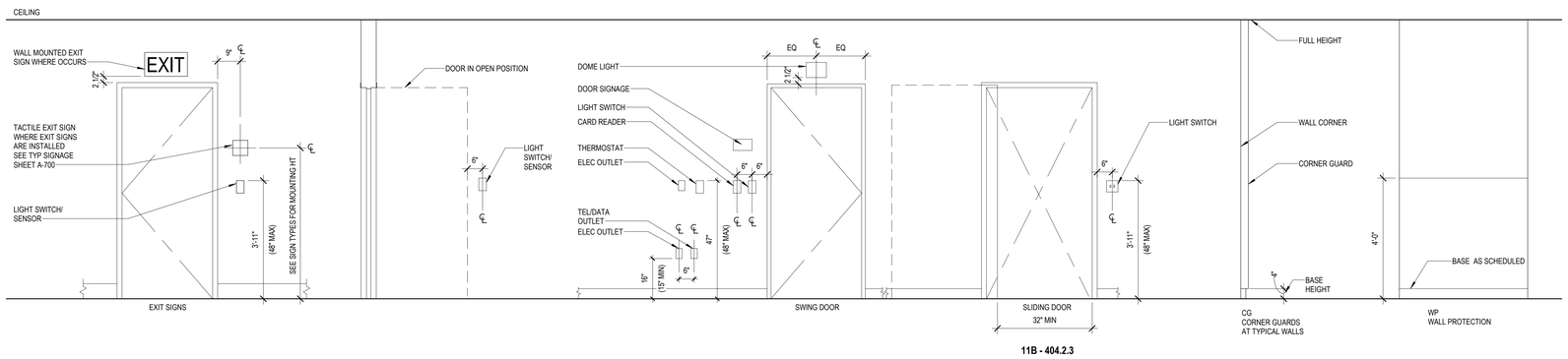
7/20/2022 9:20:51 AM



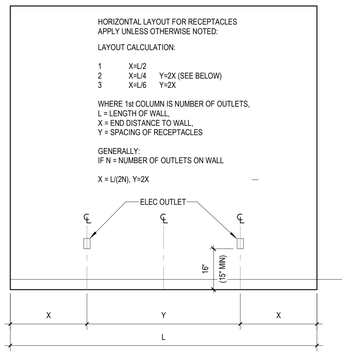
1 TYPICAL MOUNTING HEIGHTS/LOCATIONS - TOILET ROOM ACCESSORIES
1/2" = 1'-0"



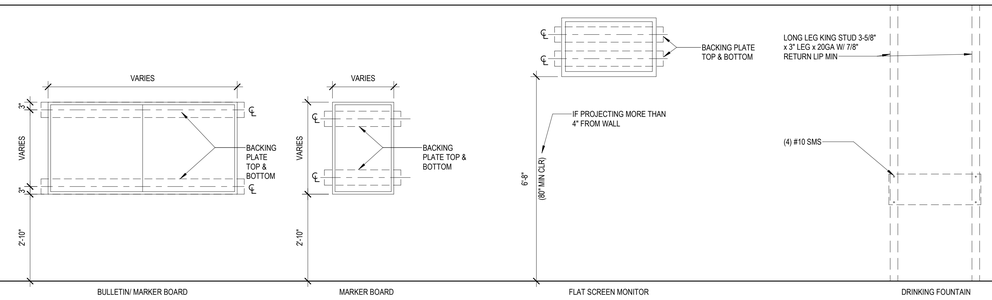
C1 TYPICAL ACCESSIBLE MOUNTING HEIGHTS
1/2" = 1'-0"



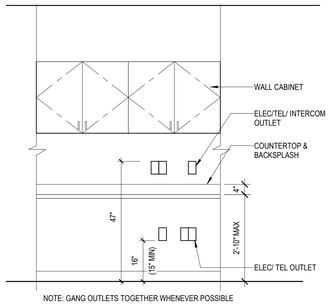
B1 TYPICAL MOUNTING HEIGHTS/ LOCATIONS AT DOOR, UON
1/2" = 1'-0"



B2 TYPICAL HORIZONTAL OUTLET LAYOUT
1/2" = 1'-0"



A1 TYPICAL BACKING HEIGHTS/ LOCATIONS
1/2" = 1'-0"



D1 TYPICAL OUTLET MOUNTING HEIGHTS
1/2" = 1'-0"

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

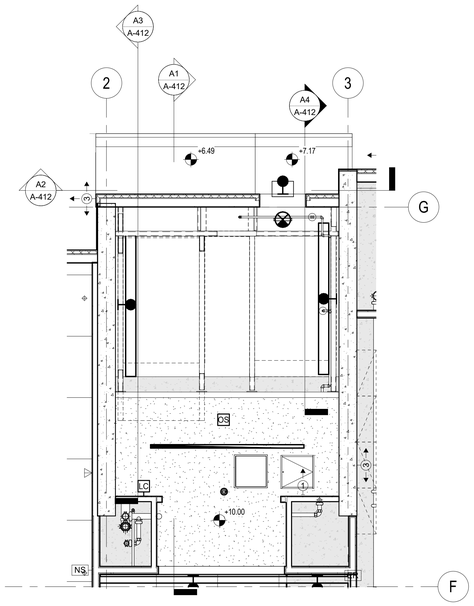
TYPICAL MOUNTING HEIGHTS & LOCATIONS

SCALE: 1/2" = 1'-0"
PROJECT NUMBER: 21415

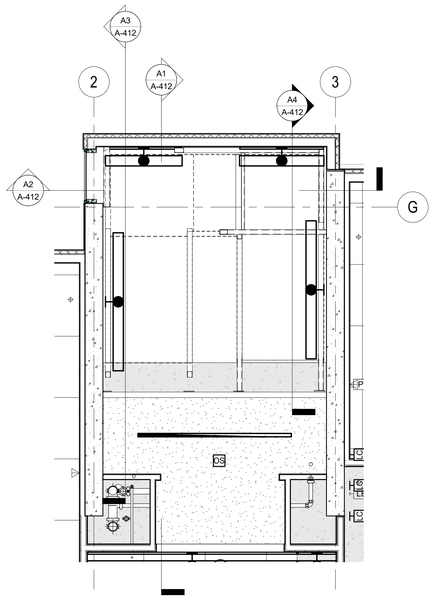
SHEET NUMBER: A-402

07/18/2022 DSA SUBMITTAL & BID SET

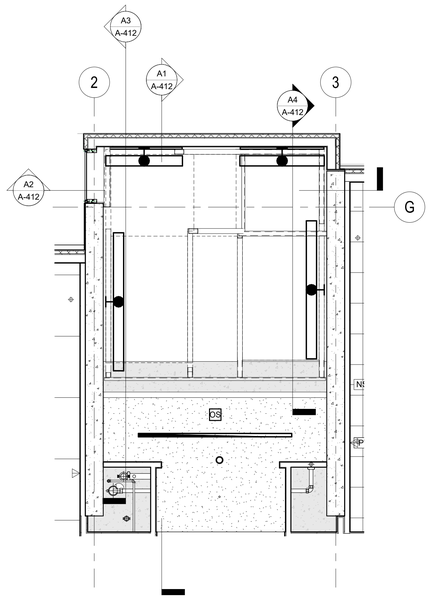
7/28/2022 9:21:37 AM



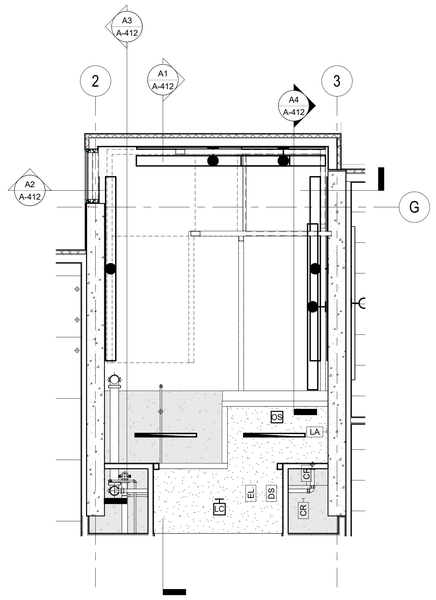
B1 ENLARGED REFLECTED CEILING PLAN - LEVEL 1 NORTH STAIR
1/4" = 1'-0"



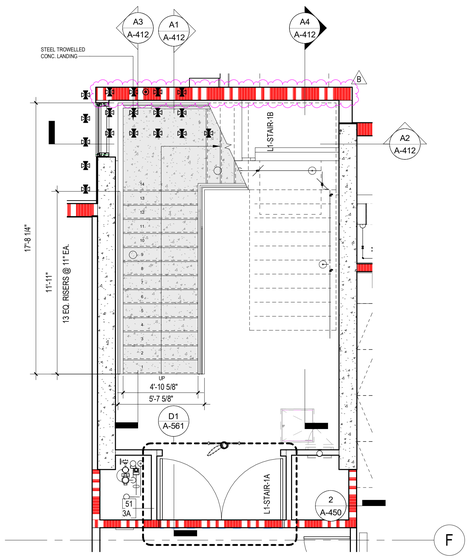
B2 ENLARGED REFLECTED CEILING PLAN - LEVEL 2 NORTH STAIR
1/4" = 1'-0"



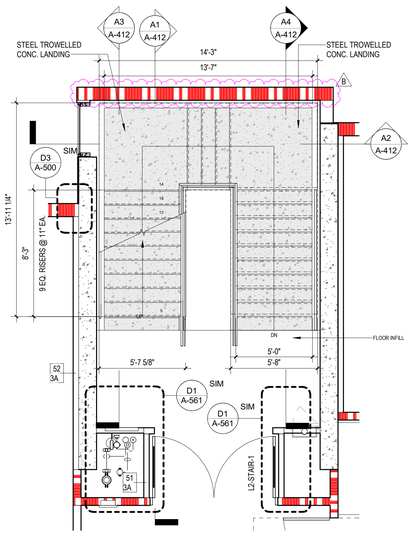
B3 ENLARGED REFLECTED CEILING PLAN - LEVELS 3-5 NORTH STAIR
1/4" = 1'-0"



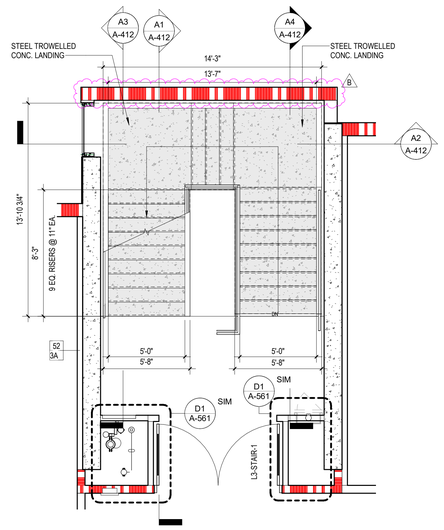
B4 ENLARGED REFLECTED CEILING PLAN - LEVEL 6 NORTH STAIR
1/4" = 1'-0"



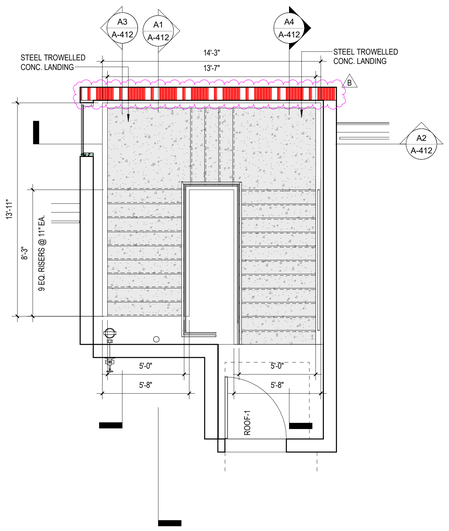
A1 ENLARGED FLOOR PLAN - LEVEL 1 NORTH STAIR
1/4" = 1'-0"



A2 ENLARGED FLOOR PLAN - LEVEL 2 NORTH STAIR
1/4" = 1'-0"



A3 ENLARGED FLOOR PLAN - LEVELS 3-6 NORTH STAIR
1/4" = 1'-0"



A4 ENLARGED FLOOR PLAN - ROOF NORTH STAIR
1/4" = 1'-0"

STAIR GENERAL NOTES

1. REFER TO SHEET A-415 FOR TYPICAL STAIR DETAILS.
2. REFER TO SHEET A-610 FOR STAIR FINISHES.

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

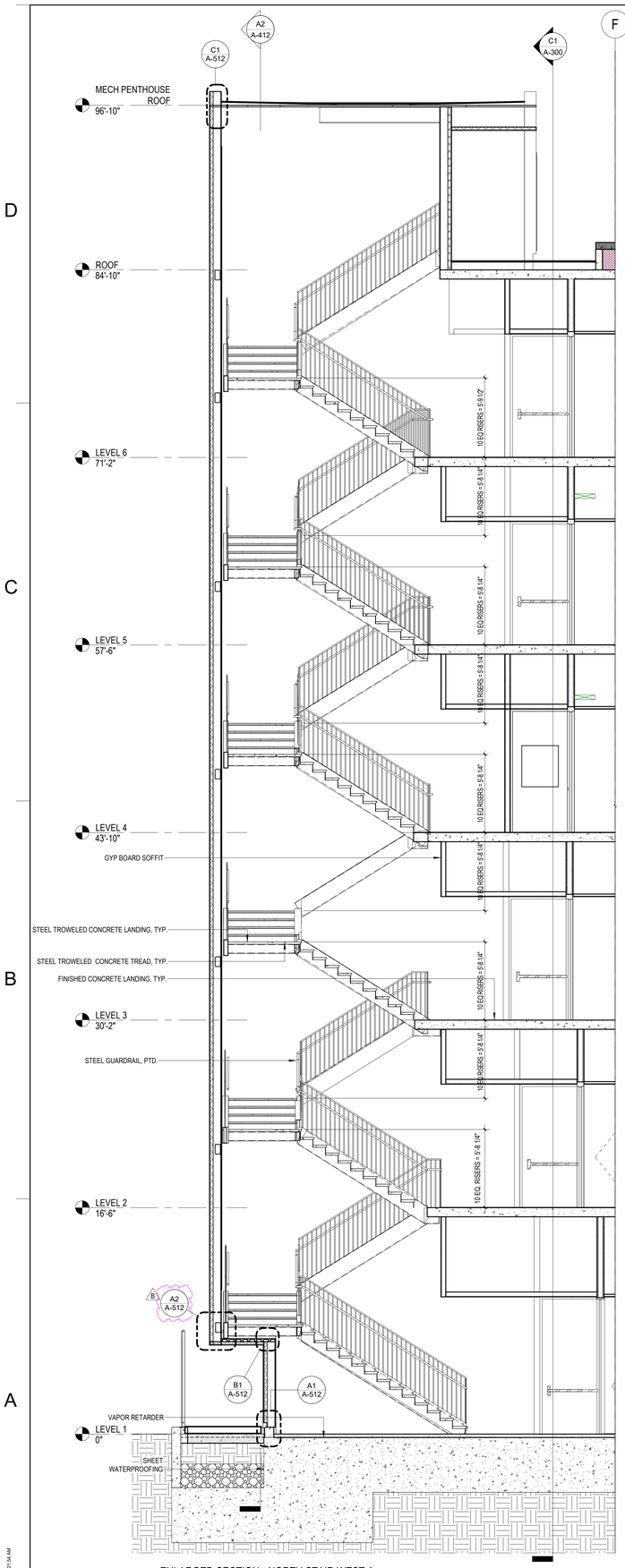
ENLARGED PLANS - NORTH STAIR PLANS & RCPS

SCALE: As indicated
PROJECT NUMBER: 21415

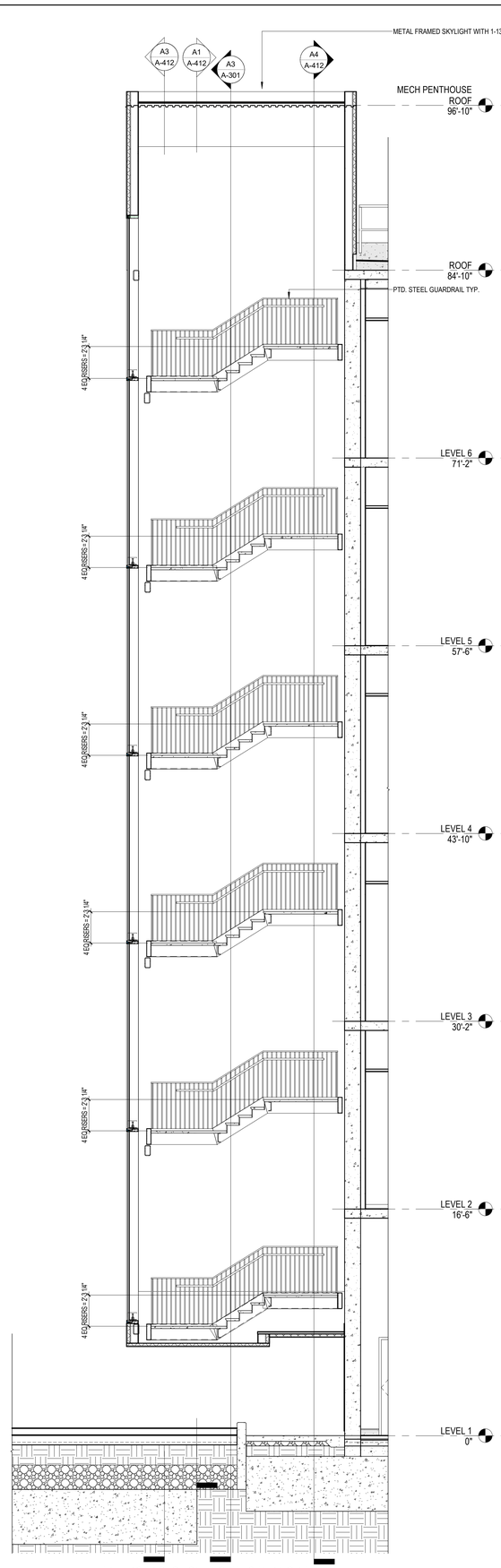
SHEET NUMBER: A-411

07/18/2022 DSA SUBMITTAL & BID SET

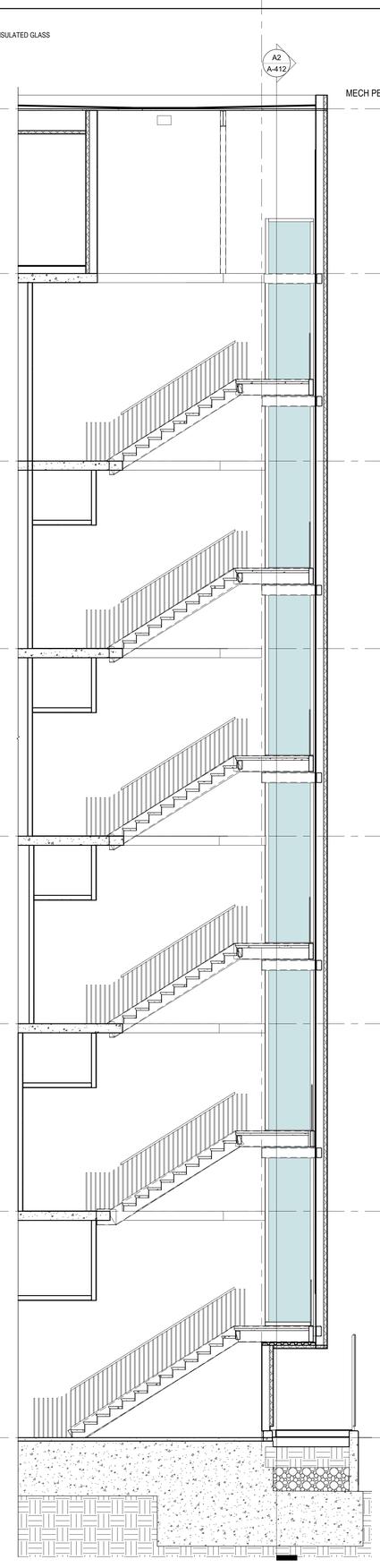
7/28/2022 9:21:48 AM



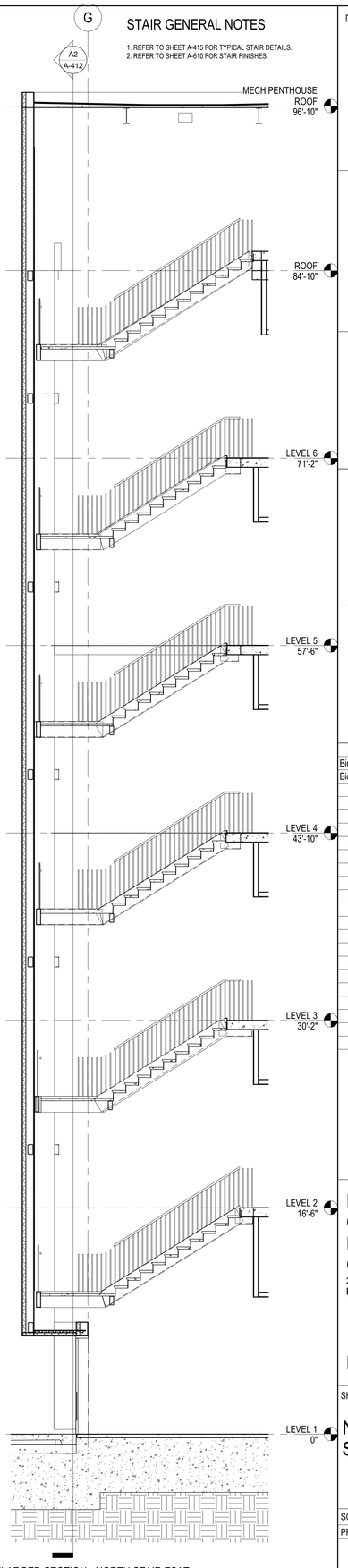
A1 ENLARGED SECTION - NORTH STAIR WEST A
1/4" = 1'-0"



A2 ENLARGED SECTION - NORTH STAIR NORTH
1/4" = 1'-0"



A3 ENLARGED SECTION - NORTH STAIR WEST B
1/4" = 1'-0"



A4 ENLARGED SECTION - NORTH STAIR ESAT
1/4" = 1'-0"

STAIR GENERAL NOTES

1. REFER TO SHEET A-415 FOR TYPICAL STAIR DETAILS.
2. REFER TO SHEET A-610 FOR STAIR FINISHES.

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

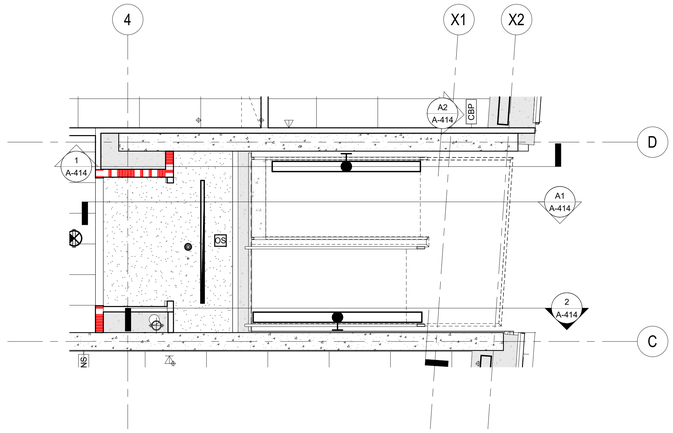
NORTH STAIR SECTIONS

SCALE: As indicated
PROJECT NUMBER: 21415

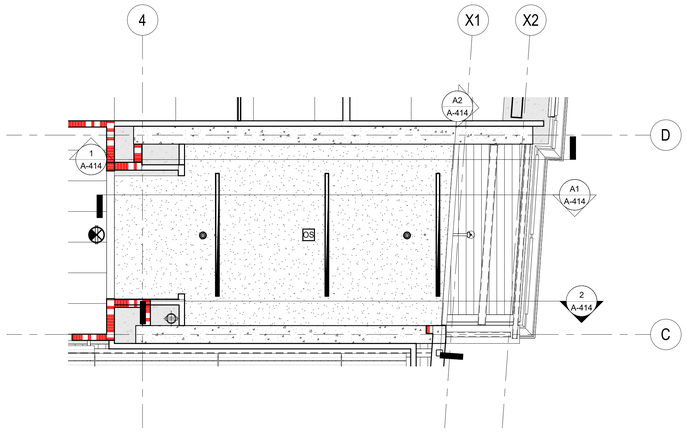
SHEET NUMBER: A-412

07/18/2022 DSA SUBMITTAL & BID SET

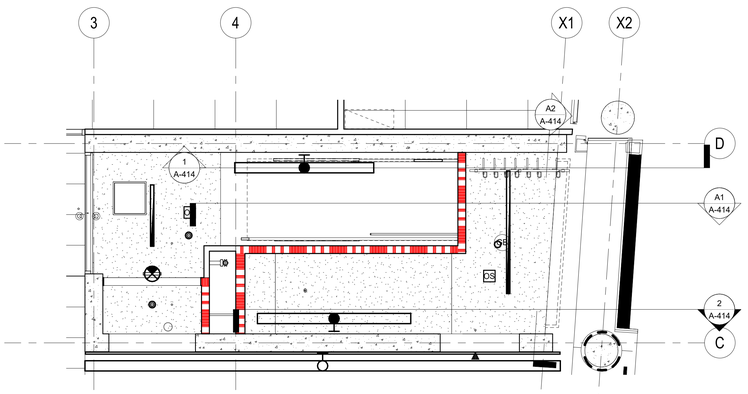
7/26/2022 3:21:34 AM



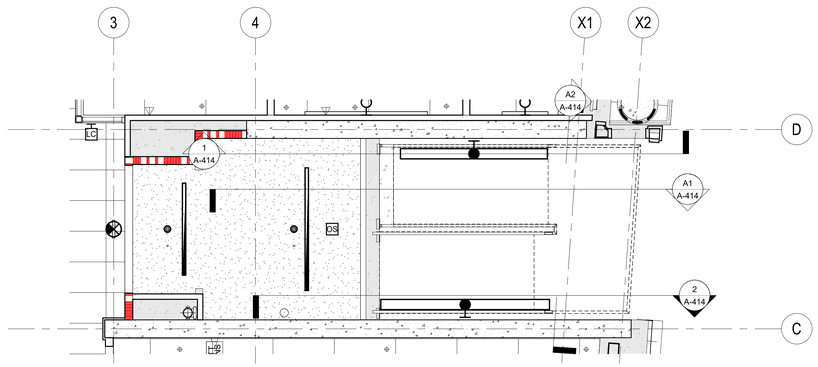
D1 ENLARGED RCP - LEVELS 3-5 SOUTH STAIR
1/4" = 1'-0"



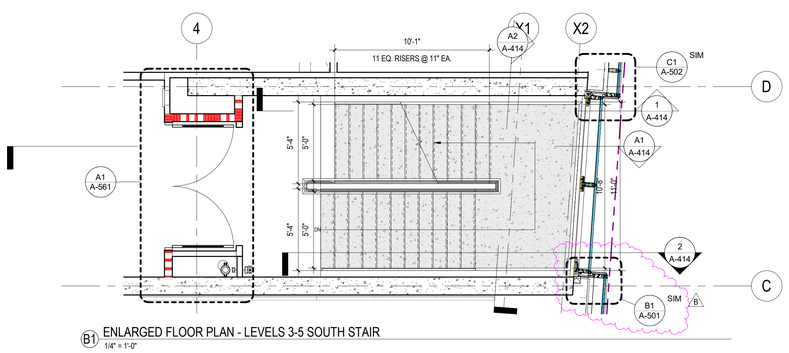
D3 ENLARGED RCP - LEVEL 6 SOUTH STAIR
1/4" = 1'-0"



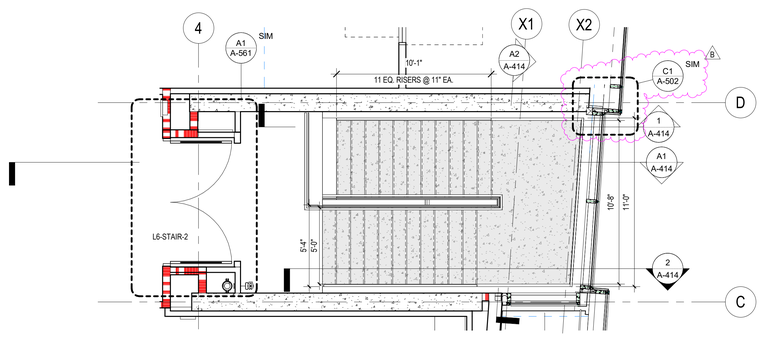
C1 !ARCH_ENLARGED RCP - LEVEL 1 SOUTH STAIR
1/4" = 1'-0"



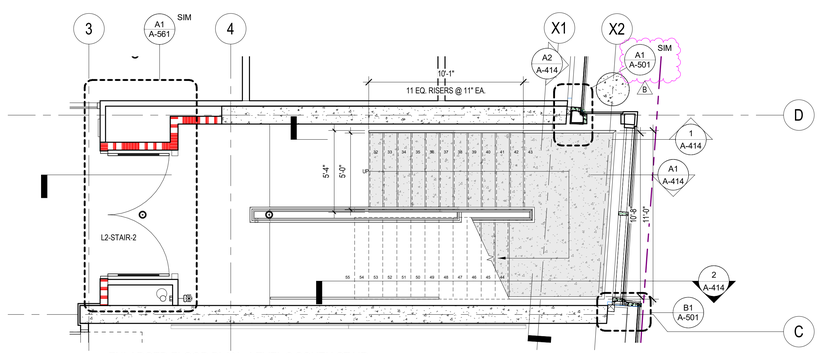
C3 ENLARGED RCP - LEVEL 2 SOUTH STAIR
1/4" = 1'-0"



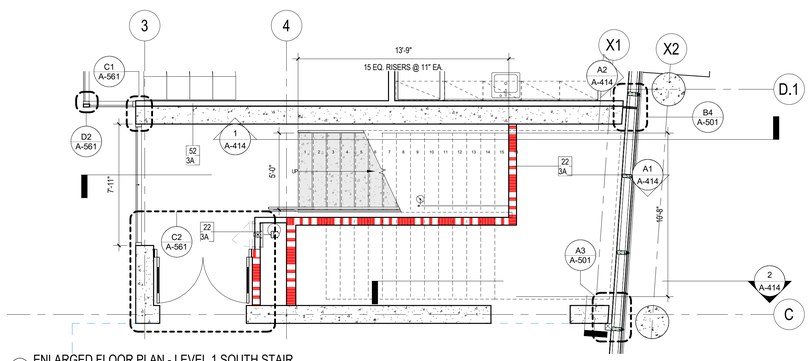
B1 ENLARGED FLOOR PLAN - LEVELS 3-5 SOUTH STAIR
1/4" = 1'-0"



B3 ENLARGED FLOOR PLAN - LEVEL 6 - SOUTH STAIR
1/4" = 1'-0"



A1 ENLARGED FLOOR PLAN - LEVEL 2 SOUTH STAIR
1/4" = 1'-0"



A3 ENLARGED FLOOR PLAN - LEVEL 1 SOUTH STAIR
1/4" = 1'-0"

STAIR GENERAL NOTES

1. REFER TO SHEET A-415 FOR TYPICAL STAIR DETAILS.
2. REFER TO SHEET A-610 FOR STAIR FINISHES.

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

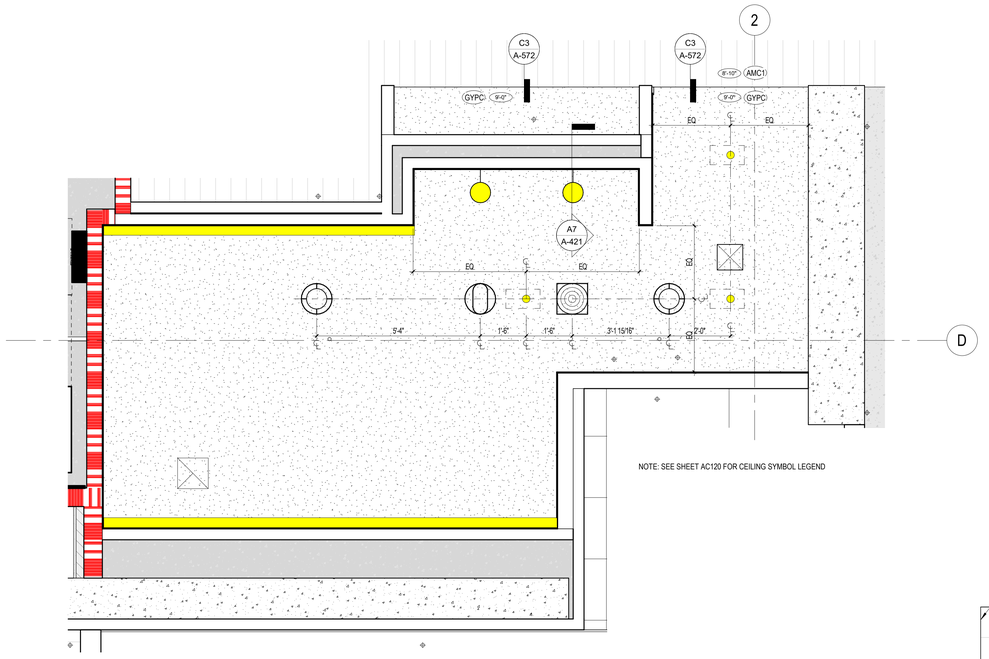
ENLARGED PLANS - SOUTH STAIR PLANS & RCPS

SCALE: As indicated
PROJECT NUMBER: 21415

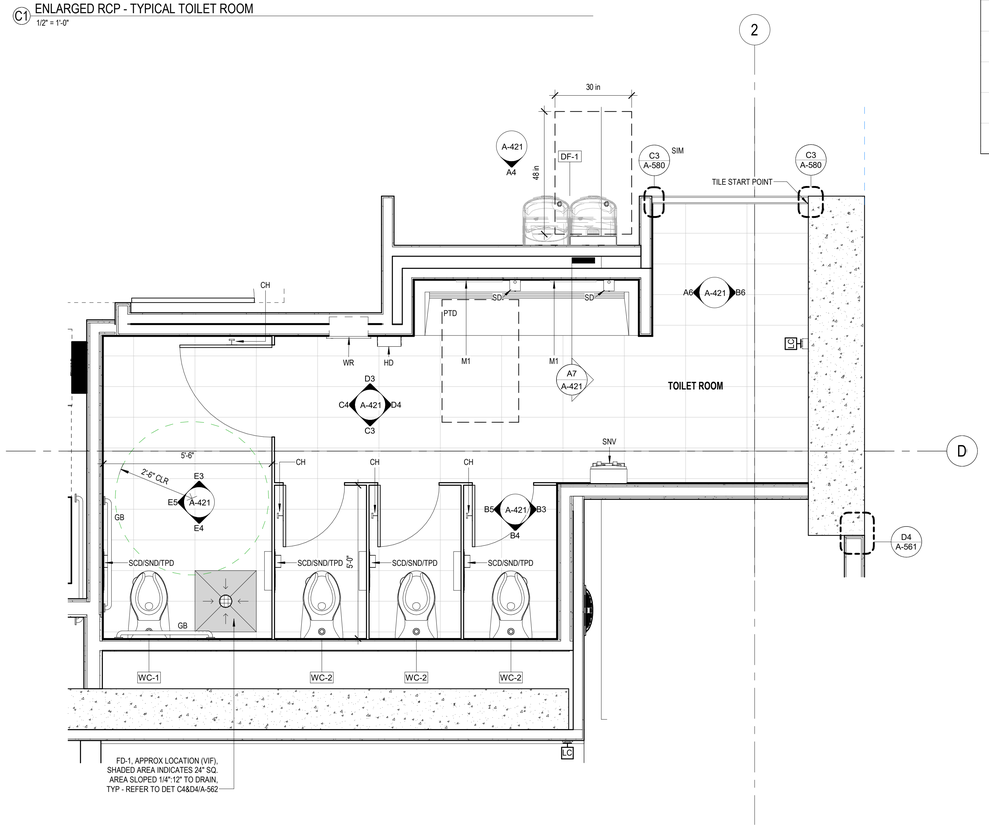
SHEET NUMBER: A-413

07/18/2022 DSA SUBMITTAL & BID SET

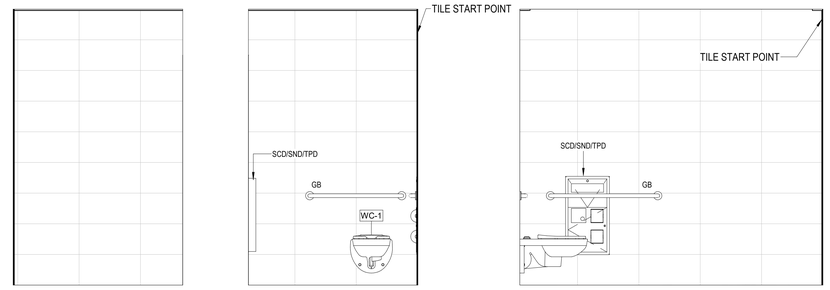
7/26/2022 3:22:04 AM



C1 ENLARGED RCP - TYPICAL TOILET ROOM
1/2" = 1'-0"



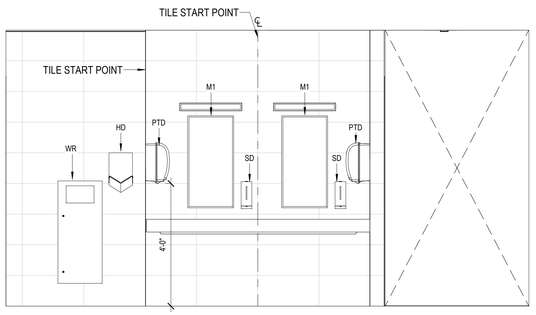
A1 ENLARGED FLOOR PLAN - TYPICAL TOILET ROOM
1/2" = 1'-0"

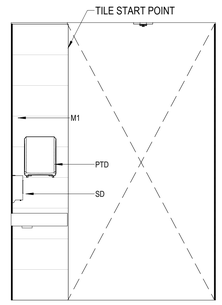


E3 TR-ADA-N
1/2" = 1'-0"

E4 TR-ADA-S
1/2" = 1'-0"

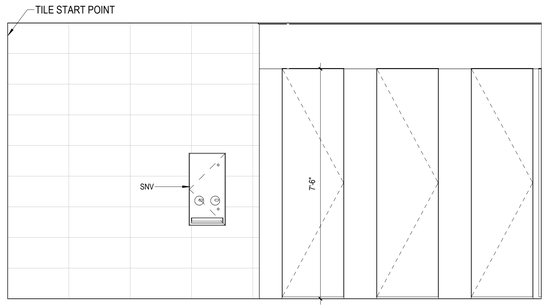
E5 TR-ADA-W
1/2" = 1'-0"

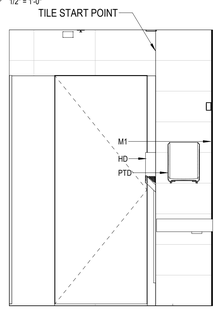




D3 TR-SINK-N
1/2" = 1'-0"

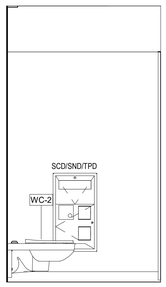
D4 TR-SINK-E
1/2" = 1'-0"

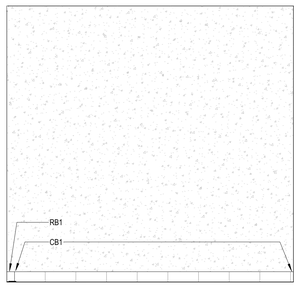




C3 TR-SINK-S
1/2" = 1'-0"

C4 TR-SINK-W
1/2" = 1'-0"



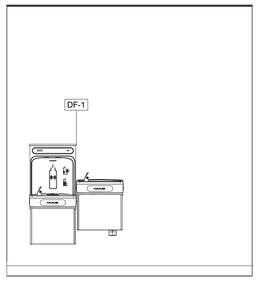


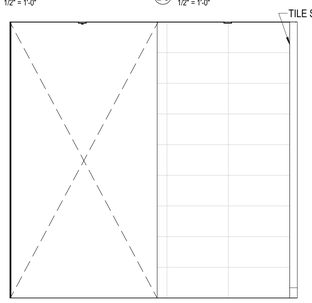
B3 TR-REG-E
1/2" = 1'-0"

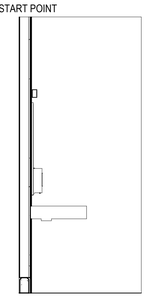
B4 TR-REG-S
1/2" = 1'-0"

B5 TR-REG-W
1/2" = 1'-0"

B6 TR-HALL-E
1/2" = 1'-0"







A4 DF-S
1/2" = 1'-0"

A6 TR-HALL-W
1/2" = 1'-0"

A7 SECTION @ LAVATORY
1/2" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X: FLOOR LEVEL; ROOM NUMBER

WINDOW — XX: IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 A / 6A LEAD: WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12: IDENTIFIER

F12: DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01: IDENTIFIER

CASEWORK — CW XX XX XX: IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1: IDENTIFIER

NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX: IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME: NAME; 101: NUMBER

NAME: NAME; 101: NUMBER; 750 SF: SQ FT; 100: OCCUPANTS PER S.F.; B 8: OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1: IDENTIFIER

WS1A: MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. (B)
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON. SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

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Tel 510 899 6400
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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

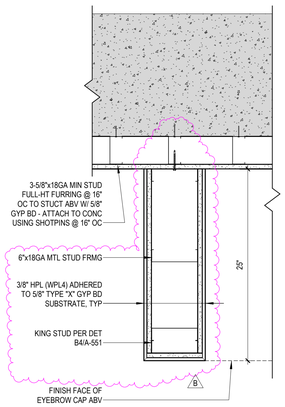
ENLARGED PLANS - TOILET ROOMS

SCALE: As indicated
PROJECT NUMBER: 21415

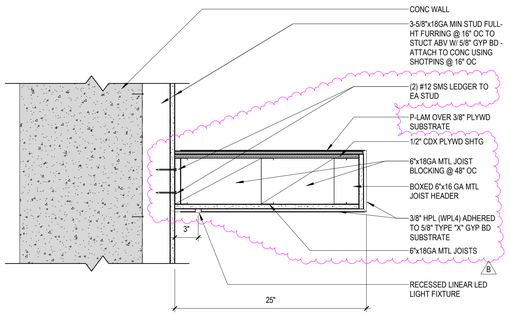
SHEET NUMBER: A-421

07/18/2022 DSA SUBMITTAL & BID SET

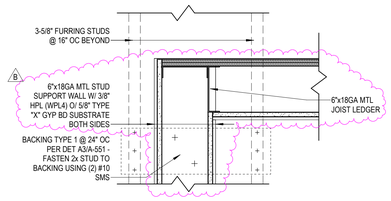
7/20/2022 9:22:38 AM



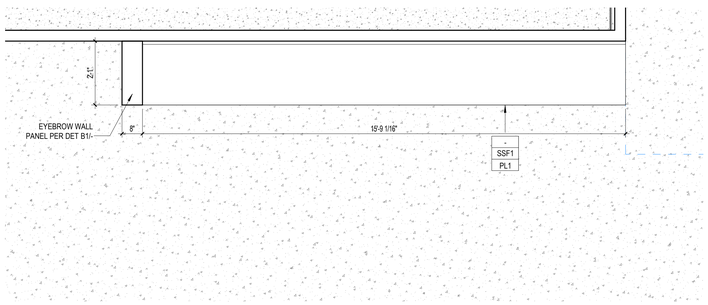
B1 STUDENT LOUNGE EYEBROW WALL PLAN DETAIL
1 1/2" = 1'-0"



B2 STUDENT LOUNGE EYEBROW SECTION DETAIL
1 1/2" = 1'-0"



B3 STUDENT LOUNGE EYEBROW CORNER SECTION DETAIL
1 1/2" = 1'-0"



A1 ENLARGED PLAN - LEVEL 1 - STUDENT LOUNGE
1/2" = 1'-0"

A3 PRSNT! STUDENT LOUNGE-PERSPECTIVE - EYEBROW

DSA APPROVAL

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Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

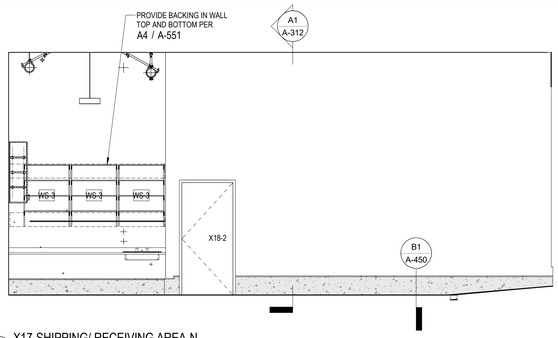
ENLARGED PLANS - STUDENT LOUNGE

SCALE: As indicated
PROJECT NUMBER: 21415

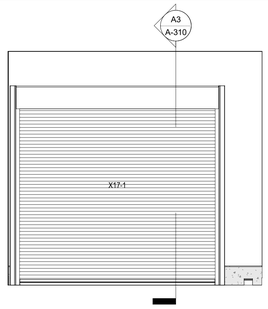
SHEET NUMBER: A-444

DSA SUBMITTAL & BID SET
07/18/2022

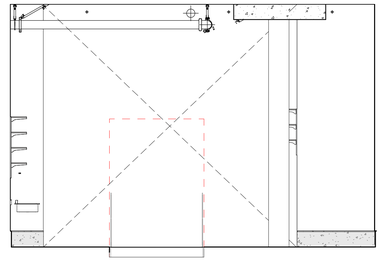
7/26/2022 9:23:58 AM



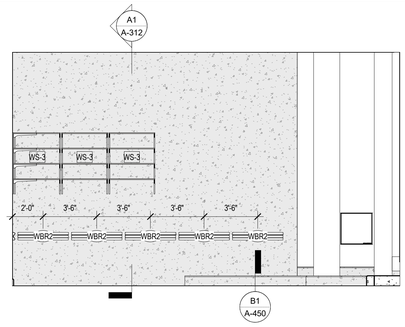
E1 X17-SHIPPING/ RECEIVING AREA-N
1/4" = 1'-0"



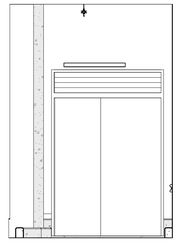
E2 X17-SHIPPING/ RECEIVING AREA-E
1/4" = 1'-0"



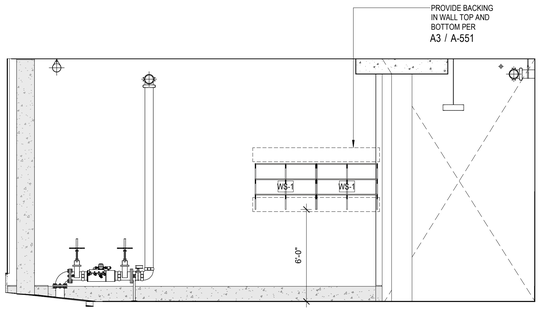
E3 X17-SHIPPING/ RECEIVING AREA-E2
1/4" = 1'-0"



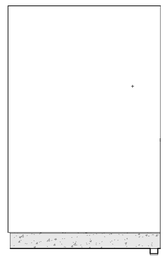
E4 X18 - TRASH ENCLOSURE-N
1/4" = 1'-0"



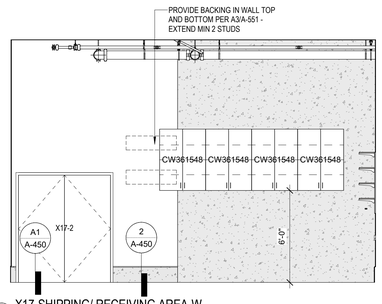
E5 X18 - TRASH ENCLOSURE-E
1/4" = 1'-0"



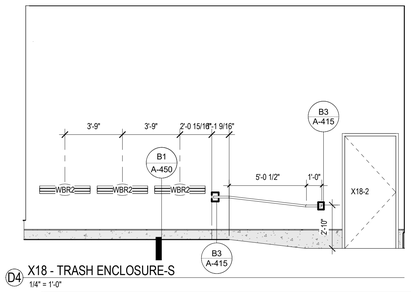
D1 X17-SHIPPING/ RECEIVING AREA-S
1/4" = 1'-0"



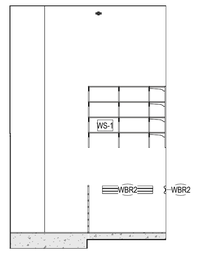
D2 X17-SHIPPING/ RECEIVING AREA-S2
1/4" = 1'-0"



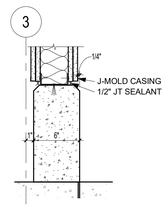
D3 X17-SHIPPING/ RECEIVING AREA-W
1/4" = 1'-0"



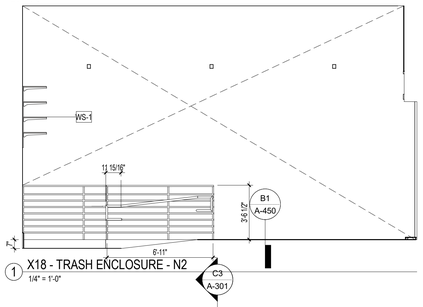
D4 X18 - TRASH ENCLOSURE-S
1/4" = 1'-0"



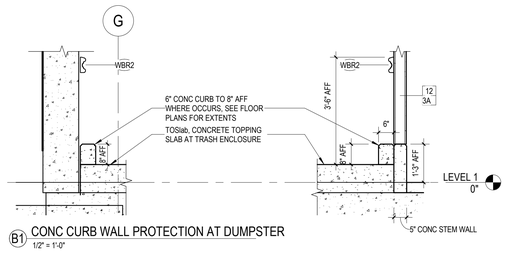
D5 X18 - TRASH ENCLOSURE-W
1/4" = 1'-0"



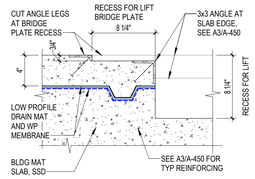
2 DETAIL @ TALL CONC CURB
1 1/2" = 1'-0"



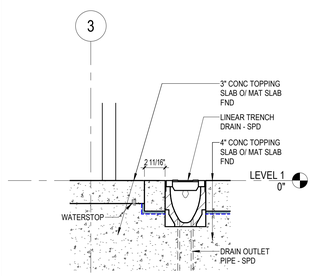
1 X18 - TRASH ENCLOSURE - N2
1/4" = 1'-0"



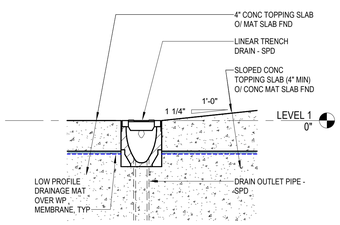
B1 CONC CURB WALL PROTECTION AT DUMPSTER
1/2" = 1'-0"



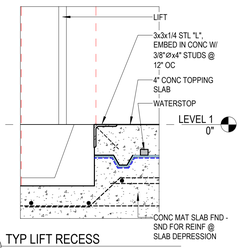
B3 LIFT RECESS AT LIFT BRIDGE
1 1/2" = 1'-0"



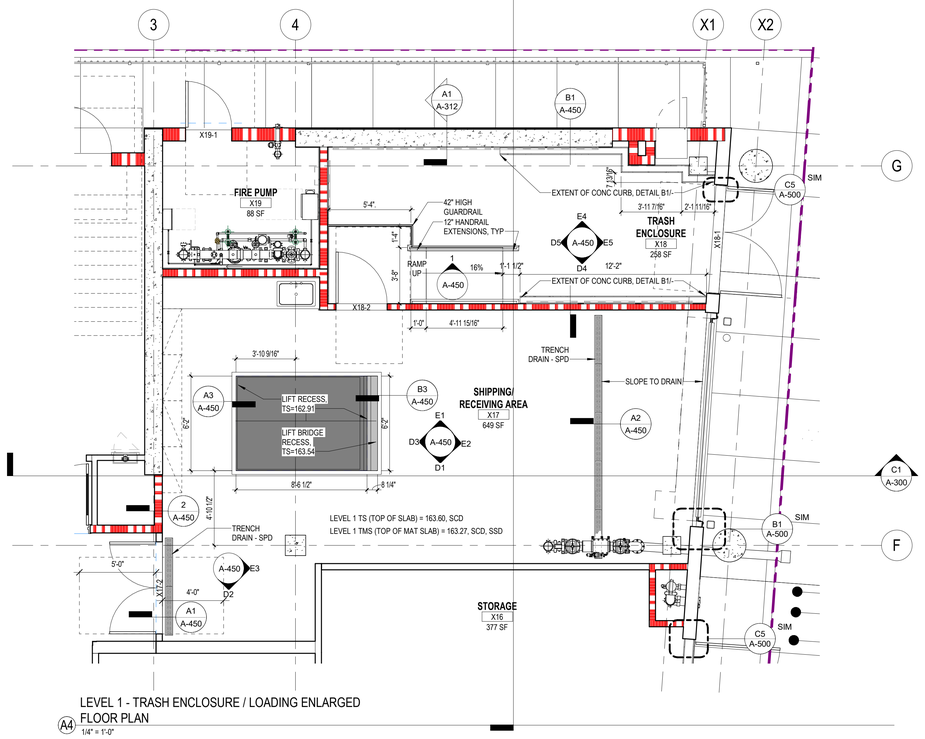
A1 TYP INTERIOR TRENCH DRAIN @ DOOR
1 1/2" = 1'-0"



A2 INTERIOR TRENCH DRAIN @ SLOPED RAMP
1 1/2" = 1'-0"



A3 TYP LIFT RECESS
1 1/2" = 1'-0"



A4 LEVEL 1 - TRASH ENCLOSURE / LOADING ENLARGED FLOOR PLAN
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL; ROOM NUMBER

WINDOW — XX — IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 6A LEAD — 01 6A LEAD A — WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12 — IDENTIFIER

F12 — DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01 — IDENTIFIER

CASEWORK — CW XX XX XX — IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1 — IDENTIFIER. NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX — IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME — NAME; 101 — NUMBER

NAME — NAME; 101 — NUMBER; 750 SF — SQ FT; 100 — OCCUPANTS PER S.F.; B 8 — OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER

MATERIAL EXTENTS ALONG WALL — WS1A

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE.
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. (B)
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON, SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

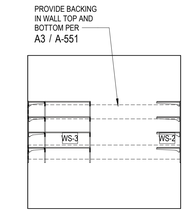
ENLARGED TRASH ENCLOSURE & SHIPPING/RECEIVING

SCALE: As indicated
PROJECT NUMBER: 21415

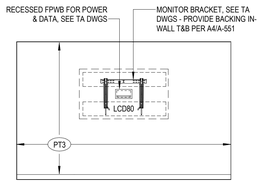
SHEET NUMBER: A-450

07/18/2022 DSA SUBMITTAL & BID SET

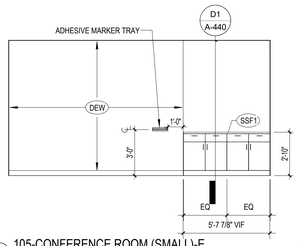
7/25/2022 9:24:18 AM



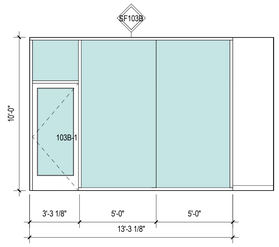
E1 X12 - BUILDING OFFICE - W
1/4" = 1'-0"



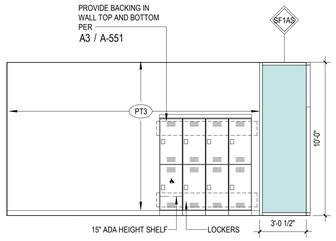
E2 105-CONFERENCE ROOM (SMALL)-N
1/4" = 1'-0"



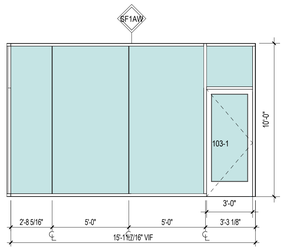
E3 105-CONFERENCE ROOM (SMALL)-E
1/4" = 1'-0"



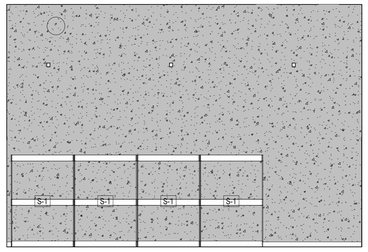
E4 102-STUDENT LIFE RECEPTION/WAITING-E
1/4" = 1'-0"



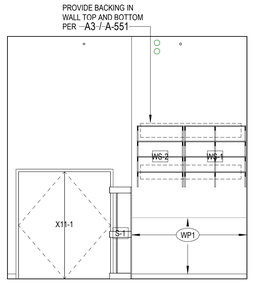
E5 102-STUDENT LIFE RECEPTION/WAITING-S
1/4" = 1'-0"



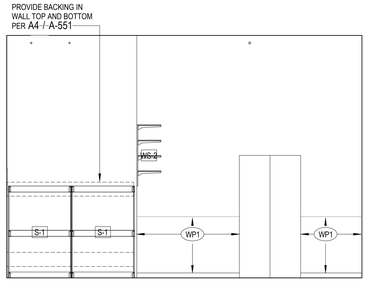
E6 102-STUDENT LIFE RECEPTION/WAITING-W
1/4" = 1'-0"



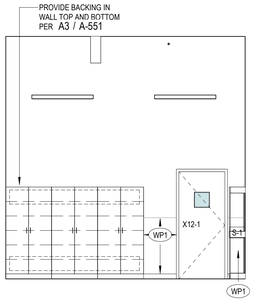
D1 X11 - BUILDING STORAGE - N
1/4" = 1'-0"



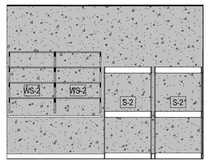
D2 X11 - BUILDING STORAGE - E
1/4" = 1'-0"



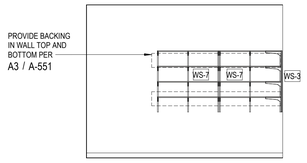
D3 X11 - BUILDING STORAGE - S
1/4" = 1'-0"



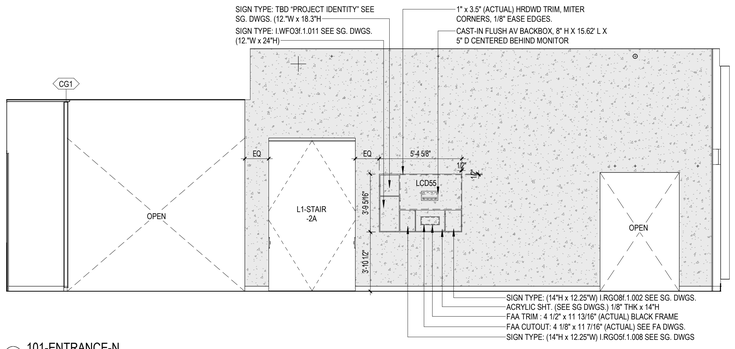
D4 X11 - BUILDING STORAGE - W
1/4" = 1'-0"



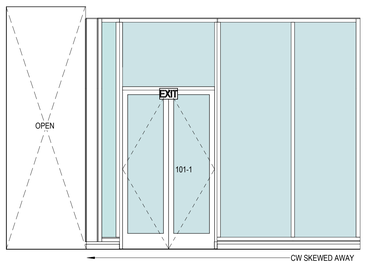
D5 X12 - BUILDING OFFICE - N
1/4" = 1'-0"



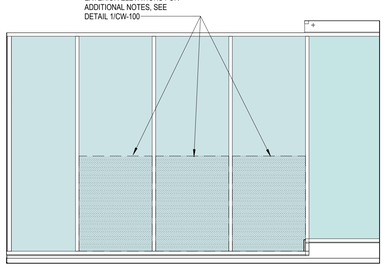
D6 X12 - BUILDING OFFICE - S
1/4" = 1'-0"



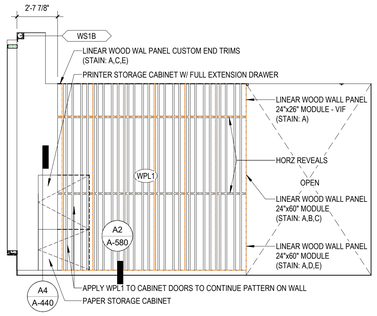
C1 101-ENTRANCE-N
1/4" = 1'-0"



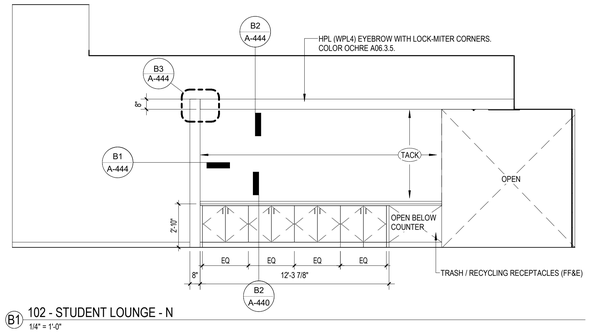
C2 101-ENTRANCE-E2
1/4" = 1'-0"



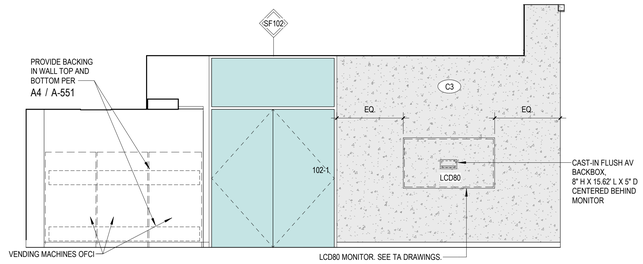
C3 101-ENTRANCE-S
1/4" = 1'-0"



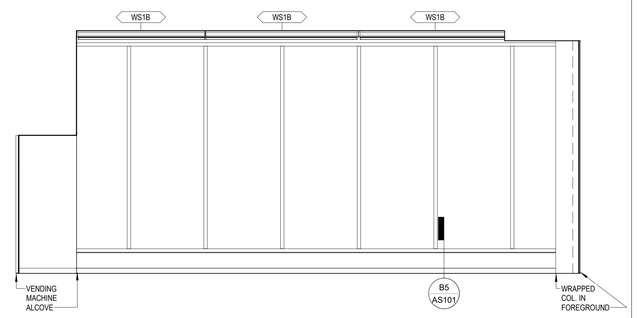
C4 101-ENTRANCE-W
1/4" = 1'-0"



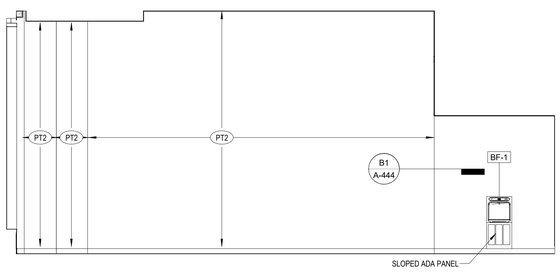
B1 102 - STUDENT LOUNGE - N
1/4" = 1'-0"



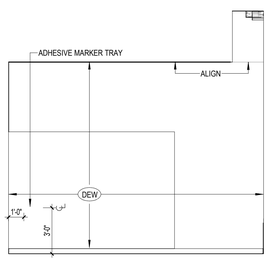
B2 102 - STUDENT LOUNGE - E
1/4" = 1'-0"



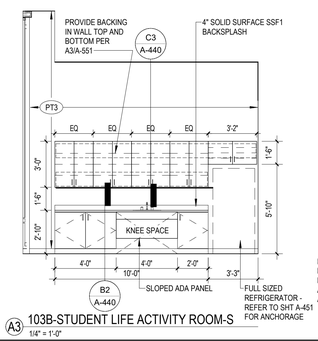
B3 102 - STUDENT LOUNGE - S
1/4" = 1'-0"



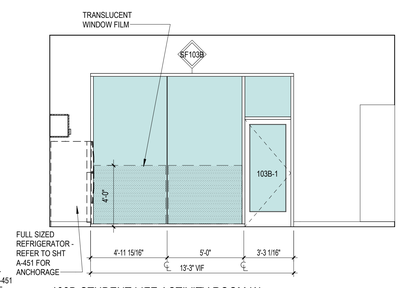
A1 102 - STUDENT LOUNGE - W
1/4" = 1'-0"



A2 103B-STUDENT LIFE ACTIVITY ROOM-N
1/4" = 1'-0"



A3 103B-STUDENT LIFE ACTIVITY ROOM-S
1/4" = 1'-0"



A4 103B-STUDENT LIFE ACTIVITY ROOM-W
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL; ROOM NUMBER

WINDOW — XX — IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 A / 6A LEAD — WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12 — IDENTIFIER

F12 — DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01 — IDENTIFIER

CASEWORK — CW XX XX XX — IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1 — IDENTIFIER. NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX — IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME — NAME; 101 — NUMBER

NAME — NAME; 101 — NUMBER; 750 SF — SQ FT; 100 — OCCUPANTS PER S.F.; B 8 — OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER

WS1A — MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. (B)
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON, SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

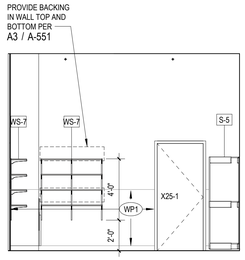
INTERIOR ELEVATIONS - LEVEL 1

SCALE: As indicated
PROJECT NUMBER: 21415

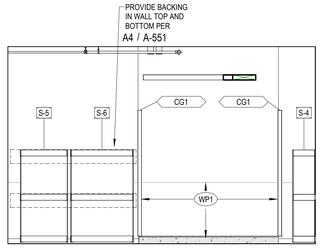
SHEET NUMBER: A-460

07/18/2022 DSA SUBMITTAL & BID SET

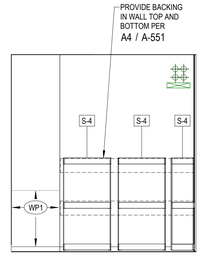
7/20/2022 9:24:44 AM



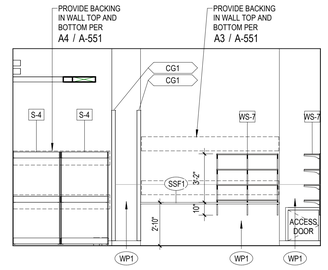
E1 X25-AV/IT WORK-N
1/4" = 1'-0"



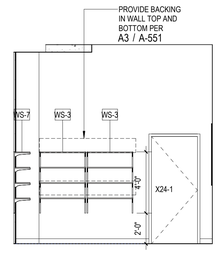
E2 X25-AV/IT WORK-E
1/4" = 1'-0"



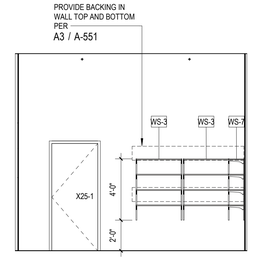
E3 X25-AV/IT WORK-S
1/4" = 1'-0"



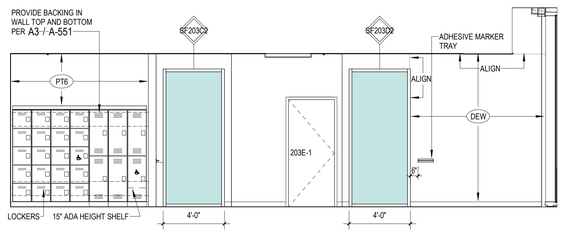
E4 X25-AV/IT WORK-W
1/4" = 1'-0"



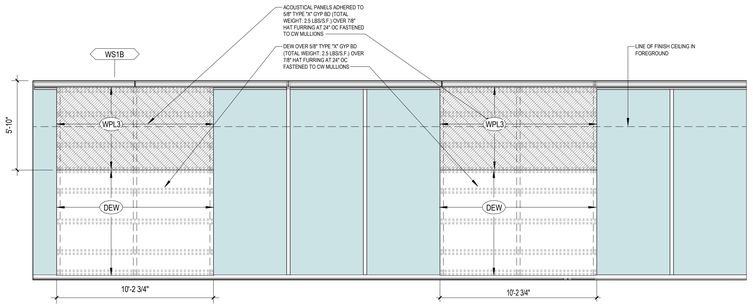
E5 X24-AV STAFF WORKROOM-N
1/4" = 1'-0"



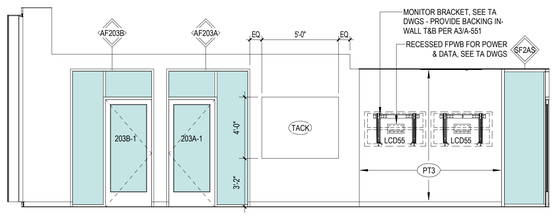
E6 X24-AV STAFF WORKROOM-S
1/4" = 1'-0"



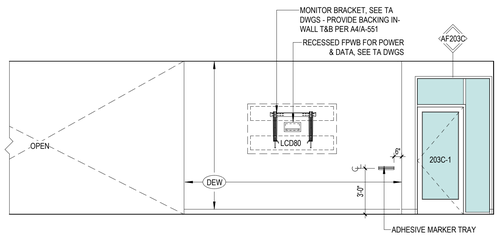
D1 203-LRC OPEN AREA-N
1/4" = 1'-0"



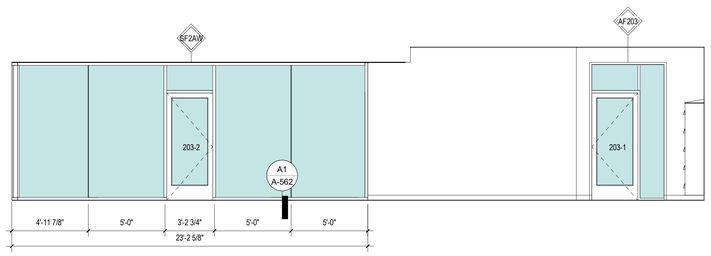
D2 203-LRC OPEN AREA-E
1/4" = 1'-0"



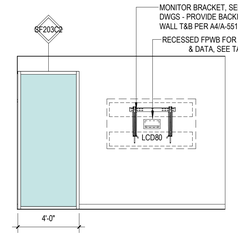
D3 203-LRC OPEN AREA-S
1/4" = 1'-0"



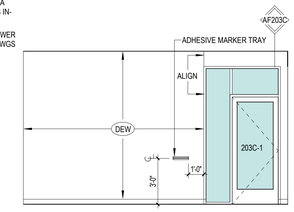
C1 203-LRC OPEN AREA-W
1/4" = 1'-0"



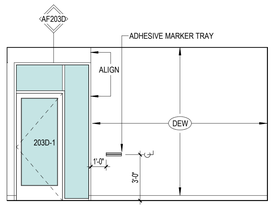
C2 203-LRC OPEN AREA-W2
1/4" = 1'-0"



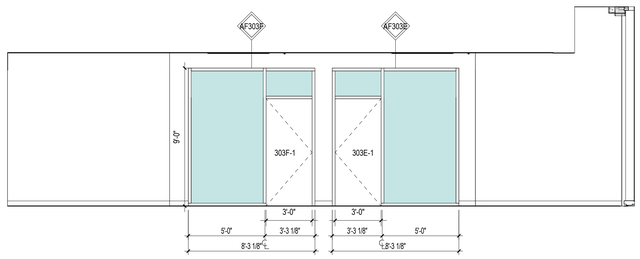
C3 203C-LRC GROUP STUDY-S
1/4" = 1'-0"



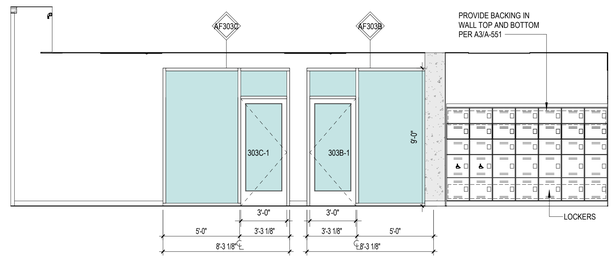
C4 203C-LRC GROUP STUDY-E
1/4" = 1'-0"



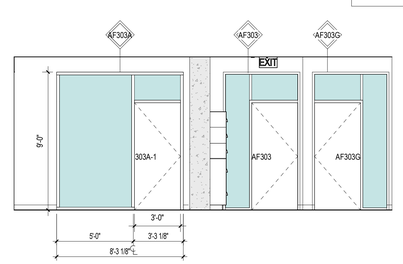
B1 203D-LRC GROUP STUDY-W
1/4" = 1'-0"



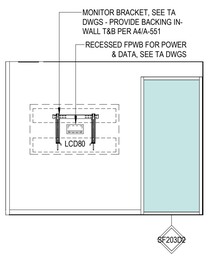
B2 303-OPEN OFFICE-N
1/4" = 1'-0"



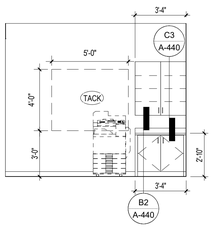
B3 303-OPEN OFFICE-S
1/4" = 1'-0"



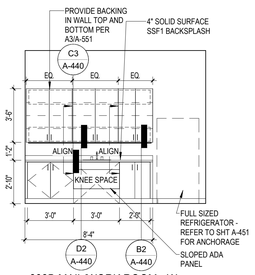
B4 303-OPEN OFFICE-W
1/4" = 1'-0"



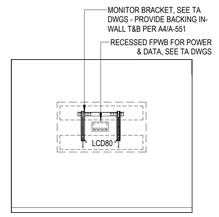
A1 203D-LRC GROUP STUDY-S
1/4" = 1'-0"



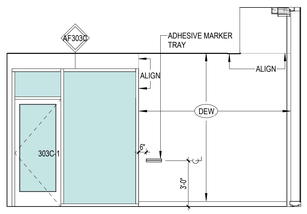
A2 303B MAIL/WORK ROOM - E
1/4" = 1'-0"



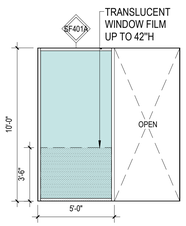
A3 303B MAIL/WORK ROOM - W
1/4" = 1'-0"



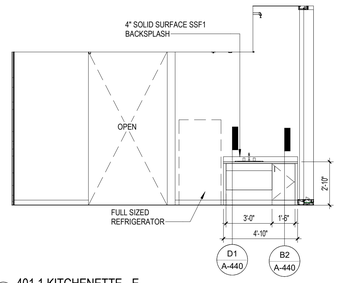
A4 303C CONFERENCE - W
1/4" = 1'-0"



A5 303C CONFERENCE - NORTH
1/4" = 1'-0"



A6 401A OPEN OFFICE - N
1/4" = 1'-0"



A7 401.1 KITCHENETTE - E
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL; ROOM NUMBER

WINDOW — XX — IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 A 6A LEAD — WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12 — IDENTIFIER

F12 — DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01 — IDENTIFIER

CASEWORK — CW XX XX XX — IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1i — IDENTIFIER

NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX — IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME — NAME; 101 — NUMBER

NAME — NAME; 101 — NUMBER; 750 SF — SQ FT; 100 — OCCUPANTS PER S.F.; B 8 — OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER

WS1A — MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES.
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON. SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

(B)

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT RONALD D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

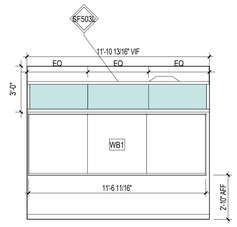
INTERIOR ELEVATIONS - LEVELS 2 & 3 & 4

SCALE: As indicated
PROJECT NUMBER: 21415

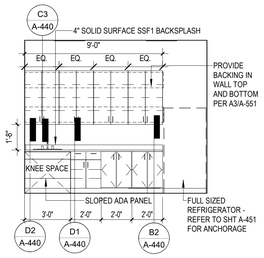
SHEET NUMBER: A-461

07/18/2022 DSA SUBMITTAL & BID SET

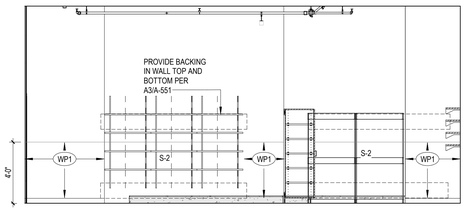
7/28/2022 9:25:08 AM



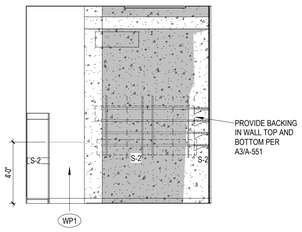
E1 503M-STAFF LOUNGE-E
1/4" = 1'-0"



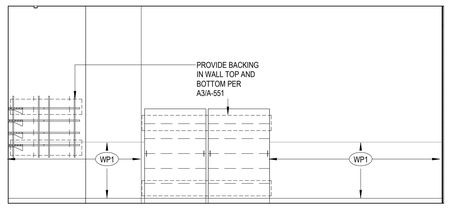
E2 503M-STAFF LOUNGE-W
1/4" = 1'-0"



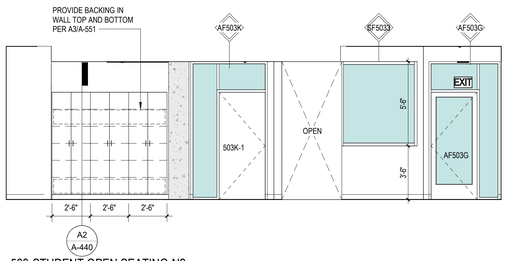
E3 X54-ENGINEER STAFF & WORK RM-E
1/4" = 1'-0"



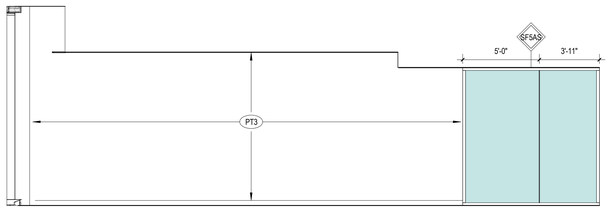
E4 X54-ENGINEER STAFF & WORK RM-S
1/4" = 1'-0"



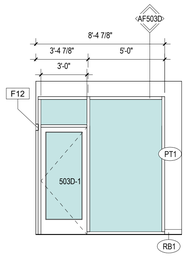
E5 X54-ENGINEER STAFF & WORK RM-W
1/4" = 1'-0"



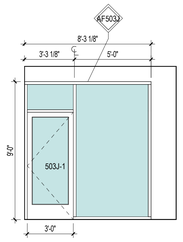
D1 503-STUDENT OPEN SEATING-N2
1/4" = 1'-0"



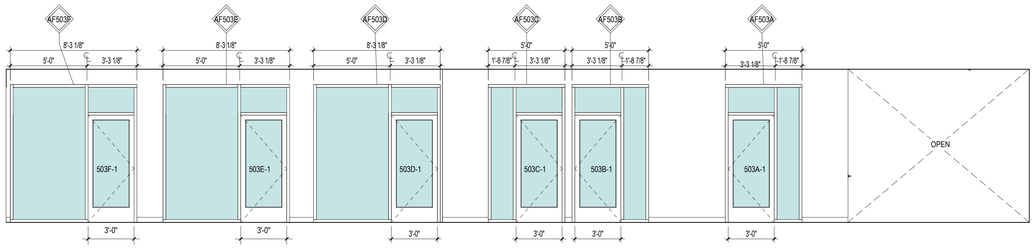
D2 503 STUDENT SERVICES OPEN AREA - S
1/4" = 1'-0"



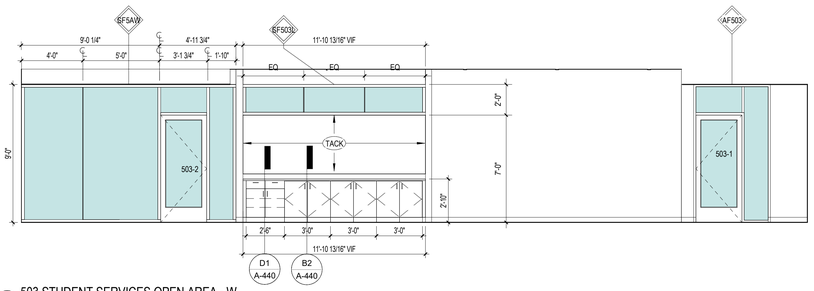
D4 503D-SoS OFFICE-W
1/4" = 1'-0"



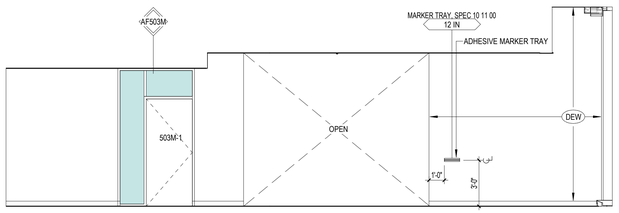
D5 503J-UCRC OFFICE-E
1/4" = 1'-0"



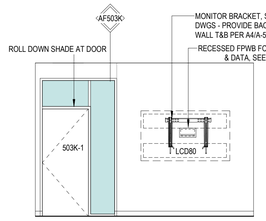
C1 503 STUDENT SERVICES OPEN AREA - E
1/4" = 1'-0"



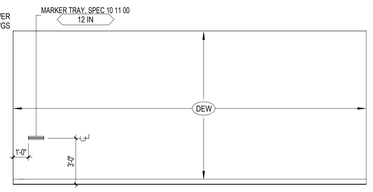
C2 503 STUDENT SERVICES OPEN AREA - W
1/4" = 1'-0"



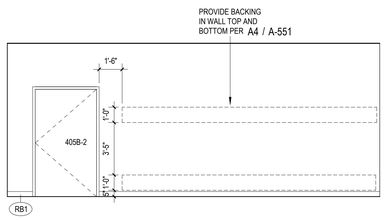
B1 503 STUDENT SERVICES OPEN AREA - NORTH
1/4" = 1'-0"



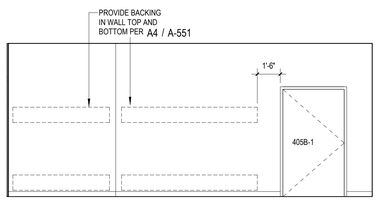
B2 503K-CONFERENCE ROOM (MEDIUM)-S
1/4" = 1'-0"



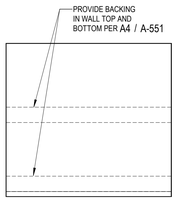
B3 503K-CONFERENCE ROOM (MEDIUM)-W
1/4" = 1'-0"



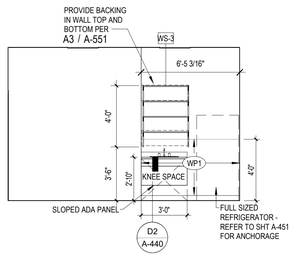
A1 405B ART STORAGE - N
1/4" = 1'-0"



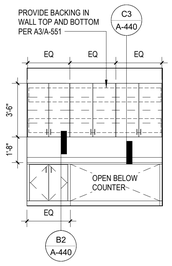
A2 405B-ART STORAGE-S
1/4" = 1'-0"



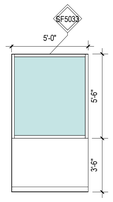
A3 405B-ART STORAGE-W
1/4" = 1'-0"



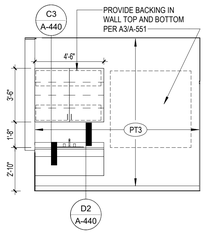
A4 X44-CUSTODIAL OFFICE/WORKROOM-E
1/4" = 1'-0"



A5 503.3 - WORK ROOM - N
1/4" = 1'-0"



A6 503.3 - WORK ROOM - S
1/4" = 1'-0"



A7 504C EXAM - E
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL; ROOM NUMBER

WINDOW — XX — IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 6A A LEAD — WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12 — IDENTIFIER

F12 — DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01 — IDENTIFIER

CASEWORK — CW XX XX XX — IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — IDENTIFIER; 1i

NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX — IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME — NAME; 101 — NUMBER

NAME — NAME; 101 — NUMBER; 750 SF — SQ FT; 100 — OCCUPANTS PER S.F.; B 8 — OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER

WS1A — MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. (B)
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON. SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

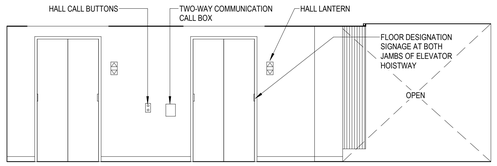
INTERIOR ELEVATIONS - LEVELS 4 & 5

SCALE: As indicated
PROJECT NUMBER: 21415

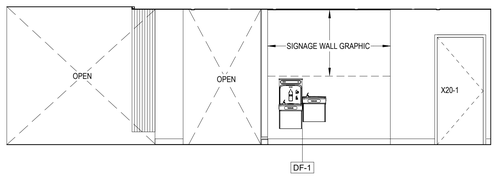
SHEET NUMBER: A-462

DSA SUBMITTAL & BID SET 07/18/2022

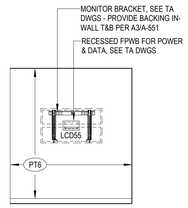
7/26/2022 9:25:28 AM



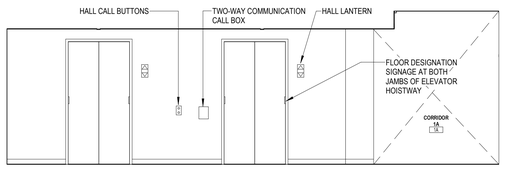
E1 ELEVATOR LOBBY 2 - N
1/4" = 1'-0"



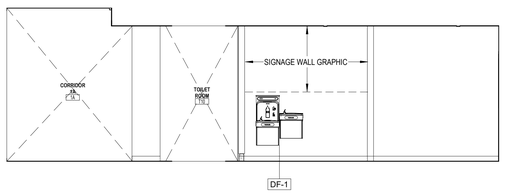
E2 ELEVATOR LOBBY 2 - S
1/4" = 1'-0"



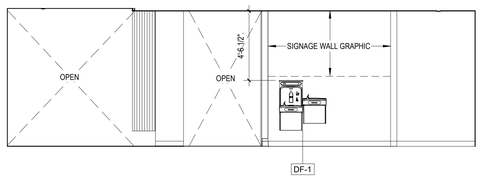
E3 ELEVATOR LOBBY 2 - W
1/4" = 1'-0"



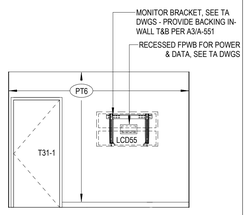
D1 ELEVATOR LOBBY 1 - N
1/4" = 1'-0"



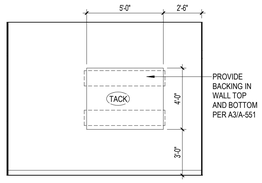
D2 ELEVATOR LOBBY 1 - S
1/4" = 1'-0"



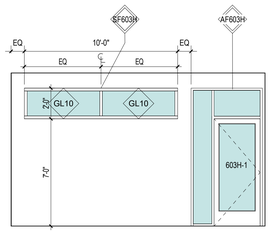
D3 ELEVATOR LOBBY 3 - S
1/4" = 1'-0"



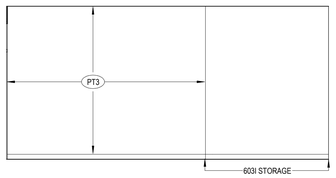
D4 ELEVATOR LOBBY 3 - W
1/4" = 1'-0"



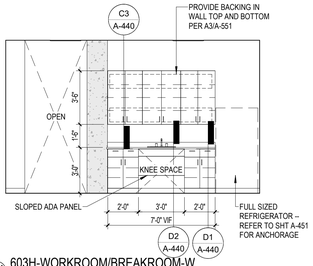
C1 603H-WORKROOM/BREAKROOM-N
1/4" = 1'-0"



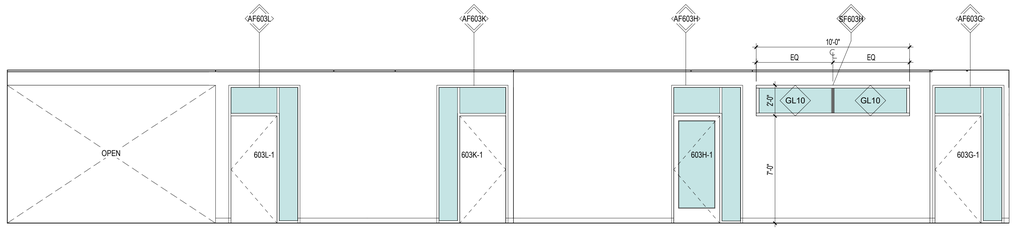
C2 603H-WORKROOM/BREAKROOM-E
1/4" = 1'-0"



C3 603H-WORKROOM/BREAKROOM-S
1/4" = 1'-0"

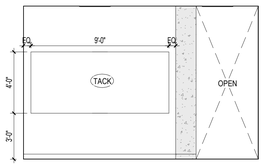


C4 603H-WORKROOM/BREAKROOM-W
1/4" = 1'-0"

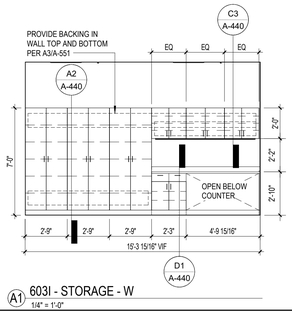


B1 603-OPEN OFFICES-W
1/4" = 1'-0"

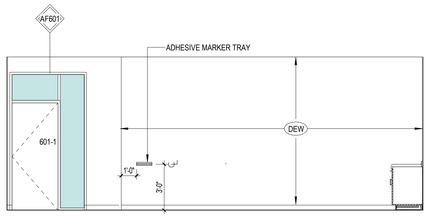
B2 603-OPEN OFFICES-S
1/4" = 1'-0"



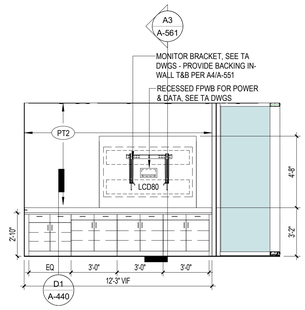
B3 603I - STORAGE - E
1/4" = 1'-0"



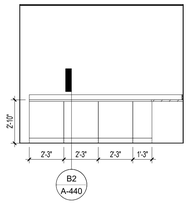
A1 603I - STORAGE - W
1/4" = 1'-0"



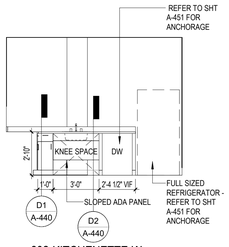
A2 601-CONFERENCE ROOM-N
1/4" = 1'-0"



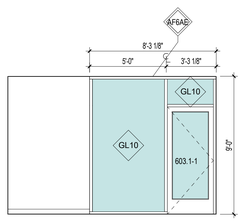
A3 601-CONFERENCE ROOM-E
1/4" = 1'-0"



A4 602-KITCHENETTE-S
1/4" = 1'-0"



A5 602-KITCHENETTE-W
1/4" = 1'-0"



A6 603.1-RECEPTION-W
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL; ROOM NUMBER

WINDOW — XX — IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 A 6A LEAD — WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12 — IDENTIFIER

F12 — DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01 — IDENTIFIER

CASEWORK — CW XX XX XX — IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1i — IDENTIFIER

NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX — IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME — NAME; 101 — NUMBER

NAME — NAME; 101 — NUMBER; 750 SF — SQ FT; 100 — OCCUPANTS PER S.F.; B 8 — OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER

MATERIAL EXTENTS ALONG WALL — WS1A

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. (B)
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON. SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

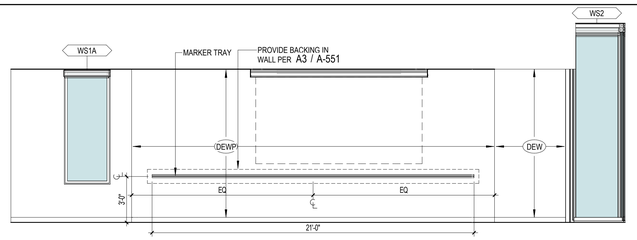
INTERIOR ELEVATIONS - LEVEL 6 & ELEVATOR LOBBIES

SCALE: As indicated
PROJECT NUMBER: 21415

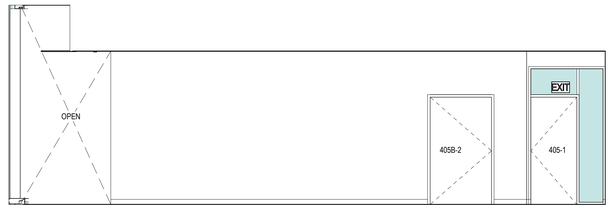
SHEET NUMBER: A-463

07/18/2022 DSA SUBMITTAL & BID SET

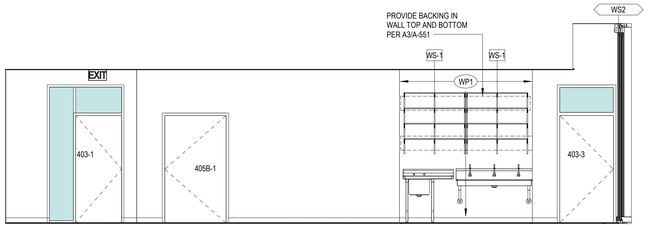
7/28/2022 9:25:46 AM



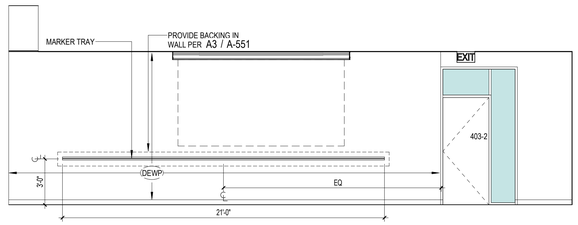
G1 405-ART STUDIO 1-N
1/4" = 1'-0"



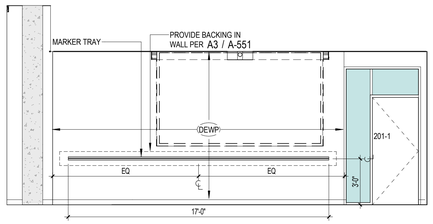
G3 405-ART STUDIO 1-S
1/4" = 1'-0"



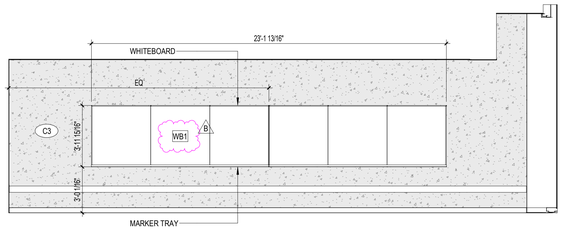
F1 403-ART STUDIO 2-N
1/4" = 1'-0"



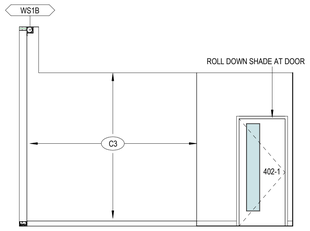
F3 403-ART STUDIO 2-S
1/4" = 1'-0"



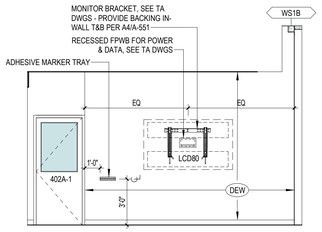
E1 TYPICAL SOUTH EAST CORNER CLASSROOM - W
1/4" = 1'-0"



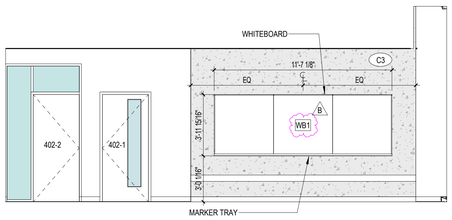
E2 301-LARGE CLASSROOM 4-N
1/4" = 1'-0"



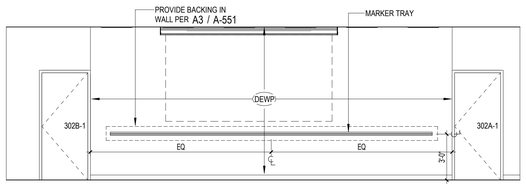
E3 406-COMMUNICATIONS LAB-W
1/4" = 1'-0"



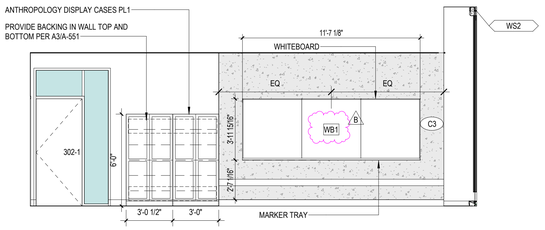
E4 406-COMMUNICATIONS LAB-E
1/4" = 1'-0"



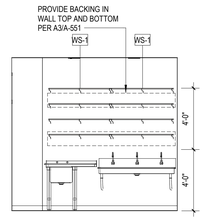
C4 402-COMMUNICATIONS CLASSROOM-E
1/4" = 1'-0"



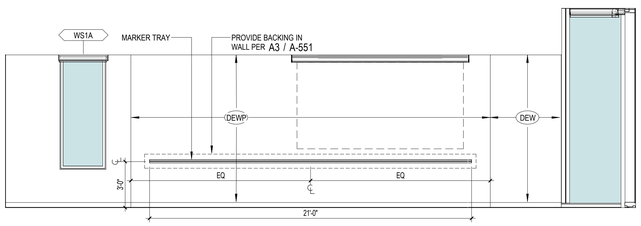
D2 302-ANTHROPOLOGY CLASSROOM-N
1/4" = 1'-0"



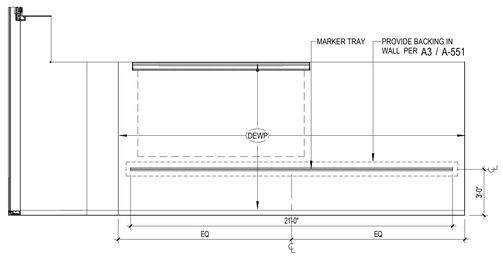
D3 302-ANTHROPOLOGY CLASSROOM-E
1/4" = 1'-0"



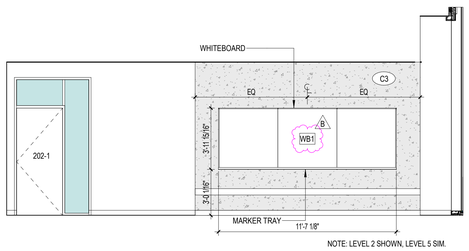
D5 405A-HALLWAY-W
1/4" = 1'-0"



B1 305-CLASSROOM 6-N
1/4" = 1'-0"

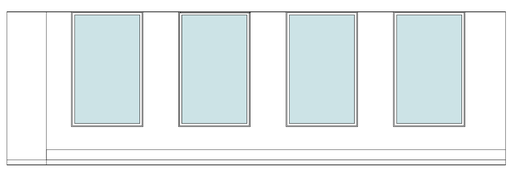


C1 TYPICAL SOUTH WEST CORNER CLASSROOM - W
1/4" = 1'-0"

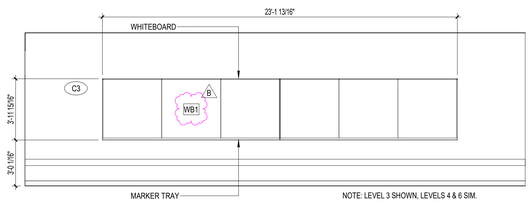


NOTE: LEVEL 2 SHOWN, LEVEL 5 SIM.

C3 TYPICAL SOUTH WEST CORNER CLASSROOM - E
1/4" = 1'-0"

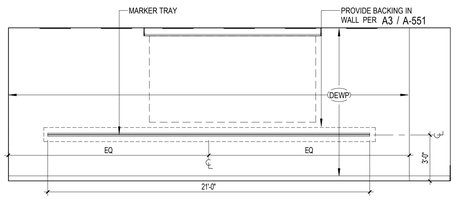


A1 TYPICAL NORTH WEST CORNER CLASSROOM - N
1/4" = 1'-0"



NOTE: LEVEL 3 SHOWN, LEVELS 4 & 6 SIM.

A3 TYPICAL NORTH WEST CORNER CLASSROOM - S
1/4" = 1'-0"



A4 TYPICAL NORTH WEST CORNER CLASSROOM - W
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL; ROOM NUMBER

WINDOW — XX — IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 6A A LEAD; 01 6A A LEAD — WALL TYPE; WALL IS ACOUSTIC LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12 — IDENTIFIER

F12 — DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01 — IDENTIFIER

CASEWORK — CW XX XX XX — IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1 — IDENTIFIER. NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX — IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME — NAME; 101 — NUMBER

NAME — NAME; 101 — NUMBER; 750 SF — SQ FT; 100 — OCCUPANTS PER S.F.; B 8 — OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1 — IDENTIFIER

WS1A — MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. (B) SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES.
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON. SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

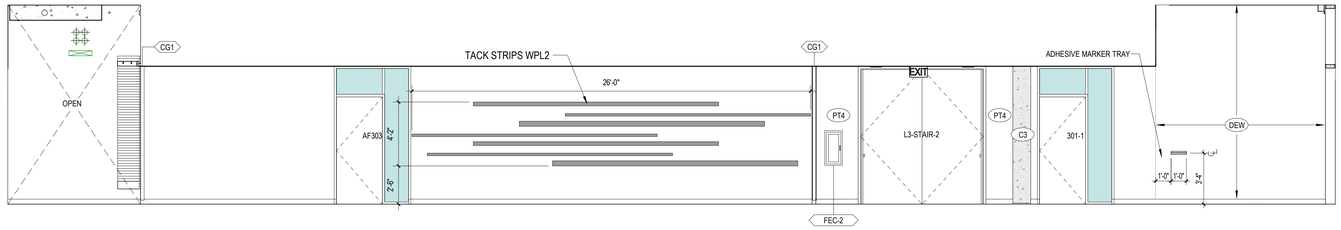
INTERIOR ELEVATIONS - CLASSROOMS

SCALE: As indicated
PROJECT NUMBER: 21415

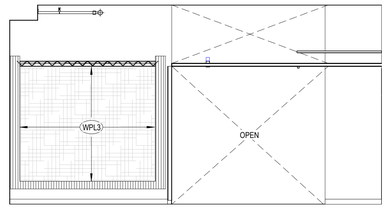
SHEET NUMBER: A-464

DSA SUBMITTAL & BID SET
07/18/2022

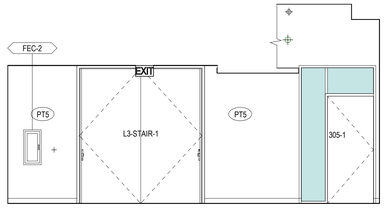
7/26/2022 9:26:06 AM



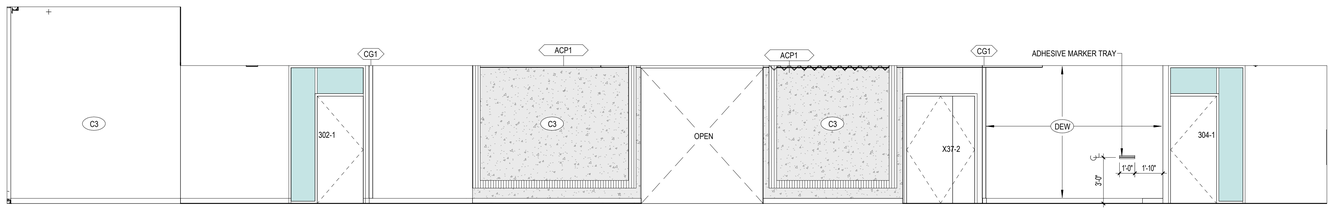
F1 CORRIDOR 3A - E
1/4" = 1'-0"



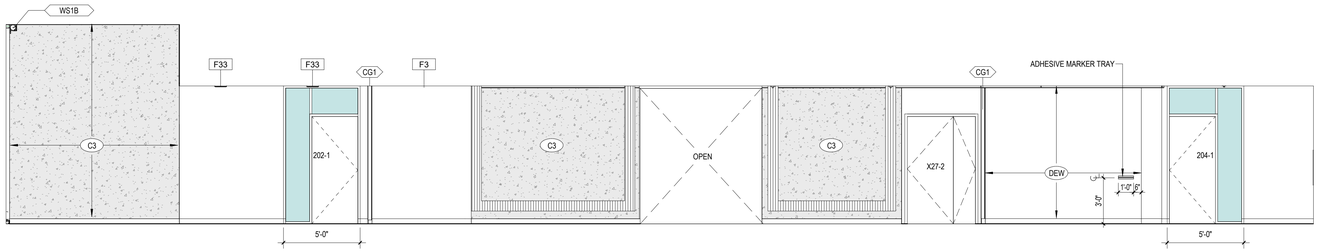
F2 CORRIDOR 3A - S @ NORTH STAIR 1
1/4" = 1'-0"



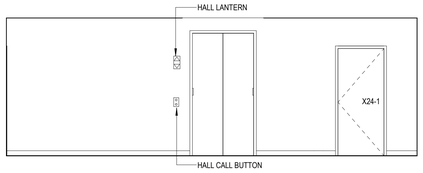
E1 CORRIDOR 3A - N
1/4" = 1'-0"



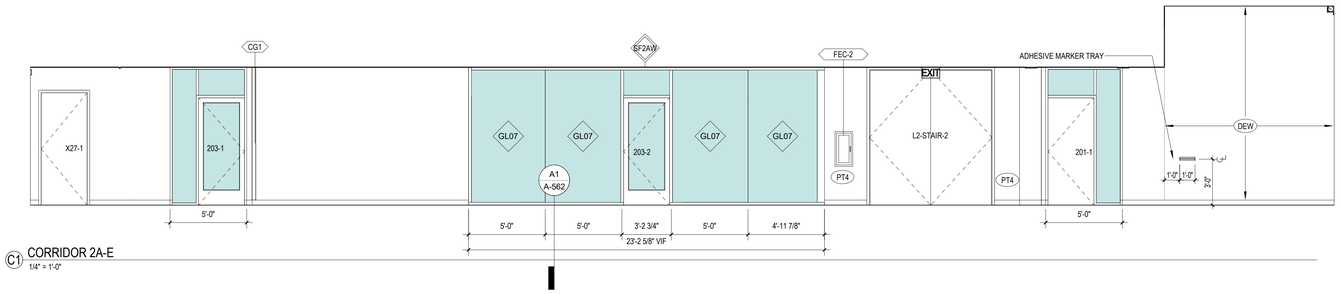
E2 CORRIDOR 3A - W
1/4" = 1'-0"



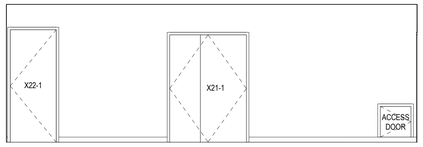
D1 CORRIDOR 2A - W
1/4" = 1'-0"



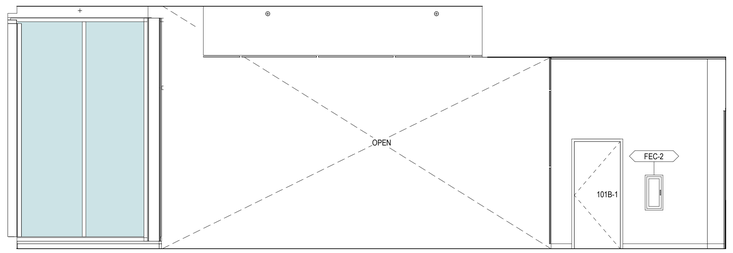
D2 CORRIDOR 2C - S
1/4" = 1'-0"



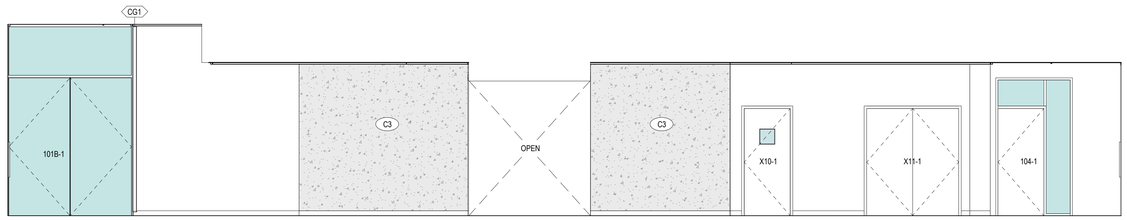
C1 CORRIDOR 2A-E
1/4" = 1'-0"



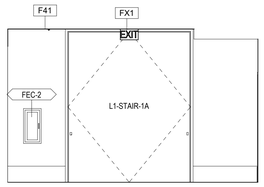
C2 CORRIDOR 2C - N
1/4" = 1'-0"



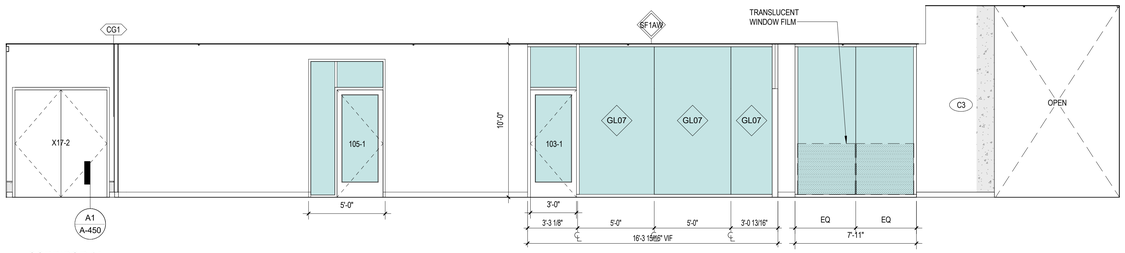
B1 CORRIDOR 1A - S
1/4" = 1'-0"



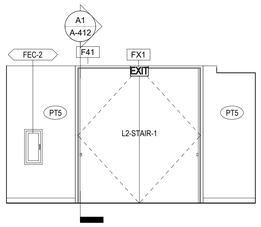
B2 CORRIDOR 1A - W
1/4" = 1'-0"



A1 CORRIDOR 1A - N
1/4" = 1'-0"



A2 CORRIDOR 1A - E
1/4" = 1'-0"



A3 CORRIDOR 2A - N
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X: FLOOR LEVEL; ROOM NUMBER

WINDOW — XX: IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 6A LEAD: WALL TYPE; WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12: IDENTIFIER

F12: DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01: IDENTIFIER

CASEWORK — CW XX XX XX: IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1: IDENTIFIER

NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. B

SANITARY ACCESSORIES CALLOUT — XXX: IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME: NAME; 101: NUMBER

NAME: NAME; 101: NUMBER; 750 SF: SQ FT; 100: OCCUPANTS PER S.F.; B 8: OCCUPANTS; CODE GROUP

MATERIAL TAGS

MATERIAL — PT1: IDENTIFIER

WS1A: MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. B
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON. SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

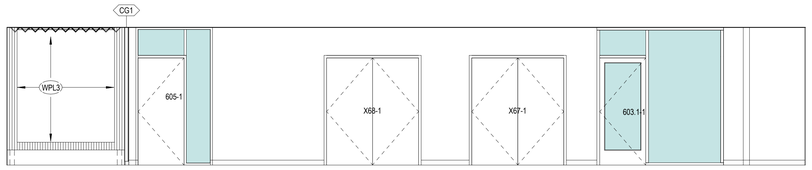
INTERIOR ELEVATIONS - CORRIDORS - LEVELS 1 & 2 & 3

SCALE: As indicated
PROJECT NUMBER: 21415

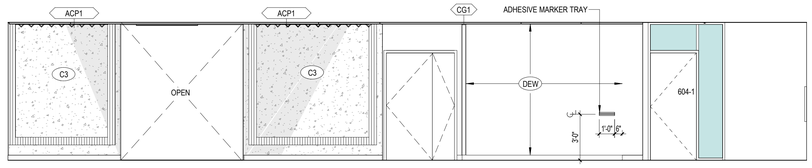
SHEET NUMBER: A-465

07/18/2022 DSA SUBMITTAL & BID SET

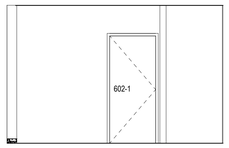
7/26/2022 9:39:21 AM



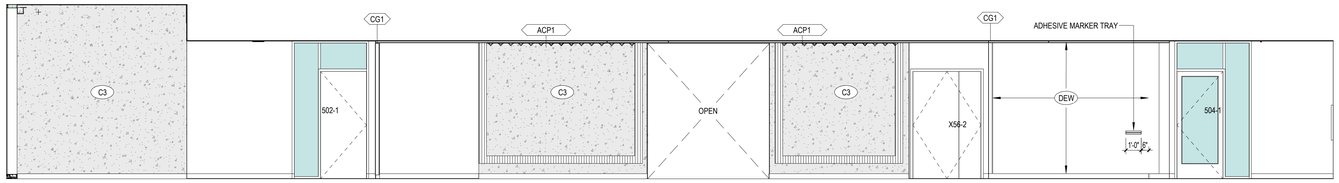
F1 CORRIDOR 6A - E
1/4" = 1'-0"



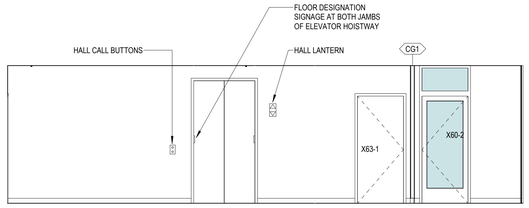
F2 CORRIDOR 6A - W
1/4" = 1'-0"



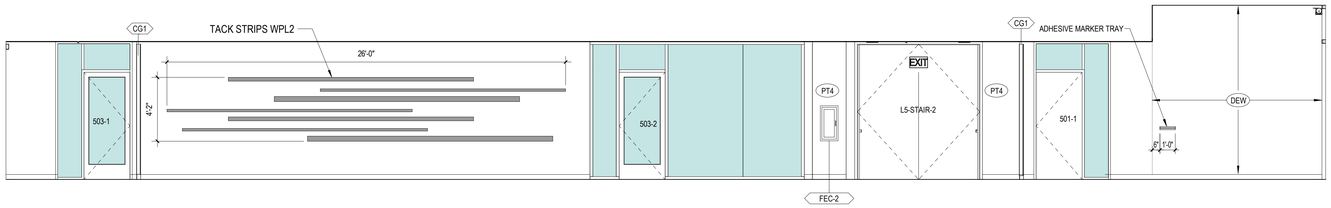
F3 CORRIDOR 6A.1 - W
1/4" = 1'-0"



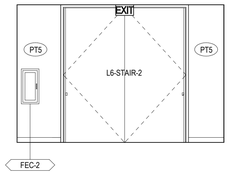
E1 CORRIDOR 5A - W
1/4" = 1'-0"



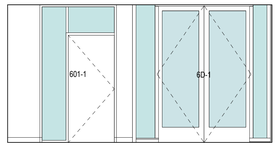
E2 CORRIDOR 6C - S
1/4" = 1'-0"



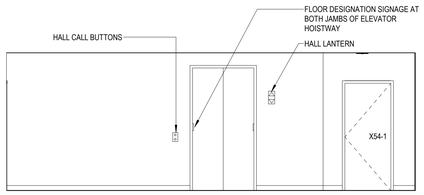
D1 CORRIDOR 5A - E
1/4" = 1'-0"



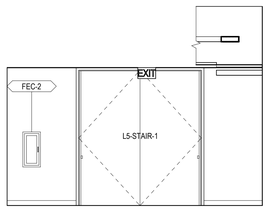
D2 CORRIDOR 6A.1 - E
1/4" = 1'-0"



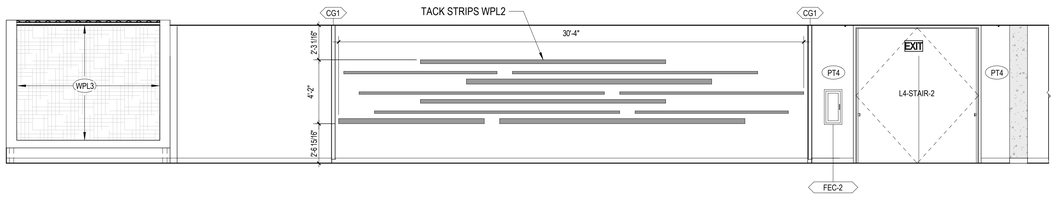
D3 CORRIDOR 6A.1 - S
1/4" = 1'-0"



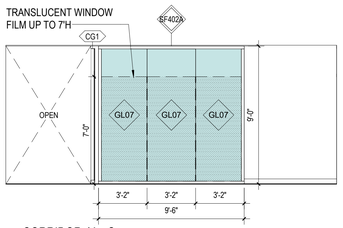
C1 CORRIDOR 5C - S
1/4" = 1'-0"



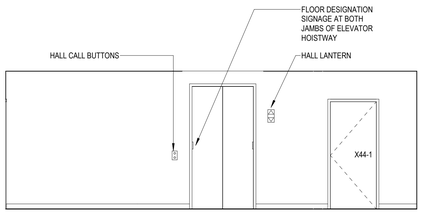
C2 CORRIDOR 5A - N
1/4" = 1'-0"



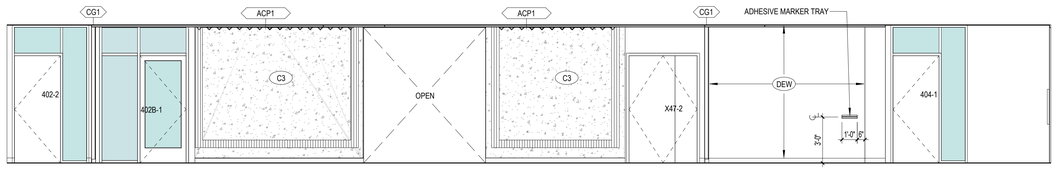
C3 CORRIDOR 4A - E
1/4" = 1'-0"



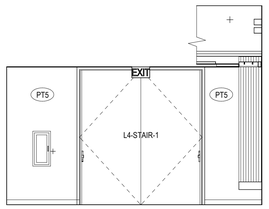
B1 CORRIDOR 4A - S
1/4" = 1'-0"



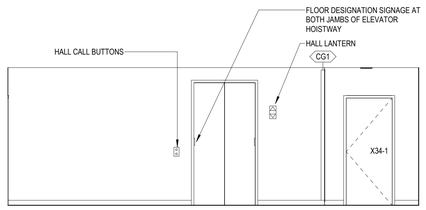
B2 CORRIDOR 4C - S
1/4" = 1'-0"



B3 CORRIDOR 4A - W
1/4" = 1'-0"



A1 CORRIDOR 4A - N
1/4" = 1'-0"



A2 CORRIDOR 3C - S
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X: FLOOR LEVEL; ROOM NUMBER

WINDOW — XX: IDENTIFIER

CEILING HEIGHT — 10'-0"

WALL — 01 6A LEAD: WALL TYPE; 01 6A LEAD A: WALL IS ACOUSTIC; LEAD LINING; WALL HEAD CONFIGURATION; WALL STUD SIZE

EQUIPMENT — F12: IDENTIFIER; F12: DESCRIPTION OR CLIENT CODE; IDENTIFIER

FURNITURE/ FIXTURES/ SHELVING/ EQUIPMENT — F01: IDENTIFIER

CASEWORK — CW XX XX XX: IDENTIFIER; HEIGHT; DEPTH; WIDTH

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — IDENTIFIER; NOTE: SEE A-602 FOR STOREFONT (SF) SCHEDULE. SEE A-603 FOR ALUMINUM FRAME (AF) SCHEDULE. (B)

SANITARY ACCESSORIES CALLOUT — XXX: IDENTIFIER, SEE SPEC 10 28 00

ROOM TAGS

ROOM — ROOM NAME: NAME; 101: NUMBER

NAME: NAME; 101: NUMBER; 750 SF: SQ FT; 100: OCCUPANTS PER S.F.; B 8: OCCUPANTS, CODE GROUP

MATERIAL TAGS

MATERIAL — PT1: IDENTIFIER

WS1A: MATERIAL EXTENTS ALONG WALL

SHEET NOTES

1. SEE SHEET A-402 FOR TYPICAL MOUNTING HEIGHTS
2. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS
3. SEE SHEET A-610 FOR FINISH SCHEDULE
4. SEE FLOOR PLANS FOR INTERIOR WINDOW TYPES AND LOCATIONS. SEE SHEET A-602 FOR INTERIOR STOREFRONT GLAZING TYPES. (B)
5. ALL ALUMINUM FRAME (AF) UNITS ARE TO BE GLAZING TYPE GL10 UON, SEE SPECS. SEE A-603 FOR ALUMINUM FRAME SCHEDULE.

DSA APPROVAL

RATCLIFF
5856 Doyle Street
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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

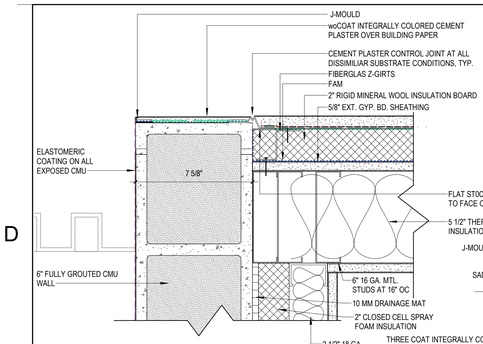
INTERIOR ELEVATIONS - CORRIDORS - LEVELS 3 & 4 & 5 & 6

SCALE: As indicated
PROJECT NUMBER: 21415

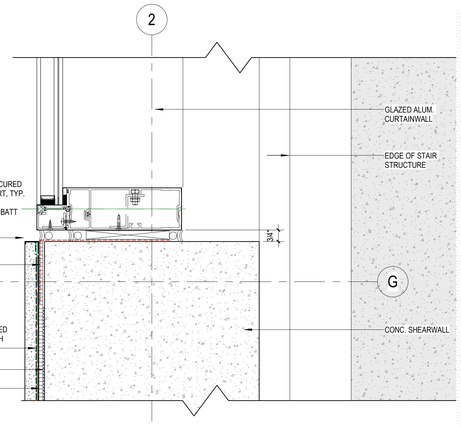
SHEET NUMBER: A-466

DSA SUBMITTAL & BID SET 07/18/2022

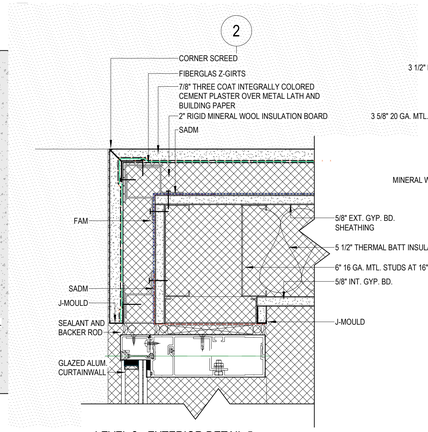
7/20/2022 2:35:39 AM



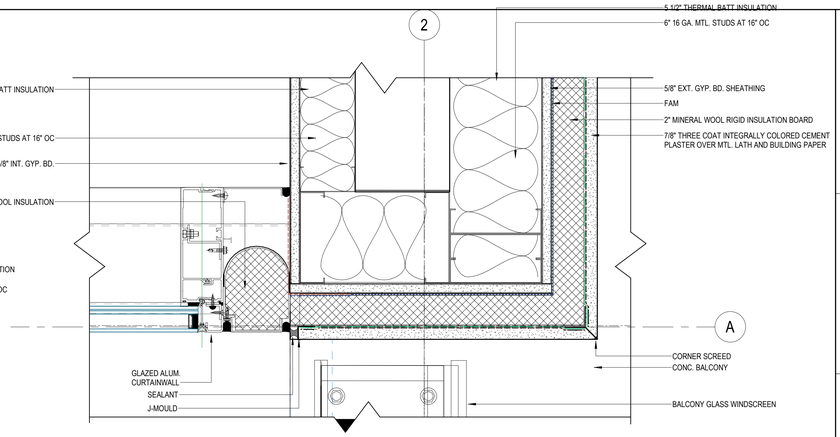
D1 LEVEL 2 - DETAIL AT NW CORNER
3" = 1'-0"



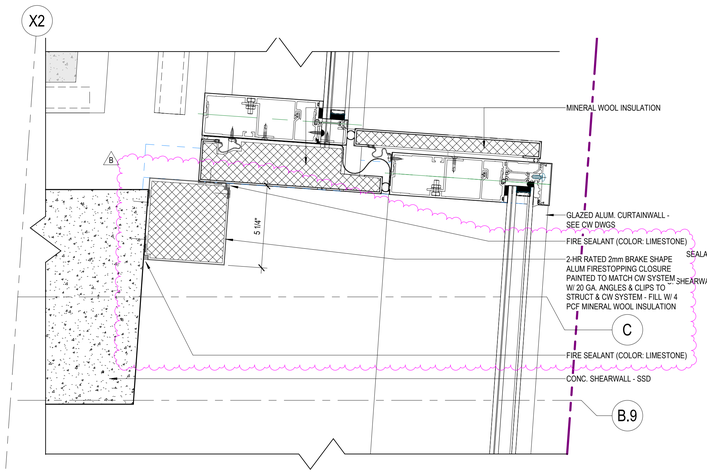
D2 LEVEL 2 - WINDOW JAMB DETAIL AT NORTH STAIR
3" = 1'-0"



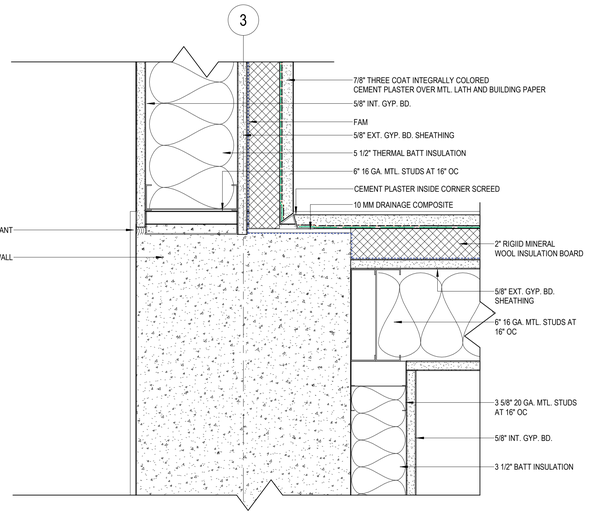
D3 LEVEL 2 - EXTERIOR DETAIL 5
3" = 1'-0"



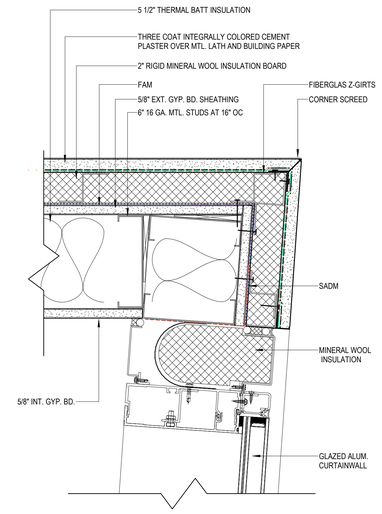
D4 LEVEL 2 - WALL DETAIL AT BALCONY
3" = 1'-0"



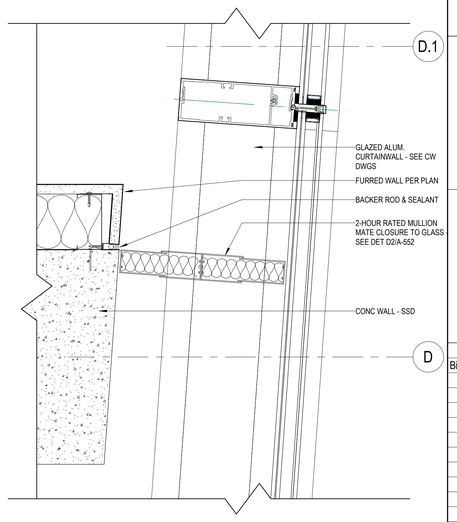
B1 DETAIL AT SOUTH JAMB OF SOUTH STAIR
3" = 1'-0"



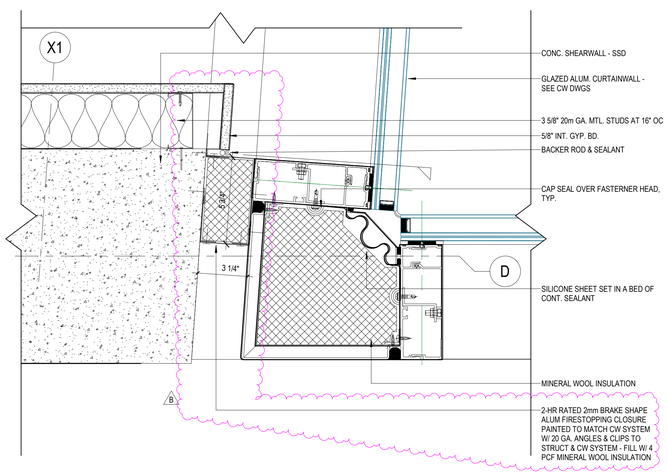
B2 LEVEL 2 - CEMENT PLASTER WALL AT SHEARWALL AT STAIR
3" = 1'-0"



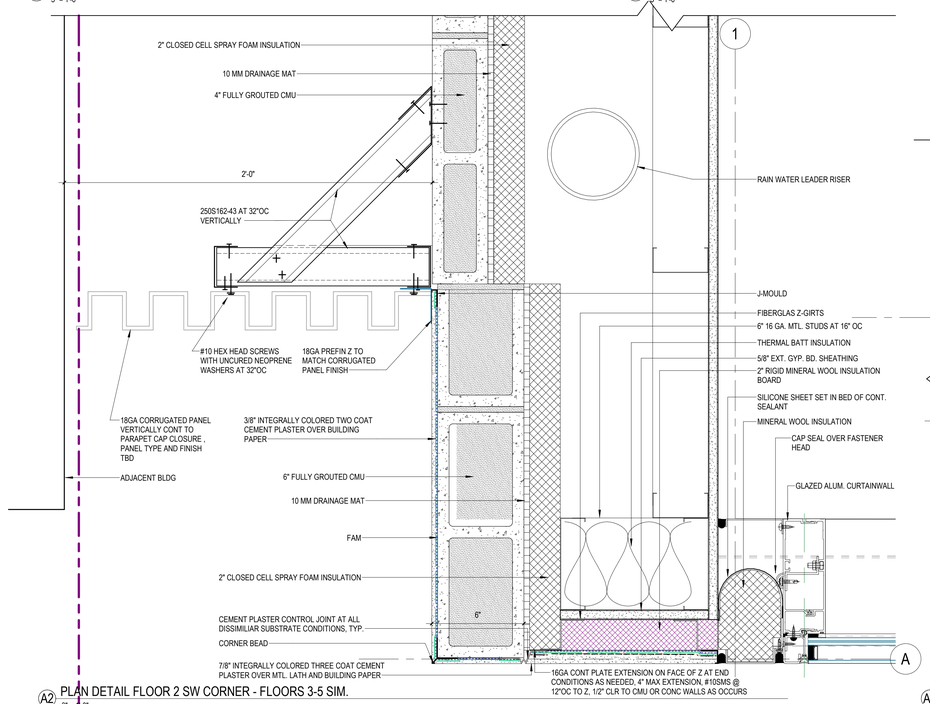
B3 LEVEL 2 -DETAIL AT NE CORNER
3" = 1'-0"



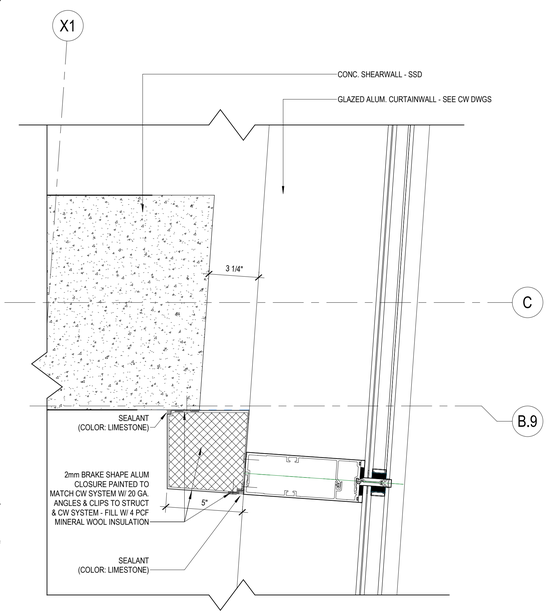
B4 PLAN DETAIL AT SOUTH STAIR AT NORTH WALL
3" = 1'-0"



A1 DETAIL AT SOUTH STAIR - NORTH WALL
3" = 1'-0"



A2 PLAN DETAIL FLOOR 2 SW CORNER - FLOORS 3-5 SIM.
3" = 1'-0"



A3 PLAN DETAIL FLOOR 1 SOUTH STAIR AT SOUTH WALL
3" = 1'-0"

DSA APPROVAL

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5856 Doyle Street
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LICENSED ARCHITECT DANIEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

DSA STAMP

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

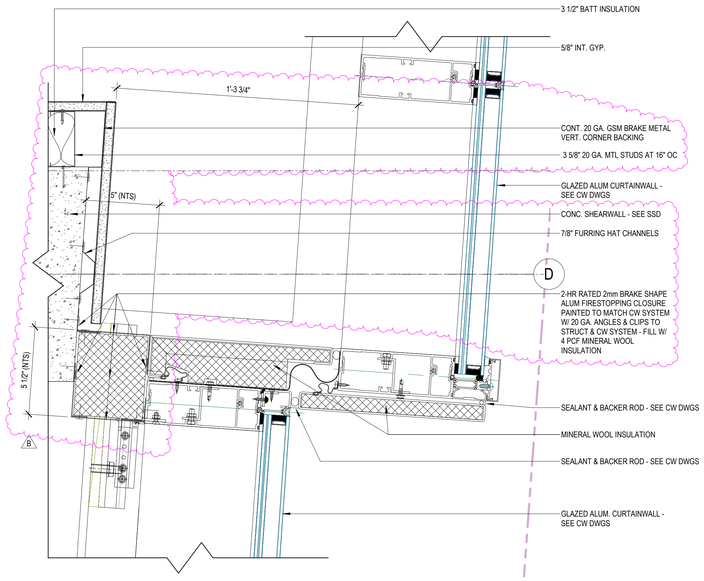
EXTERIOR PLAN DETAILS - LEVEL 2

SCALE: 3" = 1'-0"
PROJECT NUMBER: 21415

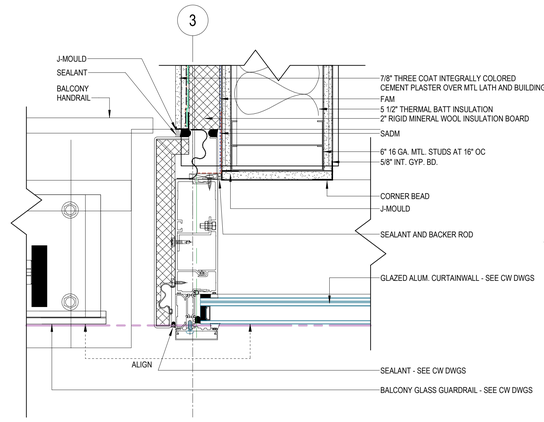
SHEET NUMBER: A-501

07/18/2022 DSA SUBMITTAL & BID SET

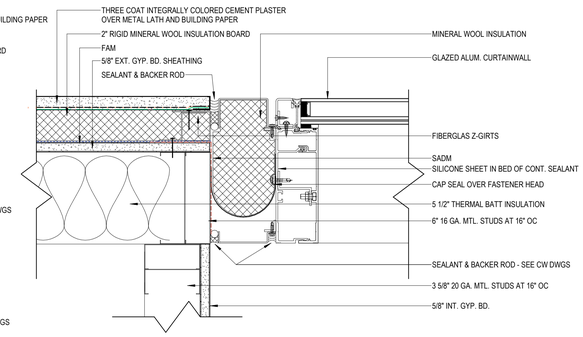
7/26/2022 9:27:06 AM



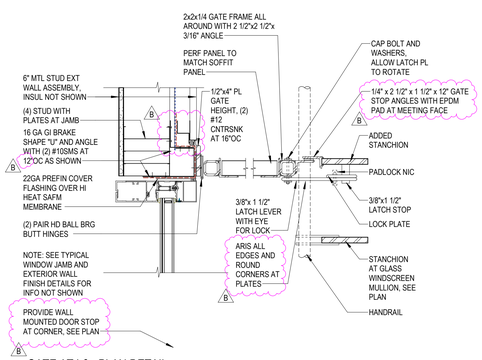
C1 LEVEL 3,4&5 - CURTAINWALL DETAIL AT SOUTH STAIR, NORTH CONC SHEAR WALL
3" = 1'-0"



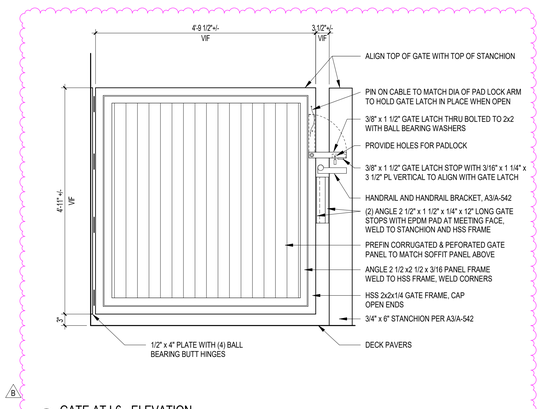
C2 LEVEL 3,4&5 - CURTAINWALL DETAIL AT EXT BALCONY
3" = 1'-0"



C3 LEVEL 6 - CEMENT PLASTER TO CURTAINWALL NE CORNER
3" = 1'-0"



A1 GATE AT L6 - PLAN DETAIL
1 1/2" = 1'-0"



A2 GATE AT L6 - ELEVATION
3/4" = 1'-0"

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

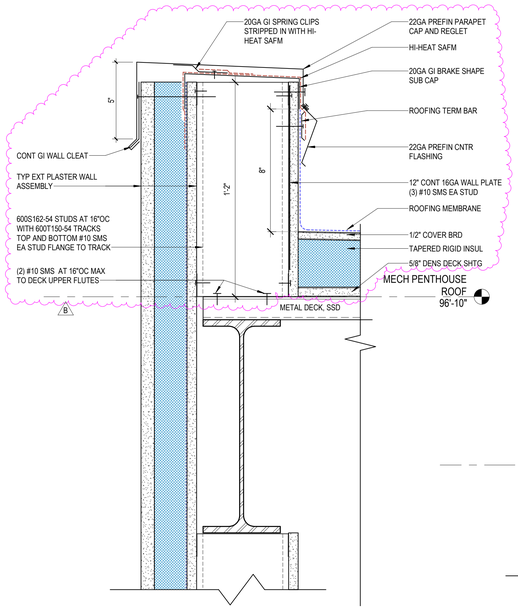
EXTERIOR PLAN DETAILS - LEVEL 3-6

SCALE: As indicated
PROJECT NUMBER: 21415

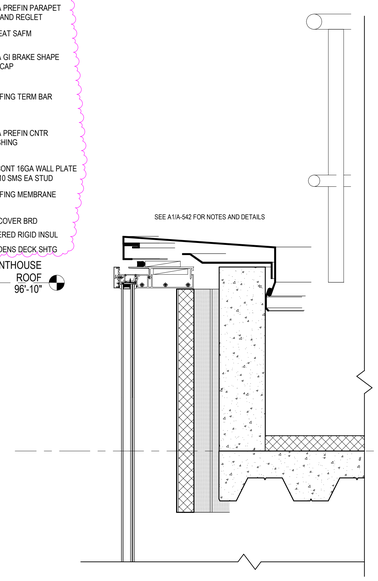
SHEET NUMBER: A-502

07/18/2022 DSA SUBMITTAL & BID SET

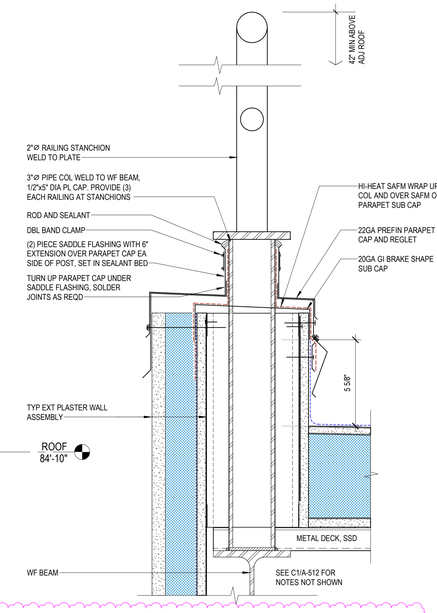
7/26/2022 9:27:11 AM



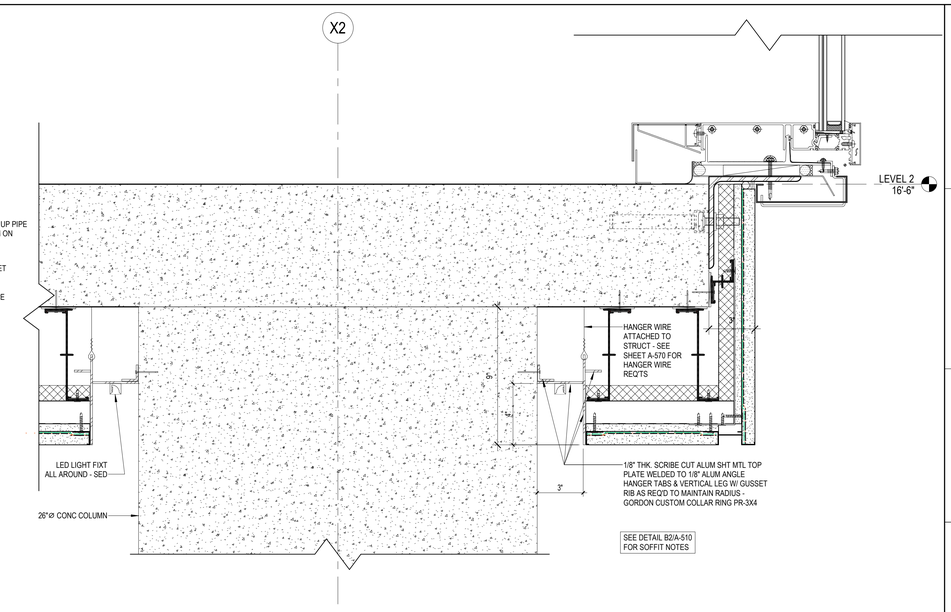
C1 !ARCH_ENLARGED SECT - N STAIR - W - Callout 5
3" = 1'-0"



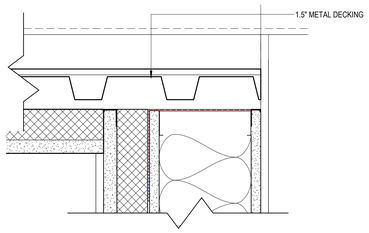
C2 SOUTH STAIR - PARAPET
1 1/2" = 1'-0"



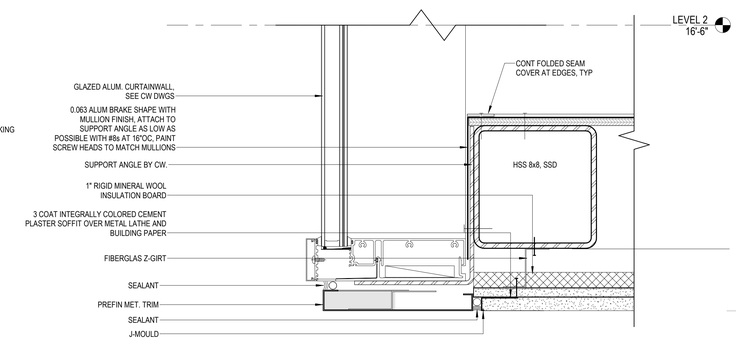
C3 PARAPET AT ELEVATOR OVERRUN
3" = 1'-0"



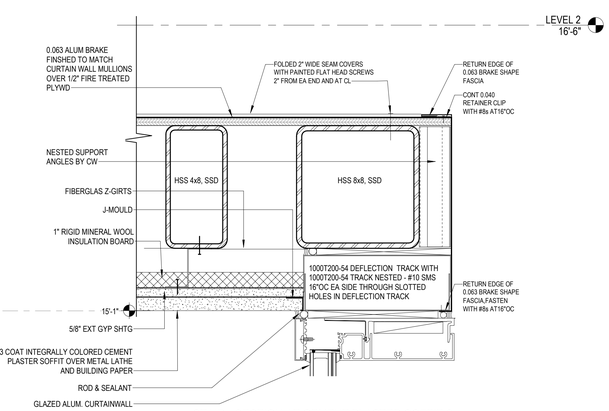
C4 TYP CUSTOM COLUMN COLLAR DETAIL
3" = 1'-0"



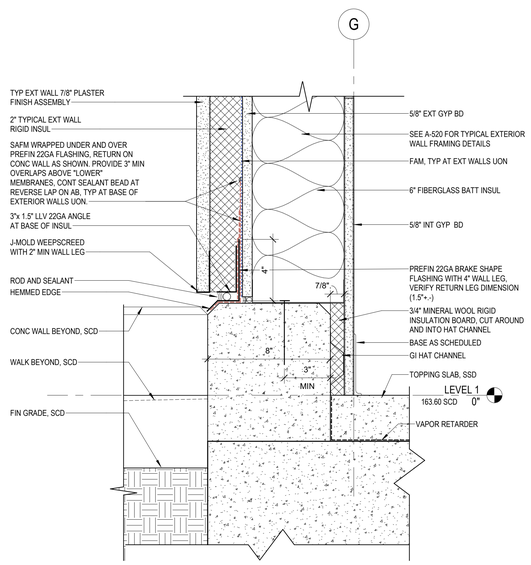
B1 !ARCH_ENLARGED SECT - N STAIR - W - Callout 2
3" = 1'-0"



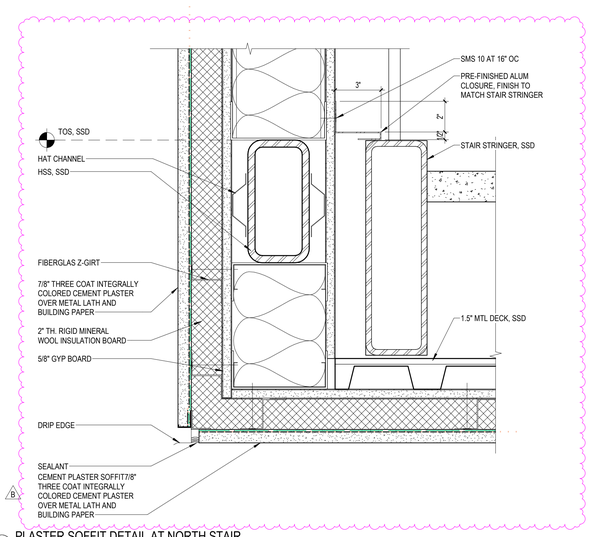
B2 STAIR - SECTION AT CEMENT PLASTER SOFFIT 1
REF A1A-414
3" = 1'-0"



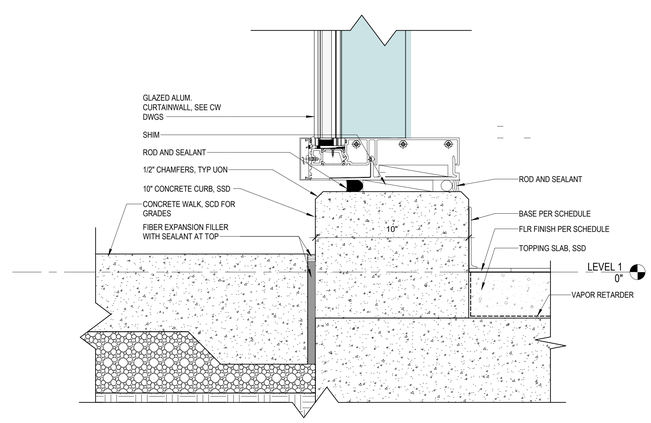
B3 STAIR - SECTION AT CEMENT PLASTER SOFFIT 2
3" = 1'-0"
REF A1A-414



A1 SILL DETAIL AT NORTH STAIR
3" = 1'-0"



A2 PLASTER SOFFIT DETAIL AT NORTH STAIR
3" = 1'-0"



A3 SILL DETAIL AT SOUTH STAIR
3" = 1'-0"
REF A1A-414

DSA APPROVAL

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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

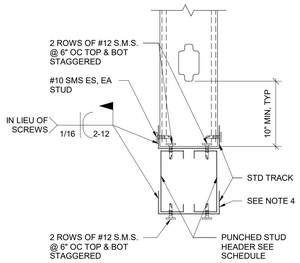
EXTERIOR SECTION DETAILS

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-512

07/18/2022 DSA SUBMITTAL & BID SET

7/25/2022 3:27:46 AM

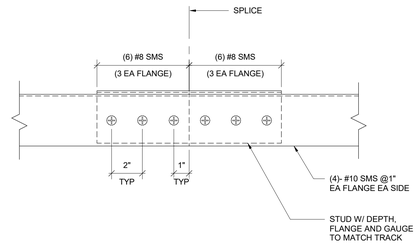


OPNG OVER 4'-0"

	OPNG 4ft < w < 8ft	OPNG 8ft < w < 12ft B
WALL LEVEL	6" Wall	6" Wall
LEVEL 1-4	2-600S250-43	2-600S250-54
LEVEL 5-ROOF	2-600S250-54	-

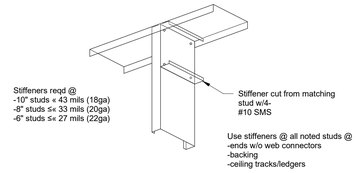
NOTES:
1. SCHEDULES PROVIDE MINMUM MEMBER SIZES UON ON PLANS.
2. ATTACHMENT OF CEILNG, EQUIPMENT, ETC TO THE HEADERS OR STUDS ABOVE THE HEADER NOT PERMITTED WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
3. FOR HEADER CONNECTION TO JAMB STUD SEE TYPICAL DETAIL.
4. SAME GAUGE STUD MAY BE REPLACE STD TRACK AND FLIP 180 WHERE REQD.
5. DO NOT SPLCIE TRACKS OR JOISTS IN HEADERS.

C2 HEADER SECTION & SCHEDULE
3" = 1'-0"

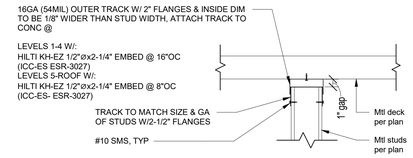


NOTE:
TRACK SPLICE REQUIRED ONLY WHERE NOT CONNECTED TO DECK OR STEEL BEAM..

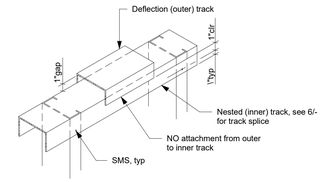
D3 TYPICAL TOP TRACK SPLICE DETAIL
3" = 1'-0"



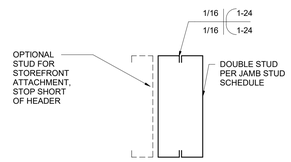
D4 STUD WEB STIFFENER DETAIL
3/4" = 1'-0"



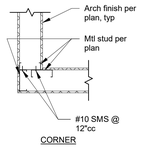
'A' - STUDS PERPENDICULAR TO DECK



D5 TYP. EXT. WALL TO CONC. SLAB (NESTED TRACKS) TOP TRACK CONN.
1 1/2" = 1'-0"

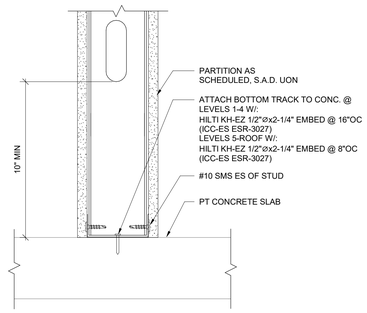


DOUBLE STUD

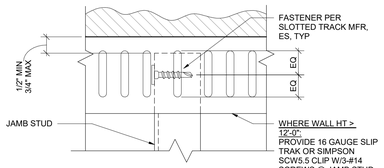


CORNER

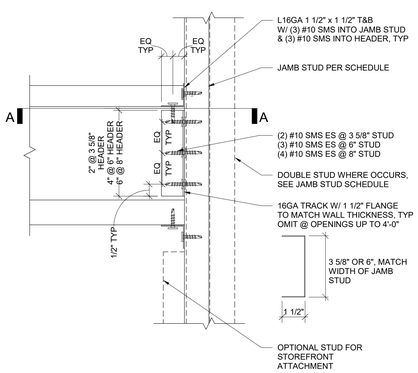
C4 METAL STUD WALL FRAMING
3/4" = 1'-0"

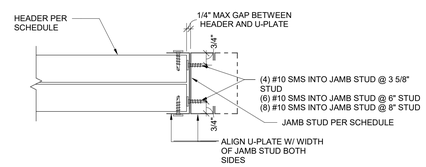


C5 TYPICAL BOTTOM TRACK CONNECTION
3" = 1'-0"



TOP CONN AT JAMB STUD

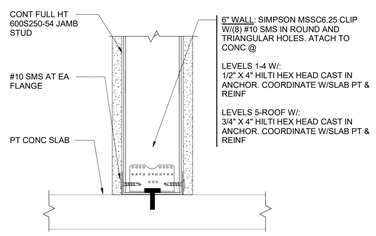




PLAN A-A

NOTES:
1. MAX OPENING WIDTH 16'-0"
2. MAX WALL HT 20'-0"

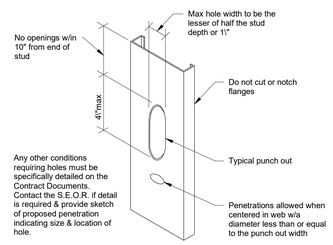
A2 HEADER TO JAMB STUD CONNECTION DETAIL
3" = 1'-0"



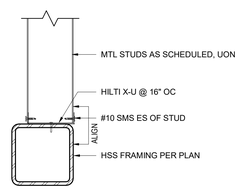
BOTTOM CONN AT JAMB STUD

NOTES:
1. SEE VERTICALLY SLOTTED TOP TRACK TYPICAL DETAIL FOR CONNECTION AT TOP OF JAMB STUD.

B3 JAMB STUD SCHEDULE
NTS



B4 HOLES IN METAL STUDS
1 1/2" = 1'-0"

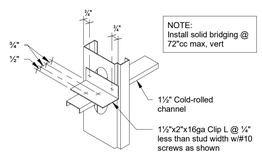


B5 3/CFS
1 1/2" = 1'-0"

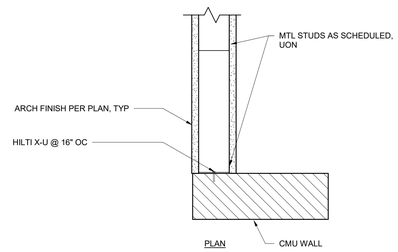
STUD SECTION	BUILDING LEVEL
600S250-43 @ 16" OC	LEVEL 1-4
600S250-54 @ 16" OC	LEVEL 5-ROOF

NOTES:
1. SEE TYP DETAILS FOR TOP AND BOTTOM CONNECTION TO STRUCTURE
2. DEFLECTION LIMIT OF L/240
3. MAX 2 LAYERS OF GYP EA SIDE
4. ADDITIONAL LOADING ON STUD FROM ARCH OR MEP ELEMENTS NOT CONSIDERED

A3 STUD SECTION SCHEDULE
1" = 1'-0"



A4 METAL STUD BRIDGING
3/4" = 1'-0"



A5 4/CFS
1 1/2" = 1'-0"

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

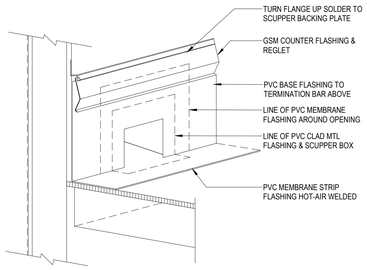
SHEET TITLE:
EXTERIOR METAL STUD DETAILS

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-520

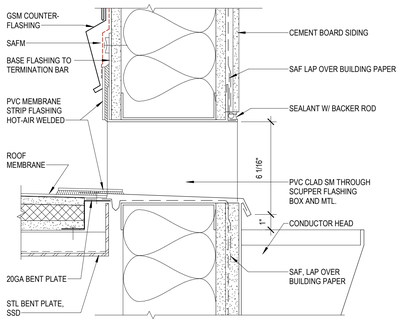
07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:27:51 AM

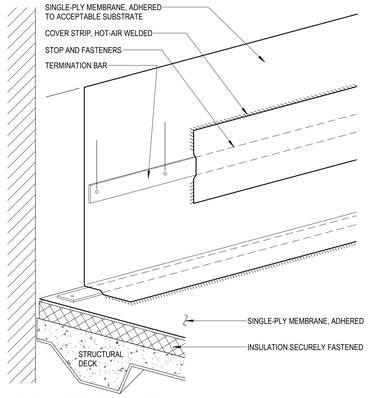


NOTE:
SEE D2/- FOR ADDITIONAL NOTES AND INFO.

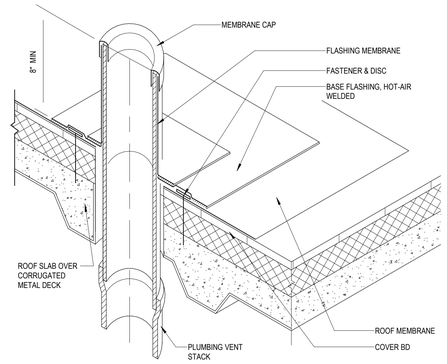
D1 SCUPPER FROM ROOF SIDE
1 1/2" = 1'-0"



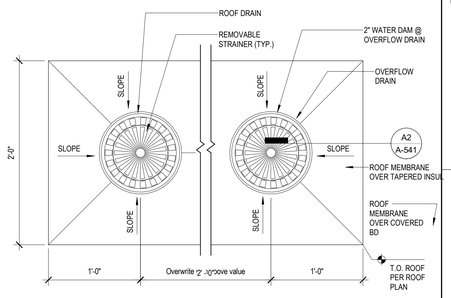
D2 TYPICAL OVERFLOW SCUPPER
3" = 1'-0"



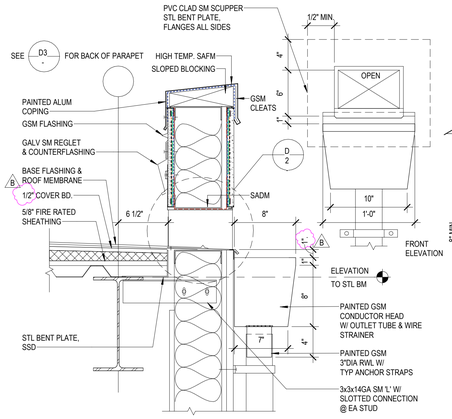
D3 TYP ADHERED ROOFING @ WALL
NTS



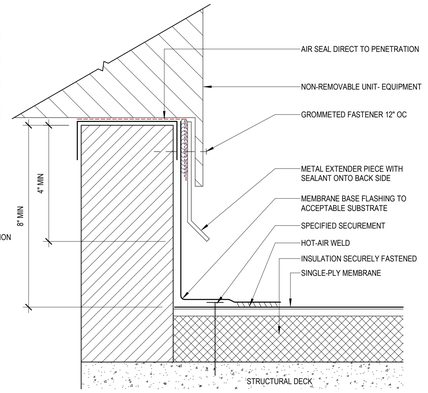
D4 TYP ROOFING @ PLUMBING VENT
3" = 1'-0"



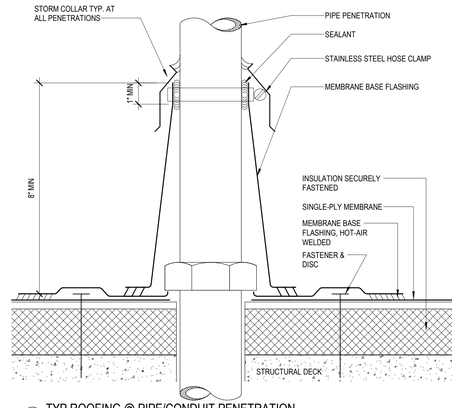
D5 TYP SUMP PLAN @ ROOF DRAINS
1 1/2" = 1'-0"



C2 PENTHOUSE PARAPET & CONDUCTOR HEAD
1 1/2" = 1'-0"



C3 TYP ROOFING @ PRE-FABRICATED CURB
3" = 1'-0"

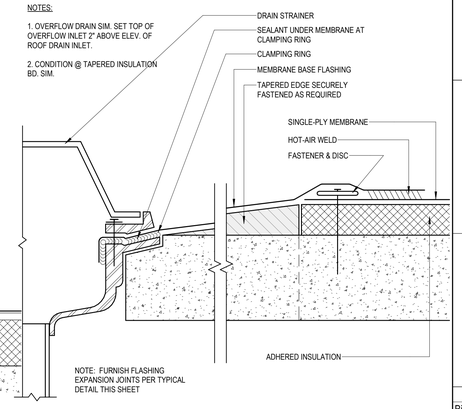


C4 TYP ROOFING @ PIPE/CONDUIT PENETRATION
3" = 1'-0"

NOTES:

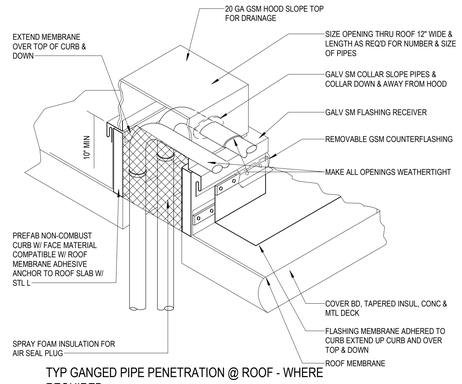
1. OVERFLOW DRAIN SIM. SET TOP OF OVERFLOW INLET 2" ABOVE ELEV. OF ROOF DRAIN INLET.

2. CONDITION @ TAPERED INSULATION BD. SIM.

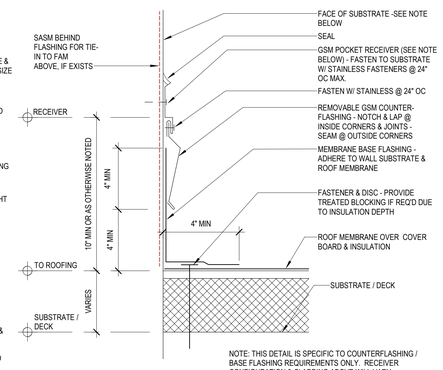


NOTE: FURNISH FLASHING EXPANSION JOINTS PER TYPICAL DETAIL THIS SHEET

C5 TYP ROOF DRAIN SUMP SECTION
3" = 1'-0"



B4 TYP GANGED PIPE PENETRATION @ ROOF - WHERE REQUIRED
NTS

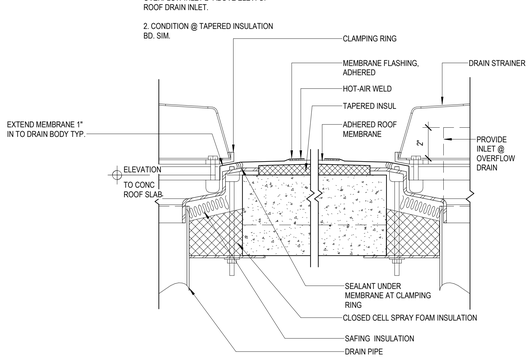


NOTE: THIS DETAIL IS SPECIFIC TO COUNTERFLASHING / BASE FLASHING REQUIREMENTS ONLY. RECEIVER CONFIGURATION & CLADDING ABOVE WILL VARY. REFER TO LOCATION-SPECIFIC DETAILS FOR FURTHER DETAIL.

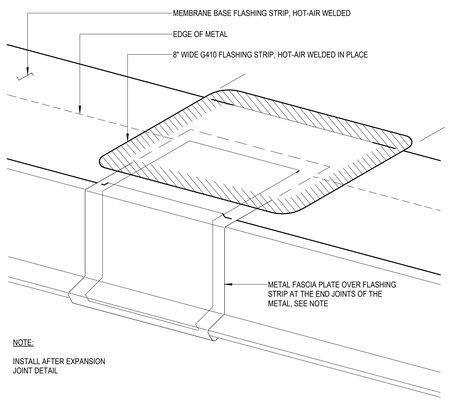
B5 TYP ROOFING COUNTER-FLASHING
3" = 1'-0"

NOTES: 1. OVERFLOW DRAIN SIM. SET TOP OF OVERFLOW INLET 2" ABOVE ELEV. OF ROOF DRAIN INLET.

2. CONDITION @ TAPERED INSULATION BD. SIM.

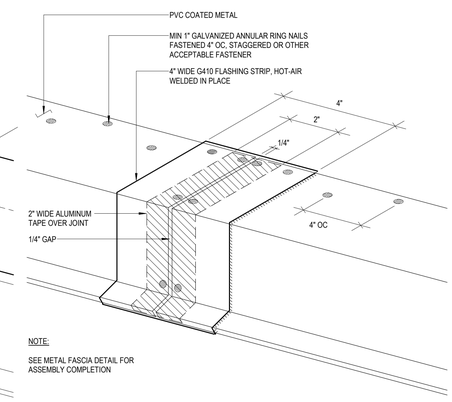


A2 TYP ROOF DRAIN SUMP SECTION 2
3" = 1'-0"



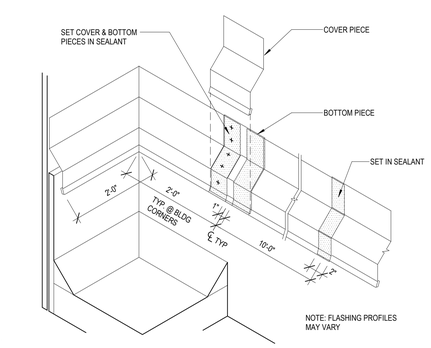
NOTE:
INSTALL AFTER EXPANSION JOINT DETAIL

A3 METAL FASCIA/FLASHING @ GRAVEL STOP JOINT
NTS



NOTE:
SEE METAL FASCIA DETAIL FOR ASSEMBLY COMPLETION

A4 TYP EXPANSION JOINT @ PVC-CLAD GRAVEL STOP
NTS



NOTE: FLASHING PROFILES MAY VARY

A5 TYP FLASHING EXPANSION JOINT & SPLICE (3D VIEW)
1 1/2" = 1'-0"

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

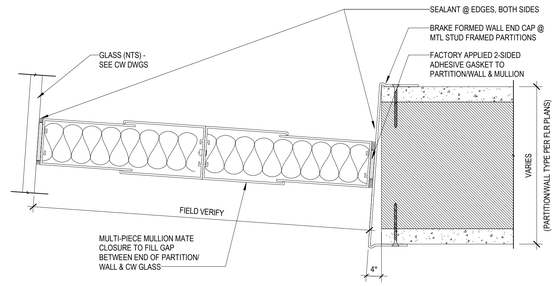
EXTERIOR DETAILS - SINGLE-PLY ROOFING

SCALE: As indicated
PROJECT NUMBER: 21415

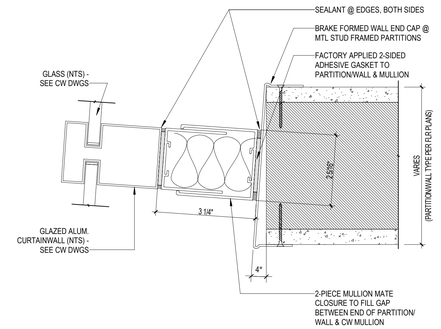
SHEET NUMBER: A-541

07/18/2022 DSA SUBMITTAL & BID SET

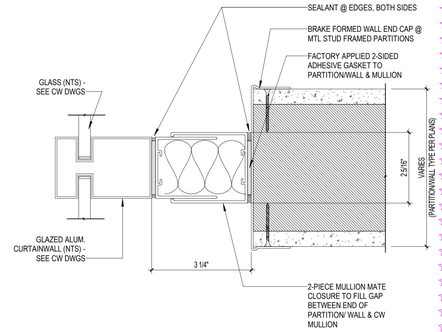
7/25/2022 9:28:54 AM



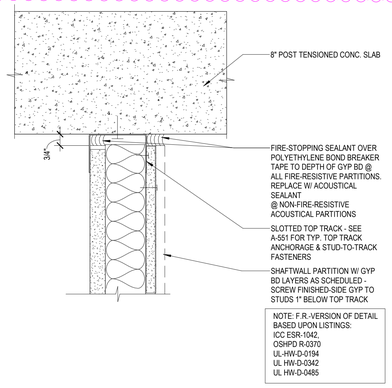
D2 TYP. PARTITION GAP CLOSURE MULLION MATE @ GLASS
6" = 1'-0"



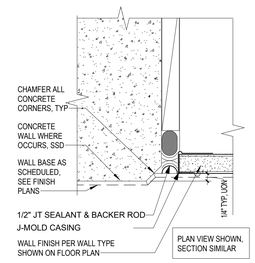
D4 TYP. PARTITION GAP CLOSURE MULLION MATE ANGLED
6" = 1'-0"



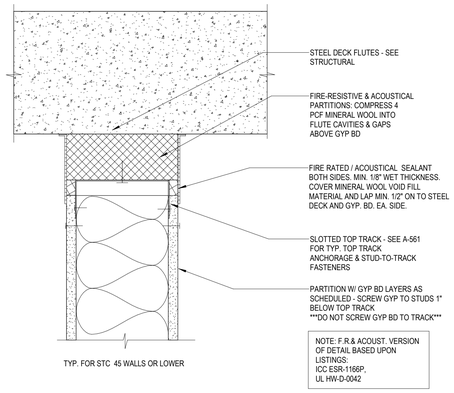
D5 TYP. PARTITION GAP CLOSURE MULLION MATE
6" = 1'-0"



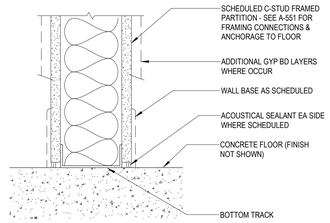
C4 TYP HEAD OF SHAFTWALL @ CONC STRUCTURE
3" = 1'-0"



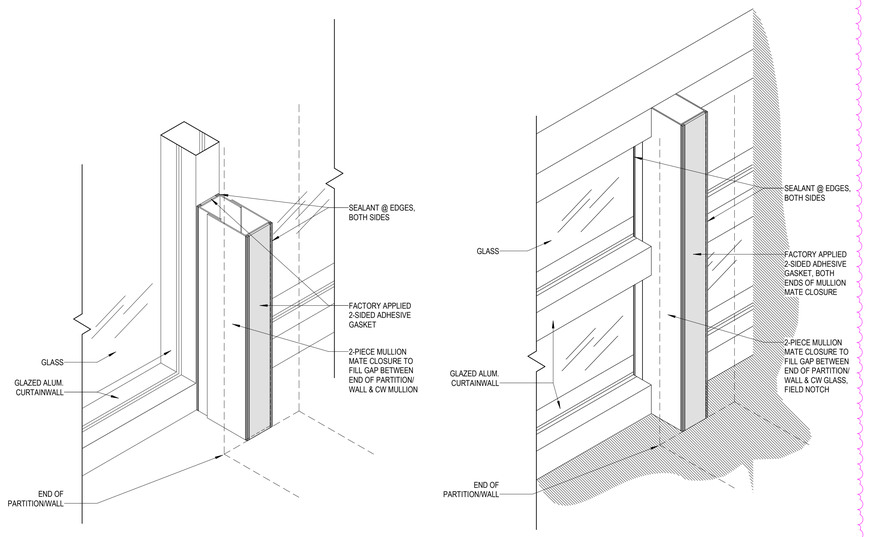
C5 TYPICAL CONCRETE TO GYP INTERFACE DETAIL
6" = 1'-0"



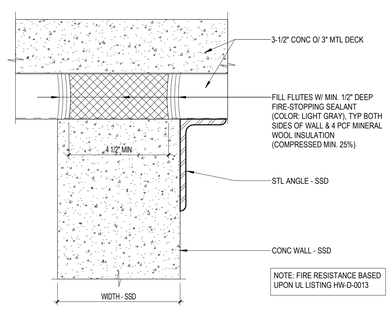
B4 TYP HEAD OF WALL @ CONCRETE STRUCTURE
3" = 1'-0"



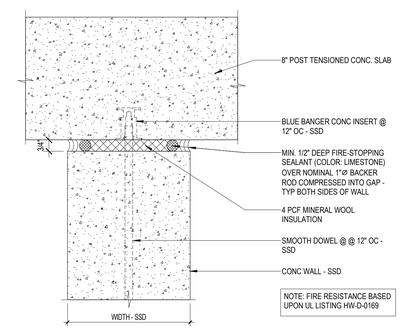
B5 TYP BASE OF C-STUD PARTITION @ CONCRETE FLOOR
3" = 1'-0"



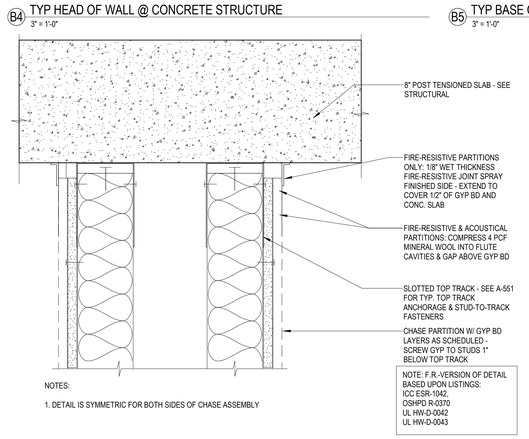
(NOT TO SCALE) TYP. PARTITION GAP CLOSURE MULLION MATE - WALL-TO-GLASS
B2 12" = 1'-0"



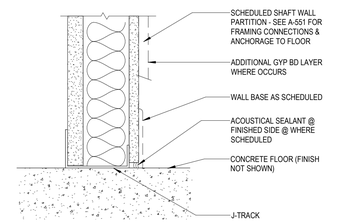
HEAD OF CONC WALL @ CONC O/ MTL DECK FLR (SEE DET 8/S521)
A2 3" = 1'-0"



B
HEAD OF CONC WALL @ CONC FLR SLAB (SEE DET 6/S352)
A3 3" = 1'-0"



A4 TYP HEAD OF CHASE WALL
3" = 1'-0"



A5 TYP BASE OF SHAFT WALL @ CONCRETE FLOOR
3" = 1'-0"

DSA APPROVAL

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LICENSED ARCHITECT
LIONEL D. MATIAS
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

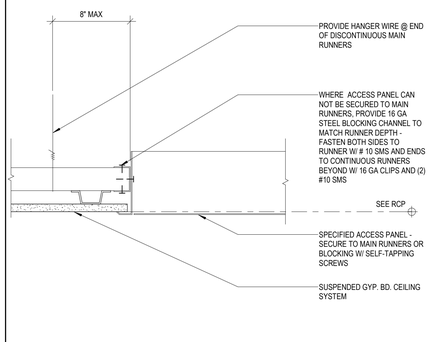
TYPICAL PARTITION / STRUCTURE INTERFACE

SCALE: As indicated
PROJECT NUMBER: 21415

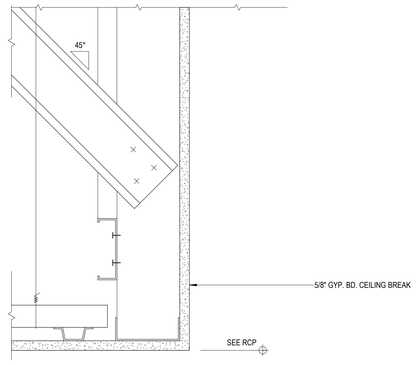
SHEET NUMBER: A-552

07/18/2022 DSA SUBMITTAL & BID SET

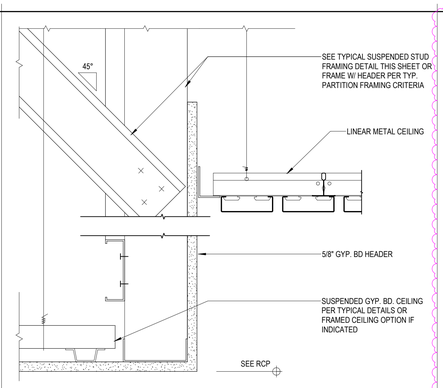
7/26/2022 9:28:32 AM



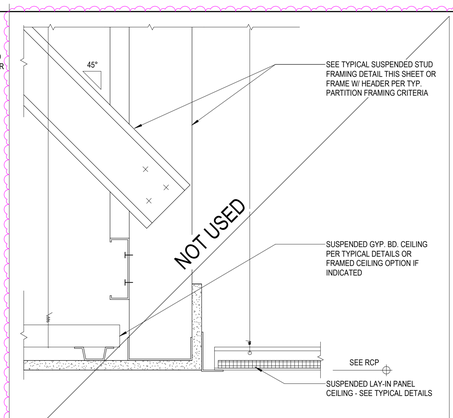
D1 TYP. ACCESS PANEL @ SUSP GYP BD CLG
3" = 1'-0"



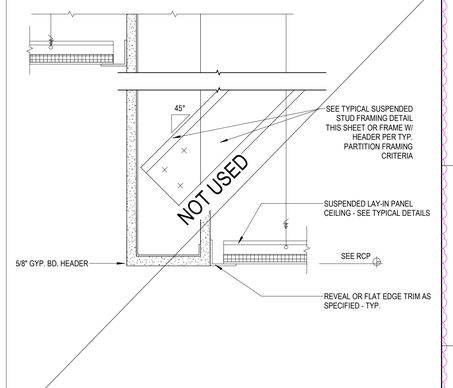
D2 TYP. CEILING BREAK
3" = 1'-0"



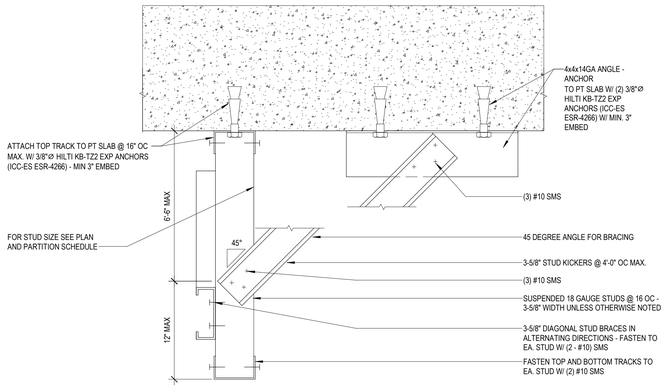
D3 TYP. GYP BD CEILING AT LINEAR METAL CEILING
3" = 1'-0"



D4 TYP. FLUSH ACOUSTICAL AND GYP BD CEILINGS
3" = 1'-0"



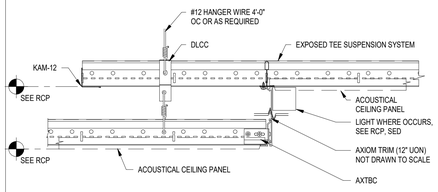
D5 TYP. ACOUSTICAL CEILING AT GYP BD HEADER
3" = 1'-0"



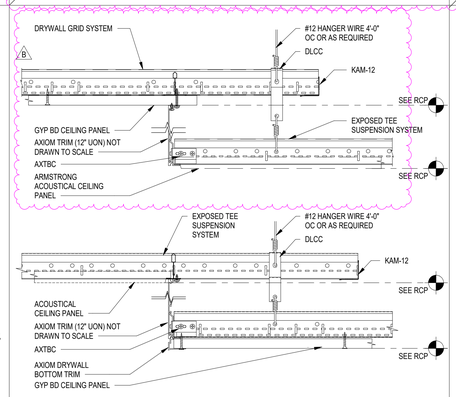
DETAIL NOTES:

1. REFER TO SPECIFICATIONS OR TYPICAL PARTITION FRAMING NOTES FOR STUD GAUGES.
2. HEADER ASSEMBLY AND CRIPPLE STUDS MAY BE SUBSTITUTED FOR SUSPENDED FRAMING PER TYPICAL PARTITION FRAMING DIAGRAM WHERE SPANS COMPLY WITH TYPICAL HEADER CONDITIONS
3. VERIFY LOCATION OF PT SLAB TENDONS PRIOR TO DRILLING FOR ANY ANCHORS. DO NOT DAMAGE TENDONS.

C1 TYP. SUSPENDED STUD FRAMING CONFIGURATION
3" = 1'-0"



C3 CEILING TYP DETAIL - AXIOM ACT-ACT HT TRANSITION
3" = 1'-0"



C4 CEILING TYP DETAIL - AXIOM ACT-GYP HT TRANSITION
3" = 1'-0"

DSA APPROVAL

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5856 Doyle Street
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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

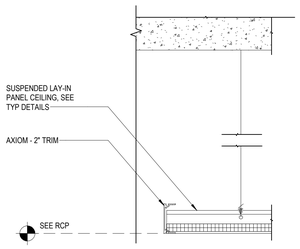
TYPICAL CEILING DETAILS

SCALE: 3" = 1'-0"
PROJECT NUMBER: 21415

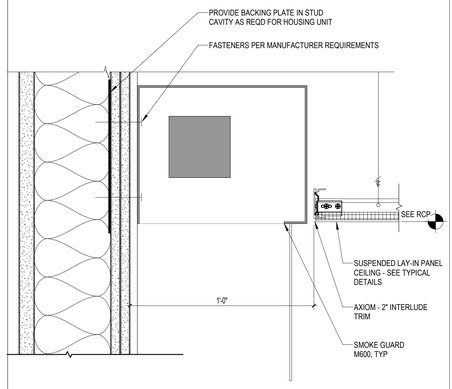
DSA OR OSHPD OR NONE
SHEET NUMBER: A-571

07/18/2022 DSA SUBMITTAL & BID SET

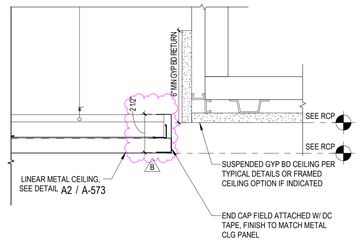
7/26/2022 9:29:07 AM



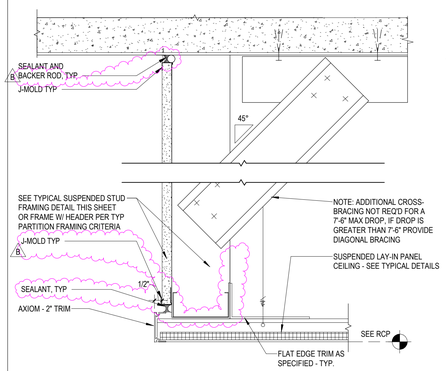
C1 SUSPENDED ACOUSTICAL CEILING
3" = 1'-0"



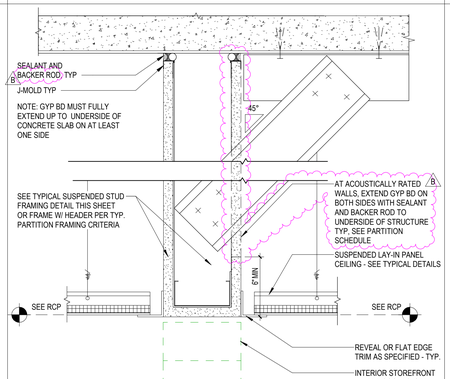
C2 ACOUSTICAL CEILING - SMOKE GUARD
3" = 1'-0"



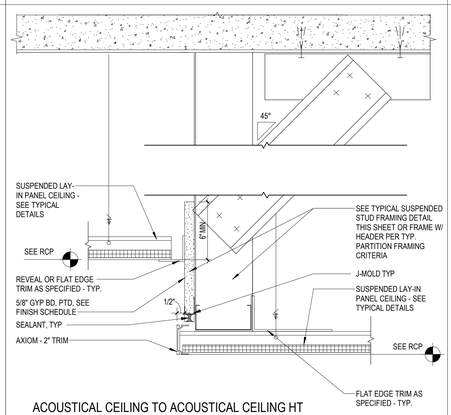
C3 ACOUSTICAL CEILING @ SUSPENDED GYP BD
3" = 1'-0"



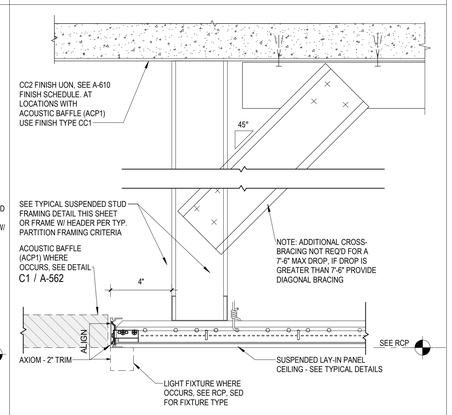
B2 ACOUSTICAL CEILING @ GYP BD SOFFIT TO SLAB, TYP
3" = 1'-0"



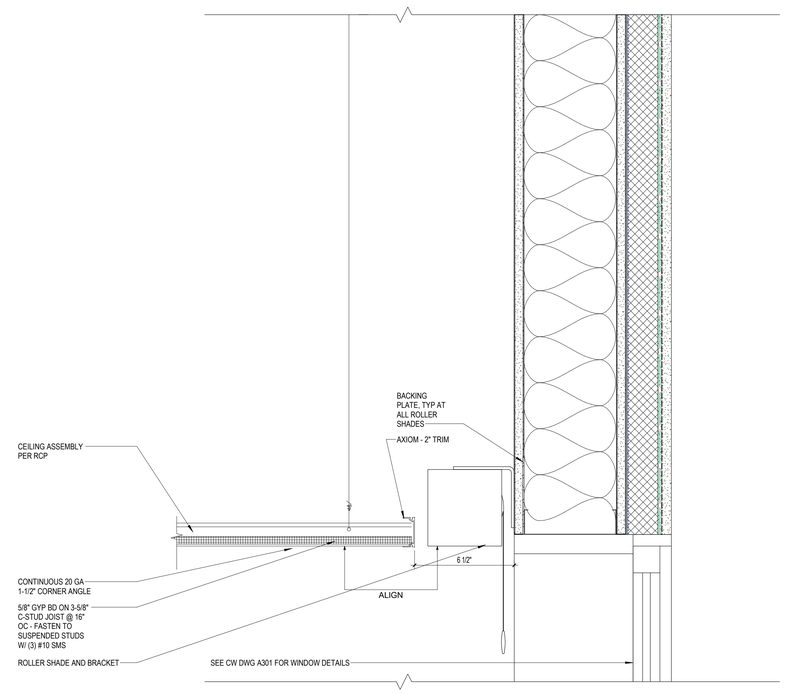
B3 ACOUSTICAL CEILING @ GYP BD SOFFIT TO SLAB, @ STOREFRONT HEAD CONDITIONS
3" = 1'-0"



A2 ACOUSTICAL CEILING TO ACOUSTICAL CEILING HT DIFFERENCE @ GYP BD SOFFIT TO SLAB, TYP
3" = 1'-0"



A3 ACOUSTICAL CEILING @ OPEN CEILING TO SLAB, TYP
3" = 1'-0"



B4 ACOUSTICAL CEILING @ GYP BD SOFFIT - FIXED WINDOW
3" = 1'-0"

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LICENSED ARCHITECT
RONEL D. MATION
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

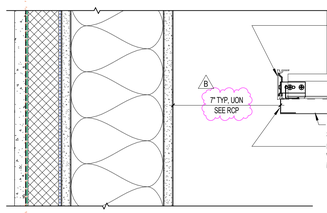
SHEET TITLE:
CEILING DETAILS

SCALE: 3" = 1'-0"
PROJECT NUMBER: 21415

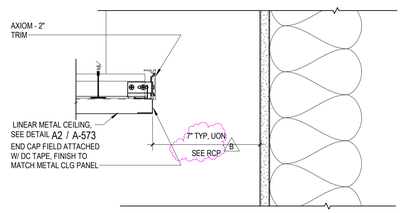
SHEET NUMBER: A-572

07/18/2022 DSA SUBMITTAL & BID SET

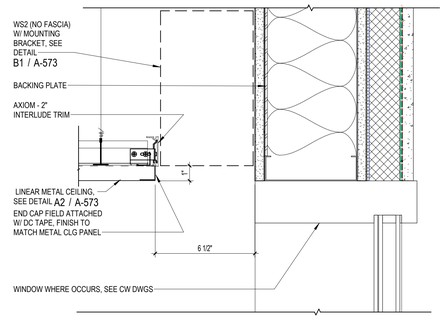
7/25/2022 9:29:11 AM



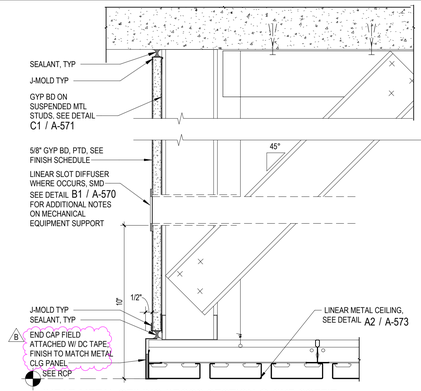
D1 CEMENT PLASTER WALL - LINEAR METAL CEILING
3" = 1'-0"



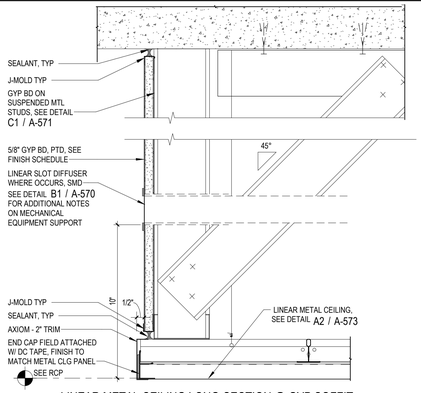
D2 PARTITION - LINEAR METAL CEIILING
3" = 1'-0"



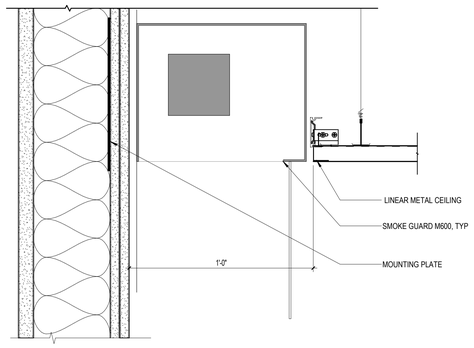
D3 LINEAR METAL CEILING - CURTAIN WALL
3" = 1'-0"



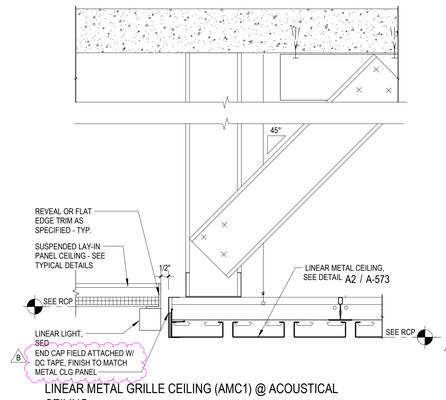
D4 LINEAR METAL CEILING CROSS-SECTION @ GYP SOFFIT
3" = 1'-0"



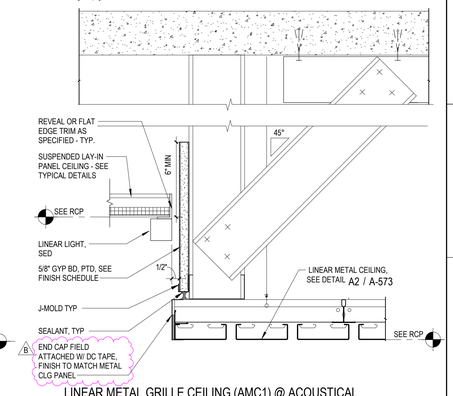
D5 LINEAR METAL CEILING LONG-SECTION @ GYP SOFFIT
3" = 1'-0"



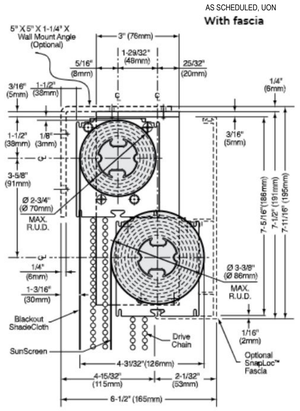
C1 LINEAR METAL CEILING - SMOKE GUARD
3" = 1'-0"

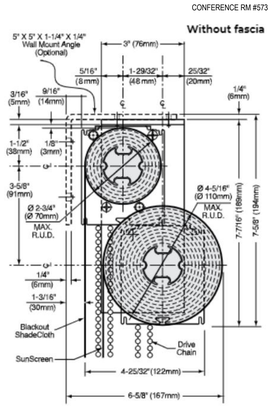


C4 LINEAR METAL GRILLE CEILING (AMC1) @ ACOUSTICAL CEILING
3" = 1'-0"

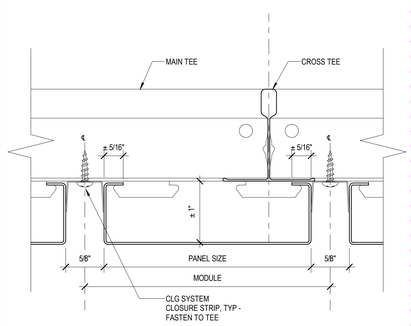


C5 LINEAR METAL GRILLE CEILING (AMC1) @ ACOUSTICAL CEILING WITH GYP SOFFIT
3" = 1'-0"

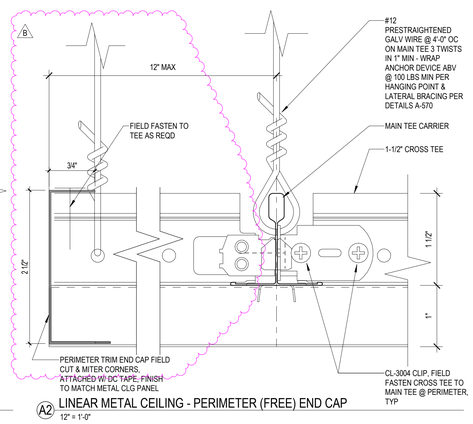




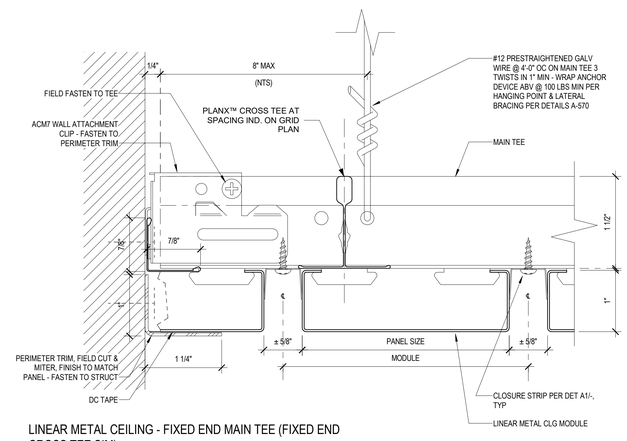
B1 WINDOW SHADE BASIS OF DESIGN TYPE WS2



A1 LINEAR METAL CEILING - CLOSURE
12" = 1'-0"



A2 LINEAR METAL CEILING - PERIMETER (FREE) END CAP
12" = 1'-0"



A3 LINEAR METAL CEILING - FIXED END MAIN TEE (FIXED END CROSS TEE SIM)
12" = 1'-0"

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
CEILING DETAILS

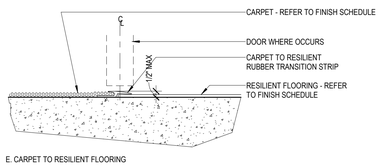
SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-573

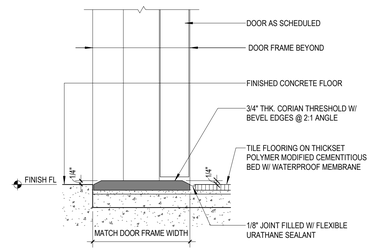
07/18/2022 DSA SUBMITTAL & BID SET

7/25/2022 3:29:18 AM

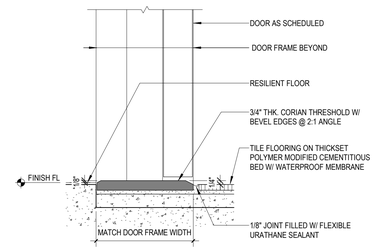
D1 FLOOR STRIP TRANSITIONS
3" = 1'-0"



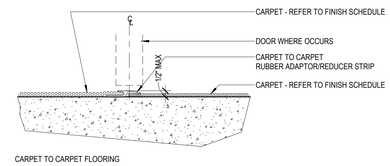
D2 CARPET TO RESILIENT FLOORING
3" = 1'-0"



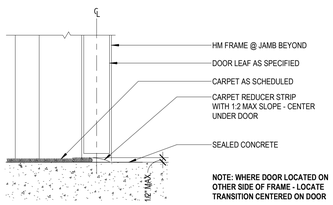
D3 TYP. TOILET ROOM DOOR THRESHOLD @ CONCRETE
3" = 1'-0"



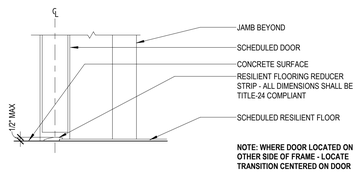
D4 TYP. TOILET ROOM DOOR THRESHOLD @ RESILIENT
3" = 1'-0"



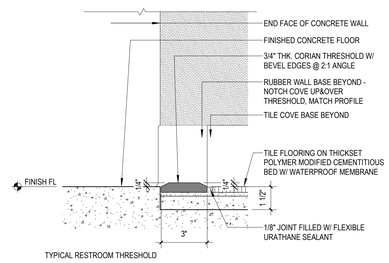
D5 CARPET TO CARPET FLOORING
3" = 1'-0"



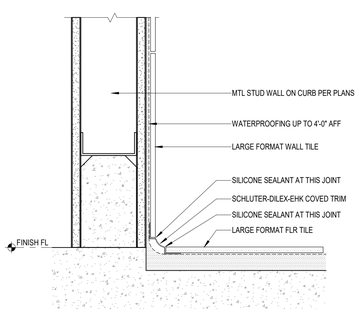
C1 TYP. THRESHOLD - CARPET @ CONCRETE
3" = 1'-0"

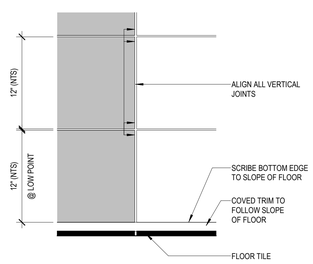


C2 TYP. THRESHOLD - RESILIENT FLOOR @ CONCRETE2
3" = 1'-0"

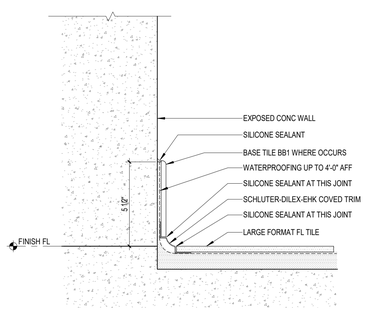


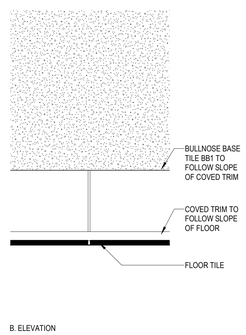
C3 TYP. THRESHOLD - TILE @ CONCRETE
3" = 1'-0"



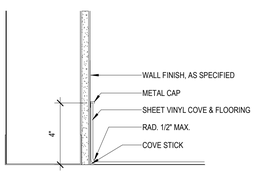


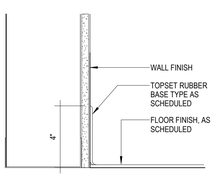
B3 TYP. WALL BASE DETAIL @ TOILET ROOM TILE WALL, STUD WALL
3" = 1'-0"



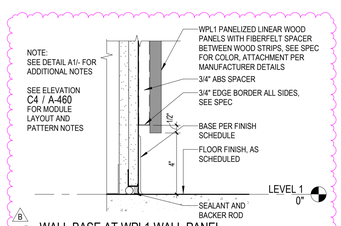


1 TYP. WALL BASE DETAIL @ TOILET ROOM TILE WALL, CONCRETE WALL
3" = 1'-0"





A4 TYP. WALL BASE DETAILS
3" = 1'-0"



A2 WALL BASE AT WPL1 WALL PANEL
3" = 1'-0"

DSA APPROVAL

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Tel 510 899 6400
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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

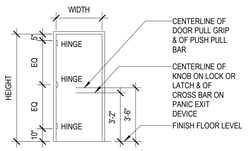
INTERIOR FINISH - FLOORING TRANSITIONS AND BASE DETAILS

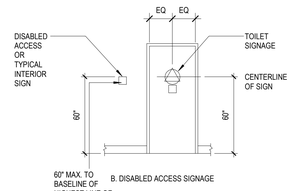
SCALE: 3" = 1'-0"
PROJECT NUMBER: 21415

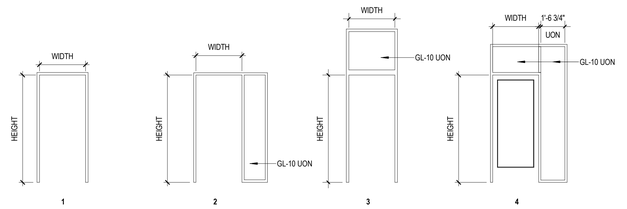
SHEET NUMBER: A-580

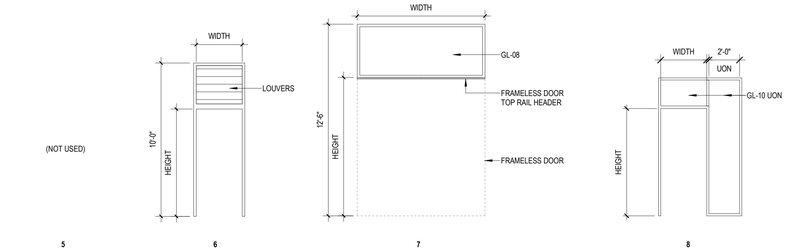
07/18/2022 DSA SUBMITTAL & BID SET

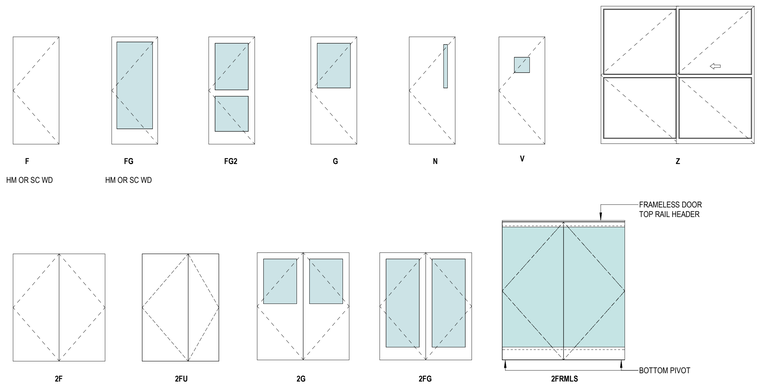
7/26/2022 9:29:52 AM











OPENING SCHEDULE - DOORS

				DOOR			FRAME								SEE G-002 FOR ABBREVIATIONS
MARK	WIDTH	HEIGHT	RATING	TYPE	MAT'L	FINISH	TYPE	HEAD	JAMB	SILL	MAT'L	FINISH	HDW GROUP	GLAZE TYPE	REMARKS
2D-1	3'-3"	9'-0"	NR	FG	AL	HPC	SEE REMARKS	1/CW451	5&6/CW406	2/CW451	AL	HPC	02	GL-05	CR, CURTAINWALL - SPEC 084413
3D-1	3'-3"	9'-0"	NR	FG	AL	HPC	SEE REMARKS	1/CW451	5&6/CW406	2/CW451	AL	HPC	02	GL-05	CR, CURTAINWALL - SPEC 084413
4D-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	1/CW451 SIM	5&6/CW406 SIM	2/CW451	AL	HPC	06	GL-05	CURTAINWALL - SPEC 084413
5D-1	3'-3"	9'-0"	NR	FG	AL	HPC	SEE REMARKS	1/CW451	5&6/CW406	2/CW451	AL	HPC	02	GL-05	CR, CURTAINWALL - SPEC 084413
6D-1	6'-0"	9'-0"	NR	2FG	AL	HPC	SEE REMARKS	1/CW451	3&4/CW406	2/CW451	AL	HPC	08	GL-05	PH, CR, CURTAINWALL - SPEC 084413
101-1	6'-0"	10'-4 1/2"	NR	2FG	AL	HPC	SEE REMARKS	1/CW451	3&4/CW406	A1/A-443	AL	HPC	07	GL-05	AO, PH, CURTAINWALL - SPEC 084413
101B-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D1/A-561	B1/A-561	C1/A-580	AL	PTD	12	-	CR
102-1	8'-0"	9'-0"	NR	2FRMLS	GL	-	7		-	-	HM	PTD	33	GL-08	PH
103-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568	C2/A-580	AL	HPC	17	GL-07	CR, INT STOREFRONT - SPEC 084113
103A-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568	D2/A-580	AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
103B-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-07	INT STOREFRONT - SPEC 084113
103B-8															
103B-10	2'-0"	2'-0"	NR	-	GFRG	PTD	-	-	-	-	AL	PTD	-	-	SPEC 083113
103C-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-561	D2/A-561		AL	PTD	13	-	
104-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
105-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	19	GL-10	CR
201-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
202-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
203-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	23	GL-10	CR
203-2	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-562			AL	HPC	23	GL-10	PH, CR, INT STOREFRONT - SPEC 084113
203A-1	3'-0"	7'-0"	NR	F	WD	TRANS	8	D2/A-568	C2&D2/A-568		AL	PTD	12	GL-10	
203B-1	3'-0"	7'-0"	NR	F	WD	TRANS	8	D2/A-568	C2&D2/A-568		AL	PTD	12	GL-10	
203C-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	GL-10	
203D-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	GL-10	
203E-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	13	-	
204-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
301-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	19	-	CR
302-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
302A-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	13	-	
302B-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	13	-	
303A-1	3'-0"	7'-0"	NR	F	AL	TRANS	SEE REMARKS	D2/A-561	C2&D2/A-568		AL	HPC	12	-	INT STOREFRONT - SPEC 084113
303B-1	3'-0"	7'-0"	NR	FG	AL	TRANS	SEE REMARKS	D2/A-568	C2&D2/A-568	D2/A-580	AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
303C-1	3'-0"	7'-0"	NR	FG	AL	TRANS	SEE REMARKS	D2/A-568	C2&D2/A-568	D2/A-580	AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
303D-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
303E-1	3'-0"	7'-0"	NR	F	AL	TRANS	SEE REMARKS	D2/A-568	C2&D2/A-568		AL	HPC	12	-	INT STOREFRONT - SPEC 084113
303F-1	3'-0"	7'-0"	NR	F	AL	TRANS	SEE REMARKS	D2/A-568	C2&D2/A-568		AL	HPC	12	-	INT STOREFRONT - SPEC 084113
304-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
305-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
401-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	18	GL-10	
401B-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
401C-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
401D-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	CR
401E-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
402-1	3'-0"	7'-0"	NR	N	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	45	GL-10	CR
402-2	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	25	-	
402A-1	3'-0"	7'-0"	NR	G	WD	TRANS	1	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	19	GL-10	CR
402B-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-562	B1/A-568	C2/A-580	AL	HPC	12	GL-10	CR, INT STOREFRONT - SPEC 084113
403-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	25	-	PH, CR
403-2	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	25	-	PH
403-3	3'-6"	7'-0"	NR	F	WD	TRANS	3	D2/A-568	C2&D2/A-568		AL	PTD	29	-	
404-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
405-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	25	-	PH, CR
405B-1	4'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	16	-	
405B-2	4'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	16	-	
501-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	24	-	PH, CR
502-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	25	-	PH, CR
503-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	18	GL-10	CR
503-2	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	21	GL-10	CR, INT STOREFRONT - SPEC 084113
503A-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503B-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503C-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503D-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503E-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503F-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503H-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	GL-10	
503J-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
503K-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
503M-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	D2/A-580	AL	PTD	12	-	
504-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	18	GL-10	CR
504A-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
504B-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
504C-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568	D2/A-580	AL	PTD	29	-	
504D-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	13	-	
504E-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
504F-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
601-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	D5/A-580	AL	PTD	18	-	
602-1	3'-0"	7'-0"	20 MIN	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	12	-	CR
603.1-1	3'-0"	7'-0"	NR	FG	AL	HPC	SEE REMARKS	D1/A-568	B1/A-568		AL	HPC	12	GL-10	INT STOREFRONT - SPEC 084113
603A-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603B-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603C-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603D-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603E-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603F-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603G-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603H-1	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568	D2/A-580	AL	PTD	12	GL-10	
603J-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	CR
603K-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
603L-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
604-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C2/A-580	AL	PTD	18	-	CR
605-1	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	19	-	CR
ACCESS DOOR	2'-0"	2'-0"	NR	-	GFRG	PTD	-	-	-	-	AL	PTD	-	-	SPEC 083113
ACCESS DOOR	2'-0"	2'-0"	NR	-	GFRG	PTD	-	-	-	-	AL	PTD	-	-	SPEC 083113
ACCESS DOOR	2'-0"	2'-0"	NR	-	GFRG	PTD	-	-	-	-	AL	PTD	-	-	SPEC 083113
AF303	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	17	-	CR
AF303G	3'-0"	7'-0"	NR	F	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	-	
AF503G	3'-0"	7'-0"	NR	FG	WD	TRANS	4	D2/A-568	C2&D2/A-568		AL	PTD	12	GL-10	
L1-STAIR -2A	6'-0"	9'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L1-STAIR-1A	8'-0"	9'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L1-STAIR-1B	3'-0"	7'-0"	NR	F	HM	PTD	1	D5/A-500, SIM	D5/A-500	A1/A-500	HM	PTD	01	-	PH, CR
L2-STAIR-1	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L2-STAIR-2	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L3-STAIR-1	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L3-STAIR-2	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L4-STAIR-1	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L4-STAIR-2	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L5-STAIR-1	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L5-STAIR-2	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L6-STAIR-1	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
L6-STAIR-2	8'-0"	8'-10"	90 MIN	2F	WD	PTD	1	D2/A-569	D2/A-569		HM	PTD	32	-	DHO, PH
ROOF-1	4'-0"	7'-0"	NR	F	HM	PTD	1	D5/A-500, SIM	D5/A-500, SIM		HM	PTD	04	-	
T21-1	3'-0"	7'-0"	NR	F	HM	PTD	1	D2/A-569	D2/A-569	D3/A-580	HM	PTD	26	-	
T31-1	3'-0"	7'-0"	NR	F	HM	PTD	1	D2/A-569	D2/A-569	D3/A-580	HM	PTD	28	-	
T51-1	3'-0"	7'-0"	NR	F	HM	PTD	1	D2/A-569	D2/A-569	D3/A-580	HM	PTD	28	-	
T61-1	3'-0"	7'-0"	NR	F	HM	PTD	1	D2/A-569	D2/A-569	D3/A-580	HM	PTD	28	-	
X10-1	3'-0"	7'-0"	NR	V	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	27		
X11-1	6'-0"	7'-0"	NR	2F	WD	TRANS	1	D2/A-568	C2&D2/A-568	D1/A-562	AL	PTD	30	-	CR
X11B-1	4'-0"	7'-0"	NR	F	HM	PTD	1	D5/A-500, SIM	D5/A-500, SIM		HM	PTD	30	-	ROOF: ELEVATOR MACHINE ROOM
X12-1	3'-0"	7'-0"	NR	V	WD	TRANS	1	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	12		
X13-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	22	-	PH, CR
X14-1	4'-0"	7'-0"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	31	-	CR
X15-1	3'-0"	9'-0"	NR	F	HM	PTD	6	D2/A-569	D2/A-569	A1/A-500	HM	PTD	05	-	PH, CR
X16-1	11'-0"	9'-0"	NR	2F	HM	PTD	6	D5/A-500, SIM	C5/A-500, SIM	A1/A-500	HM	PTD	09	-	CR
X16-2	3'-0"	7'-0"	NR	N	HM	PTD	1	D2/A-569	D2/A-569		HM	PTD	43	-	
X17-1	14'-0"	13'-0"	NR	SEE REMARKS	-	-	SEE REMARKS		B1/A-500	A1/A-510	SEE REMARKS	PTD	34	-	12'-8 1/2"W x 13'-0"H CLEAR OPENING OVERHEAD COILING DOOR - SPEC 083310
X17-2	6'-0"	7'-0"	NR	2F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	39	-	
X18-1	7'-0"	9'-0"	NR	2F	HM	PTD	6	D5/A-500, SIM	C5/A-500	A1/A-500	HM	PTD	10		
X18-2	3'-4"	7'-4"	20 MIN	F	HM	PTD	1	D2/A-569	D2/A-569		HM	PTD	27	-	CR
X19-1	3'-0"	7'-0"	NR	F	HM	PTD	1	D5/A-500, SIM	D5/A-500	A1/A-500	HM	PTD	03	-	CR
X20-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	13	-	
X21-1	5'-0"	7'-0"	90 MIN	2F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	31	-	CR
X22-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X23-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	13	-	
X24-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	17	-	CR
X25-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	17	-	CR
X27-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X27-2	4'-5 1/4"	7'-0"	NR	2FU	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	37	-	CR
X30-1	3'-0"	7'-0"	20 MIN	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	14	-	
X31-1	3'-0"	7'-0"	20 MIN	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	17	-	CR
X32-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X33-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	26	-	
X34-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	17	-	CR
X37-2	4'-5 1/4"	7'-0"	NR	2FU	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	37	-	CR
X40-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	14	-	
X41-1	3'-0"	7'-0"	20 MIN	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	17	-	CR
X42-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X43-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	26	-	
X44-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	17	-	CR
X45-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	15	-	
X47-2	4'-5 1/4"	7'-0"	NR	2FU	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	37	-	CR

TYPICAL DOOR HARDWARE NOTES & MOUNTING HEIGHTS

DOOR HARDWARE MOUNTING NOTES

HINGE LOCATIONS: THE THREE HINGES SHOWN ON THE DRAWING ARE FOR DOORS UP TO AND INCLUDING 7'-0" IN HEIGHT. FOR DOORS OF GREATER HEIGHTS AND WIDTHS, FOUR OR MORE HINGES SHALL BE USED AND THE TOP AND BOTTOM HINGES SHALL BE LOCATED AS SHOWN, WITH INTERMEDIATE HINGES BEING EQUALLY SPACED BETWEEN THEM.

LOCATION FOR OTHER HARDWARE ITEMS: KICK PLATES, UNLESS OTHERWISE SPECIFIED, SHALL EXTEND TO WITHIN 1/4" FROM THE BOTTOM OF THE DOOR AND THEIR HORIZONTAL LENGTH SHALL BE AS FOLLOWS: ON SINGLE DOORS, THE NOMINAL DOOR WIDTH LESS 2" ON THE PUSH SIDE AND THE NOMINAL DOOR WIDTH LESS 1" ON THE PULL SIDE; ON DOUBLE DOORS, THE NOMINAL DOOR WIDTH LESS 1" ON EACH SIDE.

SILENCERS ON SINGLE DOOR FRAMES SHALL BE PLACED OPPOSITE THE HINGES, AND ON DOUBLE DOOR FRAMES, SHALL BE LOCATED 6" EACH OFF THE CENTER OF THE HEAD STOP.

FINISH FLOOR LEVEL: FINISH FLOOR LEVEL IS DEFINED AS THE TOP SURFACE OF THE FINISH FLOORING MATERIAL, EXCEPT WHEN RESILIENT FINISH OR CARPET IS USED. THEN IT IS THE TOP SURFACE OF THE UNDERLYING FINISHED CONCRETE.

A. HINGE LOCATIONS

B. DISABLED ACCESS SIGNAGE

FRAME TYPES

HOLLOW METAL

HOLLOW METAL FRAME PROFILES ARE 2" UNLESS OTHERWISE NOTED

ALUMINUM

ALUMINUM FRAME PROFILES ARE 1 3/4" UNLESS OTHERWISE NOTED

DOOR TYPES

OPENING SCHEDULE - DOORS

				DOOR			FRAME								SEE G-002 FOR ABBREVIATIONS
MARK	WIDTH	HEIGHT	RATING	TYPE	MAT'L	FINISH	TYPE	HEAD	JAMB	SILL	MAT'L	FINISH	HDW GROUP	GLAZE TYPE	REMARKS
X50-1	5'-0"	7'-0"	NR	2FU	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	30	-	CR
X51A-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568	D4/A-580	AL	PTD	20	-	CR
X52-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X53-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	26	-	
X54-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568	C1/A-580	AL	PTD	17	-	CR
X56-2	4'-5 1/4"	7'-0"	NR	2FU	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	37	-	CR
X60-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X60-2	3'-0"	7'-0"	NR	FG	HM	PTD	3	D5/A-500, SIM	D5/A-500, SIM		HM	PTD	11	GL-05	PH, CR, OUTBOARD LITE ON PUSH SIDE
X60-3	7'-4"	9'-0"	20 MIN	2F	WD	TRANS	1	D2/A-569	D2/A-569		AL	PTD	36		DHO, PH
X60-4	12'-4"	10'-0"	NR	SEE REMARKS	AL	HPC	NA	A3/A-565 & 6/CW458	A4&B4/A-565, 3/CW408 & 1/CW429	A3/A-565 & 6/CW458	AL	PTD	41	GL-05	FOLDING PANEL PARTITION - SPEC 102239
X62-1	3'-0"	7'-4"	90 MIN	F	WD	TRANS	1	D2/A-569	D2/A-569		HM	PTD	17	-	CR
X63-1	3'-0"	7'-0"	NR	F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	26	-	CR
X64-1	4'-6"	7'-0"	NR	2F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	40	-	
X65-1	8'-0"	9'-0"	NR	2F	HM	PTD	1	D5/A-500, SIM	D5/A-500, SIM		HM	HPC	35	-	
X66-1	8'-0"	9'-0"	NR	2F	HM	PTD	1	D5/A-500, SIM	D5/A-500, SIM		HM	PTD	35	-	
X67-1	6'-0"	7'-0"	NR	2F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	38	-	
X68-1	6'-0"	7'-0"	NR	2F	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	35	-	
X70-1	4'-5 1/4"	7'-0"	NR	2FU	WD	TRANS	1	D2/A-568	C2&D2/A-568		AL	PTD	38	-	PH, CR

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MICHAEL D. MATSON
No. C-25627
REN. 12-31-22

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

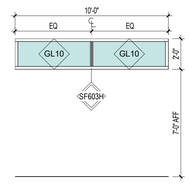
SHEET TITLE:

DOOR SCHEDULE AND LEGENDS

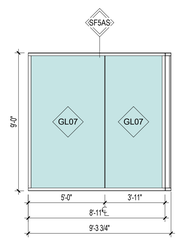
SCALE: 1/4" = 1'-0"
PROJECT NUMBER: 21415

SHEET NUMBER: A-601

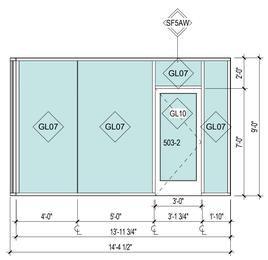
07/18/2022 DSA SUBMITTAL & BID SET



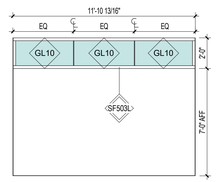
E1 SF603H1
1/4" = 1'-0"



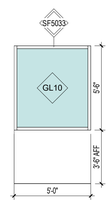
D1 SF5AS
1/4" = 1'-0"



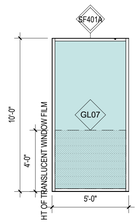
D2 SF5AW
1/4" = 1'-0"



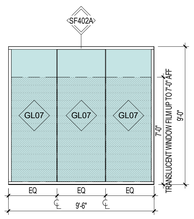
D3 SF503L
1/4" = 1'-0"



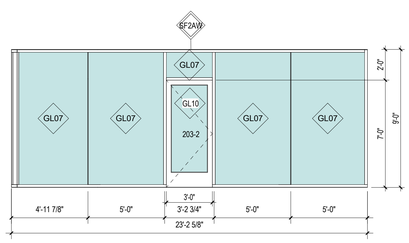
D4 SF5033
1/4" = 1'-0"



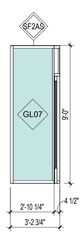
C1 SF401A
1/4" = 1'-0"



C2 SF402A
1/4" = 1'-0"



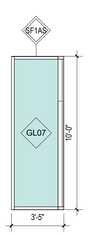
B1 SF2AW
1/4" = 1'-0"



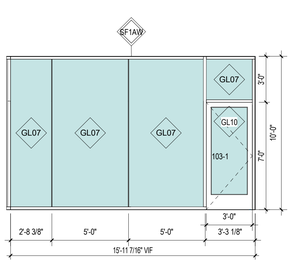
B2 SF2AS
1/4" = 1'-0"

B3 SF203C2
1/4" = 1'-0"

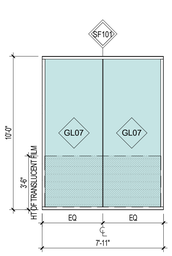
B4 SF203D2
1/4" = 1'-0"



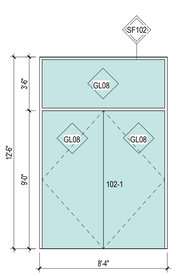
A1 SF1AS
1/4" = 1'-0"



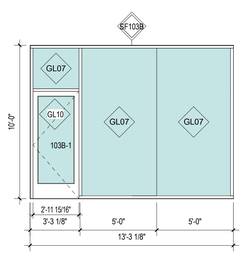
A2 SF1AW
1/4" = 1'-0"



A3 SF101
1/4" = 1'-0"



A4 SF102
1/4" = 1'-0"



A5 SF103B
1/4" = 1'-0"

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL / ROOM NUMBER

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1i — IDENTIFIER

CURTAINWALL (CW) / STOREFRONT (SF) PANEL TYPE — GL-XX — IDENTIFIER, SEE SPEC 08 80 00 FOR GLAZING TYPES

SHEET NOTES

1. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS.
2. SEE SHEET A-610 FOR FINISH SCHEDULE.
3. SEE DOOR SCHEDULE AND DOOR TYPE & FRAME LEGENDS ON SHEET A-601 FOR ALL DOORS AND FRAME TYPES IN PROJECT.
4. ALL SYSTEMS THIS SHEET TO BE SUBMITTED TO DSA FOR APPROVAL AS DEFERRED SUBMITTAL - SEE G-002 & SPEC SECTION 08 41 13.

INTERIOR STOREFRONT SCHEDULE

MARK	SF HEIGHT	SF LENGTH	WALL HEAD CONFIGURATION		Comments
LEVEL 1					
SF1AS	10'-0"	3'-2 3/4"			
SF1AW	10'-0"	16'-1"			CONTAINS DOOR 103-1
SF101	10'-0"	8'-6"			
SF102	12'-6"	8'-4"			CONTAINS DOOR 102
SF103B	10'-0"	13'-3"			CONTAINS DOOR 103B-1
LEVEL 2					
SF203C2	9'-0"	4'-0"			
SF203D2	9'-0"	4'-0"			
LEVEL 4					
SF401A	10'-0"	5'-0"			
SF402A	9'-0"	9'-6"			
LEVEL 5					
SF5AS	9'-0"	8'-11"			
SF5AW	9'-0"	13'-11 3/4"			CONTAINS DOOR 503-2
SF503G	9'-0"	4'-7 3/4"			CONTAINS DOOR 503G-1
SF503L	2'-0"	11'-10 7/8"			
SF5033	5'-6"	5'-0"			
LEVEL 6					
SF603H	2'-0"	10'-0"			

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

INTERIOR STOREFRONT SCHEDULE

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: B A-602

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 3:29:57 AM

TAGS

OBJECT TAGS

DOOR — 101-X — FLOOR LEVEL / ROOM NUMBER

CURTAINWALL (CW) / STOREFRONT (SF) / ALUMINUM FRAME (AF) — 1i — IDENTIFIER

CURTAINWALL (CW) / STOREFRONT (SF) PANEL TYPE — GL-XX — IDENTIFIER, SEE SPEC 08 80 00 FOR GLAZING TYPES

SHEET NOTES

1. SEE SHEET A-601 FOR DOOR SCHEDULE AND LEGENDS.
2. SEE SHEET A-610 FOR FINISH SCHEDULE.
3. SEE DOOR SCHEDULE AND DOOR TYPE & FRAME LEGENDS ON SHEET A-601 FOR ALL DOORS AND FRAME TYPES IN PROJECT.
4. SPEC SECTION 08 12 16.

ALUMINUM FRAME SCHEDULE

MARK	SF HEIGHT	SF LENGTH	WALL HEAD CONFIGURATION	Comments
LEVEL 1				
AF103A	10'-0"	5'-3"		CONTAINS DOOR 103A-1
AF104	9'-0"	5'-0"		CONTAINS DOOR 104-1
AF105	9'-0"	5'-0"		CONTAINS DOOR 105-1
LEVEL 2				
AF201	9'-0"	5'-0"		CONTAINS DOOR 201-1
AF202	9'-0"	5'-0"		CONTAINS DOOR 202-1
AF203	9'-0"	5'-0"		CONTAINS DOOR 203-1
AF203A	9'-0"	5'-5 1/4"		CONTAINS DOOR 203A-1
AF203B	9'-0"	5'-5 1/4"		CONTAINS DOOR 203B-1
AF203C1	9'-0"	5'-0"		CONTAINS DOOR 203C-1
AF203D1	9'-0"	5'-0"		CONTAINS DOOR 203D-1
AF204	9'-0"	5'-0"		CONTAINS DOOR 204-1
LEVEL 3				
AF301	9'-0"	5'-0"		CONTAINS DOOR 301-1
AF302	9'-0"	5'-0"		CONTAINS DOOR 302-1
AF303	9'-0"	5'-0"		CONTAINS DOOR 303-1
AF303A	9'-0"	8'-3 1/8"		CONTAINS DOOR 303A-1
AF303B	9'-0"	8'-3 1/8"		CONTAINS DOOR 303B-1
AF303C	9'-0"	8'-3 1/8"		CONTAINS DOOR 303C-1
AF303D	9'-0"	5'-0"		CONTAINS DOOR 303D-1
AF303E	9'-0"	8'-3 1/8"		CONTAINS DOOR 303E-1
AF303F	9'-0"	8'-3 1/8"		CONTAINS DOOR 303F-1
AF303G	9'-0"	5'-0"		CONTAINS DOOR 303G-1
AF304	9'-0"	5'-0"		CONTAINS DOOR 304-1
AF305	9'-0"	5'-0"		CONTAINS DOOR 305-1
LEVEL 4				
AF401	9'-0"	5'-0"		CONTAINS DOOR 401-1
AF401B	9'-0"	4'-7 3/4"		CONTAINS DOOR 401B-1
AF401C	9'-0"	4'-7 3/4"		CONTAINS DOOR 401C-1
AF401D	9'-0"	4'-7 3/4"		CONTAINS DOOR 401D-1
AF401E	9'-0"	4'-7 3/4"		CONTAINS DOOR 401E-1
AF402	9'-0"	5'-0"		CONTAINS DOOR 402-2
AF403N	9'-0"	5'-0"		CONTAINS DOOR 403-1
AF403S	9'-0"	5'-0"		CONTAINS DOOR 403-2
AF404	9'-0"	5'-0"		CONTAINS DOOR 404-1
AF405	9'-0"	5'-0"		CONTAINS DOOR 405-1
AF405A	2'-0"	3'-10"		CONTAINS DOOR 403-3
LEVEL 5				
AF501	9'-0"	5'-0"		CONTAINS DOOR 501-1
AF502	9'-0"	5'-0"		CONTAINS DOOR 502-1
AF503A	9'-0"	5'-0"		CONTAINS DOOR 503A-1
AF503B	9'-0"	5'-0"		CONTAINS DOOR 503B-1
AF503C	9'-0"	5'-0"		CONTAINS DOOR 503C-1
AF503D	9'-0"	8'-3 1/8"		CONTAINS DOOR 503D-1
AF503E	9'-0"	8'-3 1/8"		CONTAINS DOOR 503E-1
AF503F	9'-0"	8'-3 1/8"		CONTAINS DOOR 503F-1
AF503H	9'-0"	4'-7 3/4"		CONTAINS DOOR 503H-1
AF503J	9'-0"	8'-3 1/8"		CONTAINS DOOR 503J-1
AF503K	9'-0"	5'-0"		CONTAINS DOOR 503K-1
AF503M	9'-0"	5'-0"		CONTAINS DOOR 503M-1
AF504	9'-0"	5'-0"		CONTAINS DOOR 504-1
AF5031	9'-0"	5'-0"		CONTAINS DOOR 503-1
LEVEL 6				
AF6AE	9'-0"	8'-3 1/8"		CONTAINS DOOR 603.1-1
AF601	9'-0"	5'-0"		CONTAINS DOOR 601-1
AF603A	9'-0"	4'-7 3/4"		CONTAINS DOOR 603A-1
AF603B	9'-0"	4'-7 3/4"		CONTAINS DOOR 603B-1
AF603C	9'-0"	4'-7 3/4"		CONTAINS DOOR 603C-1
AF603D	9'-0"	4'-7 3/4"		CONTAINS DOOR 603D-1
AF603E	9'-0"	4'-7 3/4"		CONTAINS DOOR 603E-1
AF603F	9'-0"	4'-7 3/4"		CONTAINS DOOR 603F-1
AF603G	9'-0"	4'-7 3/4"		CONTAINS DOOR 603G-1
AF603H	9'-0"	4'-7 3/4"		CONTAINS DOOR 603H-1
AF603J	9'-0"	4'-7 3/4"		CONTAINS DOOR 603J-1
AF603K	9'-0"	4'-7 3/4"		CONTAINS DOOR 603K-1
AF603L	9'-0"	4'-7 3/4"		CONTAINS DOOR 603L-1
AF604	9'-0"	5'-0"		CONTAINS DOOR 604-1
AF605	9'-0"	5'-0"		CONTAINS DOOR 605-1

DSA APPROVAL

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5856 Doyle Street
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Tel 510 899 6400
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LICENSED ARCHITECT MICHAEL D. RATCLIFF No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

ALUMINUM FRAME SCHEDULE

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-603

DSA SUBMITTAL & BID SET 07/18/2022

GENERAL NOTES

1. ALL PAINTS, COATINGS AND CEILING MATERIALS MUST MEET THE LEED V4.1 LOW EMITTING MATERIALS REQUIREMENTS.

2. ALL FLOORING MUST MEET THE LEED V4.1 LOW EMITTING MATERIALS REQUIREMENT.

MATERIALS LIST

CODE	MATERIAL CATEGORY	MFR	PRODUCT	COLOR	FINISH	DIMENSIONS	EDGE PROFILE	INSTALLATION METHOD	BACKING SYSTEM	COMMENTS
BASE										
BB1	BULLNOSE BASE	CROSSVILLE	READY TO WEAR	AV317 FLANNEL SUIT	-	4 X 24 BULLNOSE	-	-	-	-
RB1	RUBBER BASE	JOHNSONITE	TIGHTLOCK TOP SET	29 MOON ROCK	-	4"H	-	TIGHTLOCK REQUIRED SEQUENCING WITH FLOORING DURING INSTALLATION CONTRACTOR TO CHECK WITH MNFR'S RECOMMENDATIONS FOR INSTALLATION	-	BASE TO BE FLUSH AT CONCRETE WALLS, CAST IN CONCRETE W/ 3/4" X 4" WOOD BLOCKING
RB2	RUBBER	JOHNSONITE	TIGHTLOCK CARPET SET	29 MOON ROCK	-	4-1/2"H	-	PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	TIGHTLOCK REQUIRED SEQUENCING WITH FLOORING DURING INSTALLATION CONTRACTOR TO CHECK WITH MNFR'S RECOMMENDATIONS FOR INSTALLATION
CASEWORK										
PL1	HIGH PRES. LAM.	FORMICA	WHEAT STRAND 6212-58	-	MATTE	-	-	-	-	-
PL2	HIGH PRES. LAM.	WILSONART	HIGH LINE 7970K-18	-	-	-	-	-	-	-
PL3	HIGH PRESSURE LAMINATE	FORMICA	PEARL 934-58	-	MATTE	-	-	-	-	-
SSF1	SOLID SURFACE MATERIAL	HI-MACS	-	VENUS	-	-	-	-	-	-
SSF2	SOLID SURFACE MATERIAL	HI-MACS	-	MOON HAZE G118	-	-	-	-	-	-
SSF3	SOLID SURFACE MATERIAL	CORIAN	-	BISQUE	-	-	-	-	-	-
CEILING										
ACP1	ACOUSTIC CEILING BAFFLE	KIREI	ZIGGY	551	-	PER RCP	-	CABLE HUNG WITH LOOPS ATTACHED TO THE OVAL EXTRUSION	-	CONCRETE CEILING ABOVE FINISHED WITH CC2
ACT1	ACCOUSTICAL CEILING TILE	ARMSTRONG	ULTIMA HIGH NRC SQUARE LAY IN	WHITE	-	2' X 4'	-	-	-	-
ALW1	LINEAR WOOD GRILLE CEILING	RULON	QUARTER SAWN B	WHITE BIRCH (STAIN "A": LECHE; STAIN "B": CLEAR; STAIN "C": APRICOT)	CLEAR MATTE	PER RCP & DETAILS A	- B	PER MFR RECOMMENDATION WITH SHOP DRAWWING SUBMITTAL	BLACK THEATER CLOTH	NOTE: SEE DETAILS FOR STAIN TYPE APPLICATION
AMC1	LINEAR METAL CEILING	CEILINGS PLUS	PLANX	S22 OAKLINE	-	-	-	-	-	-
CC1	CONCRETE CEILING, UNFINISHED	-	- B	-	-	-	-	-	-	A BACK OF HOUSE AREAS, UNOCCUPIED
CC2	CONCRETE CEILING, PAINTED	-	-	PT1, SEE WALL FINISHES.	MATTE	-	-	-	-	OVERSPRAY 4'-0" BEYOND EDGE OF DROP CEILINGS AT EXPOSED CONCRETE CEILING AREAS
GYPC	GYP BOARD CEILING, PAINTED	-	SHERWIN WILLIAMS	SW 7007 CEILING BRIGHT WHITE	EGGSHELL	-	-	-	-	GYPC IN ALL TOILET ROOMS WILL HAVE SEMI-GLOSS FINISH
FLOOR										
CG1	CORNER GUARD	CONSTRUCTION SPECIALTIES	304 STAINLESS STEEL WITH #4 SATIN FINISH	-	-	FULL HEIGHT; 2" x 2"	-	-	-	UP TO 7' H ON FIRST FLOOR
CPT1A	ENTRYWAY SYSTEM	MATS, INC.	NUWAY	ALUMINUM METAL WIPER BLADES + CHARCOAL CARPET WIPER BLADES. OPEN	ALUMINUM	7/16" THICKNESS+ + 5/16" ARDEX FILL FOR FLUSH INSTALLATION	SQUARE	PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	OPEN CONSTRUCTION	-
CPT1B	WALKOFF CARPET TILE	TARKETT	02578 ABRASIVE ACTION II	1910 WINTER GRAY	-	24" X 24"	-	QUARTER-TURN ; GLUEDOWN	ETHOS MODULAR WITH OMNICOAT TECHNOLOGY	-
CPT2	CARPET TILE	TARKETT	COLORMAP	42803 DESERT PAVEMENT	-	24" X 24"	-	VERTICAL ASHLAR ; PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	ETHOS MODULAR WITH OMNICOAT TECHNOLOGY	-
CPT3	CARPET TILE	TARKETT	DOUBLE BOUCLE A0010	COOL GRAPHITE 74207	-	24" X 24"	-	VERTICAL ASHLAR ; PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	ETHOS MODULAR WITH OMNICOAT TECHNOLOGY	-
CPT4	CARPET TILE	TARKETT	04655 ANGULATE	22101 LIGHT MOVEMENT	-	24" X 24"	-	MONOLITHIC ; PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	ETHOS MODULAR WITH OMNICOAT TECHNOLOGY	-
CPT5	CARPET TILE	TARKETT	04655 ANGULATE	22105 LUMINAIRE	-	24" X 24"	-	MONOLITHIC ; PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	ETHOS MODULAR WITH OMNICOAT TECHNOLOGY	-
CT1	CERAMIC FLOOR TILE	CROSSVILLE	READY TO WEAR	AV317 FLANNEL SUIT	-	12" X 24"	-	MONOLITHIC ; PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	CORIAN COLOR "CONCRETE" AT TILE/CONCRETE THRESHOLD
FC1	FINISHED CONCRETE	FLOOR SEAL TECHNOLOGY	MIRRORCRETE DYE	-	-	PER FINISH PLANS	-	PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	-
FC2	FINISHED CONCRETE	-	-	-	-	-	-	-	-	NOT USED
RES1	LINOLEUM	FORBO	MARMOLEUM STRIATO	SILT STONE 5256	-	108' x 79"	-	PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	PVC FREE
SC1	SEALED CONCRETE	-	-	-	-	PER FINISH PLANS	-	PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	SEE SPEC. SECTION 09 97 23
STAIR FINISHES										
C4	CONCRETE TREAD AND STAIR LANDING				STEEL TROWEL	-	-	-	-	EXPOSED STEEL, RAILINGS, HANDRAILS
PT1	PAINT, GENERAL	SHERWIN WILLIAMS	ZERO-VOC	SW7551 GREEK VILLA	SEMI-GLOSS	-	-	-	-	(ALT. HANDRAIL FINISH: STAINLESS STEEL TYPE 304)
WALL										
C1	RAW CONCRETE WALL	-	-	-	-	-	-	-	-	BACK OF HOUSE SERVICE AREAS
C2	RAW CONCRETE WALL, PAINTED	-	-	-	-	-	-	-	-	SERVICE AREA OFFICES
C3	ARCHITECTURAL EXPOSED CONCRETE WALL	-	-	-	SACK AND PATCH	-	-	-	-	SACK AND PATCH ALL PUBLIC SPACES
CG1	CORNER GUARD	CONSTRUCTION SPECIALTIES	304 STAINLESS STEEL WITH #4 SATIN FINISH	-	-	FULL HEIGHT; 2" x 2"	-	-	-	UP TO 7' H ON FIRST FLOOR
CT2	CERAMIC WALL TILE	CROSSVILLE	READY TO WEAR	AV311 BUTTONED UP	-	12" X 24"	-	MONOLITHIC ; PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	-
DEW	DRY ERASE WALL COVERING	KOROSEAL	WALL-TALKERS MAGRITE M2PR-00	WHITE	LOW GLOSS DRY ERASE FILM	ROLLED 48"W x 0.61 mm	-	ADHERED; FINISH ALL EXPOSED EDGES WITH 1/2" ALUM. FLAT TRIM, WHITE	-	-
DEWP	DRY ERASE WALL COVERING, PROJECTABLE	KOROSEAL	WALL-TALKERS MAGRITE M2PR-00	WHITE	LOW GLOSS DRY ERASE FILM	ROLLED 48"W x 0.61 mm	-	ADHERED; FINISH ALL EXPOSED EDGES WITH 1/2" ALUM. FLAT TRIM, WHITE	-	-
PT1	PAINT, GENERAL	SHERWIN WILLIAMS	ZERO-VOC	SW7551 GREEK VILLA	SEMI-GLOSS	-	-	-	-	
PT2	PAINT, ACCENT	SHERWIN WILLIAMS	ZERO-VOC	SW7037 BALANCED BEIGE	SEMI-GLOSS	-	-	-	-	-
PT3	PAINT, ACCENT	SHERWIN WILLIAMS	ZERO-VOC	SW9152 LET IT RAIN	SEMI-GLOSS	-	-	-	-	-
PT4	PAINT, ACCENT	SHERWIN WILLIAMS	ZERO-VOC	SW9141 WATERLOO	SEMI-GLOSS	-	-	-	-	-
PT5	PAINT, ACCENT	SHERWIN WILLIAMS	ZERO-VOC	SW6369 TASSEL	SEMI-GLOSS	-	-	-	-	-
PT6	PAINT, ACCENT	SHERWIN WILLIAMS	ZERO-VOC	SW7682 BEE'S WAX	SEMI-GLOSS	-	-	-	-	-
WALL PANEL										
TACK	TACKABLE SURFACE	WOLF GORDON	COLORED BULLETIN BOARD CORK	GOH32255760 #2280 - MUSHROOM MEDLEY B	-	PER ELEVATIONS	-	B ADHERED	JUTE	ALUMINUM ANGLE FRAMED
WPL1	ACOUSTICAL	RULON	QUARTER SAWN	WHITE BIRCH	-	-	-	-	-	-
WPL2	TACKABLE FELT	SUTHERLAND FELT COMPANY	ARCHITECTURAL FELT	DB-03 MARBLE	-	PER ELEVATION	SQUARE B	PER MFR. RECOMMENDATIONS, PROVIDE SHOP DRAWING WITH SUBMITTAL	-	UNFRAMED B
WPL3	ACOUSTICAL	KIREI	ECHOPANEL PRINT	TRIO 100 B	-	12mm THICK	-	B ADHERED	-	-
WPL4	WALL PANEL A B	TRESPA	METEON	OCHRE A06.3.5/ST	SATIN	3650 x 1860 (FF)	-	-	-	-
WALL PROTECTION										
CG1	CORNER GUARD	CONSTRUCTION SPECIALTIES	304 STAINLESS STEEL WITH #4 SATIN FINISH	-	-	FULL HEIGHT; 2" x 2"	-	-	-	UP TO 7' H ON FIRST FLOOR
WP1	WALL PROTECTION, SHEET	CONSTRUCTION SPECIALTIES	INPRO RIGID SHEET	-	SUEDE	.060" THICKNESS	-	MANUFACTURER'S STANDARD WATER-BASED, 50 g/L VOC MAXIMUM	-	3' ON EITHER SIDE OF MOP SINK AND 48" HIGH IN ALL JANITOR'S CLOSETS
WINDOW SHADE										
WS1A	SINGLE ROLL SYSTEM - MANUAL W/ LAM	MECHO SHADE	ECOVEIL 1350 SERIES	-	5% OPENESS FACTOR	-	-	-	-	PROVIDE 3" BOTTOM CLOSURE AND CLOSURE MOUNT W/ TILE SUPPORT AT ACT1 CEILINGS
WS1B	SINGLE ROLL SYSTEM - MANUAL W/ LAM	MECHO SHADE	ECOVEIL 1350 SERIES	-	5% OPENESS FACTOR	-	-	-	-	PROVIDE POCKET 4133 AND 3" BOTTOM CLOSURE AT EXPOSED CEILINGS
WS2	DUAL ROLL SYSTEM WITH BLACKOUT & VERTICAL SEAL - MANUAL	MECHO SHADE	ECOVEIL 1350 SERIES + EQUINOX 0100 SERIES	-	ECOVEIL 1350 SERIES 5% OF + EQUINOX BLACKOUT 0%	-	-	-	-	BLACKOUT SHADES AT ART AND ANTHROPOLOGY CLASSROOMS - PROVIDE VERTICAL ROLL STACK ARRANGEMENT, FASCIA AND (X) BOTTOM CLOSURE

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. MATSON
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FINISH SCHEDULE

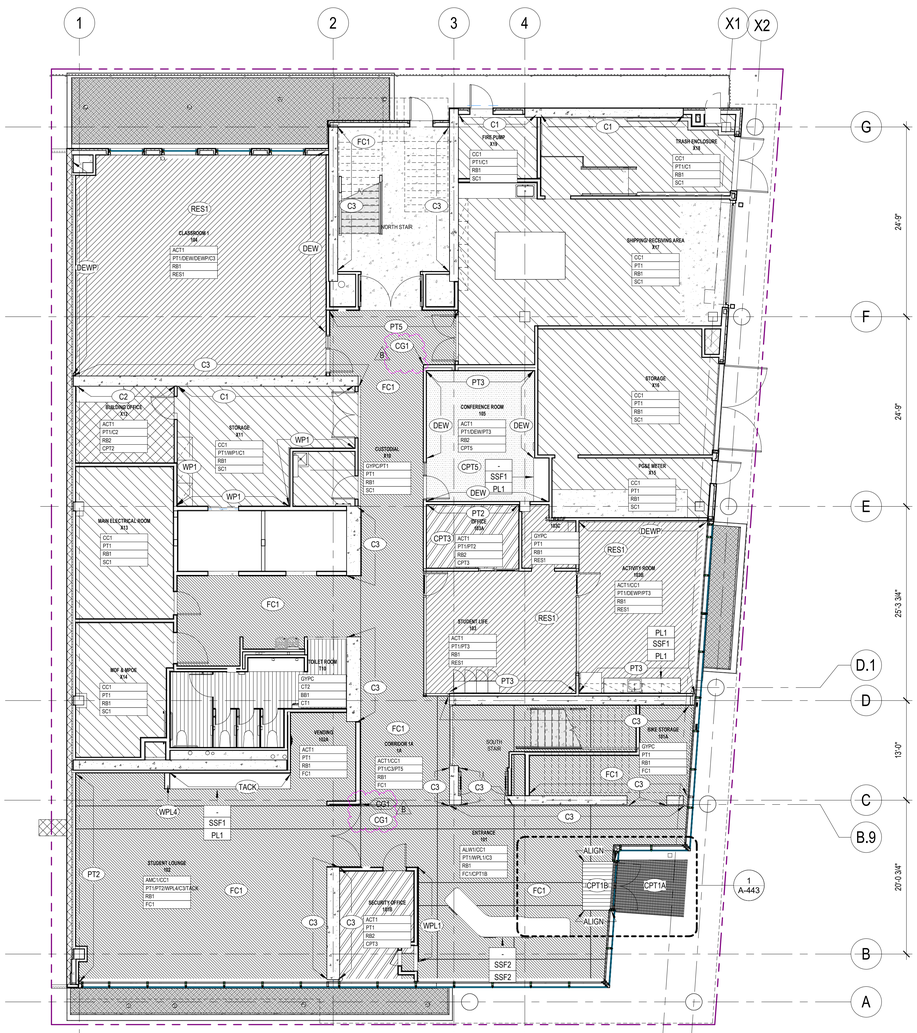
SCALE:

PROJECT NUMBER: 21415

SHEET NUMBER: A-610

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:30:50 AM



A1 LEVEL 1 - FLOOR PLAN
1/8" = 1'-0"

A2 LEVEL 2 - FLOOR PLAN
1/8" = 1'-0"

GENERAL FINISH NOTES

WALL FINISHES
1. FINISH ALL WALL FINISHES AT INSIDE CORNER.

2. ALL MECHANICAL ACCESSORIES THAT ARE PRIMED ONLY AND ACCESS DOORS ARE TO BE PAINTED TO MATCH SURROUNDING WALL. NOTIFY ARCHITECT FOR FINISHED ITEMS NOT MACHTING SURROUNDING WALL.

3. ALL EXPOSED GYPSUM BOARD SURFACES TO BE PAINTED PT1 U.O.N.

4. TYPICAL WALL PAINT FINISH IS PT1 SHERWIN WILLIAMS SW7551 GREEK VILLA.

5. CONCRETE WALL & COLUMN FINISH WILL BE C1 U.O.N.

FLOOR FINISHES
1. WHERE DIFFERING FLOOR FINISH MATERIALS MEET AT DOORS, THE SEAM SHALL OCCUR DIRECTLY BELOW THE CENTERLINE OF THE CLOSED DOOR U.O.N.

2. GRAIN DIRECTION OF FLOORING MATERIAL TO BE CONSISTENT IN DIRECTION THROUGHOUT ENTIRE PROJECT. DO NOT QUARTER-TURN FLOORING MATERIAL UNLESS THE INSTALLATION METHOD HAS BEEN RECOMMENDED BY THE MANUFACTURER; I.E., CARPET TILE AND / OR WALK-OFF MAT.

3. SUBMIT FLOOR SEAMING DIAGRAM FOR APPROVAL PRIOR TO PURCHASE OF MATERIAL.

4. PROVIDE TRANSITION / REDUCER STIP AT ALL FLOOR MATERIAL CHANGES. IDENTIFY TRANSITION / REDUCER STRIPS IN SHOP DRAWINGS.

5. WHERE DIFFERING FLOOR MATERIAL MEET, FEATHER SUBFLOOR TO ACCOMODATE DIFFERENCES IN GUAGES OR SUB-FLOOR LEVEL.

6. DO NOT SCALE THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR TH SITE REVIEW AND VERIFICATION OF ALL QUANTITES OF MATERIAL REQUIRED TO COMPLETE THE INSTALLATION.

7. EXTEND RESILLIENT FLOORING TO WALL UNDER COUNTER AND FACE OF CASEWORK TOE SPACE, TYP.

8. ALL MATERIAL OF ONE PATTERN / COLOR SHALL BE THE SAME DYE LOT.

9. RESILIENT BASE REQUIRES SEQUENCING WITH FLOORING CONTRACTOR TO CHECK WITH MNFR'S RECOMMENDATIONS FOR INSTALLATION

10. ALL CONCRETE WALLS ARE EXPOSED / UNPAINTED UNLESS OTHERWISE NOTED.

11. PROVIDE FRP WAINSCOT AT ALL CUSTODIAL CLOETS BEHIND MOP SINKS. 3'-0" LONG EACH SIDE X 4'-0" HIGH.

12. PROVIDE 4'-0" HIGH FRP WAINSCOT BEHIND WASHER /DRYER AT BUILDING STORAGE ROOM X47 AND EXTEND 3'-0" ON EACH SIDE.

13. 1/8" SAW CUT WITH EPOXY FILL AT FC1 AND FC2. COLOR TO BE DETERMINED.

FINISH LEGEND

- CPT1B
- CPT2
- CPT3
- CPT4
- CPT5
- RES1
- SC1
- CT1
- FC1

Name
HH
Ceiling Finish
Wall Finish
Base Finish
Floor Finish

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FINISH PLANS - LEVELS 1 & 2

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-611

07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:51:04 AM

A1 LEVEL 3 - FLOOR PLAN
1/8" = 1'-0"

A2 LEVEL 4 - FLOOR PLAN
1/8" = 1'-0"

GENERAL FINISH NOTES

WALL FINISHES
1. FINISH ALL WALL FINISHES AT INSIDE CORNER.

2. ALL MECHANICAL ACCESSORIES THAT ARE PRIMED ONLY AND ACCESS DOORS ARE TO BE PAINTED TO MATCH SURROUNDING WALL. NOTIFY ARCHITECT FOR FINISHED ITEMS NOT MACHTING SURROUNDING WALL.

3. ALL EXPOSED GYPSUM BOARD SURFACES TO BE PAINTED PT1 U.O.N.

4. TYPICAL WALL PAINT FINISH IS PT1 SHERWIN WILLIAMS SW7551 GREEK VILLA.

5. CONCRETE WALL & COLUMN FINISH WILL BE C1 U.O.N.

FLOOR FINISHES
1. WHERE DIFFERING FLOOR FINISH MATERIALS MEET AT DOORS, THE SEAM SHALL OCCUR DIRECTLY BELOW THE CENTERLINE OF THE CLOSED DOOR U.O.N.

2. GRAIN DIRECTION OF FLOORING MATERIAL TO BE CONSISTENT IN DIRECTION THROUGHOUT ENTIRE PROJECT. DO NOT QUARTER-TURN FLOORING MATERIAL UNLESS THE INSTALLATION METHOD HAS BEEN RECOMMENDED BY THE MANUFACTURER; I.E., CARPET TILE AND / OR WALK-OFF MAT.

3. SUBMIT FLOOR SEAMING DIAGRAM FOR APPROVAL PRIOR TO PURCHASE OF MATERIAL.

4. PROVIDE TRANSITION / REDUCER STIP AT ALL FLOOR MATERIAL CHANGES. IDENTIFY TRANSITION / REDUCER STRIPS IN SHOP DRAWINGS.

5. WHERE DIFFERING FLOOR MATERIAL MEET, FEATHER SUBFLOOR TO ACCOMODATE DIFFERENCES IN GUAGES OR SUB-FLOOR LEVEL.

6. DO NOT SCALE THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR TH SITE REVIEW AND VERIFICATION OF ALL QUANTITES OF MATERIAL REQUIRED TO COMPLETE THE INSTALLATION.

7. EXTEND RESILLIENT FLOORING TO WALL UNDER COUNTER AND FACE OF CASEWORK TOE SPACE, TYP.

8. ALL MATERIAL OF ONE PATTERN / COLOR SHALL BE THE SAME DYE LOT.

9. RESILIENT BASE REQUIRES SEQUENCING WITH FLOORING CONTRACTOR TO CHECK WITH MNFR'S RECOMMENDATIONS FOR INSTALLATION

10. ALL CONCRETE WALLS ARE EXPOSED / UNPAINTED UNLESS OTHERWISE NOTED.

11. PROVIDE FRP WAINSCOT AT ALL CUSTODIAL CLOETS BEHIND MOP SINKS. 3'-0" LONG EACH SIDE X 4'-0" HIGH.

12. PROVIDE 4'-0" HIGH FRP WAINSCOT BEHIND WASHER /DRYER AT BUILDING STORAGE ROOM X47 AND EXTEND 3'-0" ON EACH SIDE.

13. 1/8" SAW CUT WITH EPOXY FILL AT FC1 AND FC2. COLOR TO BE DETERMINED.

FINISH LEGEND

- CPT1B
- CPT2
- CPT3
- CPT4
- CPT5
- RES1
- SC1
- CT1
- FC1

Name 101
Ceiling Finish
Wall Finish
Base Finish
Floor Finish

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. RATCLIFF
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

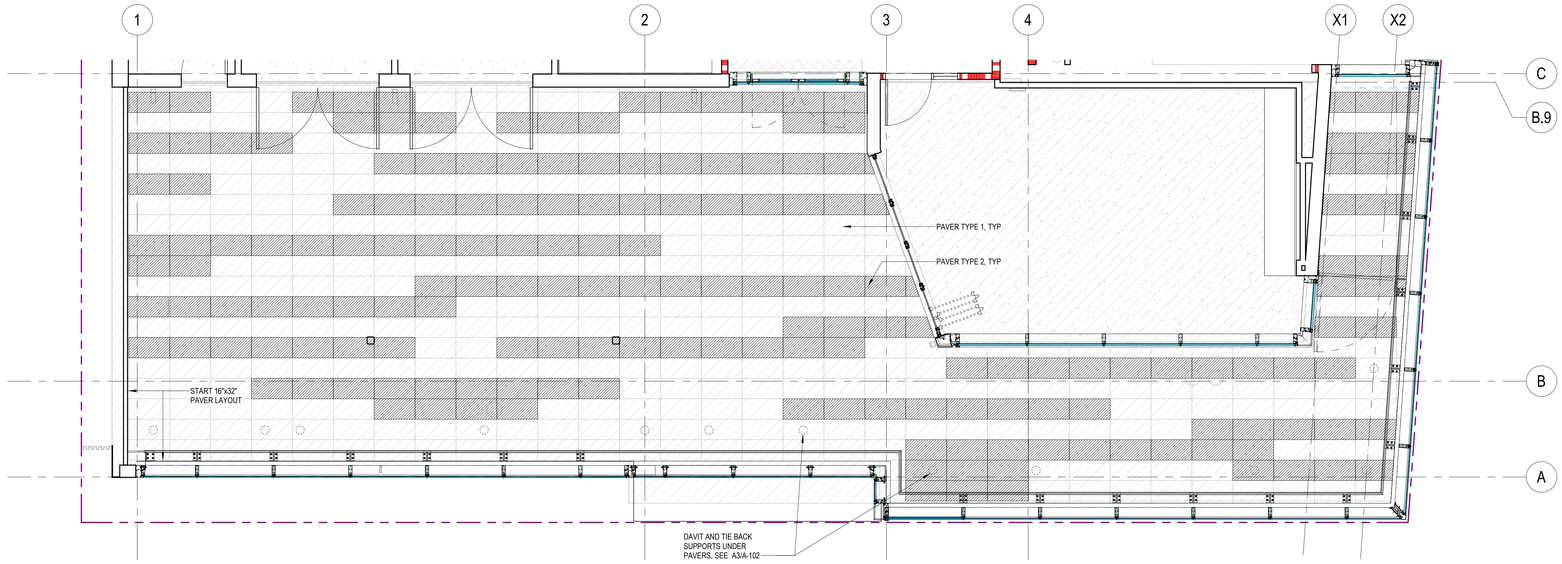
FINISH PLANS - LEVELS 3 & 4

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-612

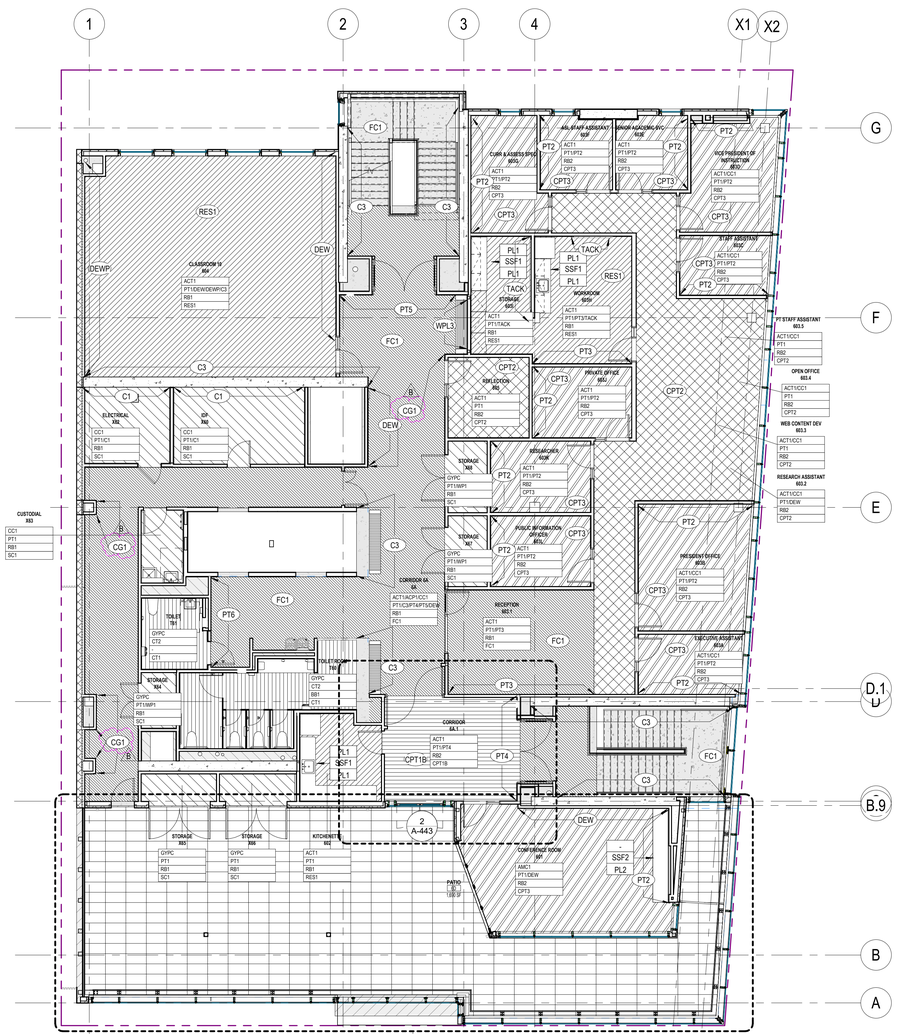
07/18/2022 DSA SUBMITTAL & BID SET

7/26/2022 9:31:17 AM



C2 ENLARGED FINISH PLAN - PEDESTAL PAVER PATTERN
1/4" = 1'-0"

A1 LEVEL 5 - FLOOR PLAN
1/8" = 1'-0"



A2 LEVEL 6 - FLOOR PLAN
1/8" = 1'-0"

GENERAL FINISH NOTES

WALL FINISHES
1. FINISH ALL WALL FINISHES AT INSIDE CORNER.

2. ALL MECHANICAL ACCESSORIES THAT ARE PRIMED ONLY AND ACCESS DOORS ARE TO BE PAINTED TO MATCH SURROUNDING WALL. NOTIFY ARCHITECT FOR FINISHED ITEMS NOT MACHTING SURROUNDING WALL.

3. ALL EXPOSED GYPSUM BOARD SURFACES TO BE PAINTED PT1 U.O.N.

4. TYPICAL WALL PAINT FINISH IS PT1 SHERWIN WILLIAMS SW7551 GREEK VILLA.

5. CONCRETE WALL & COLUMN FINISH WILL BE C1 U.O.N.

FLOOR FINISHES
1. WHERE DIFFERING FLOOR FINISH MATERIALS MEET AT DOORS, THE SEAM SHALL OCCUR DIRECTLY BELOW THE CENTERLINE OF THE CLOSED DOOR U.O.N.

2. GRAIN DIRECTION OF FLOORING MATERIAL TO BE CONSISTENT IN DIRECTION THROUGHOUT ENTIRE PROJECT. DO NOT QUARTER-TURN FLOORING MATERIAL UNLESS THE INSTALLATION METHOD HAS BEEN RECOMMENDED BY THE MANUFACTURER, I.E., CARPET TILE AND / OR WALK-OFF MAT.

3. SUBMIT FLOOR SEAMING DIAGRAM FOR APPROVAL PRIOR TO PURCHASE OF MATERIAL.

4. PROVIDE TRANSITION / REDUCER STIP AT ALL FLOOR MATERIAL CHANGES. IDENTIFY TRANSITION / REDUCER STRIPS IN SHOP DRAWINGS.

5. WHERE DIFFERING FLOOR MATERIAL MEET, FEATHER SUBFLOOR TO ACCOMODATE DIFFERENCES IN GUAGES OR SUB-FLOOR LEVEL.

6. DO NOT SCALE THE DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR TH SITE REVIEW AND VERIFICATION OF ALL QUANTITES OF MATERIAL REQUIRED TO COMPLETE THE INSTALLATION.

7. EXTEND RESILLIENT FLOORING TO WALL UNDER COUNTER AND FACE OF CASEWORK TOE SPACE, TYP.

8. ALL MATERIAL OF ONE PATTERN / COLOR SHALL BE THE SAME DYE LOT.

9. RESILIENT BASE REQUIRES SEQUENCING WITH FLOORING CONTRACTOR TO CHECK WITH MNFR'S RECOMMENDATIONS FOR INSTALLATION

10. ALL CONCRETE WALLS ARE EXPOSED / UNPAINTED UNLESS OTHERWISE NOTED.

11. PROVIDE FRP WAINSCOT AT ALL CUSTODIAL CLOETS BEHIND MOP SINKS. 3'-0" LONG EACH SIDE X 4'-0" HIGH.

12. PROVIDE 4'-0" HIGH FRP WAINSCOT BEHIND WASHER /DRYER AT BUILDING STORAGE ROOM X47 AND EXTEND 3'-0" ON EACH SIDE.

13. 1/8" SAW CUT WITH EPOXY FILL AT FC1 AND FC2. COLOR TO BE DETERMINED.

FINISH LEGEND

- CPT1B
- CPT2
- CPT3
- CPT4
- CPT5
- RES1
- SC1
- CT1
- FC1

Name 101
Ceiling Finish
Wall Finish
Base Finish
Floor Finish

DSA APPROVAL

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LICENSED ARCHITECT
MICHAEL D. MATSKI
No. C-25627
REN. 12-31-22
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FINISH PLANS - LEVELS 5 & 6

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: A-613

DSA SUBMITTAL & BID SET
07/18/2022

GENERAL NOTES:

I. GENERAL

1. MATERIALS AND WORKMANSHIP TO CONFORM WITH THE 2019 EDITION OF THE CALIFORNIA BUILDING CODE, WITH DIVISION OF STATE ARCHITECT (DSA) AMENDMENTS AND THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

2. THESE GENERAL NOTES SUPPLEMENT THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS. IN CASE OF CONFLICT BETWEEN THE PLANS AND SPECIFICATIONS, CONTACT THE ARCHITECT.

3. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, USE SIMILAR DETAILS OF CONSTRUCTION, SUBJECT TO REVIEW BY THE ARCHITECT.

4. DETAILS ON SHEETS TITLED “TYPICAL DETAILS” APPLY TO SITUATIONS OCCURRING ON THE PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE SPECIFICALLY REFERENCED. SUCH DETAILS ARE NOT NOTED AT EACH LOCATION THAT THEY OCCUR.

5. DO NOT SCALE THE DRAWINGS.

6. PROVIDE MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES INCLUDE, BUT MAY NOT BE LIMITED TO, BRACING AND SHORING FOR LOADS DURING CONSTRUCTION. RETAIN A REGISTERED CIVIL ENGINEER WHO IS PROPERLY QUALIFIED TO DESIGN BRACING, SHORING, ETC. VISITS TO THE SITE BY THE SEOR WILL NOT INCLUDE OBSERVATION OF THE ABOVE NOTED ITEMS.

7. INFORMATION SHOWN ON THE DRAWINGS RELATED TO EXISTING CONDITIONS REPRESENTS THE PRESENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. REPORT CONDITIONS THAT CONFLICT WITH THE CONTRACT DOCUMENTS TO THE ARCHITECT. DO NOT DEVIATE FROM THE CONTRACT DOCUMENTS WITHOUT WRITTEN DIRECTION FROM THE ARCHITECT.

8. REFER TO ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF FLOOR, ROOF AND WALL OPENINGS NOT SHOWN ON THE STRUCTURAL DRAWINGS. COORDINATE THE SIZE AND LOCATION OF OPENINGS ASSOCIATED WITH, BUT NOT LIMITED TO, ELECTRICAL, MECHANICAL AND PLUMBING TRADES. SUBMIT FINAL SIZING AND LOCATION REQUIREMENTS OF OPENINGS TO THE ARCHITECT FOR REVIEW.

9. REFERENCE DATUM FOR THE ELEVATIONS IS FINISH FIRST FLOOR, PER CIVIL DRAWINGS, ELEVATION = 163.60' DEFINE ELEVATION OF DATUM IN FEET ABOVE MEAN SEA LEVEL.

II. FOUNDATION AND SITE WORK

1. THE DESIGN OF THE FOUNDATION SYSTEM IS BASED UPON THE CRITERIA AND RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL INVESTIGATION AND GEOLOGIC HAZARD STUDY REPORT BY A3GEO, INC., DATED OCTOBER 20, 2021.

2. THE GEOTECHNICAL REPORT IS PART OF THE CONSTRUCTION DOCUMENTS.

3. LOCATE AND PROTECT EXISTING UTILITIES TO REMAIN DURING AND/OR AFTER CONSTRUCTION.

4. REMOVE ABANDONED FOOTINGS, UTILITIES, ETC. WHICH INTERFERE WITH NEW CONSTRUCTION, UNLESS OTHERWISE INDICATED.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, UNDERPINNING AND PROTECTION OF EXISTING CONSTRUCTION.

6. EXCAVATIONS FOR FOUNDATIONS MUST BE ACCEPTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING REINFORCING AND CONCRETE. NOTIFY THE GEOTECHNICAL ENGINEER WHEN EXCAVATIONS ARE READY FOR INSPECTION.

7. PLACE BACKFILL BEHIND RETAINING WALLS AFTER CONCRETE OR MASONRY HAS ATTAINED FULL DESIGN STRENGTH. BRACE BUILDING AND PIT WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHED FLOORS AND SLABS ON GRADE ARE COMPLETE AND HAVE ATTAINED FULL DESIGN STRENGTH.

8. MECHANICALLY COMPACT EXCAVATION BACKFILLS IN LAYERS. PROVIDE THE FOLLOWING MINIMUM COMPACTION IN ACCORDANCE WITH THE ASTM D1557 TEST METHOD:

LOCATION	MAXIMUM DRY DENSITY
TRENCH AND WALL BACKFILL	90%
UPPER 6” OF SOIL BENEATH FILL	90%
FILL BENEATH SLAB ON GRADE	90%
FILL BENEATH FOOTINGS	95%
OTHER	90%

III. DRILLED PIERS

1. EACH DRILLED PIER MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE AND REINFORCING STEEL. ADJUST SHAFT LENGTHS UNDER DIRECTION OF THE GEOTECHNICAL ENGINEER AND THE OWNER’S REPRESENTATIVE BASED ON SOIL CONDITIONS OBSERVED AT TIME OF DRILLING.

IV. REINFORCING STEEL

1. REINFORCING TO CONFORM TO THE FOLLOWING, UNLESS OTHERWISE NOTED:

REINFORCING STEEL	TYPE
#5 AND SMALLER	ASTM A615, 60 KSI
#6 AND LARGER & BARS TO BE WELDED	ASTM A706, 60 KSI
HIGH STRENGTH REINF WHERE NOTED ON DWGS	ASTM A706, 80 KSI
1/2 INCH DIAMETER LOW RELAXATION SEVEN-WIRE POST-TENSIONING STRAND	ASTM A416, 270 KSI
WELDED STEEL WIRE FABRIC	ASTM A185, 70 KSI
SMOOTH DOWELS IN SLAB ON GRADE	ASTM A36, 36 KSI

2. MECHANICAL COUPLERS: TYPE 2 PER ACI-318, UNLESS OTHERWISE NOTED.

3. TERMINATE REINFORCING STEEL IN STANDARD HOOKS, UNLESS OTHERWISE SHOWN.

V. CAST-IN-PLACE CONCRETE

1. CONCRETE IS REINFORCED AND CAST-IN-PLACE UNLESS OTHERWISE NOTED. WHERE REINFORCING IS NOT SPECIFICALLY SHOWN OR WHERE DETAILS ARE NOT GIVEN, PROVIDE REINFORCING SIMILAR TO THAT SHOWN FOR SIMILAR CONDITIONS, SUBJECT TO REVIEW BY THE OWNER’S REPRESENTATIVE.

2. ROUGHEN CONCRETE SURFACES OF CONSTRUCTION JOINTS TO 1/4 INCH AMPLITUDE AND CLEAN OF LAITANCE, FOREIGN MATTER, AND LOOSE PARTICLES AT THE FOLLOWING LOCATIONS: WHERE CAST AGAINST EXISTING CONCRETE.

3. REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS OF ADDITIONAL CONCRETE CURBS AND HOUSEKEEPING PADS NOT SHOWN.

4. CONCRETE CLEAR COVER TO REINFORCING BARS IS AS FOLLOWS, UNLESS OTHERWISE NOTED:

LOCATION	CLEAR COVER
CONCRETE PLACED AGAINST EARTH	3 INCHES
FORMED SURFACES EXPOSED TO WEATHER OR IN CONTACT WITH EARTH:	
#6 BARS AND LARGER	2 INCHES
#5 BARS AND SMALLER	1 1/2 INCHES
SLABS ON GRADE (TOP CLEARANCE)	1 1/2 INCHES
BEAMS, GIRDERS AND COLUMNS NOT EXPOSED TO WEATHER OR EARTH:	1 1/2 INCHES
WALL OR SLAB SURFACES NOT EXPOSED TO WEATHER OR EARTH:	
#5 & SMALLER	3/4 INCH
#6 & #7	1 INCH
#8, #9, #10 & #11	1 1/2 INCHES
#14 & #18	2 1/2 INCHES

5. CONCRETE TYPES:
   - A. MAT FOUNDATION:
     - a. 28-DAY STRENGTH: F'C = 5000 PSI
     - b. TYPE: NORMAL WEIGHT
   - B. SUSPENDED SLABS:
     - a. 28-DAY STRENGTH: F'C = 5000 PSI
     - b. TYPE: NORMAL WEIGHT
   - C. WALLS AND COLUMNS:
     - a. 28-DAY STRENGTH: F'C = SEE COL SCHEDULE/ WALL ELEVATIONS
     - b. TYPE: NORMAL WEIGHT
   - D. MISC CURBS, HOUSEKEEPING PADS, ETC:
     - a. 28-DAY STRENGTH: F'C = 4000 PSI
     - b. TYPE: NORMAL WEIGHT

6. CONCRETE FILL THICKNESS SHOWN ON THE FRAMING PLANS ARE MINIMAL THICKNESSES. NO ALLOWANCES HAVE BEEN SHOWN FOR ADDITIONAL CONCRETE FILL REQUIRED TO COMPENSATE FOR FRAME, DECK, OR FORMWORK DEFLECTIONS TO MAINTAIN SURFACE TOLERANCES SPECIFIED.

7. NON-SHRINK GROUT: ASTM C1107, WITH MINIMUM COMPRESSIVE STRENGTH OF 7,000 PSI.

8. ALL TOPPING SLABS TO RECEIVE 6x6-W2.9xW2.9 WELDED WIRE FABRIC UNLESS NOTES OTHERWISE. PLACE FABRIC IN CENTER OF SLAB OR A MAXIMUM 2" CLEAR FROM THE TOP OF CONCRETE, WHICHEVER IS LESS.

9. FORM EXPOSED CORNERS OF COLUMNS, WALLS, BEAMS, ETC. WITH 1/2 INCH CHAMFER UNLESS DETAILED OTHERWISE.

10. PROVIDE FORM SAVERS, WHERE REQUIRED, TO AVOID USING CUSTOM FORMS FOR CONCRETE.

VI. SHOTCRETE

1. USE SHOTCRETE ONLY WHERE DESIGNATED ON THE DRAWINGS. NO SUBSTITUTION OF SHOTCRETE FOR CAST-IN-PLACE CONCRETE IS ALLOWED.

2. COMPLY WITH THE REQUIREMENTS OF THE CAST-IN-PLACE CONCRETE AND REINFORCING STEEL SECTIONS OF THESE GENERAL NOTES, EXCEPT AS MODIFIED IN THIS SECTION.

   SHOTCRETE TYPES:

LOCATION	28-DAY STRENGTH
ALL CONCRETE SHEAR WALLS EXCEPT SHEAR WALL WITH COUPLING BEAM	SAME AS CAST-IN-PLACE CONCRETE

VII. POST-TENSIONED CONCRETE

1. PROVIDE POST-TENSIONING TENDONS OF LOW RELAXATION, SEVEN WIRE TENDONS COMPLYING WITH ASTM A416 AND THE FOLLOWING:

1/2" DIAMETER TENDON AREA	0.153 SQ. IN.
ULTIMATE STRENGTH (FPU)	270 KSI
JACKING STRESS TO OVERCOME FRICTION (MAX.)	216 KSI
ANCHORING STRESS	189 KSI
EFFECTIVE DESIGN STRESS	174 KSI

   FINAL EFFECTIVE FORCES AS INDICATED ON STRUCTURAL DRAWINGS ARE BASED ON THE FOLLOWING:

SLABS	26.6 K/TENDON

2. IDENTIFY TENDONS WITH APPROPRIATE TAGS AND SUBMIT MILL CERTIFICATES FOR EACH REEL, HEAT, OR LOT NUMBER.

3. PROVIDE POST-TENSIONING ANCHORS, WEDGES, COUPLERS AND MISCELLANEOUS HARDWARE BY A MANUFACTURER POSSESSING A CURRENT ICC -ES. SUBMIT REPORTS AND TEST DATA COMPLYING WITH SECTION 18.6.3.5 TO ARCHITECT (STRUCTURAL ENGINEER) AND DSA PRIOR TO FABRICATION. PLACE COUPLERS AT LOCATIONS ACCEPTABLE TO ARCHITECT (STRUCTURAL ENGINEER) AND APPROVED BY DSA.

4. ENCASE UNBONDED TENDONS IN SLIPPAGE SHEATHING CONSISTING OF DURABLE, WATERPROOF POLYETHYLENE PLASTIC TUBING CAPABLE OF PREVENTING PENETRATION OF CEMENT PASTE AND CONTAINING A RUST-INHIBITING GREASE COATING. REPAIR TEARS IN SHEATHING GREATER THAN 4 INCHES IN LENGTH.

5. SUBMIT SHOP DRAWINGS TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW. INDICATE OPENINGS AND OTHER PENETRATIONS, TENDON LAYOUT, DEAD-END AND STRESSING-END LOCATIONS INCLUDING ANCHORAGE DETAILS, TENDON SUPPORT LAYOUT WITH DETAILS NECESSARY FOR INSTALLATION AND MEMBER IDENTIFICATION MARKS.

6. DETERMINE LOCATIONS OF NECESSARY OPENINGS AND PENETRATIONS THROUGH POST-TENSIONED MEMBERS PRIOR TO SHOP DRAWING DEVELOPMENT. REINFORCING STEEL AND POST-TENSIONING SHOP DRAWINGS WILL NOT BE ACCEPTED IF OPENINGS AND OTHER PENETRATIONS ARE NOT LOCATED. DO NOT CONSTRUCT OPENINGS OR OTHER PENETRATIONS UNLESS SPECIFICALLY SHOWN ON SUBMITTED AND ACCEPTED SHOP DRAWINGS.

7. PREPARE CALCULATIONS FOR ANCHORAGE DESIGN AND FOR LOSSES FOR SPECIFIC STRESSING LENGTHS TO ENSURE THAT MINIMUM FINAL EFFECTIVE FORCES ARE MAINTAINED. BASE ELONGATION CALCULATIONS UPON AN AVERAGE MODULUS OF ELASTICITY INDICATED ON MILL CERTIFICATES FOR TENDONS BEING FURNISHED. TAKE INTO ACCOUNT CREEP, PLASTIC FLOW, ELASTIC FLOW, SHRINKAGE OF CONCRETE, RELAXATION OF STEEL, SLIP AT ANCHORAGES AND SEQUENCE WHEN DETERMINING EFFECTIVE DESIGN STRESSES. SUBMIT CALCULATIONS SIGNED BY AND BEARING SEAL OF A REGISTERED CIVIL ENGINEER TO ARCHITECT (STRUCTURAL ENGINEER) FOR REVIEW AND DSA FOR APPROVAL.

8. IN THE EVENT THAT FIELD ELONGATION READINGS OR ELONGATIONS CALCULATED FROM FIELD FORCE READINGS VARY FROM CALCULATED REQUIRED VALUES BY MORE THAN 7%, PROVIDE ADDITIONAL CALCULATIONS BASED ON MODULUS OF ELASTICITY SHOWN ON MILL CERTIFICATE FOR CORRESPONDING TENDONS.

9. PLACE TENDONS IN COMPLIANCE WITH CONTROLLING POINTS SHOWN ON DRAWINGS AND IN AN APPROXIMATE PARABOLIC DRAPE BETWEEN SUPPORTS UNLESS NOTED OR SHOWN OTHERWISE. DIMENSIONS LOCATE CENTER OF GRAVITY OF TENDON (SINGLE TENDON OR GROUP OF TENDONS). LOW POINTS ARE AT MID SPAN UNLESS OTHERWISE SHOWN OR NOTED. DO NOT PLACE TENDON AT A HORIZONTAL RADIUS LESS THAN 10'-0" UNLESS NOTED OR SHOWN OTHERWISE.

10. SLIGHT DEVIATIONS IN SPACING OF SLAB TENDONS WILL BE PERMITTED WHEN REQUIRED TO AVOID OPENINGS, INSERTS, AND DOWELS WHICH ARE SPECIFICALLY LOCATED. WHERE LOCATION OF TENDONS INTERFERE WITH EACH OTHER, ONE (1) TENDON MAY BE MOVED HORIZONTALLY IN ORDER TO AVOID INTERFERENCE.

11. SECURE TENDONS TO ENSURE CORRECT LOCATION DURING AND AFTER CONCRETE PLACEMENT - SECURE AT 4'-0" MAXIMUM.

12. DO NOT TWIST OR ENTWINE INDIVIDUAL TENDONS WITHIN A BUNDLE OR BEAM.

13. PROVIDE TWO (2) NO. 5 BARS DIRECTLY BEHIND ANCHOR PLATE IN SLABS EXTENDING A MINIMUM OF SIX INCHES BEYOND ENDS OF PLATE. POSITION BARS AS NEAR TOP AND BOTTOM CORNERS OF BEARING PLATE AS POSSIBLE. LOCATE REINFORCING STEEL TO ADEQUATELY SUPPORT STRUCTURE IMMEDIATELY SURROUNDING ANCHORAGES POCKETS. SEE CBC SECTION 1905A.1.12 FOR ADDITIONAL REINFORCING REQUIREMENTS.

14. MINIMUM CONCRETE COVERAGE OVER TENDONS: MAINTAIN THE FOLLOWING MINIMUM CLEAR DISTANCES BETWEEN TENDONS AND FACE OF CONCRETE UNLESS NOTED OTHERWISE:

SLAB END SPANS, BOTTOM	1-1/2 INCHES
SLAB INTERIOR SPANS, TOP	3/4 INCH
SLAB INTERIOR SPANS, BOTTOM	3/4 INCH
GROUT COVERAGE OVER ANCHORAGE AT SLAB EDGES (EXTEND TENDON STUB 1 INCH MAXIMUM)	4 INCHES

15. CHAIRS OR SPACERS FOR TENDONS SHALL BE PLASTIC OR PLASTIC COATED WHEN RESTING ON EXPOSED SURFACES.

16. IF CONCRETE IS TO BE PUMPED, PROVIDE NECESSARY SUPPORTS SO HOSES DO NOT BEAR ON TENDONS.

17. DO NOT USE GROUT OR CONCRETE CONTAINING CHLORIDES.

18. ENSURE COMPLETE CONSOLIDATION AND DENSIFICATION OF CONCRETE BEHIND POST-TENSIONING ANCHORAGES. POCKETS SHALL BE WATERPROOF.

19. BEGIN PRESTRESSING WHEN CONCRETE ATTAINS A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AND WITHIN 72 HOURS OF THE POUR.

20. STRESSING ORDER:
    - A. TWO-WAY SLAB SYSTEMS:
      - 1. UNIFORM TENDONS
      - 2. BANDED TENDONS

21. ENSURE TWO-WAY SLABS ARE STRESSED IN BOTH DIRECTIONS TO MINIMUM FINAL PRESTRESS AS FOLLOWS:

SLABS DIRECTLY EXPOSED TO WEATHER OR TO EXPERIENCE WATER RUNOFF	200 PSI
OTHER SLABS	125 PSI

22. TENDONS STRESSED FROM BOTH ENDS NEED NOT BE STRESSED FROM BOTH ENDS SIMULTANEOUSLY. HOWEVER, STRESS EACH END TO A FORCE OF 33.0 KIPS IN ORDER TO OVERCOME FRICTION.

23. COORDINATE SHORING DESIGN TO BE COMPATIBLE WITH PRESTRESSING SEQUENCE.

24. SLABS OR BEAMS MAY BE DE-SHORED WHEN ALL TENDONS HAVE BEEN STRESSED, UNLESS SHORING IS REQUIRED TO CARRY FLOORS ABOVE.

25. NO CUTTING OR CORING OF POST-TENSIONED CONCRETE IS PERMITTED EXCEPT AS ACCEPTED BY ARCHITECT (STRUCTURAL ENGINEER).

26. STEEL ANCHORS SHALL NOT PENETRATE INTO POST TENSIONED SLAB A DISTANCE GREATER THAN THE MINIMUM COVER SPECIFIED FOR THE PT TENDONS UNLESS IT CAN BE DEMONSTRATED TO THE SATISFACTION OF THE ARCHITECT (STRUCTURAL ENGINEER), AND THE BUILDING OFFICIAL IF REQUIRED, THAT SUCH ANCHORS WILL NOT BE IN CONTACT WITH THE PT TENDONS. MAXIMUM LENGTH OF 3/4" FOR SUCH FASTENERS IS RECOMMENDED IN ALL POST TENSIONED SLABS.

27. PROVIDE BLUEBANGER HANGER INSETS ICC ESR 3599 FOR ANCHORING AT THE UNDERSIDE OF PT SLABS. LOCATION OF SUCH INSERTS TO BE COORDINATED WITH ALL AMEP TRADES. SEOR TO REVIEW ALL SUCH LOCATION OF INSERTS.

28. ALL UNBONDED SINGLE STRAND POST-TENSIONING TENDONS MUST BE ENCAPSULATED REGARDLESS OF THE EXPOSURE CONDITIONS. THE ENCAPSULATION OF THE TENDONS SHALL BE IN ACCORDANCE WITH THE MATERIAL REQUIREMENTS FOR AGGRESSIVE ENVIRONMENTS IN THE PTI SPECIFICATION FOR UNBONDED SINGLE STRAND TENDONS (PTI M10.2-00) AND THE ACI SPECIFICATION FOR UNBONDED SINGLE STRAND TENDON MATERIALS AND COMMENTARY (ACI 423.7-14).

29. SEE CAST-IN-PLACE CONCRETE AND REINFORCING STEEL SECTIONS FOR REMAINDER OF CONCRETE AND REINFORCING STEEL REQUIREMENTS.

30. TENDONS SHALL BE STRESSED TO THEIR FULL EXTENT (ONE OCCURRENCE) AND NOT PARTIALLY STRESSED AND THEN RESTRESSED.

31. ALL CONDUITS SHALL BE INDEPENDENTLY CHAIRED AND NOT SUPPORTED BY THE POST-TENSIONING TENDONS.

32. CONTRACTOR TO PROVIDE PAINT MARKINGS SHOWING LOCATION OF PT CABLES AND DRAPES AT THE BOTTOM OF CONCRETE DECKS TO FACILITATE INSTALLATION OF POST INSTALLED ANCHORS.

VIII. UNIT MASONRY

1. MINIMUM COMPRESSIVE STRENGTH OF MASONRY, F’M, EQUAL TO 2,000 PSI AT 28 DAYS.

2. MASONRY UNITS: ASTM C90, MEDIUM WEIGHT, HOLLOW, LOAD BEARING UNITS. MINIMUM COMPRESSIVE STRENGTH: 2,000 PSI.

3. MORTAR: ASTM C270, TYPE S.

4. GROUT: ASTM C476, MINIMUM COMPRESSIVE STRENGTH: 2,000 PSI.

5. REINFORCING STEEL: SEE REINFORCING STEEL SECTION OF THESE GENERAL NOTES.

6. FILL ALL CELLS SOLIDLY WITH GROUT. CLEAN CELLS AND BOND BEAMS OF MORTAR PROTRUSIONS AND DEBRIS BEFORE GROUTING.

   ONLY FILL CELLS AND SPACES CONTAINING REINFORCING WITH GROUT. CLEAN CELLS AND BOND BEAMS TO BE GROUTED OF MORTAR PROTRUSIONS AND DEBRIS BEFORE GROUTING.

7. PROVIDE THE FOLLOWING MINIMUM CLEARANCES:

LOCATION	CLEARANCES
BETWEEN REINF AND INSIDE FACE OF UNIT	1/2” CLEAR
BETWEEN PARALLEL BARS	1” CLEAR

IX. STRUCTURAL STEEL

1. STRUCTURAL STEEL TO CONFORM TO THE FOLLOWING UNLESS OTHERWISE NOTED:

SECTIONS	TYPE
ROLLED SHAPES:	
WIDE FLANGES	ASTM A992
CHANNELS, ANGLES, & OTHER	ASTM A36
PLATES:	
COLUMN BASE PLATES	ASTM A572, GR 50
BRACE GUSSET PLATES	ASTM A572, GR 50
BEAM SHEAR CONNECTION PLATES	ASTM A572, GR 50
COLUMN CONTINUITY PLATES	ASTM A572, GR 50
BEAM STIFFENER PLATES	ASTM A36
EDGE OF DECK BENT PLATE	ASTM A36
OTHER	ASTM A572, GR 50
STEEL PIPE	ASTM A53 GRADE B
COLD FORMED STRUCTURAL TUBING (HSS)	ASTM A500 GRADE B
STAINLESS STEEL SHAPES, PLATES & BARS	ASTM A276, TYPE 304L
BOLTS	ASTM F3125: GRADE A325X, F1852X
MACHINE BOLTS	ASTM A307, GRADE A
STAINLESS STEEL BOLTS	ASTM A193 B8M, CLASS 1
ANCHOR RODS	ASTM F1554, GR55 W/ WELDABLE SUPPLEMENT S1
ALL-THREAD ROD AND THRU BOLTS	ASTM [A36;A572, GR50]
HIGH STRENGTH ALL-THREAD ROD	ASTM A193 B7, GR105
STAINLESS STEEL ALL-THREAD ROD	ASTM A193 B8M CLASS 2
HANGER ROD	ASTM A572, GR50
WELDED SHEAR STUD CONNECTORS	ASTM A108, GRADE 1015 TO1020
WELDED THREADED STUDS	ASTM A108, GRADE 1015 TO 1020
NUTS FOR BOLTS AND MACHINE BOLTS	ASTM A563
STAINLESS STEEL NUTS	ASTM A194 GR8M
HARDENED WASHERS FOR BOLTS	ASTM F436
UNHARDENED FLAT WASHERS	ASTM F844, ANSI B18.22.1
STAINLESS STEEL WASHERS	ASTM A276, TYPE 304
BEVELED WASHERS	ANSI B18.23.1

2. HOT DIP GALVANIZE IN ACCORDANCE WITH ASTM A123 AND ASTM A153 STRUCTURAL STEEL AND FASTENERS THAT ARE PERMANENTLY EXPOSED TO THE WEATHER. REPAIR GALVANIZING AFTER WELDING IN ACCORDANCE WITH ASTM A780. HOT-DIP GALVANIZE ASTM F1554 RODS IN ACCORDANCE WITH ASTM F2329.

3. ARC-WELDING ELECTRODES/FILLER METALS TO BE LOW HYDROGEN TYPES E7XTX, E7XTXX OR E70XXX MINIMUM AS APPLICABLE. ELECTRODES WITH CHARPY V-NOTCH TESTS VALUES OF A MINIMUM 20 FOOT-POUNDS AT 0 DEGREES FAHRENHEIT AND 40 FOOT- POUNDS AT 70 DEGREES FAHRENHEIT ARE TO BE USED AT ALL WELDS OF THE SEISMIC FORCE RESISTING SYSTEM (SFRS), WHERE DESIGNATED “DC” ON THE DRAWINGS AND THE FOLLOWING LOCATIONS:
   - A. COMPLETE JOINT PENETRATION WELDS.
   - B. BEAM TO COLUMN MOMENT CONNECTIONS – INCLUDING FLANGE, WEB, DOUBLER PLATES, BASE PLATES, AND CONTINUITY PLATE FILLET AND PARTIAL JOINT PENETRATION WELDS.
   - C. BRACE CONNECTIONS – INCLUDING BRACE, GUSSET, BASE PLATES, BEAM STIFFENER PLATES, AND CONTINUITY PLATE FILLET AND PARTIAL JOINT PENETRATION WELDS.
   - D. COLLECTORS – SHEAR TABS, FLANGE AND WEB WELDS.

4. WHERE FIELD WELDING IS NOTED, THE DESIGNATION IS GIVEN AS A SUGGESTED CONSTRUCTION PROCEDURE ONLY.

X. METAL DECKING

1. METAL FLOOR AND ROOF DECK TO HAVE MINIMUM SECTION PROPERTIES SHOWN ON THE METAL DECK SCHEDULE.

2. FLOOR AND ROOF DECK TO BE GALVANIZED IN ACCORDANCE WITH ASTM A653 COATING CLASS G60.

3. WHERE POSSIBLE, LAYOUT METAL DECK TO SPAN AT LEAST THREE SPANS CONTINUOUSLY. TERMINATE ENDS OVER SUPPORTS EXCEPT AT OPENINGS OR BUILDING EDGES WHERE METAL DECKS MAY BE CANTILEVERED AS SHOWN.

4. SECURE FLOOR AND ROOF METAL DECK TO THE STEEL FRAMEWORK AND TOGETHER AS SHOWN. UNLESS OTHERWISE NOTED ON THE STRUCTURAL DRAWINGS, MINIMUM DECK ATTACHMENT SHALL BE AS FOLLOWS:
   - A. 1/2” EFFECTIVE DIAMETER PUDDLE WELDS AT 12” OC AT TRANSVERSE ANDPERIMETER SUPPORTS. 1/2” EFFECTIVE DIAMETER PUDDLE WELDS AT 16” OC AT LONGITUDINAL SUPPORTS. 3/16” BUTTON PUNCH OR 1 1/2” TOP SEAM WELD AT 36” OC AT SIDE LAP CONNECTIONS.
   - B. TYPE B ROOF DECK ATTACHMENT: (7) 1/2” EFFECTIVE DIAMETER PUDDLE WELDS PER 36” WIDE SECTION AT TRANSVERSE SUPPORTS. 1/2” EFFECTIVE DIAMETER PUDDLE WELDS AT 16” OC AT PERIMETER AND LONGITUDINAL SUPPORTS. 1 1/2” TOP SEAM WELD AT 12” OC AT SIDE LAP CONNECTIONS.

XI. COLD-FORMED METAL FRAMING

1. STUDS: ASTM C955 AND ASTM A1003, “C” SHAPED WITH LIPPED FLANGES AND PUNCHED WEB. PROVIDE G60 COATING MINIMUM.
   - A. 43 MIL (18 GAGE) AND LIGHTER: GRADE 33 TYPE H
   - B. 54 MIL (16 GAGE) AND HEAVIER: GRADE 50 TYPE H

2. TRACK: ASTM C955 AND ASTM A1003, “U” SHAPED WITH UN-PUNCHED WEB. PROVIDE G60 COATING MINIMUM.
   - A. MATCH DEPTH, THICKNESS AND GRADE OF STUDS.

3. JOISTS: ASTM A1003. PROVIDE G60 COATING MINIMUM.
   - A. 43 MIL (18 GAGE) AND LIGHTER: GRADE 33 TYPE H
   - B. 54 MIL (16 GAGE) AND HEAVIER: GRADE 50 TYPE H

4. FRAMING DESIGNATIONS ON PLANS ARE BASED ON THE STEEL STUD MANUFACTURER’S ASSOCIATION (SSMA) PRODUCT TECHNICAL GUIDE (ICC-ESR-3064P). ALTERNATE FRAMING MAY BE PROPOSED IF A CURRENT ICC EVALUATION REPORT IS PROVIDED SHOWING EQUIVALENCY WITH SSMA PROPERTIES.

5. INSTALL STUDS IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS AND ASTM C1007. INSTALL JOISTS IN ACCORDANCE WITH MANUFACTURER’S INSTRUCTIONS.

6. SHEET METAL SCREWS: SELF-DRILLING, SELF-TAPPING, HDG PER ASTM A153. PAN OR HEX WASHER HEAD AS REQUIRED BY FINISH.
   - A. PRODUCTS: ITW-BUILDEX TEKS SELECT (ICC-ESR-3223), GRABBER DRIVALL (ICC-ESR-1271) OR APPROVED EQUIVALENT.

7. MINIMUM SCREW SPACING AND EDGE DISTANCE TO BE 3/4".

8. ATTACH STUD TO TRACK WITH (1) #12 SHEET METAL SCREW AT EACH FLANGE, UNLESS OTHERWISE NOTED.

9. POWDER ACTUATED FASTENERS: HILTI LOW-VELOCITY FASTENERS (ICC-ESR-2269).

BASE MATERIAL	FASTENERS	MINIMUM EMBEDMENT	MINIMUM EDGE DISTANCE
STEEL	HILTI X-U	PER MANUF	1/2"
CONCRETE	HILTI X-P	PER MANUF	3”

10. WELDING TO BE IN ACCORDANCE WITH AWS D1.3. WELDERS TO BE QUALIFIED IN ACCORDANCE WITH AWS D1.1.
    - A. WELDING ELECTRODE: E70XX

11. INSTALL BLOCKING AT 4’-0” OC AT ALL STUDS AND JOISTS, UNLESS OTHERWISE NOTED.

XII. MECHANICAL ANCHORS

1. EXPANSION OR WEDGE ANCHORS INTO CONCRETE: HILTI KB-TZ (ICC-ESR-1917), SIMPSON STRONG-BOLT 2 (ICC-ESR-3037) OR DEWALT POWER-STUD+ SD2 (ICC-ESR-2502), UNLESS SPECIFICALLY NOTED OTHERWISE.

2. HEAVY DUTY SLEEVE ANCHORS INTO CONCRETE: HILTI HSL-3 ANCHORS (ICC-ESR-1545) OR DEWALT POWER-BOLT+ (ICC-ESR-3260).

3. UNDERCUT ANCHORS: HILTI HDA (ICC-ESR-1546)[, SIMPSON STRONG-TIE TORQ-CUT (ICC-ESR-2705); DEWALT ATOMIC+ UNDERCUT (ICC-ESR-3067).]

4. SCREW ANCHORS: HILTI HUS-EZ (ICC-ESR-3027), SIMPSON STRONG-TIE TITEN-HD (ICC-ESR-2713), OR DEWALT SCREW-BOLT + (ICC-ESR-3889).

5. ANCHORS INTO CMU: HILTI KB-TZ (ICC-ESR-3785), SIMPSON STRONG-TIE WEDGE-ALL (ICC-ESR-1396) OR DEWALT POWER STUD+ SD1 (ICC-ESR-9266).

6. ALL EMBEDMENT DEPTHS NOTED ON DRAWINGS ARE EFFECTIVE EMBEDMENT PER MANUFACTURER.

7. INSTALL ANCHORS IN ACCORDANCE WITH LATEST ICC-ESR REPORT AND MANUFACTURER INSTRUCTIONS.

8. PROVIDE STAINLESS STEEL FASTENERS FOR EXTERIOR USE OR WHEN EXPOSED TO WEATHER. PROVIDE GALVANIZED CARBON STEEL ANCHORS AT OTHER LOCATIONS, UNLESS OTHERWISE NOTED.

9. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON AND SHIFT THE HOLE LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF 2 ANCHOR DIAMETERS OR 1 INCH, WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE ANCHOR AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT. IF THE ANCHOR MAY NOT BE SHIFTED AS NOTED ABOVE, THE ENGINEER WILL DETERMINE A NEW LOCATION.

10. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH MECHANICAL ANCHORS.

11. ANCHORS REQUIRE PERIODIC SPECIAL INSPECTION AND ARE TO BE PROOF-TESTED BY OWNER’S TESTING AND INSPECTION AGENCY.

12. TEST 50%OF ANCHORS TO THE MANUFACTURER’S RECOMMENDED INSTALLATION TORQUE OR RECOMMENDED TORQUE IN ICC-ESR REPORT.

XIII. ADHESIVE ANCHORS AND DOWELS

1. ANCHORS AND DOWELS INSTALLED INTO CONCRETE: HILTI HIT-RE-500-V3 (ICC-ESR-3814), SIMPSON STRONG-TIE SET - 3G (ICC-ESR-4057) OR DEWALT PURE 110+ (ICC ESR 3298). ALL EMBEDMENT DEPTHS NOTED ON DRAWINGS ARE EFFECTIVE EMBEDMENT PER MANUFACTURER.

2. ANCHORS AND DOWELS INSTALLED INTO CONCRETE MASONRY UNITS (CMU): HILTI HIT-HY 270 (ICC-ESR-4143), SIMPSON STRONG-TIE SET-XP (IAPMO UES ER-265) OR DEWALT AC100+ GOLD (ICC-ESR-3200).

3. THE TESTING LABORATORY IS TO PERFORM TENSION TESTS ON 50% OF ANCHORS AND DOWELS INSTALLED INTO CONCRETE TO THE FOLLOWING TEST LOADS:

ROD DIA OR BAR SIZE	CMIN	TEST LOAD (LBS)	
		ANCHOR LOCATED > CMIN & < 12" FROM EDGE	ANCHOR LOCATED > 12" FROM EDGE
3/8", #3	2"	1,300	1,600
1/2", #4	2 1/2"	2,000	3,400
5/8", #5	3"	2,800	4,200
3/4", #6	4"	3,700	5,000
7/8", #7	4 1/2"	3,700	5,000
1", #8	5"	4,800	6,100

4. ANCHORS AND DOWELS INSTALLED INTO UNREINFORCED BRICK MASONRY (URM): HILTI-HY 270 (ICC-ESR-4144), SIMPSON STRONG-TIE SET (ICC-ESR-1772), OR DEWALT AC100+ GOLD (ICC-ESR-4105). USE SCREENS AS SPECIFIED BY THE MANUFACTURER.

5. THE TESTING LABORATORY IS TO PERFORM TENSION TESTS ON 25% OF ANCHORS AND DOWELS TO THE FOLLOWING TEST LOADS:

ROD DIA OR BAR SIZE	EMBEDMENT	TEST LOAD	BASE MATERIAL
5/8”	12”	3000 #	URM
3/4”	12”	3000 #	URM

6. ANCHORS: ASTM A36 THREADED RODS WITH ASTM A563 GRADE A NUTS AND ANSI B18.22.1 TYPE A WASHERS, UNLESS OTHERWISE NOTED. ANCHORS DESIGNATED AS ASTM A193 GRADE B7 THREADED RODS TO USE ASTM A563 GRADE DH HEAVY HEX NUTS AND ASTM F436 WASHERS.

7. REBAR DOWELS: ASTM A615 GRADE 60 REINFORCING STEEL.

8. INSTALL ANCHORS IN ACCORDANCE WITH LATEST ICC-ESR REPORT AND MANUFACTURER INSTRUCTIONS.

9. IF REINFORCEMENT IS ENCOUNTERED DURING DRILLING, ABANDON AND SHIFT THE HOLE LOCATION TO AVOID THE REINFORCEMENT. PROVIDE A MINIMUM OF 2 ANCHOR DIAMETERS OR 1 INCH, WHICHEVER IS LARGER, OF SOUND CONCRETE BETWEEN THE DOWEL AND THE ABANDONED HOLE. FILL THE ABANDONED HOLE WITH NON-SHRINK GROUT. IF THE ANCHOR OR DOWEL MAY NOT BE SHIFTED AS NOTED ABOVE, THE ENGINEER WILL DETERMINE A NEW LOCATION.

10. LOCATE REINFORCEMENT AND CONFIRM FINAL ANCHOR LOCATIONS PRIOR TO FABRICATING PLATES, MEMBERS, OR OTHER STEEL ASSEMBLIES ATTACHED WITH ADHESIVE ANCHORS.

XIV. DESIGN CRITERIA

1. APPLICABLE CODE: 2019 CALIFORNIA BUILDING CODE

2. FOUNDATIONS HAVE BEEN DESIGNED WITH THE FOLLOWING CRITERIA:
   - A. MAT FOUNDATION:
     - 1. ALLOWABLE SOIL PRESSURE FOR DL + LL = 4500 PSF
     - 2. ALLOWABLE SOIL PRESSURE FOR DL + LL + EQ = 6000 PSF
     - 3. COEFFICIENT OF FRICTION = 0.3
     - 4. PASSIVE RESISTANCE = 350 PSF/FT
   - B. DRILLED PIERS:
     - 1. ALLOWABLE SURFACE FRICTION: PER PLOTS IN GEOTECH REPORT APPENDIX H

3. GRAVITY LOADS:
   - 1. DEAD LOADS - VARY BASED ON ACTUAL BUILDING AND EQUIP OPERATING WEIGHTS
   - 2. LIVE LOADS: SEE SHEET SG210
     - 1. ROOF 20 PSF (REDUCIBLE)
     - 2. FLOOR 50 PSF (REDUCIBLE)

4. LATERAL/SEISMIC FORCE RESISTING SYSTEM (SFRS):
   - 1. ALL LATERAL LOAD RESISTANCE AND STABILITY OF THE BUILDING IN THE COMPLETED STRUCTURE IS PROVIDED BY CONCRETE SHEAR WALLS IN EACH ORTHOGONAL DIRECTION (SEE PLANS FOR LOCATION AND ORIENTATION). THE FORMED CONCRETE FLOORS ACT AS DIAPHRAGMS THAT TRANSFER THE LATERAL WIND AND SEISMIC FORCES TO THE CONCRETE SHEAR WALLS. THE CONCRETE SHEAR WALLS TRANSMIT THE LOADS TO THE BUILDING FOUNDATION.

5. SEISMIC DESIGN:
   - A. SEISMIC RESPONSE COEFFICIENT: Cs = 0.331 (EAST-WEST)
     Cs = 0.298 (NORTH-SOUTH)
   - B. DESIGN BASE SHEAR: V = 3900 KIPS (EAST-WEST)
     V = 3500 KIPS (NORTH-SOUTH) B
     WHERE:
     R= 6 FOR SPECIAL REINFORCED CONCRETE WALLS
     SS= 2.16g
     S1= 0.833g
     SDS= 1.62g
     SD1= 1.11g
     SEISMIC IMPORTANCE FACTOR (IE): 1.25
     RISK CATEGORY: III
     SITE CLASS: D
     SEISMIC DESIGN CATEGORY: E
     RHO= 1.0 (EAST-WEST), 1.0 (NORTH-SOUTH)
   - C. ANALYSIS PROCEDURE: LINEAR DYNAMIC
   - D. BASE LEVEL USED IN ANALYSIS: LEVEL 1
   - E. STRUCTURAL IRREGULARITIES:
     - a. VERTICAL: NONE
     - b. HORIZONTAL: TORSIONAL IRREGULARITY TYPE 1a (EAST-WEST)
       NONE (NORTH-SOUTH)

6. WIND DESIGN:
   - A. BASIC WIND SPEED V (ULTIMATE): 99 MPH
   - B. WIND EXPOSURE: C
   - C. RISK CATEGORY: III

7. SEISMIC DRIFT:
   - A. CLADDING AND GLAZING DESIGNED BY OTHERS ARE TO ACCOMMODATE AN INTER-STORY DRIFT OF 1.5% TIMES THE STORY HEIGHT.

8. THE FOLLOWING ARE ITEMS, AND THEIR CONNECTION TO THE STRUCTURE ARE TO BE DESIGNED BY A SPECIALTY ENGINEER IN ACCORDANCE WITH THE ABOVE LOADING, DESIGN CRITERIA AND THE APPLICABLE DESIGN CODE. SUBMIT FINAL LOADS IMPARTED TO THE STRUCTURE FOR REVIEW AND APPROVAL. IDENTIFY CLEARLY ON PLAN AND INDICATE ALL LOADS, INCLUDING DEAD, LIVE, SEISMIC AND WIND.
   - A. EXTERIOR WALL SYSTEMS
   - B. ELEVATOR SYSTEMS
   - C. UTILITY DISTRIBUTION SYSTEMS ANCHORAGE AND BRACING
   - D. EQUIPMENT ANCHORAGE AND BRACING
   - E. EXCAVATION SUPPORT AND PROTECTION

9. DESIGN TEAM

RAY PUGLIESI	PROJECT ADVISOR
HOLLY RAZZANO	PROJECT PRINCIPAL
HEAVENZ KAUR	ASSOCIATE
KIM BOCANEGRA	DESIGN ENGINEER
MUSTAFA AMIN	PROJECT CAD/BIM SPECIALIST

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ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
GENERAL NOTES

SCALE: 12" = 1'-0"
PROJECT NUMBER: 21415

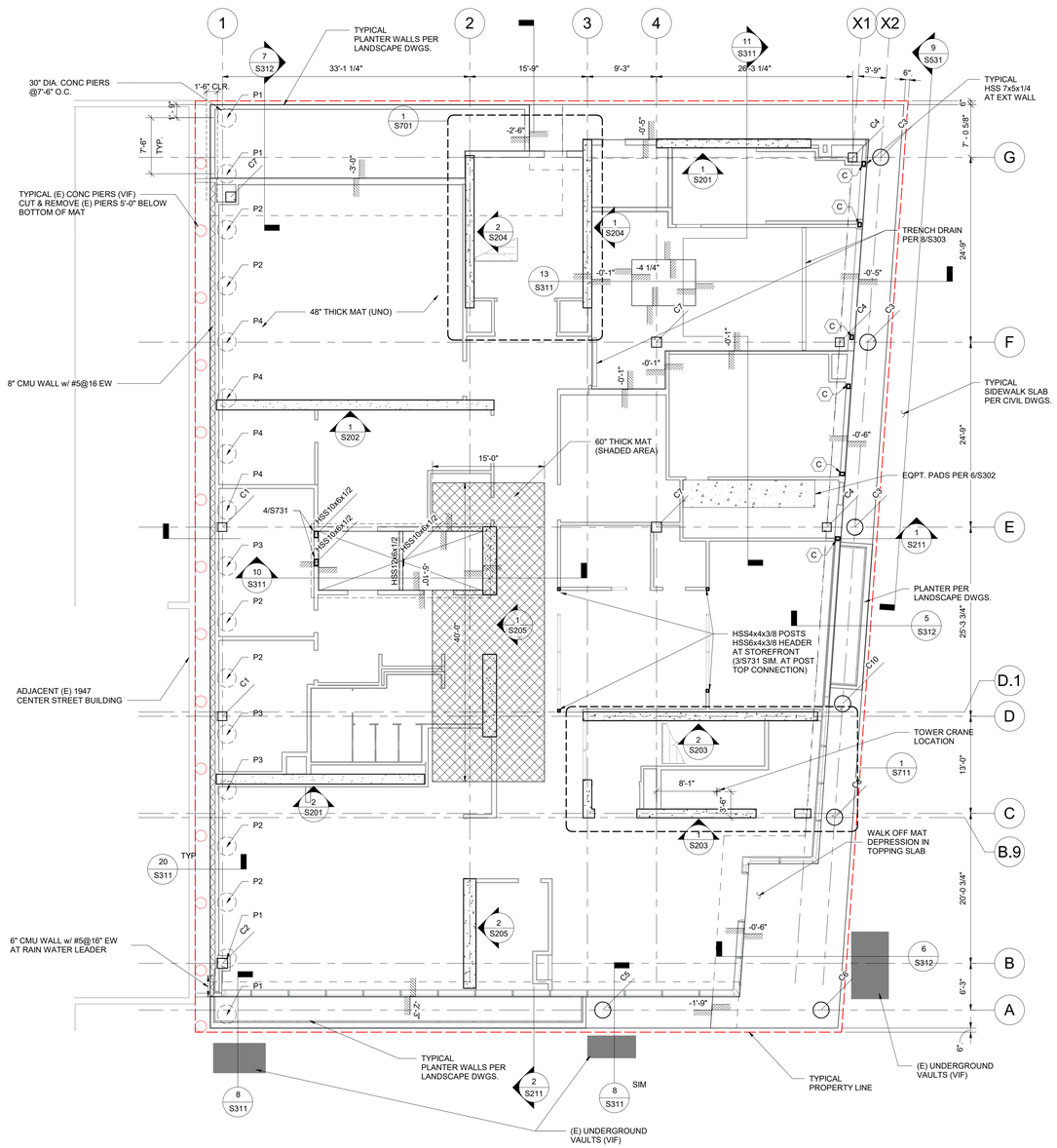
SHEET NUMBER: SG100

07/18/2022 DSA SUBMITTAL & BID SET

7/22/2022 1:53:03 PM

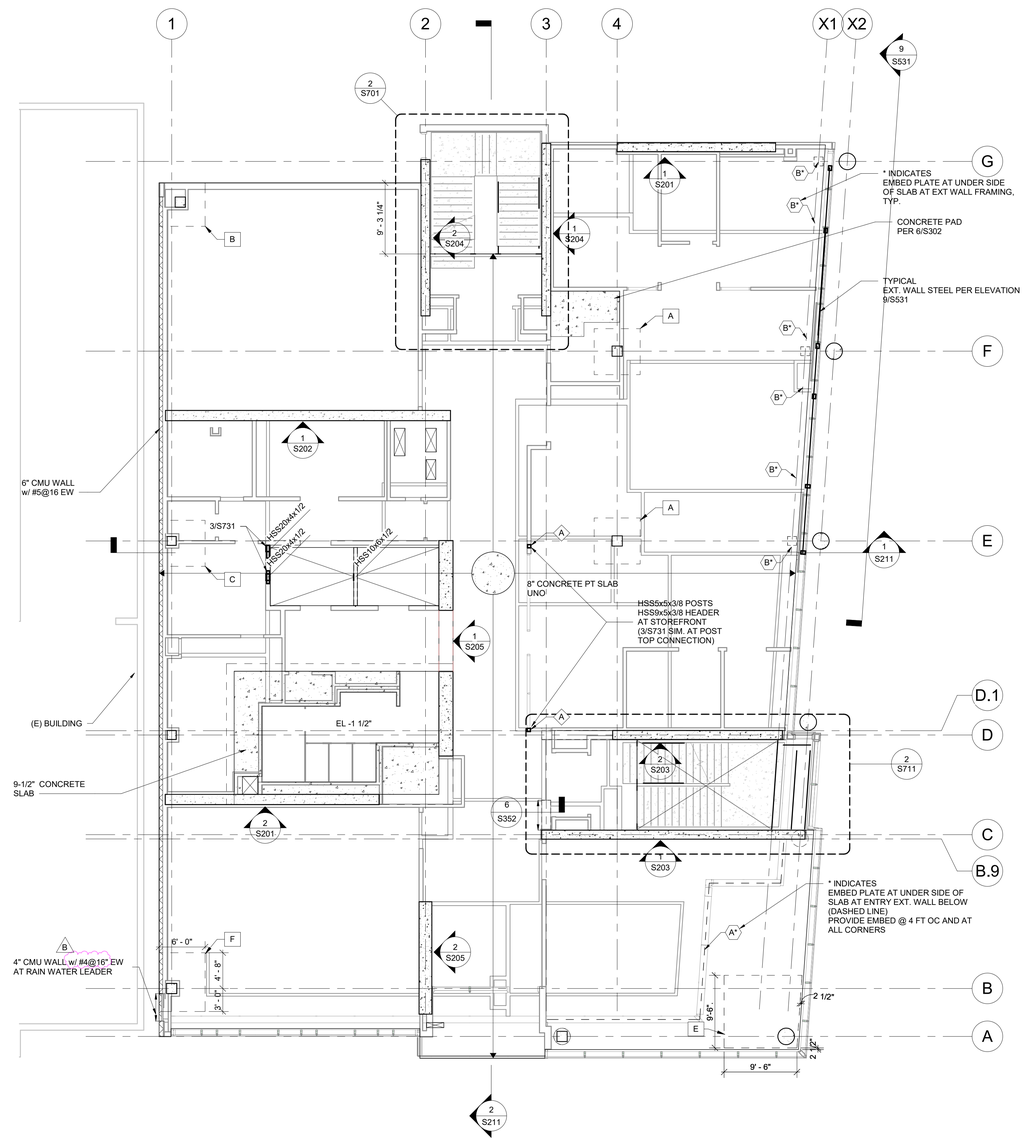
SHEET NOTES:

1. SEE SHEETS SG100 AND SG110 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.
2. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF WORK.
3. SEE ARCHITECTURAL DRAWINGS FOR CONCRETE SLAB ELEVATIONS, TOPPING SLABS, DEPRESSIONS, SLOPES, OPENINGS, CURBS, DRAINS, TRENCHES, SLAB EDGE LOCATIONS, ETC., AND FOR WALL OVERALL DIMENSIONS NOT INDICATED ON STRUCTURAL DRAWINGS.
4. SEE CIVIL SITE PLAN FOR BUILDING LOCATION AND HORIZONTAL CONTROLS.
5. STUDRAILS AT ALL ELEVATED SLAB COLUMNS PER 14/S321.
6. SLAB/ MAT OPENINGS PER S302. SEE AMEP DRAWINGS FOR SIZE AND LOCAITON.
7. SEE ARCHITECTURAL DRAWINGS FOR CONTROL (CONTRACTION) JOINTS IN TOPPING SLABS. DETAIL PER 11/S301.



TOP OF MAT SLAB AT BUILDING INTERIOR = -0'-3" U.N.O.
SEE A1/A-100 FOR TOPPING SLAB EXTENTS AND THICKNESS

1 LEVEL 1
1/8" = 1'-0"



TOP OF CONCRETE SLAB = 16'-6" U.N.O.

2 LEVEL 2 FRAMING PLAN
1/8" = 1'-0"

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ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FRAMING PLANS- LEVELS 1 & 2

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: S110

DSA SUBMITTAL & BID SET
07/18/2022

7/22/2022 1:52:14 PM

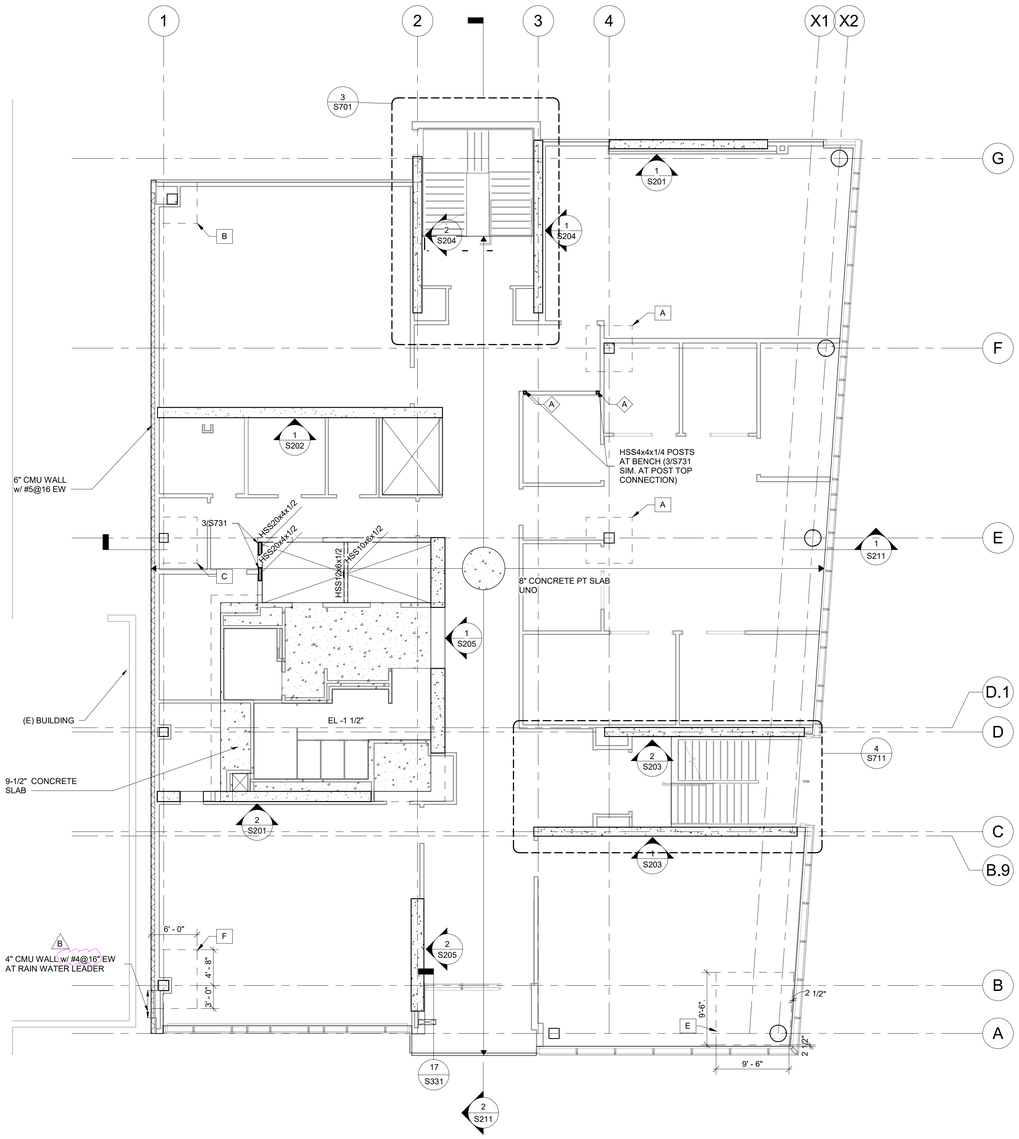
SHEET NOTES:

1. SEE SHEETS SG100 AND SG110 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.

2. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF WORK.

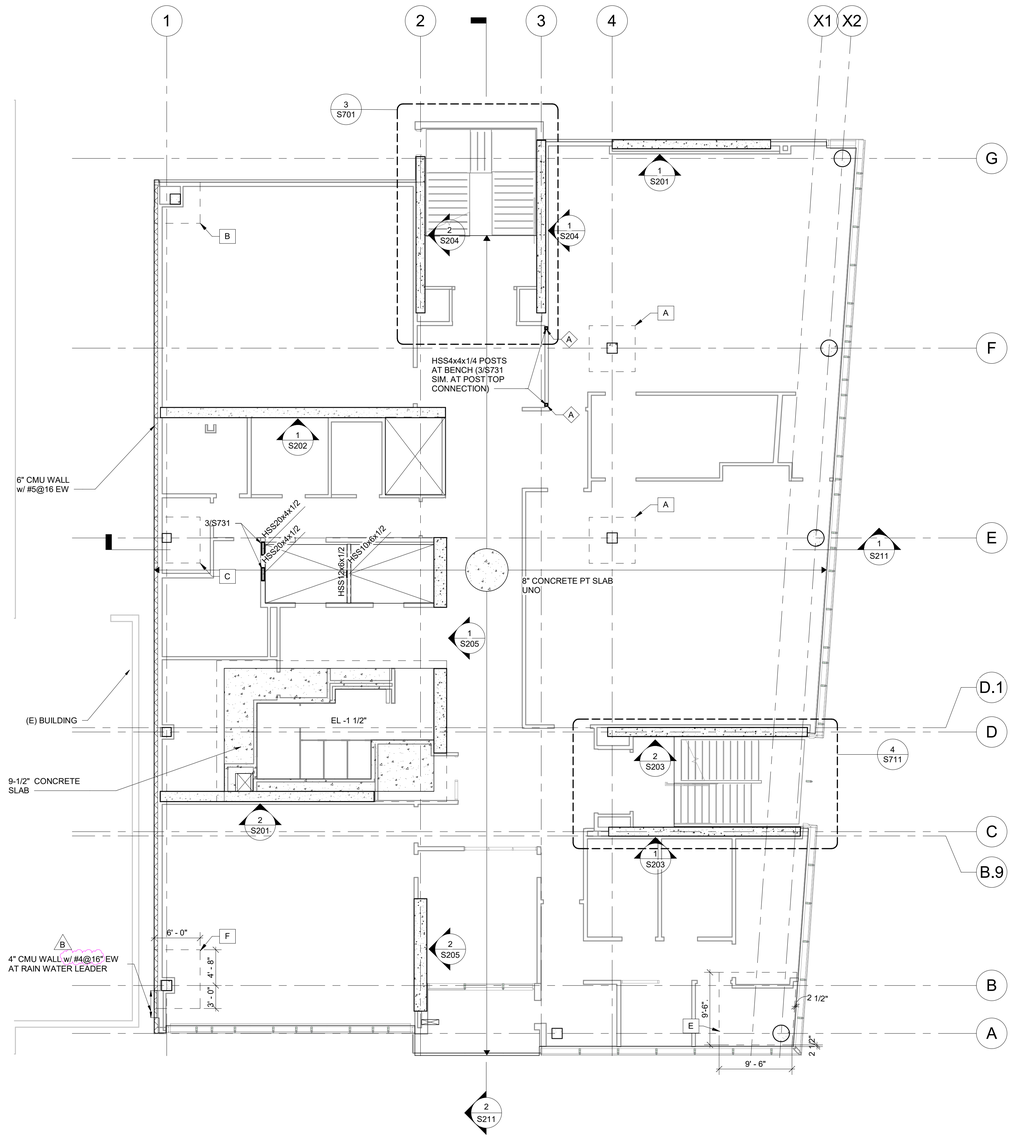
3. SEE ARCHITECTURAL DRAWINGS FOR CONCRETE SLAB ELEVATIONS, DEPRESSIONS, SLOPES, OPENINGS, CURBS, DRAINS, TRENCHES, SLAB EDGE LOCATIONS, ETC., AND FOR WALL OVERALL DIMENSIONS NOT INDICATED ON STRUCTURAL DRAWINGS.

4. STUDRAILS AT ALL COLUMNS PER 14/S321



TOP OF CONCRETE SLAB = 30'-2" U.N.O.

1 LEVEL 3 FRAMING PLAN
1/8" = 1'-0"



TOP OF CONCRETE SLAB = 43'-10" U.N.O.

2 LEVEL 4 FRAMING PLAN
1/8" = 1'-0"

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ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FRAMING PLANS-
LEVELS 3 & 4

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: S111

07/18/2022 DSA SUBMITTAL & BID SET

7/22/2022 1:52:18 PM

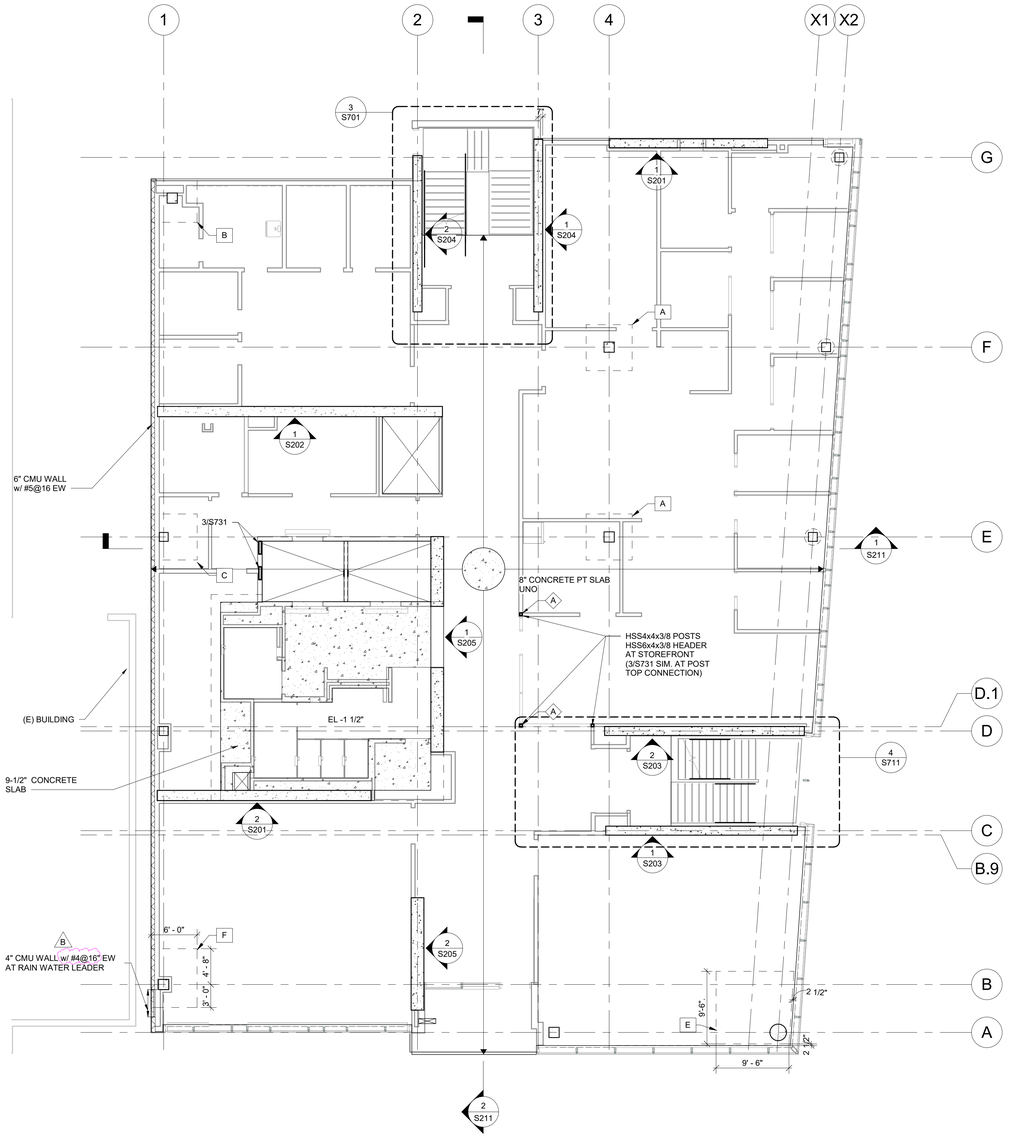
SHEET NOTES:

1. SEE SHEETS SG100 AND SG110 FOR GENERAL NOTES, SYMBOLS AND ABBREVIATIONS.

2. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS PRIOR TO START OF WORK.

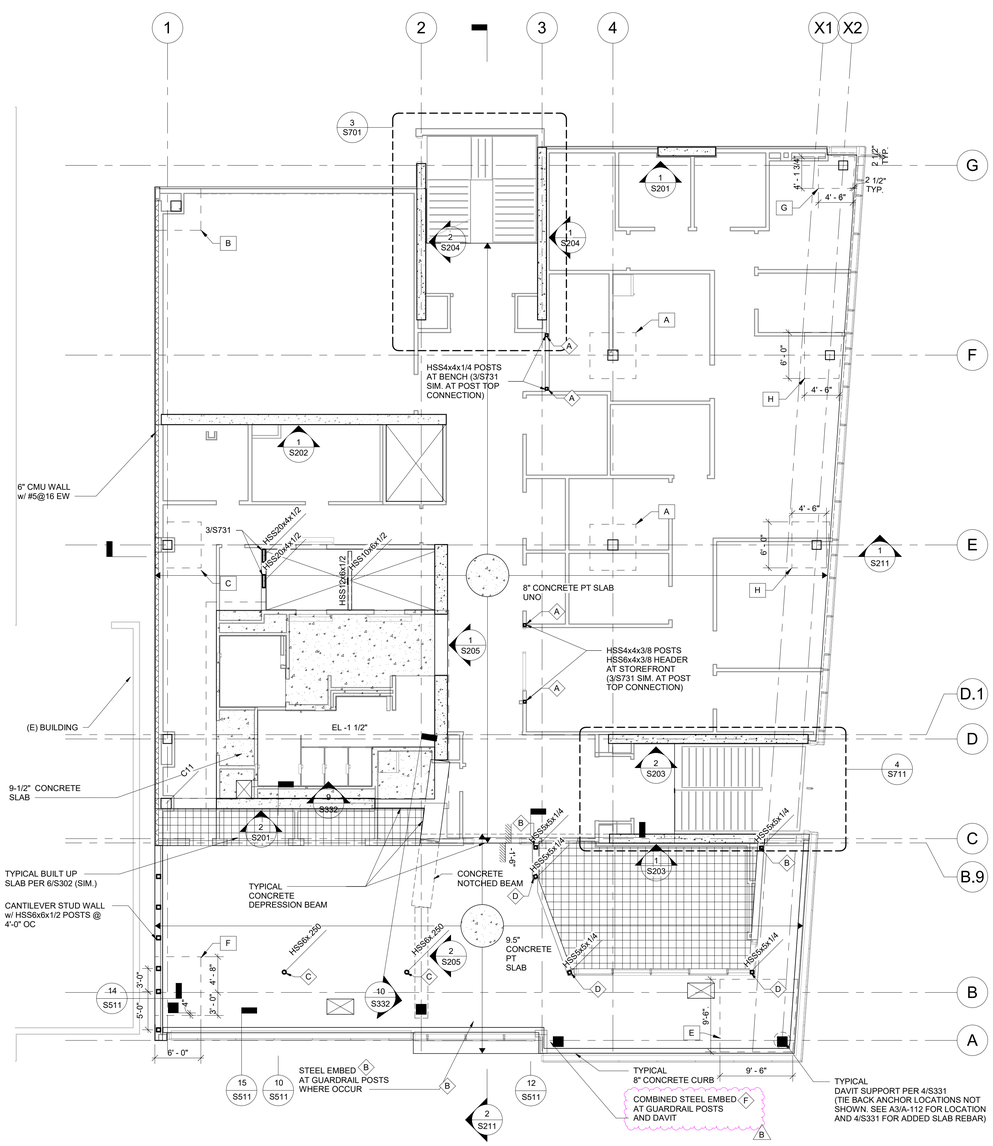
3. SEE ARCHITECTURAL DRAWINGS FOR CONCRETE SLAB ELEVATIONS, DEPRESSIONS, SLOPES, OPENINGS, CURBS, DRAINS, TRENCHES, SLAB EDGE LOCATIONS, ETC., AND FOR WALL OVERALL DIMENSIONS NOT INDICATED ON STRUCTURAL DRAWINGS.

4. STUDRAILS AT ALL COLUMNS PER 14/S321



TOP OF CONCRETE SLAB = 57'-6" U.N.O.

1 LEVEL 5 FRAMING PLAN
1/8" = 1'-0"



TOP OF CONCRETE SLAB = 71'-2" U.N.O.

2 LEVEL 6 FRAMING PLAN
1/8" = 1'-0"

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ISSUE SCHEDULE	NO.	DATE
Bid Addendum 1	A	06/29/22
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:

FRAMING PLANS-
LEVELS 5 & 6

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: S112

07/18/2022 DSA SUBMITTAL & BID SET

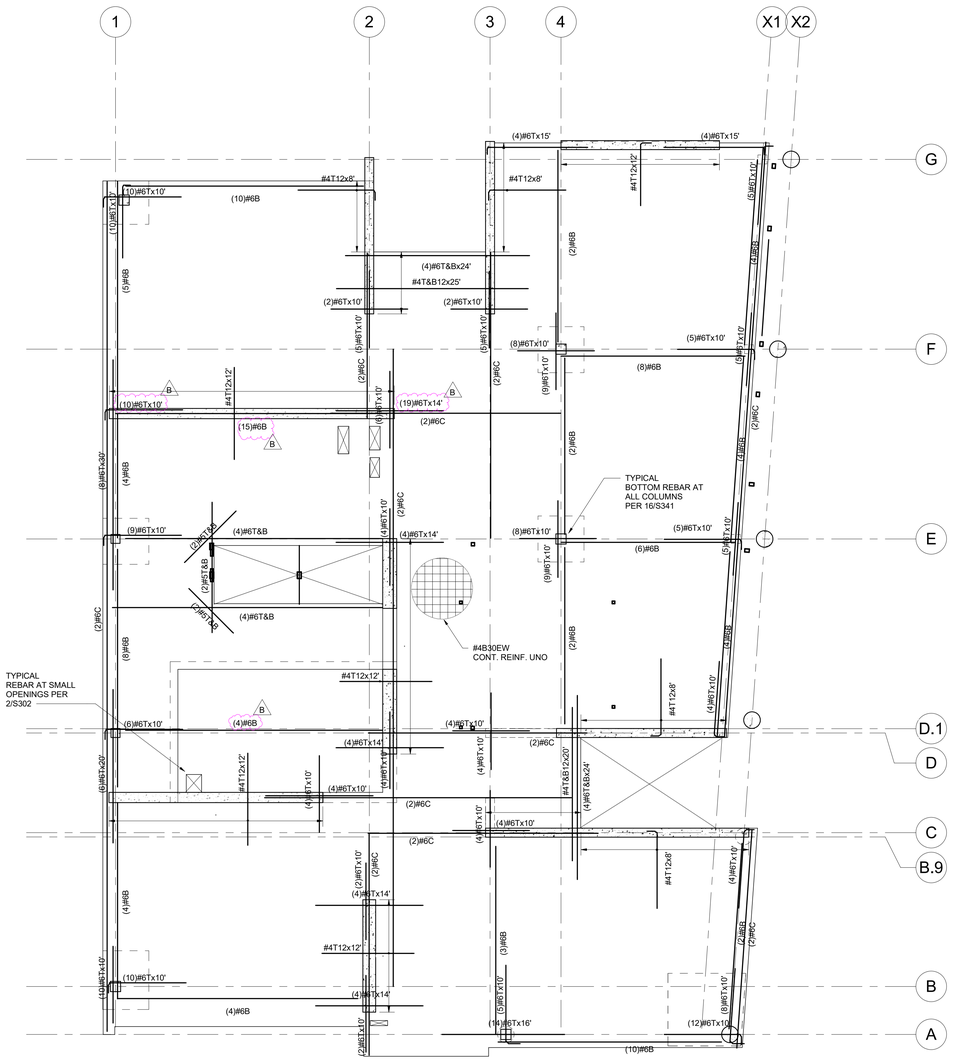
7/22/2022 1:52:19 PM

PLAN NOTES:
1. ALL REINFORCING NOTED ON PLANS IS ADDED REINFORCING. ALL ADDED REINFORCING SHALL BE PLACED AT 6" oc. AND EXTEND MINIMUM 5'-0" PAST EDGE OF OPENING, UNLESS NOTED OTHERWISE. CENTER REINFORCING AT SUPPORT TYPICAL, UNLESS NOTED OTHERWISE.
2. ALL REINFORCING SHALL BE PLACED AS FOLLOWS:
A. NORTH-SOUTH DIRECTION OUTSIDE LAYER
B. EAST-WEST DIRECTION INSIDE LAYER
3. REBAR DESIGNATION AS FOLLOWS:

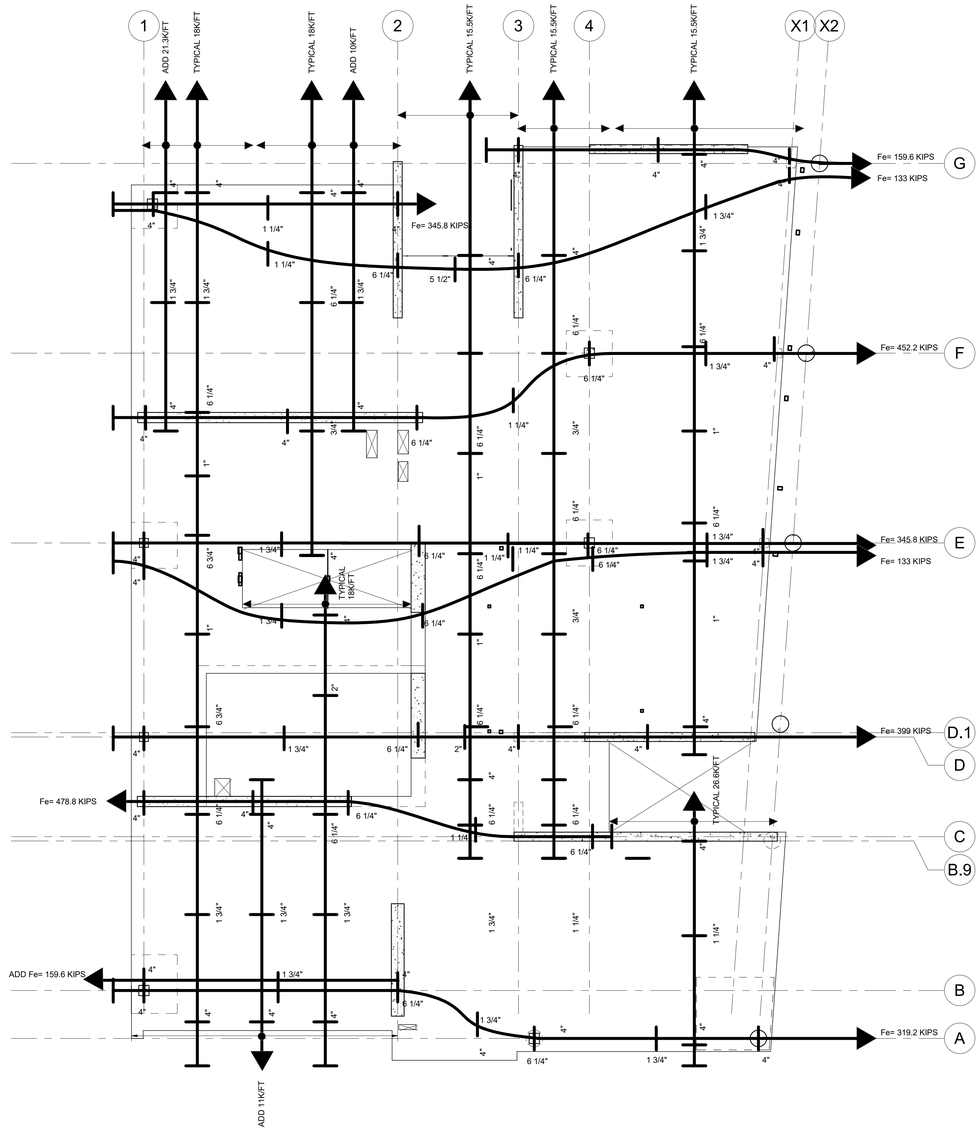
REBAR SIZE — REBAR SPACING o.c.
(8)#T6x17' — REBAR LENGTH
QUANTITY — T= TOP BARS
B= BOTTOM BARS
C= CENTER BARS

4. PROVIDE REINFORCING AROUND OPENINGS PER DETAIL 2&5/S302 UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHOP DRAWINFS SHALL INCLUDE ALL SLAB OPENINGS, DEPRESSIONS, SLOPES, CURBS, DRAINS AND SLAB EDGE LOCATIONS FROM ALL MEP TRADES. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INDICATE ALL SLAB OPENINGS ON PLAN AND SUBMIT TO THE STRUCTURAL ENGINEER PRIOR TO SUBMITTAL OF REINFORCING STEEL SHOP DRAWINGS.
6. INDICTAES REBAR WITH 90 DEGREE STA. HOOK, UNLESS NOTED OTHERWISE.
7. HOOK ALL REINFORCING INTERRUPTED BY OPENINGS AND AT PERIMETER.

PT PLAN NOTES:
1. SEE FRAMING PLAN FOR FRAMING INFORMATION NOT SHOWN. SEE REBAR PLAN FOR REBAR INFORMATION NOT SHOWN
2. INDICATES STRESS END
3. INDICATES DEAD END
4. INDICATES DISTANCE (DRAPE) FROM BOTTOM FACE OF CONCRETE SLAB TO CENTER OF GRAVITY OF CABLES IN INCHES
5. Fe=319 KIPS INDICATES FORCE IN KIPS
6. BUNDLE OF STRANDS LOCATED AT GRID LINES SHALL BE PLACED AT 12"oc (MAXIMUM BUNDLE = 4 STRANDS)
7. MINIMUM OF TWO STRANDS SHALL BE PROVIDED IN EACH DIRECTION THROUGH COLUMN.
8. TYPICAL C.G. OF THE TENDON AT EXTERIOR EDGE OF SLAB SHOULD BE AT CENTER OF THE SLAB THICKNESS UNLESS NOTED OTHERWISE.
9. FOR POST TENSIONED TYPICAL DETAILS SEE S341.



2 REBAR PLAN- LEVEL 2
1/8" = 1'-0"



1 PT PLAN- LEVEL 2
1/8" = 1'-0"

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ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
LEVEL 2 REINFORCING PLANS

SCALE: As indicated
PROJECT NUMBER: 21415
SHEET NUMBER: S122

DSA SUBMITTAL & BID SET
07/18/2022

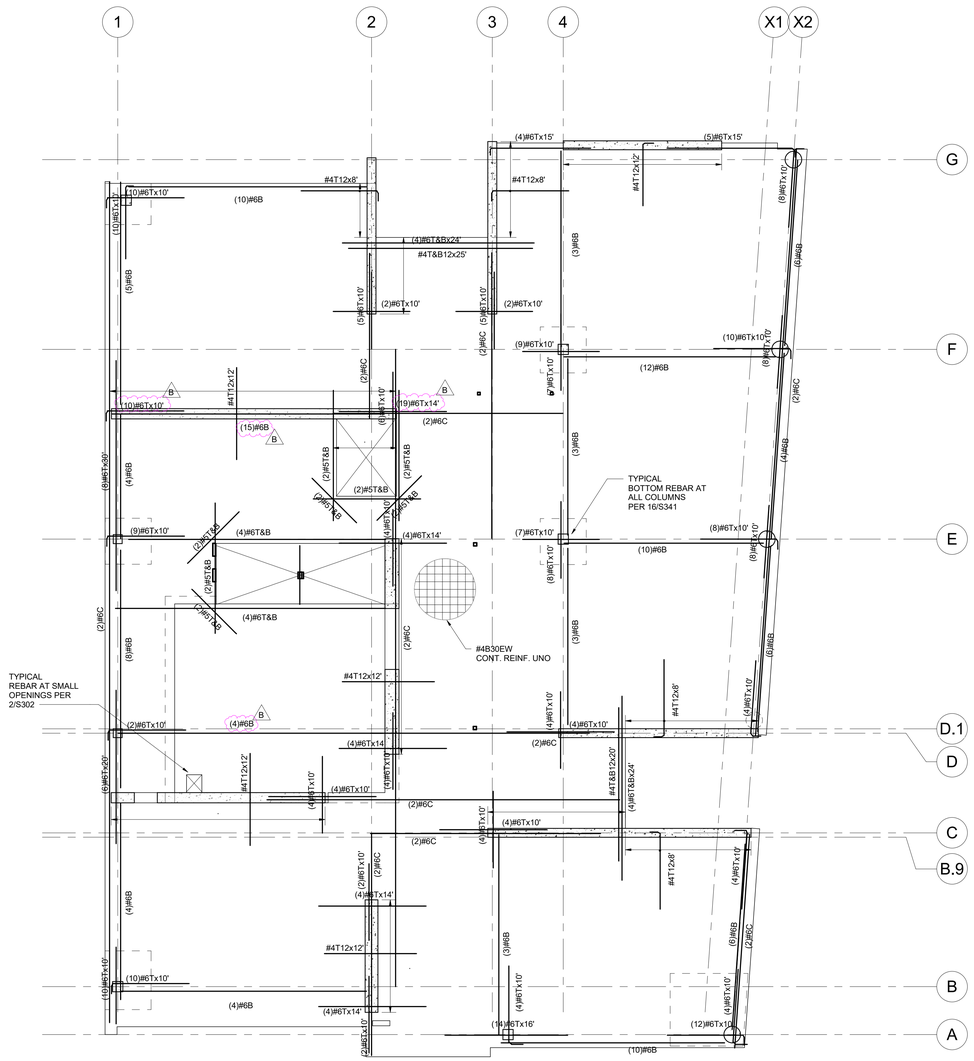
7/22/2022 1:52:21 PM

PLAN NOTES:
1. ALL REINFORCING NOTED ON PLANS IS ADDED REINFORCING. ALL ADDED REINFORCING SHALL BE PLACED AT 6" oc. AND EXTEND MINIMUM 5'-0" PAST EDGE OF OPENING, UNLESS NOTED OTHERWISE. CENTER REINFORCING AT SUPPORT TYPICAL, UNLESS NOTED OTHERWISE.
2. ALL REINFORCING SHALL BE PLACED AS FOLLOWS:
A. NORTH-SOUTH DIRECTION OUTSIDE LAYER
B EAST-WEST DIRECTION INSIDE LAYER
3. REBAR DESIGNATION AS FOLLOWS:

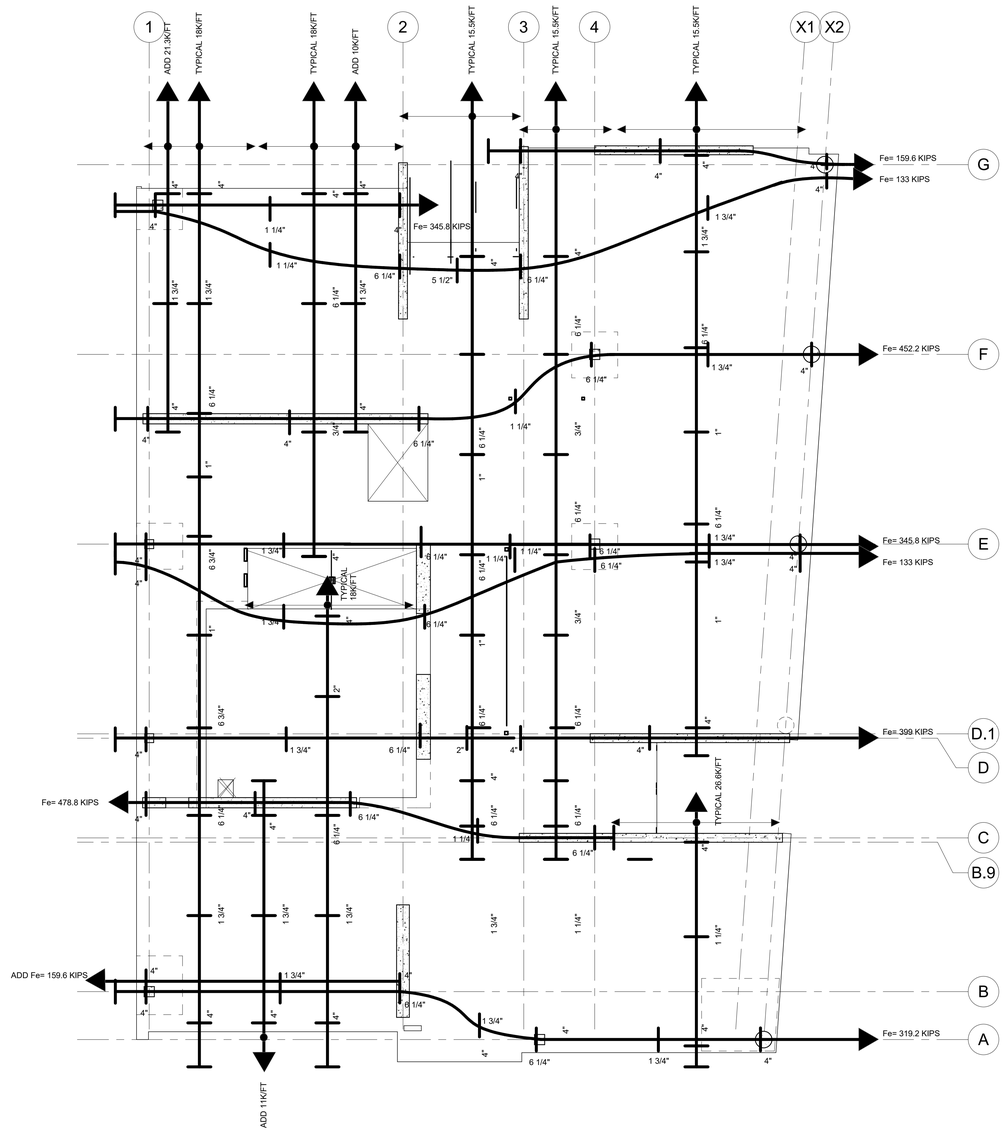
REBAR SIZE — REBAR SPACING o.c.
#4T18x17 — REBAR LENGTH
QUANTITY — T= TOP BARS; B= BOTTOM BARS; C= CENTER BARS

4. PROVIDE REINFORCING AROUND OPENINGS PER DETAIL 2&5/S302 UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHOP DRAWINFS SHALL INCLUDE ALL SLAB OPENINGS, DEPRESSIONS, SLOPES, CURBS, DRAINS AND SLAB EDGE LOCATIONS FROM ALL MEP TRADES. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INDICATE ALL SLAB OPENINGS ON PLAN AND SUBMIT TO THE STRUCTURAL ENGINEER PRIOR TO SUBMITTAL OF REINFORCING STEEL SHOP DRAWINGS.
6. INDICTAES REBAR WITH 90 DEGREE STA. HOOK, UNLESS NOTED OTHERWISE.
7. HOOK ALL REINFORCING INTERRUPTED BY OPENINGS AND AT PERIMETER.

PT PLAN NOTES:
1. SEE FRAMING PLAN FOR FRAMING INFORMATION NOT SHOWN. SEE REBAR PLAN FOR REBAR INFORMATION NOT SHOWN
2. INDICATES STRESS END
3. INDICATES DEAD END
4. INDICATES DISTANCE (DRAPE) FROM BOTTOM FACE OF CONCRETE SLAB TO CENTER OF GRAVITY OF CABLES IN INCHES
5. Fe=319 KIPS INDICATES FORCE IN KIPS
6. BUNDLE OF STRANDS LOCATED AT GRID LINES SHALL BE PLACED AT 12"oc (MAXIMUM BUNDLE = 4 STRANDS)
7. MINIMUM OF TWO STRANDS SHALL BE PROVIDED IN EACH DIRECTION THROUGH COLUMN.
8. TYPICAL C.G. OF THE TENDON AT EXTERIOR EDGE OF SLAB SHOULD BE AT CENTER OF THE SLAB THICKNESS UNLESS NOTED OTHERWISE.
9. FOR POST TENSIONED TYPICAL DETAILS SEE S341.



3 REBAR PLAN- LEVEL 3
1/8" = 1'-0"



1 PT PLAN- LEVEL 3
1/8" = 1'-0"

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DE Job Number: C0498027.00

REGISTERED PROFESSIONAL ENGINEER
No. S 4107
Exp. 03-21-2023
STRUCTURAL
CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
LEVEL 3 REINFORCING PLANS

SCALE: As indicated
PROJECT NUMBER: 21415
SHEET NUMBER: S123

07/18/2022 DSA SUBMITTAL & BID SET

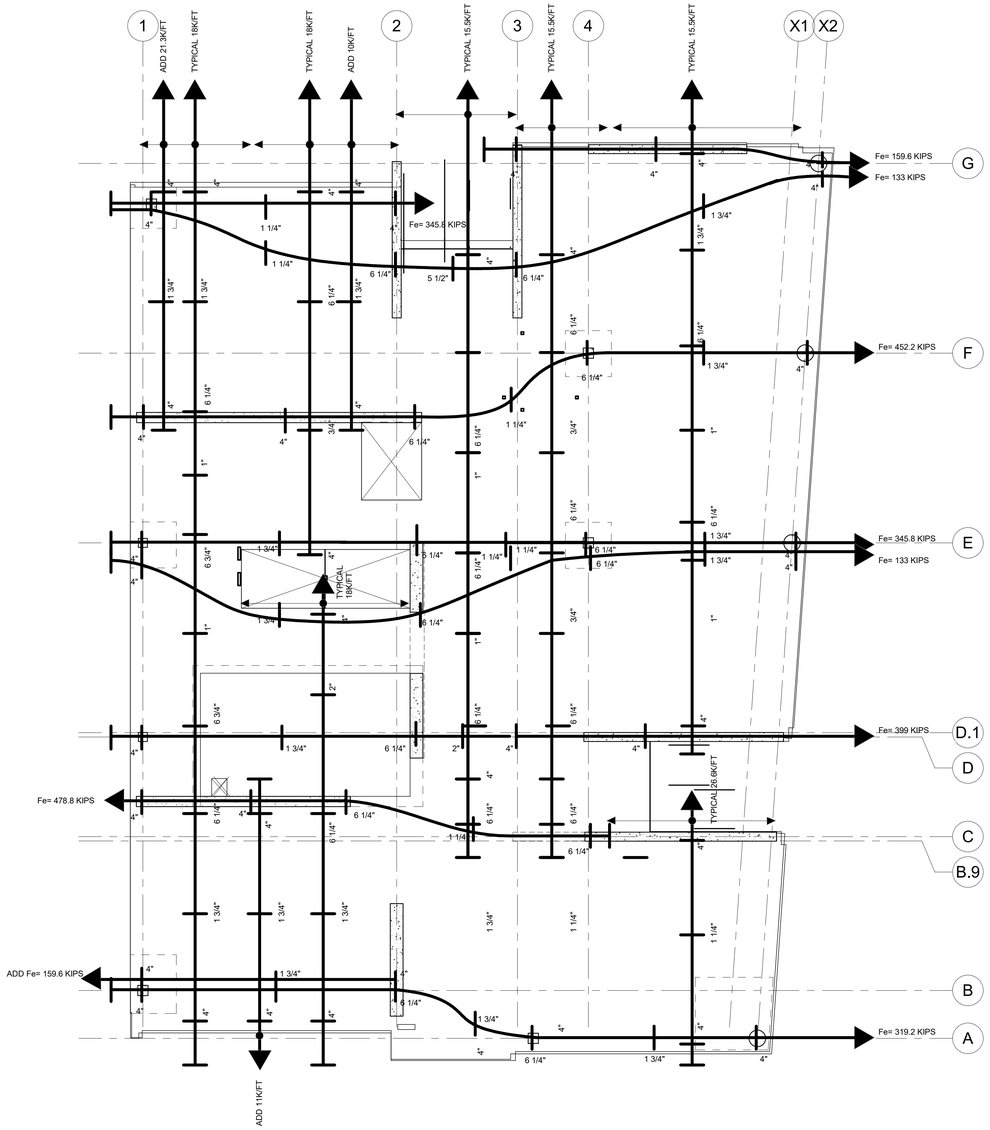
PLAN NOTES:
1. ALL REINFORCING NOTED ON PLANS IS ADDED REINFORCING. ALL ADDED REINFORCING SHALL BE PLACED AT 6" oc. AND EXTEND MINIMUM 5'-0" PAST EDGE OF OPENING, UNLESS NOTED OTHERWISE. CENTER REINFORCING AT SUPPORT TYPICAL, UNLESS NOTED OTHERWISE.
2. ALL REINFORCING SHALL BE PLACED AS FOLLOWS:
A. NORTH-SOUTH DIRECTION OUTSIDE LAYER
B. EAST-WEST DIRECTION INSIDE LAYER
3. REBAR DESIGNATION AS FOLLOWS:

REBAR SIZE — REBAR SPACING o.c.
(##T#x#' — REBAR LENGTH
QUANTITY — T= TOP BARS; B= BOTTOM BARS; C= CENTER BARS

4. PROVIDE REINFORCING AROUND OPENINGS PER DETAIL 2&5/S302 UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHOP DRAWINFS SHALL INCLUDE ALL SLAB OPENINGS, DEPRESSIONS, SLOPES, CURBS, DRAINS AND SLAB EDGE LOCATIONS FROM ALL MEP TRADES. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INDICATE ALL SLAB OPENINGS ON PLAN AND SUBMIT TO THE STRUCTURAL ENGINEER PRIOR TO SUBMITTAL OF REINFORCING STEEL SHOP DRAWINGS.
6. INDICTAES REBAR WITH 90 DEGREE STA. HOOK, UNLESS NOTED OTHERWISE.
7. HOOK ALL REINFORCING INTERRUPTED BY OPENINGS AND AT PERIMETER.

PT PLAN NOTES:
1. SEE FRAMING PLAN FOR FRAMING INFORMATION NOT SHOWN. SEE REBAR PLAN FOR REBAR INFORMATION NOT SHOWN
2. INDICATES STRESS END
3. INDICATES DEAD END
4. INDICATES DISTANCE (DRAPE) FROM BOTTOM FACE OF CONCRETE SLAB TO CENTER OF GRAVITY OF CABLES IN INCHES
5. Fe=319 KIPS INDICATES FORCE IN KIPS
6. BUNDLE OF STRANDS LOCATED AT GRID LINES SHALL BE PLACED AT 12"oc (MAXIMUM BUNDLE = 4 STRANDS)
7. MINIMUM OF TWO STRANDS SHALL BE PROVIDED IN EACH DIRECTION THROUGH COLUMN.
8. TYPICAL C.G. OF THE TENDON AT EXTERIOR EDGE OF SLAB SHOULD BE AT CENTER OF THE SLAB THICKNESS UNLESS NOTED OTHERWISE.
9. FOR POST TENSIONED TYPICAL DETAILS SEE S341.

2 REBAR PLAN- LEVEL 4
1/8" = 1'-0"



1 PT PLAN- LEVEL 4
1/8" = 1'-0"

DSA APPROVAL

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REGISTERED PROFESSIONAL ENGINEER
HOLLY J. BLOSSER
No. S 4107
Exp. 03-31-2023
STRUCTURAL
CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
LEVEL 4 REINFORCING PLANS

SCALE: As indicated
PROJECT NUMBER: 21415
SHEET NUMBER: S124

07/18/2022 DSA SUBMITTAL & BID SET

7/22/2022 1:52:22 PM

PLAN NOTES:
1. ALL REINFORCING NOTED ON PLANS IS ADDED REINFORCING. ALL ADDED REINFORCING SHALL BE PLACED AT 6" oc. AND EXTEND MINIMUM 5'-0" PAST EDGE OF OPENING, UNLESS NOTED OTHERWISE. CENTER REINFORCING AT SUPPORT TYPICAL, UNLESS NOTED OTHERWISE.
2. ALL REINFORCING SHALL BE PLACED AS FOLLOWS:
A. NORTH-SOUTH DIRECTION OUTSIDE LAYER
B. EAST-WEST DIRECTION INSIDE LAYER
3. REBAR DESIGNATION AS FOLLOWS:

REBAR SIZE — REBAR SPACING o.c.
(8)#T8x17' — REBAR LENGTH
QUANTITY — T= TOP BARS, B= BOTTOM BARS, C= CENTER BARS

4. PROVIDE REINFORCING AROUND OPENINGS PER DETAIL 2&5/S302 UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHOP DRAWINFS SHALL INCLUDE ALL SLAB OPENINGS, DEPRESSIONS, SLOPES, CURBS, DRAINS AND SLAB EDGE LOCATIONS FROM ALL MEP TRADES. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INDICATE ALL SLAB OPENINGS ON PLAN AND SUBMIT TO THE STRUCTURAL ENGINEER PRIOR TO SUBMITTAL OF REINFORCING STEEL SHOP DRAWINGS.
6. INDICTAES REBAR WITH 90 DEGREE STA. HOOK, UNLESS NOTED OTHERWISE.
7. HOOK ALL REINFORCING INTERRUPTED BY OPENINGS AND AT PERIMETER.

PT PLAN NOTES:
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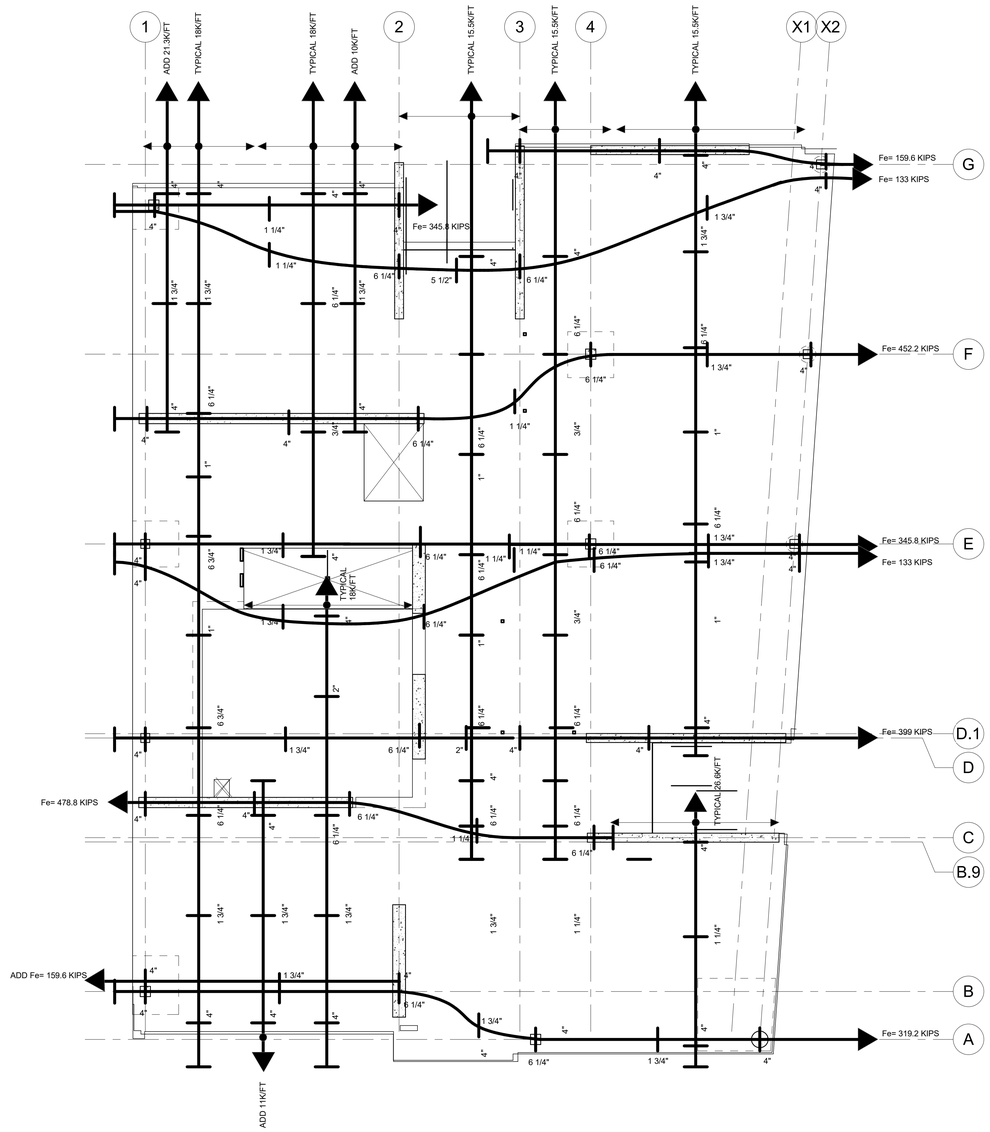
8. TYPICAL C.G. OF THE TENDON AT EXTERIOR EDGE OF SLAB SHOULD BE AT CENTER OF THE SLAB THICKNESS UNLESS NOTED OTHERWISE.
9. FOR POST TENSIONED TYPICAL DETAILS SEE S341.

3 REBAR PLAN- LEVEL 5
1/8" = 1'-0"



1 PT PLAN- LEVEL 5
1/8" = 1'-0"

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REGISTERED PROFESSIONAL ENGINEER
TOLLY J. ROSSOLL
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Exp. 03-31-2023
STRUCTURAL
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
LEVEL 5 REINFORCING PLANS

SCALE: As indicated
PROJECT NUMBER: 21415
SHEET NUMBER: S125

07/18/2022 DSA SUBMITTAL & BID SET

7/22/2022 1:55:22 PM

PLAN NOTES:
1. ALL REINFORCING NOTED ON PLANS IS ADDED REINFORCING. ALL ADDED REINFORCING SHALL BE PLACED AT 6" oc. AND EXTEND MINIMUM 5'-0" PAST EDGE OF OPENING, UNLESS NOTED OTHERWISE. CENTER REINFORCING AT SUPPORT TYPICAL, UNLESS NOTED OTHERWISE.
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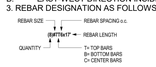
A. NORTH-SOUTH DIRECTION OUTSIDE LAYER
B. EAST-WEST DIRECTION INSIDE LAYER
3. REBAR DESIGNATION AS FOLLOWS:



4. PROVIDE REINFORCING AROUND OPENINGS PER DETAIL 2&5/S302 UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHOP DRAWINFS SHALL INCLUDE ALL SLAB OPENINGS, DEPRESSIONS, SLOPES, CURBS, DRAINS AND SLAB EDGE LOCATIONS FROM ALL MEP TRADES. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INDICATE ALL SLAB OPENINGS ON PLAN AND SUBMIT TO THE STRUCTURAL ENGINEER PRIOR TO SUBMITTAL OF REINFORCING STEEL SHOP DRAWINGS.
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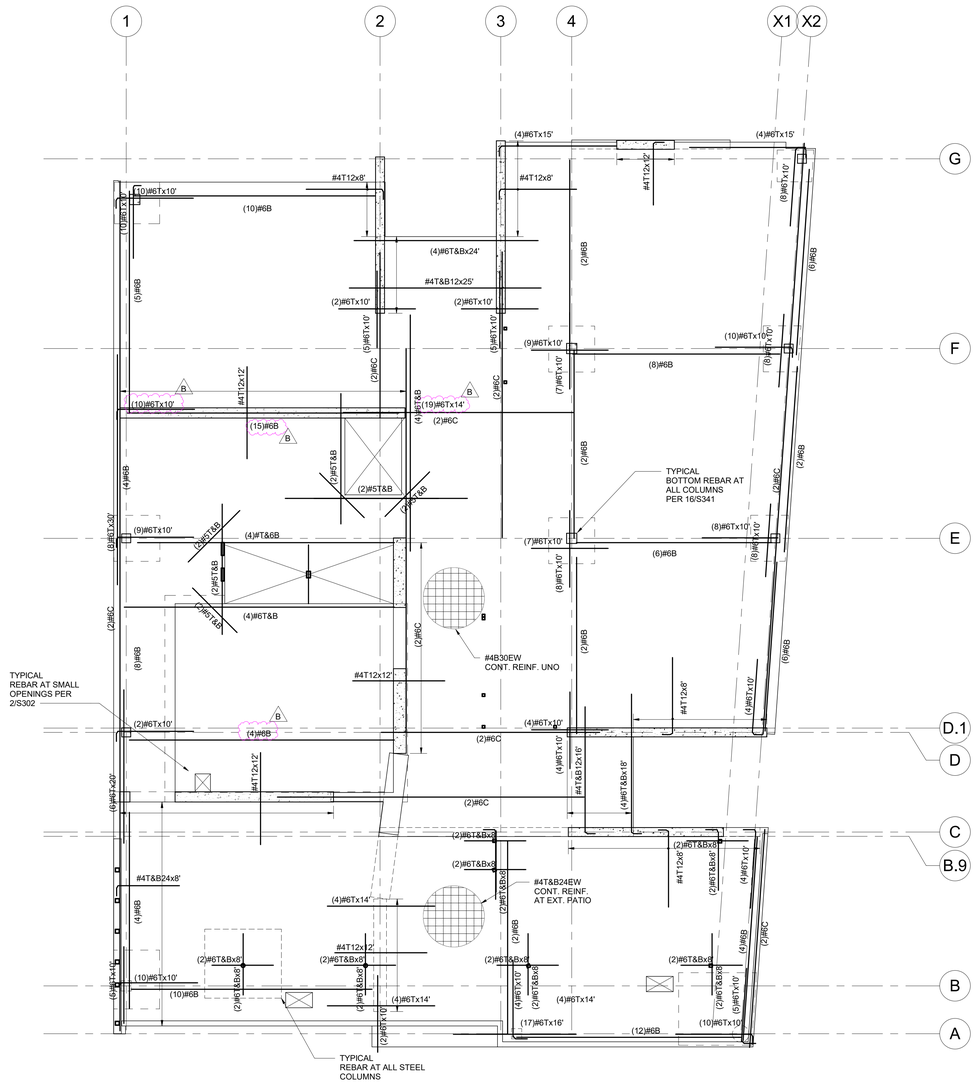
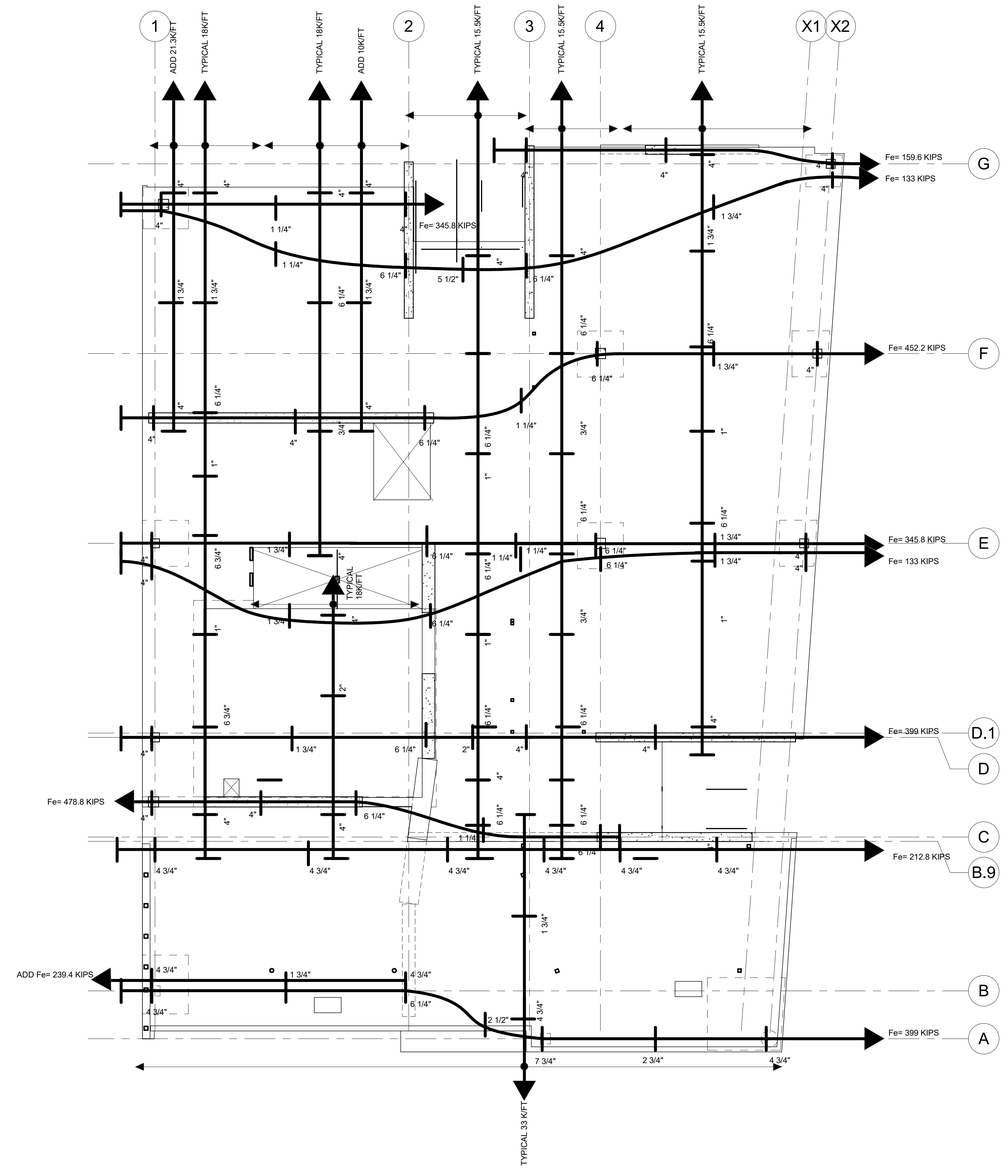


2 REBAR PLAN- LEVEL 6
1/8" = 1'-0"



1 PT PLAN- LEVEL 6
1/8" = 1'-0"

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DE Job Number: C0498027.00

REGISTERED PROFESSIONAL ENGINEER
HOLLY J. BOSSARD
No. S 4107
Exp. 03-31-2023
STRUCTURAL
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
LEVEL 6 REINFORCING PLANS

SCALE: As indicated
PROJECT NUMBER: 21415
SHEET NUMBER: S126

07/18/2022 DSA SUBMITTAL & BID SET

7/22/2022 1:52:22 PM

PLAN NOTES:
1. ALL REINFORCING NOTED ON PLANS IS ADDED REINFORCING. ALL ADDED REINFORCING SHALL BE PLACED AT 6" oc. AND EXTEND MINIMUM 5'-0" PAST EDGE OF OPENING, UNLESS NOTED OTHERWISE. CENTER REINFORCING AT SUPPORT TYPICAL, UNLESS NOTED OTHERWISE.
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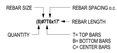
B. EAST-WEST DIRECTION INSIDE LAYER
3. REBAR DESIGNATION AS FOLLOWS:



4. PROVIDE REINFORCING AROUND OPENINGS PER DETAIL 2&5/S302 UNLESS NOTED OTHERWISE.
5. REINFORCING STEEL SHOP DRAWINFS SHALL INCLUDE ALL SLAB OPENINGS, DEPRESSIONS, SLOPES, CURBS, DRAINS AND SLAB EDGE LOCATIONS FROM ALL MEP TRADES. GENERAL CONTRACTOR IS RESPONSIBLE TO COORDINATE AND INDICATE ALL SLAB OPENINGS ON PLAN AND SUBMIT TO THE STRUCTURAL ENGINEER PRIOR TO SUBMITTAL OF REINFORCING STEEL SHOP DRAWINGS.
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PT PLAN NOTES:
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3. INDICATES DEAD END
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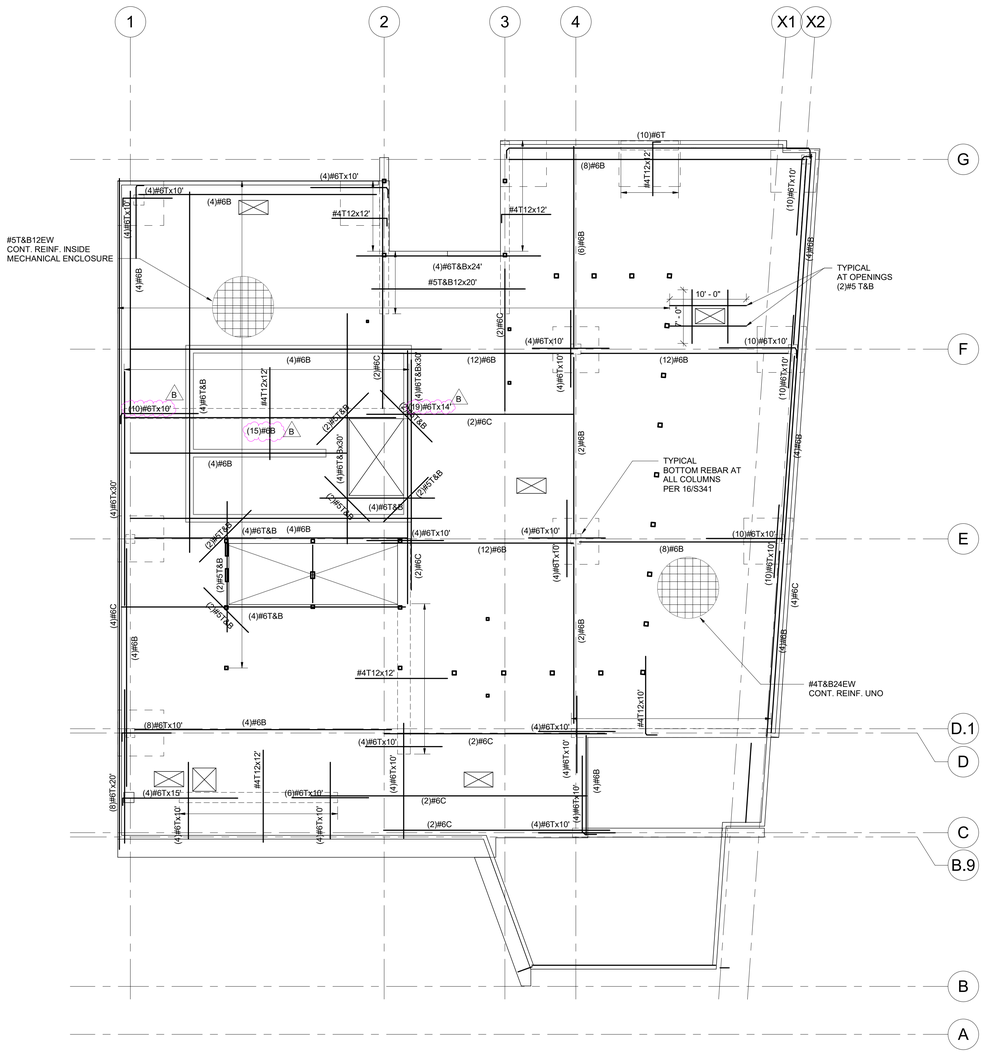
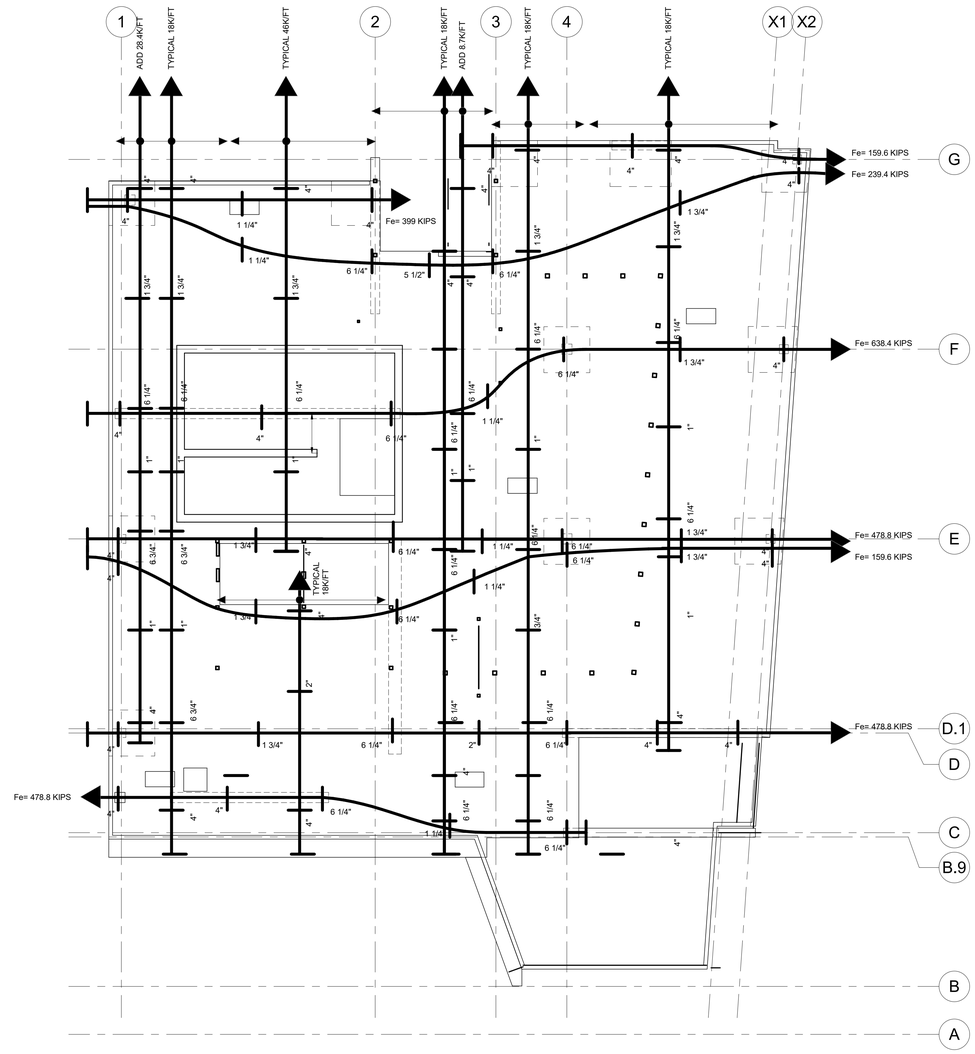
9. FOR POST TENSIONED TYPICAL DETAILS SEE S341.



2 REBAR PLAN- ROOF
1/8" = 1'-0"



1 PT PLAN- ROOF
1/8" = 1'-0"

DSA APPROVAL

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REGISTERED PROFESSIONAL ENGINEER
HOLLY J. RODGERS
No. S 4107
Exp. 03-31-2023
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CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

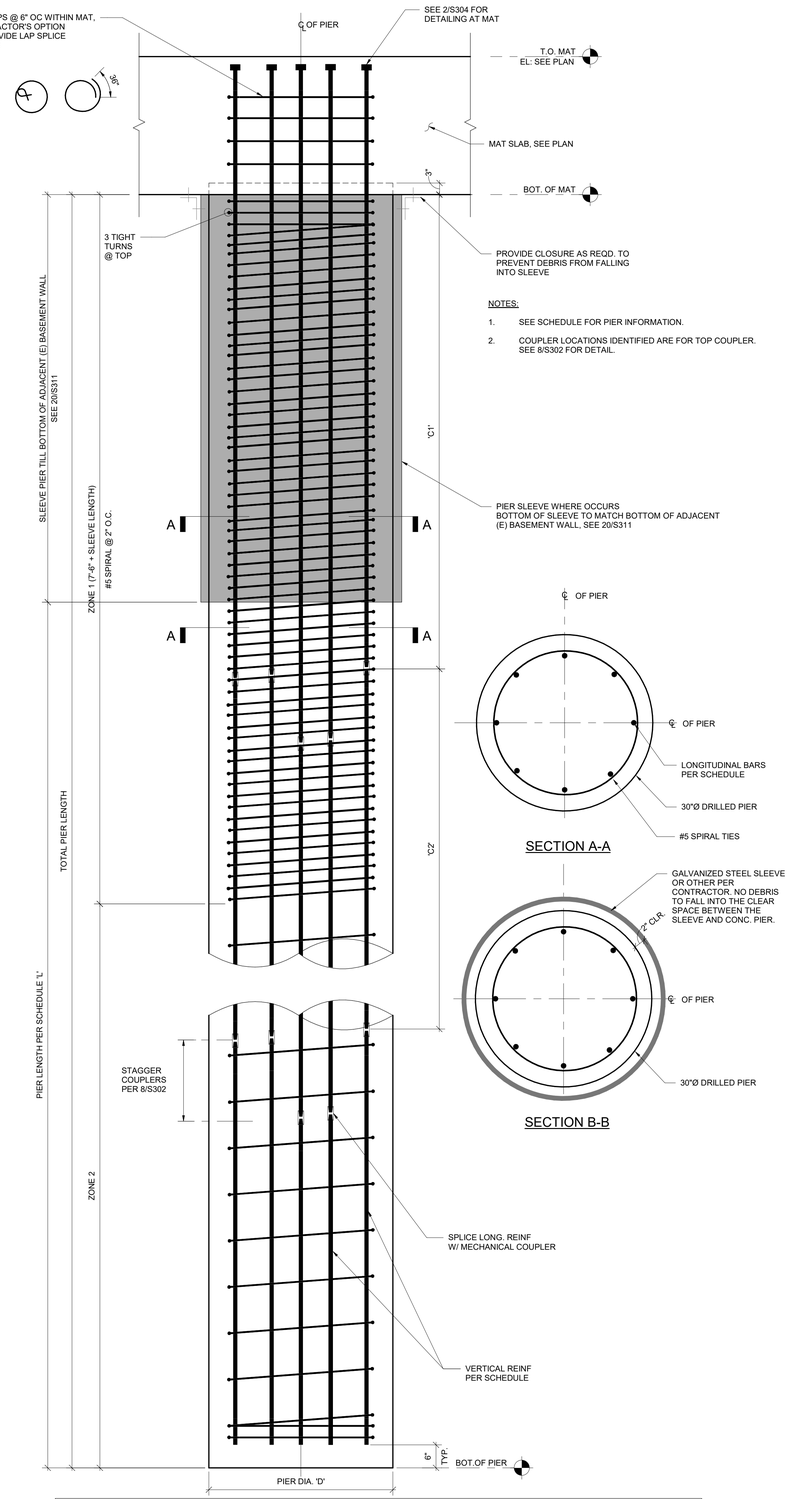
PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

SHEET TITLE:
ROOF REINFORCING PLANS

SCALE: As indicated
PROJECT NUMBER: 21415
SHEET NUMBER: S127

07/18/2022 DSA SUBMITTAL & BID SET



NOTES:

1. SEE SCHEDULE FOR PIER INFORMATION.
2. COUPLER LOCATIONS IDENTIFIED ARE FOR TOP COUPLER. SEE 8/S302 FOR DETAIL.

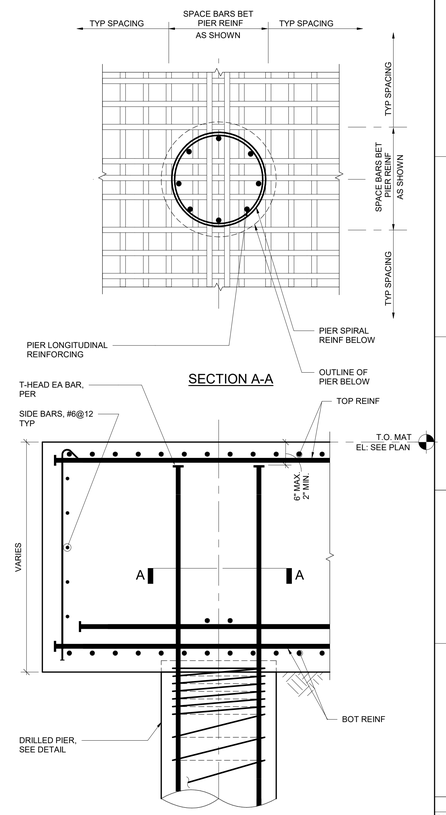
DRILLED PIER SCHEDULE

MARK	PIER DIAMETER 'D'	PIER LENGTH 'L'	LONGITUDINAL REINFORCEMENT	#5 SPIRAL REINFORCEMENT PITCH		COUPLER LOCATIONS	
			ZONE 1 & ZONE 2	ZONE 1	ZONE 2	C1	C2
P1	30"	35'-00"	8#9	2"	12"	15'-0"	--
P2	30"	45'-00"	8#9	2"	12"	15'-0"	30'-0"
P3	30"	55'-00"	8#9	2"	12"	15'-0"	30'-0"
P4	30"	58'-00"	8#9	2"	12"	15'-0"	30'-0"

/B\

NOTES:
1. CONTRACTOR OPTION TO PROVIDE CONTINUOUS BARS W/O MECHANICAL COUPLERS.

20 DRILLED PIER DETAIL
3/4" = 1'-0"



2 DRILLED PIER AT MAT
3/4" = 1'-0"

DSA APPROVAL

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REGISTERED PROFESSIONAL ENGINEER
TODD T. J. RICCARDO
No. S 4107
Exp. 03-21-2023
STRUCTURAL
STATE OF CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

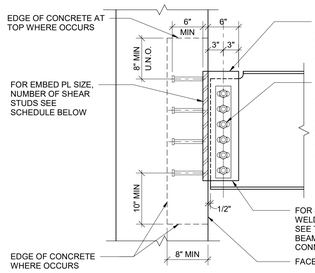
SHEET TITLE:
TYPICAL CONCRETE PIER DETAILS

SCALE: 3/4" = 1'-0"
PROJECT NUMBER: 21415

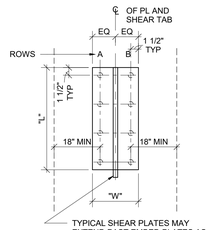
SHEET NUMBER: S304

DSA SUBMITTAL & BID SET 07/18/2022

7/22/2022 1:52:33 PM



DETAIL



TYPICAL SHEAR PLATES MAY EXTEND PAST EMBED PLATES AS REQUIRED. SHEAR PL TO EXTEND A MINIMUM OF "L". THE FULL LENGTH OF THE EMBED PL

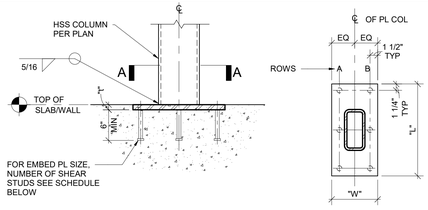
2 ROWS

LEGEND:

(A) — INDICATES EMBED PL

MARK	EMBED PLATE			SHEAR STUDS				REMARKS
	"t"	SIZE		SIZE	NUMBER OF STUDS PER ROW			
		W	L		A	B	C	
A	5/8	6	12	3/4	2	-	-	
B	1	8	12	3/4	2	2	-	
C	1	8	18	7/8	3	3	-	
D	1	9	26	7/8	4	4	-	

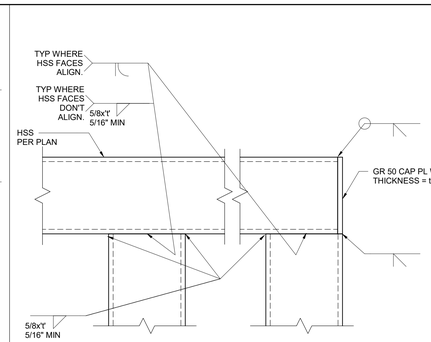
18 TYPICAL EMBED PLATE SCHEDULE
1" = 1'-0"



SECTION A-A PLAN VIEW

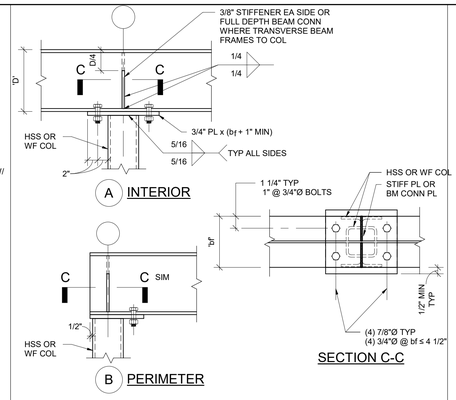
MARK	EMBED PLATE			SHEAR STUDS			REMARKS
	"t"	SIZE		SIZE	NUMBER OF STUDS PER ROW		
		W	L		A	B	
A	3/4	9	9	3/4	2	2	
B	1	14	32	7/8	6	6	AT L6 PATIO CURTAIN WALL POSTS
C	1	18	18	7/8	2	2	
D	1	14	14	3/4	2	2	
E	1/2	6	12	3/4	3	-	AT STAIR GUARDRAIL BALUSTERS. WELD MAX 3 BALUSTERS TO ONE EMBED PLATE
F	1 1/4	30	30	7/8	STUDS @ 6-3/4" OC EW (TOTAL 25)		AT L6 PATIO LINE 3/A

13 TYPICAL EMBED BASE PLATE SCHEDULE
1" = 1'-0"



NOTE:
GRIND ALL EXPOSED WELDS.

9 TYPICAL EXPOSED HSS TO HSS CONNECTION DETAIL
1 1/2" = 1'-0"



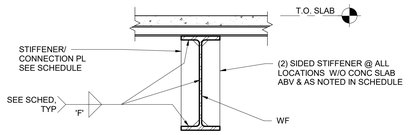
5 SEATED WF TO HSS OR WF COLUMN
N.T.S.

BEAM CONNECTION SCHEDULE

NOMINAL MEMBER DEPTH	SHEAR PL THICKNESS ('t')	BOLT HOLE IN BEAM	BOLT HOLE IN SHEAR PL (UON)	FASTENERS PER ROW A325-X UON ('N')	WELD SIZE ('F')
10" OR LESS	1/2"	STD	STD	(2) 7/8"Ø	5/16"
12" THRU 14"	1/2"	STD	STD	(3) 7/8"Ø	5/16"
16" THRU 18"	1/2"	STD	STD	(4) 7/8"Ø	5/16"
21"	1/2"	STD	STD	(5) 7/8"Ø	5/16"
24"	1/2"	STD	SSLT	(6) 7/8"Ø	5/16"
27"	1/2"	STD	SSLT	(7) 7/8"Ø	5/16"
30"	1/2"	STD	SSLT	(8) 7/8"Ø	5/16"
33"	1/2"	STD	SSLT	(9) 7/8"Ø	1/2"
36"	1/2"	STD	SSLT	(10) 7/8"Ø	1/2"
40"	1/2"	STD	SSLT	(11) 7/8"Ø	5/8"

NOTES:
1. STD HOLES SHALLBE 1/16" GREATER THAN BOLT DIAMETER.
2. SHORT SLOTTED HOLES (SSLT) SHALL BE PARALLEL TO LONGITUDINAL AXIS OF BEAM.
3. BOLTS TO BE SNUG TIGHT W/ HARDENED WASHERS, UON
4. SCHEDULE BASED ON NOMINAL DEPTH OF WIDE FLANGE BEAMS, CHANNELS, TUBES, & OTHER MISCELLANEOUS SHAPES.

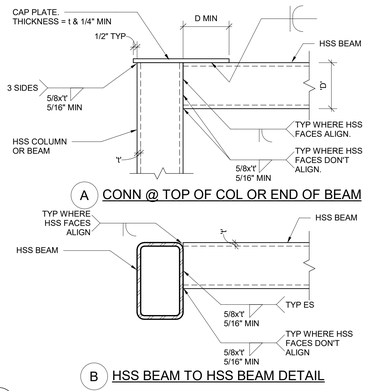
1 BOLTED BEAM CONNECTION SCHEDULE
NTS



LOCATION	PL SIZE	WELD SIZE 'W'	# OF PL's
W12 & SMALLER	1/4"	1/8"	(1) SIDED
W18 THRU W14	3/8"	3/16"	(2) SIDED
W36 THRU W21	1/2"	1/4"	(2) SIDED
STAIR STRINGER CONNECTIONS	3/8"	3/16"	(2) SIDED

NOTES:
1. USE THIS DETAIL WHERE PL's OR STIFFENERS ARE SHOWN BUT NOT DETAILED.
2. WELD TO BE MAXIMUM OF A.W.S. MINIMUM & SCHEDULE SIZE.
3. COORDINATE LOCATIONS OF PL's W/ ARCH DWGS

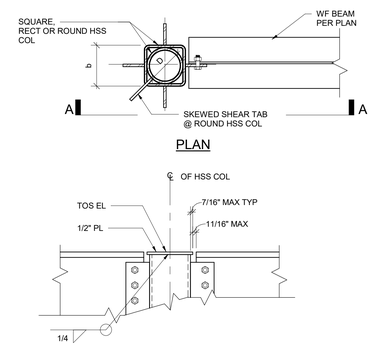
14 STIFFENER PLATES
1" = 1'-0"



10 HSS TO HSS WELDED CONNECTION DETAIL
1 1/2" = 1'-0"

BEAM TO HSS COLUMN CONNECTION SCHEDULE

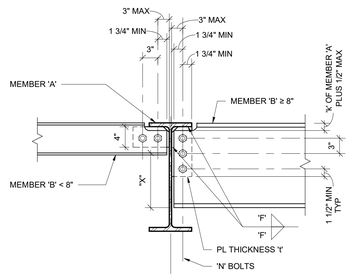
BEAM	SHEAR PL ('t')	FASTENERS	WELD SIZE		MINIMUM MEMBER THICKNESS (in)	
SECTION	ASTM A36	A325-X UON ('N')	('F')		RECT	ROUND
W8, W10	3/8"	(2) 7/8"Ø	5/16"		5/16"	0.375"
C15, W12, W14	3/8"	(3) 7/8"Ø	5/16"		5/16"	0.375"
W16	3/8"	(4) 7/8"Ø	5/16"		5/16"	0.375"
W18	3/8"	(5) 7/8"Ø	5/16"		5/16"	0.375"
W21	3/8"	(6) 7/8"Ø	5/16"		5/16"	0.375"



SECTION A-A

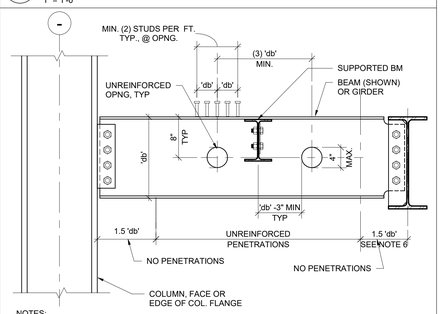
NOTE:
MAX DIM 'b' = 10" FOR RECT SECTION.
MAX DIM 'D' = 28" FOR ROUND SECTION.

7 BEAM TO HSS COL CONN
1" = 1'-0"



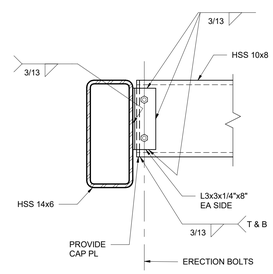
NOTES:
1. DETAIL APPLIES TO TWO SIDED CONNECTIONS AS SHOWN, IF BEAM FRAMES ONE SIDE ONLY OR X > 4", USE FULL DEPTH BEAM TO BEAM CONNECTION DETAIL.
2. FOR WELD 'F', NUMBER OF BOLTS 'N', AND PLATE THICKNESS 't', SEE BOLTED BEAM CONNECTION SCHEDULE.

2 BM TO BM CONN MEMBER A GREATER THAN MEMBER B
1" = 1'-0"

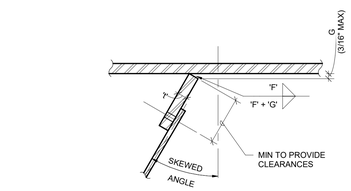


NOTES:
1. COORDINATE BEAM PENETRATION LOCATIONS WITH OTHER DISCIPLINES.
2. SUBMIT BEAM PENETRATIONS NOT SPECIFICALLY LOCATED ON THE STRUCTURAL DRAWINGS FOR APPROVAL.
3. BEAM PENETRATIONS ARE NOT ALLOWED IN SLRS MEMBERS ON GRID, BEAMS LESS THAN 16" IN DEPTH, AND BEAMS SPECIFICALLY IDENTIFIED IN PLAN.
4. MAX. NUMBER OF PENETRATIONS PER BEAM IS 3.
5. WHERE DENOTED ON PLAN WITH 'P' (i.e. W16 x 31P), THE PENETRATION DIAMETER MAY BE INCREASED TO 6" MAX IN THE MIDDLE 1/3 OF BEAM SPAN
6. DIMENSIONS APPLY FOR THE BEAM TO BEAM CONNECTIONS INCL. 11/-
7. NO PENETRATIONS PERMITTED IN BEAMS SUPPORTING MECH. EQUIPMENT OR PENTHOUSE POSTS.

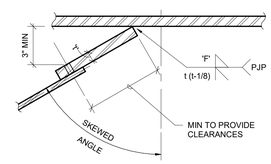
15 STEEL BEAM PENETRATION DETAIL
1" = 1'-0"



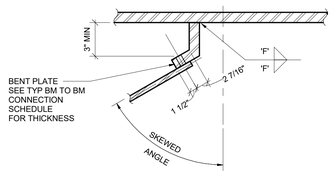
11 SECTION AT HSS 16 BEAM TO BEAM
1 1/2" = 1'-0"



SKEWED ANGLE < 30°



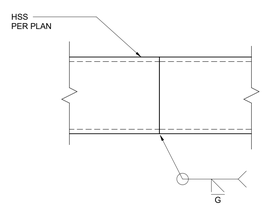
60° ≥ SKEWED ANGLE ≥ 30°



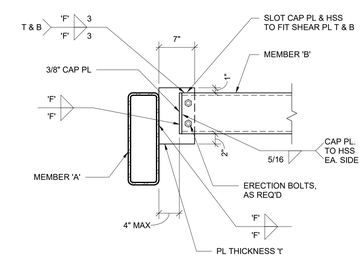
SKEWED ANGLE > 60°

NOTES:
1. SEE TYPICAL BEAM TO BEAM CONNECTIONS FOR INFO NOT SHOWN.

4 SKEWED BEAM TO BEAM CONNECTION
NTS



12 EXPOSED HSS SPLICE
1 1/2" = 1'-0"



NOTES:
1. SIMILAR CONDITIONS APPLY FOR BEAMS ON BOTH SIDES OF MEMBER 'A'.
2. FOR WELD SIZE 'F', & PL THICKNESS 't' SEE BOLTED BEAM CONNECTION SCHEDULE

8 HSS TO HSS BM CONNECTION
1" = 1'-0"

DSA APPROVAL

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratclifarch.com

Degenkolb
DEGENKOLB ENGINEERS
601 12th Street, Suite 400
Oakland, CA 94607
510.272.9040 PHONE
www.degenkolb.com
DE Job Number: C0498027.00

REGISTERED PROFESSIONAL ENGINEER
HOLLY J. BLECKMAN
No. S 4107
Exp. 03-31-2023
STRUCTURAL
CALIFORNIA

ISSUE SCHEDULE	NO.	DATE
Bid Addendum 2	B	07/25/22

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVIA STREET
BERKELEY, CA. 94704

BCC WEST

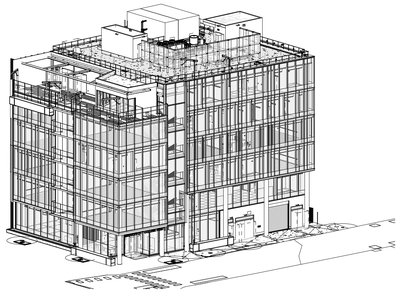
SHEET TITLE:
TYPICAL STEEL DETAILS

SCALE: As indicated
PROJECT NUMBER: 21415

SHEET NUMBER: S501

07/18/2022 DSA SUBMITTAL & BID SET

7/22/2022 1:52:40 PM



3 BUILDING ISO

SPRINKLER SCHEDULE - FULL PROJECT

SIZE	MANUF.	MODEL	TEMP.	RESP.	TYPE	K-FAC.	SIN	COUNT
1/2"	TYCO	TY-FRB	155 °F	Quick		5.6	TY313	4
1/2"	TYCO	RFII	155 °F	Quick	CONC HSW	5.6	TY3521	4
1/2"	TYCO	RFII	155 °F	Quick	CONC SSP	5.6	TY3531	24
1/2"	TYCO	CWS	155 °F	Quick	CONC WS	5.6	TY3498	2
3/4"	TYCO	EC-8	200 °F	Quick	ECP	8.0	TY5237	4
1/2"	TYCO	TY-FRB	200 °F	Quick	HSW	5.6	TY3331	4
1/2"	TYCO	RFII	155 °F	Quick	HSW	5.6	TY3521	2
1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	437
1/2"	TYCO	RFII	155 °F	Quick	SSP	5.6	TY3531	6
1/2"	TYCO	TY-FRB	155 °F	Quick	SSU	5.6	TY313	68
1/2"	TYCO	TY-FRB	155 °F	Quick	SSU	5.6	TY323	1
1/2"	TYCO	WS	200 °F	Quick	VSW WS	5.6	TY3488	7
1/2"	TYCO	CWS	155 °F	Quick	VSW WS	5.6	TY3498	1
TOTAL THIS PROJECT: 564								564

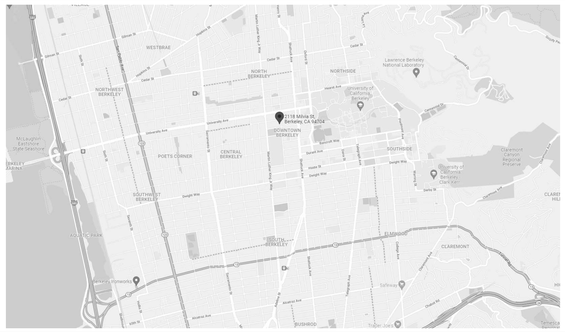
B

PROJECT INFORMATION

CONSTRUCTION TYPE:	**1B - FULLY SPRINKLERED**
OCCUPANCY CLASSIFICATION:	**A2 & B**
NUMBER OF STORIES:	**6**
BUILDING AREA:	**59604 ft²**
FIRE CODE CYCLE:	**CFC 2019**
NFPA CODES:	**NFPA 13 2016, NFPA 14 2016, NFPA 20 2019**

SHEET INDEX

VICINITY MAP



SCOPE OF WORK

1. NEW NFPA 13 AUTOMATIC WET FIRE SPRINKLER SYSTEM - ### NEW SPRINKLERS FOR NEW HIGHER EDUCATION BUILDING
2. NEW NFPA 14 CLASS 1 MANUAL WET STANDPIPE SYSTEM INCLUDING COMBINATION STANDPIPE - 13 HOSE VALVES
3. NEW NFPA 20 VERTICAL CENTRIFUGAL FIRE PUMP SYSTEM INCLUDING JOCKEY PUMP, CONTROLLERS, AND TEST ASSEMBLIES.

STANDPIPE SYSTEM NOTES

1. FLOOR OF HIGHEST OCCUPIED LEVEL IS GREATER THAN 30'-0" HIGHER THAN LEVEL OF FIRE DEPT. ACCESS. STANDPIPE SYSTEMS REQUIRED PER CFC § 905.3.1
2. STANDPIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH CFC 2019 § 905 AND NFPA 14 AS AMENDED IN CHAPTER 80 OF THE CFC.
3. CLASS 1 STANDPIPE SYSTEMS SHALL BE INSTALLED THROUGHOUT AT EACH FLOOR WHERE THE FLOOR LEVEL OF THE HIGHEST STORY IS LOCATED MORE THAN 30 FEET ABOVE THE LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS, AND THE BUILDING IS FULLY SPRINKLERED THROUGHOUT. CFC §905.3.1
4. STANDPIPE IS TO BE MANUAL WET IN ACCORDANCE WITH NFPA 14 § 5.4.1.1
5. WHERE BUILDINGS ARE FULLY SPRINKLERED STANDPIPE LATERALS AND RISERS ARE NOT REQUIRED TO BE ENCLOSED WITHIN FIRE RESISTANCE RATED CONSTRUCTION CFC § 905.4.1
6. WHERE TWO OR MORE STANDPIPES ARE INSTALLED IN THE SAME BUILDING OR SECTION OF BUILDING, THEY SHALL BE INTERCONNECTED. CFC §905.4.2, NFPA 14 § 7.5.1
7. WHERE THE BUILDING IS PROTECTED THROUGHOUT BY AN APPROVED AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH NFPA 13 THE MINIMUM COMBINED STANDPIPE SIZE SHALL BE 4 IN. (100 MM) FOR SYSTEMS HYDRAULICALLY DESIGNED NFPA 14 § 7.6.3
8. HOSE CONNECTIONS SHALL BE PROVIDED AT EACH MAIN FLOOR LANDING OF REQUIRED EXIT STAIRS NFPA 14 § 7.3.2.1
9. HOSE CONNECTIONS SHALL BE PROVIDED ON EACH SIDE OF THE WALL ADJACENT TO THE EXIT OPENINGS OF HORIZONTAL EXITS EXCEPT WHERE ALL FLOOR AREAS ARE REACHABLE FROM AN EXIT STAIRWAY HOSE CONNECTION ON THE SAME SIDE OF A HORIZONTAL EXIT WITHIN 200 FT OF TRAVEL DISTANCE WHERE BUILDINGS ARE FULLY SPRINKLERED. NFPA 14 § 7.3.2.2
10. HOSE CONNECTIONS SHALL BE PROVIDED AT THE HIGHEST LANDING OF STAIRWAYS WITH STAIRWAY ACCESS TO A ROOF. NFPA 14 § 7.3.2.7
11. IN STAIRWAYS THAT DO NOT ACCESS THE ROOF, A HOSE CONNECTION SHALL BE PROVIDED ON THE ROOF. NFPA 14 § 7.3.2.9
12. MANUAL STANDPIPE SYSTEMS SHALL BE DESIGNED TO PROVIDE 100 PSI (6.9 BAR) AT THE OUTLET OF THE HYDRAULICALLY MOST REMOTE 2 1/2" HOSE CONNECTION VALVE WITH THE CALCULATIONS TERMINATING AT THE FIRE DEPARTMENT CONNECTION. NFPA 14 § 7.8.1.2
13. VALVES SHALL BE PROVIDED FOR ALL STANDPIPES TO ALLOW ISOLATION OF A STANDPIPE WITHOUT INTERRUPTING THE SUPPLY TO OTHER STANDPIPES PR NFPA 14 § 6.3.3
14. HOSE CONNECTIONS TO BE LOCATED BETWEEN 3'-0" AND 5'-0" PER NFPA 14 § 7.3.1.1
15. STANDPIPE DEMAND IS CALCULATED AT 750 GPM TO BE SUPPLIED THROUGH FDC CONNECTION.

GENERAL NOTES

1. THE SPRINKLER SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE 2019 CALIFORNIA FIRE CODE (CFC), NFPA 13 (2016) AS ADOPTED BY THE CFC AND THE DIVISION OF THE STATE ARCHITECT.
2. NEW SYSTEMS SHALL BE HYDROSTATICALLY TESTED AT A MINIMUM OF 200 psi FOR TWO HOURS.
3. ALL HANGING/RESTRAINING MATERIAL AND METHODS ARE PER NFPA.
4. NO HIGH PILED STORAGE OR STORAGE OVER 8'-0" AFF.
5. ALL SPRINKLER SYSTEM MATERIALS SHALL BE U.L. LISTED, FM APPROVED, OR NFPA APPROVED.
6. BUILDING CONSTRUCTION IS NONCOMBUSTIBLE UNOBSTRUCTED, POST TENSION CONCRETE AND CAST IN PLACE CONCRETE BEAMS.
7. SPRINKLER DEFLECTORS TO BE 1"-6" FROM THE BOTTOM OF BEAM AND NO MORE THAN 12" FROM THE BOTTOM OF STRUCTURE.
8. BRANCH LINES HUNG WITH <6" ALL THREAD ROD. NO BRANCH LINE RESTRAINT REQUIRED PER NFPA 13.

DSA NOTES

1. NFPA 13 § 10.10.2.1, UNDERGROUND MAINS AND LEAD-IN CONNECTIONS TO SYSTEM RISER SHALL BE COMPLETELY FLUSHED BEFORE CONNECTION IS MADE TO OVERHEAD SPRINKLER PIPING SYSTEM.
2. NFPA 13 § 9.3.4.2, CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDED THROUGH WALLS, FLOORS, PLATFORMS, AND FOUNDATIONS, INCLUDING DRAINS SUCH THAT THE DIAMETER OF THE HOLES IS 2 INCHES LARGER THAN THE PIPE FOR 1 INCH TO 31/2" NOMINAL AND 4 INCHES LARGER THAN THE PIPE FOR PIPE 4 INCHES NOMINAL AND LARGER.
3. NFPA 13 § 8.15.1.1, ALL CONCEALED SPACES ENCLOSED WHOLLY OR PARTLY BY EXPOSED COMBUSTIBLE CONSTRUCTION SHALL BE PROTECTED BY SPRINKLERS UNLESS EXEMPTED BY SEC. 8.15.1.2.
4. NFPA 13 § 25.2.1.1, ALL INTERIOR PIPING AND APPURTENANCES SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE HYDROSTATICALLY TESTED AT 200 PSI AND SHALL MAINTAIN THAT PRESSURE WITHOUT LOSS FOR 2 HOURS. LOCAL FIRE DEPARTMENT SHALL BE NOTIFIED OF DATE AND TESTING SO THAT THEY MAY OBSERVE TESTING.
5. NFPA 13 § 6.2.9, PROVIDE SPARE SPRINKLER HEAD CABINET, SPRINKLER WRENCH, AND NO FEWER THAN A TOTAL OF 6 SPARE SPRINKLER HEADS MATCHING THE TYPES AND TEMPERATURE RATINGS IN EACH PROTECTED BUILDING FOR SYSTEMS LESS THAN 300 SPRINKLERS AND 12 SPARE SPRINKLER HEADS FOR SYSTEMS 300 TO 1000 SPRINKLERS.
6. NFPA 13 §. 9.3.6, THE END SPRINKLERS ON ALL BRANCH LINES SHALL BE RESTRAINED AGAINST EXCESSIVE VERTICAL AND LATERAL MOVEMENT BY USE OF APPROVED MEANS OF BRANCH LINE RESTRAINT.
7. CBC § 903.4.1, MAIN FIRE ALARM PANEL VALVE MONITORING AND WATER FLOW ALARM AND TROUBLE SIGNALS SHALL BE DISTINCTLY DIFFERENT AND SHALL BE AUTOMATICALLY TRANSMITTED TO AN APPROVED CENTRAL STATION MONITORING COMPANY.
8. NFPA 13 § 6.9.3.1, FLOW SWITCH SHALL BE CONNECTED TO A 10 INCH OUTSIDE ALARM BELL AT EACH RISER. APPROVED IDENTIFICATION SIGN SHALL BE PROVIDED FOR OUTSIDE ALARM BELL "SPRINKLER FIRE ALARM-WHEN BELL RINGS CALL 911/FIRE DEPARTMENT."
9. NFPA 13 § A.25.5, HYDRAULIC CALCULATIONS DESIGN DATA PLACARD SHALL BE ATTACHED TO RISER.
10. NFPA 13 § 25.1, SPRINKLER CONTRACTOR SHALL COMPLETE AND SIGN CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR THE OVERHEAD SPRINKLER SYSTEM USING FORM IN FIGURE 25.1 THIS FORM SHALL BE GIVEN TO THE INSPECTOR OF RECORD WHO WILL TURN-IN FOR DSA RECORDS.
11. NFPA 13 § 25.2.3.4, THE MAIN DRAIN VALVE SHALL BE OPENED AND REMAIN OPEN UNTIL THE SYSTEM PRESSURE STABILIZES. THE STATIC AND RESIDUAL PRESSURES SHALL BE RECORDED ON THE CONTRACTOR'S TEST CERTIFICATE.
12. NFPA 13 § 25.6, A "GENERAL INFORMATION SIGN" SHALL BE ATTACHED TO EACH SYSTEM CONTROL RISER. SIGN SHALL BE PERMANENTLY MARKED, WEATHER-PROOF METAL OR RIGID PLASTIC SECURED WITH CORROSION RESISTANT WIRE, CHAIN, OR OTHER ACCEPTABLE MEANS.

BASIS OF OVERHEAD SYSTEM DESIGN

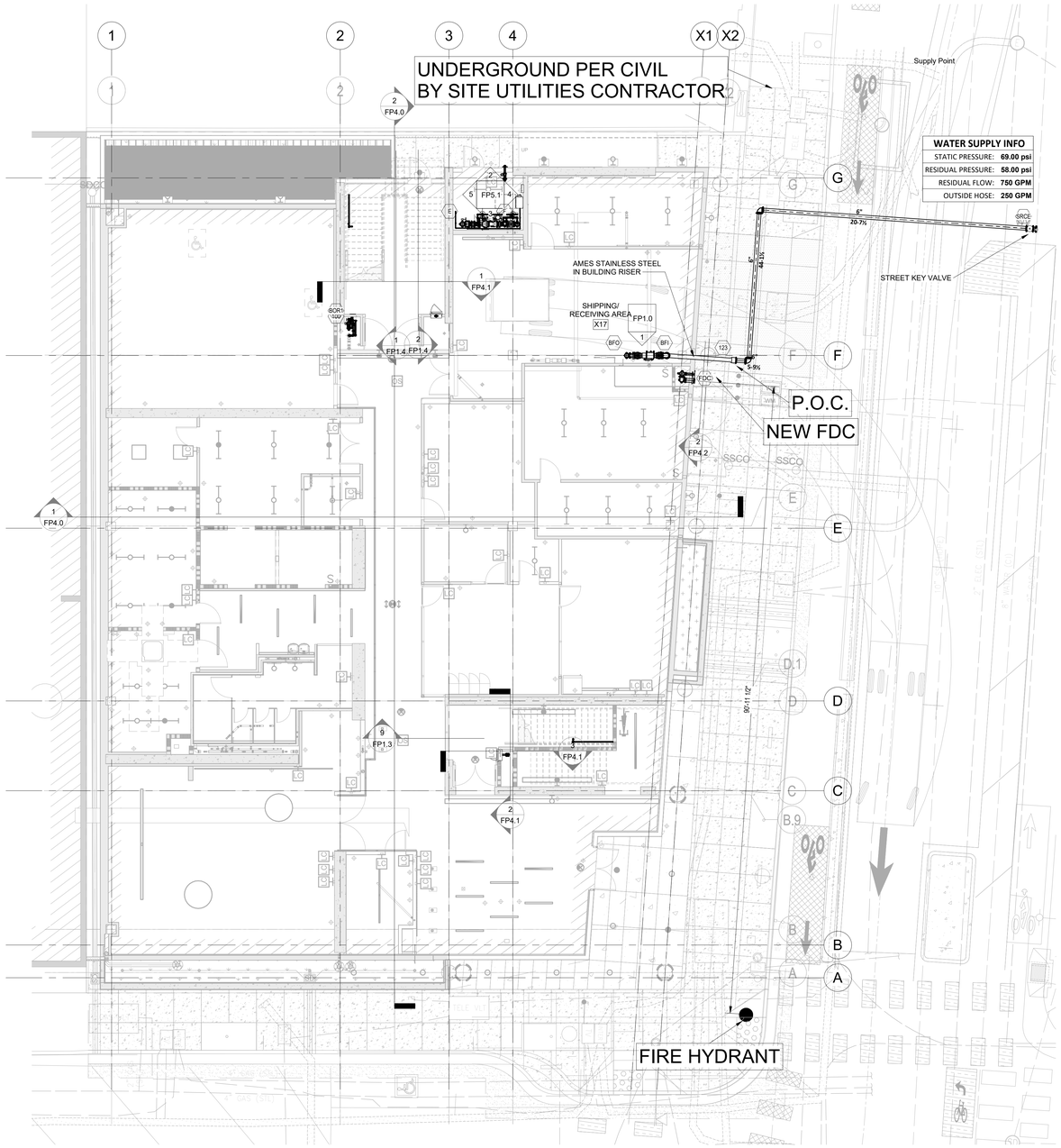
1. BUILDING IS NON-COMBUSTIBLE UNOBSTRUCTED CONSTRUCTION. CAST IN PLACE CONCRETE COLUMNS AND SHEAR WALLS WITH POST TENTION SLAB. 12" MAX DEFLECTOR DISTANCE TYP.
2. SYSTEM IS DESIGNED FOR LIGHT HAZARD FOR CLASSROOMS AND COMMON SPACES 0.1 GPM/SQ FT OVER THE MOST REMOTE 1500 SQ. FT. WITH MISCELANEOUS ORDINARY HAZARD AREAS. (ELECTRICAL/MECHANICAL SPACES AND LOADING DOCK)
3. QUICK RESPONSE SPRINKLERS TO BE USED THROUGHOUT.
4. NEW SYSTEM PIPING 3"-6" TO BE SCH.10 WITH GROOVED FITTINGS AND WELDED OUTLETS.
5. NEW SYSTEM PIPING 1"-2 1/2" TO BE SCH. 40 WITH DUCTILE IRON THREADED FITTINGS OR GROOVED FITTINGS AND COUPLINGS WITH WELDED OUTLETS.
6. ALL PENDENT SPRINKLERS TO BE ON 48" VICTAULIC FLEXIBLE SPRINKLER DROPS U.O.N. (32 EQUIV. FT. SCH 40)
7. BRANCH LINES ARE TYP. 6" FROM SLAB HUNG WITH ALL THREAD <6" NO BRANCH LINE RESTRAINT REQUIRED PER NFPA 13 § 9.3.6.5 U.O.N.
8. PER CFC CHAPTER 80, NO QUICK RESPONSE REDUCTION MAY BE USED TO REDUCE THE CALCULATION AREA FOR ORDINARY HAZARD SPACES.
9. SYSTEM CALCULATIONS BASED ON WATERFLOW DATA PROVIDED BY EBMUD.
10. SYSTEM PRESSURES EXCEED 100psi ALL ARMOVERS EXCEEDING 1'-0" IN LENGTH REQUIRE A HANGER. ALL HANGERS SHALL BE WITHIN 1'-0" FROM THE LAST PENDENT SPRINKLER OR DROP PER NFPA 13 § 9.2.3.5.2
11. HANGERS ON ARMOVERS THAT SERVE DROPS WITH FLEXIBLE SPRINKLER CONNECTIONS SHALL NOT REQUIRE TO BE ARRANGED FOR VERTICAL RESTRAINT PER NFPA 13 § 9.2.3.5.2.2

PIPING PLAN LEGEND

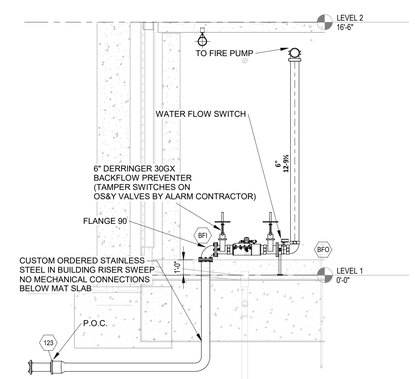
- NEW PIPING
- EXISTING PIPING
- DEMO PIPING
- FLEX SPRINKLER DROP
- FULL HEIGHT WALL
- 1 HR WALL
- 2 HR WALL
- CEILING HEIGHT WALL
- OVERHEAD SOFFIT WALL
- 15' 10" AFF — PIPE ELEVATION AFF
- -6" BTS — PIPE ELEVATION BTS
- 1'-0" — CEILING ELEVATION
- GROOVED COUPLING
- GROOVED FITTINGS
- GROOVED CAP
- PLUGGED OUTLET
- MT — MECHANICAL TEE
- NFPA 13 AIR RELIEF
- SYSTEM RISER / STANDPIPE
- HANGER TIC
- LINE RESTRAINT
- A1 — BRACING SYMBOL
- RISER BRACE
- TOR — HYDRAULIC CALC. NODE

ABBREVIATION LEGEND

AFF	AFTER FINISHED FLOOR	UON	UNLESS OTHERWISE NOTED
ATR	ALL THREAD ROD	E	EXISTING
BTS	BELOW TOP OF STRUCTURE	N	NEW
BB	C.L. PIPE BELOW BEAM	R	RELOCATED
BLR	BRANCH LINE RESTRAINT	CL	CENTER LINE
BOR	BOTTOM OF RISER	UP	PIPE UP
FDC	FIRE DEPT. CONNECTION INLET	DN	PIPE DOWN
FHV	FIRE HOSE VALVE	RN	RISER NIPPLE
GOE	GROOVE ONE END	GR	GROOVED
SCH	PIPE SCHEDULE	FH	FIRE HYDRANT
TOE	THREAD ONE END	OH	OVERHEAD
TOR	TOP OF RISER	RC	REDUCING COUPLING
TxG	THREAD BY GROOVE	UG	UNDERGROUND



2 SITE PLAN
1/8" = 1'-0"



1 BACKFLOW PREVENTER DETAIL
1/4" = 1'-0"

OSHPD/DSA STAMP (IF APPLIES):

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. MASON No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ECO FIRE SPRINKLERS, INC.
P.O. Box 327
Copperopolis, CA 95228
CA C16 Lic. 1004513
209.785.5522
EcoFireSprinklers.com

FIRE SPRINKLER CONTRACTOR ECO FIRE SPRINKLERS, INC. C16 LIC NO 1004513

ISSUE SCHEDULE	NO.	DATE
DSA SUBMITTAL & BID SET		7/18/2022

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVA ST.
BERKELEY, CA 94704

BCC WEST

SHEET TITLE:

COVER SHEET
GENERAL NOTES

SCALE: As indicated
PROJECT NUMBER: C211554

SHEET NUMBER: FP1.0

DSA SUBMITTAL & BID SET 07/18/2022

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FIRE PROTECTION SYSTEM DEMAND:	
REMOTE AREA:	11
OCCUPANCY CLASS:	LIGHT HAZARD
DENSITY:	0.1 Gpm/SqFt
AREA OF APPLICATION:	1533 SqFt
# OF SPRINKLERS IN CALC:	15
INSIDE HOSE STREAMS:	0 GPM
OUTSIDE HOSE STREAMS:	250 GPM
TOTAL WATER REQUIRED (INCLUDING HOSE):	688.007 GPM
@ REQUIRED SYSTEM PRESSURE:	25.1884 Psi

SPRINKLER LEGEND

- 1/2" QR CONCEALED SSP
- 1/2" QR CONCEALED WINDOW SPRINKLER
- 1/2" QR RECESSED SSP
- 1/2" QR SSP ON BRANCH PIPING/BELOW DUCT
- 3/4" QR ECP ON BRANCH PIPING
- 1/2" QR WINDOW SPRINKLER
- 1/2" QR STANDARD SPRAY RECESSED HSW
- 1/2" QR STANDARD SPRAY CONCEALED HSW
- 1/2" QR SSU ON BRANCH LINE/ARMOVER

SPRINKLER SCHEDULE L1

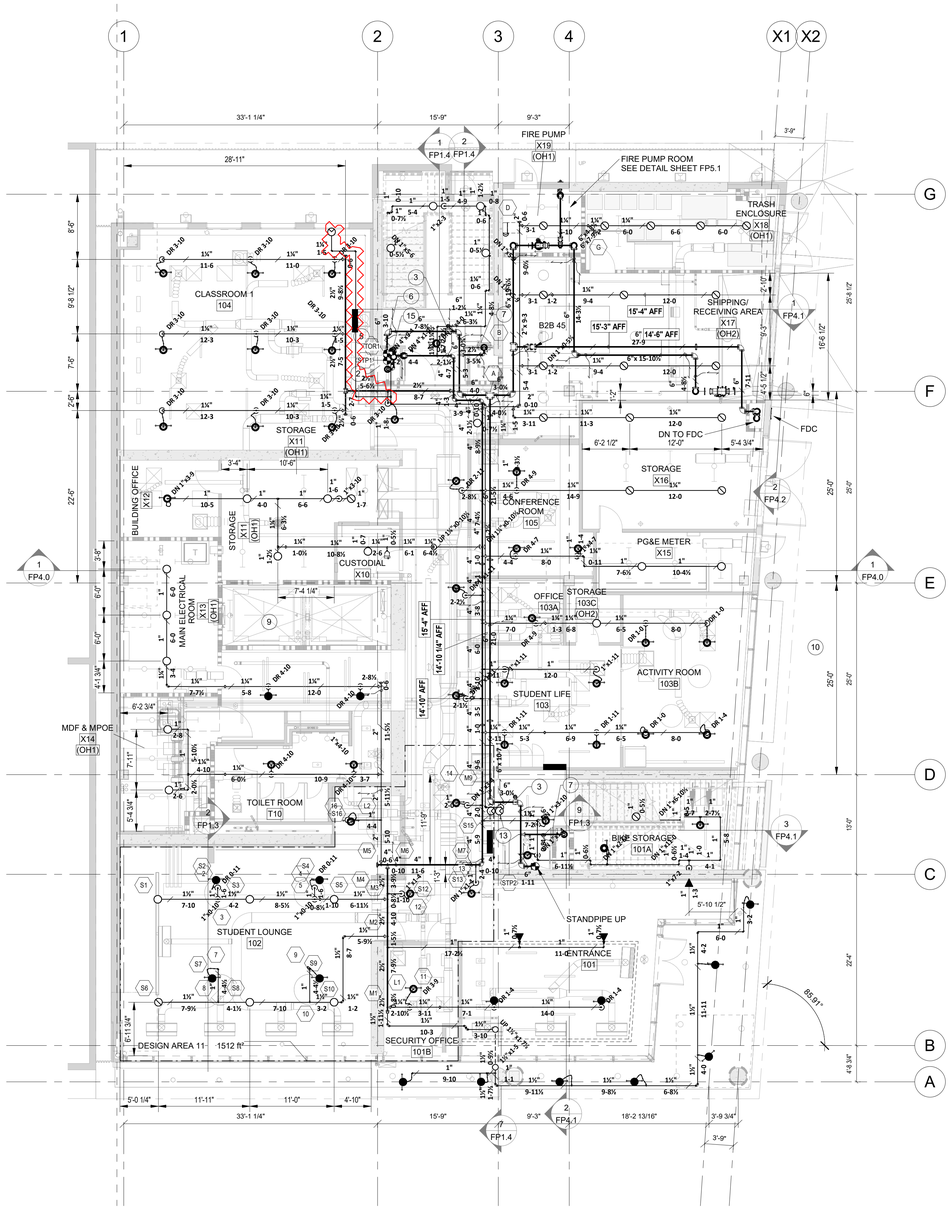
TYPE	SIZE	MANUF.	MODEL	TEMP.	RESP.	TYPE	K-FAC.	SIN	ESCUTCHEON	COUNT
CONC. SSP	1/2"	TYCO	RFII	155 °F	Quick		5.6	TY3531	CONC. WHITE	15
CONC. WINDOW SPRINKLER	1/2"	TYCO	CWS	155 °F	Quick		5.6	TY3498	CONC. WHITE	3
CONCEALED SIDEWALL	1/2"	TYCO	RFII	155 °F	Quick	CONC HSW	5.6	TY3521	CONC. WHITE	3
RECESSED SSP	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	REC. WHITE	38
SSP ON BRANCH PIPING	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	N/A	19
SSU ON LINE	1/2"	TYCO	TY-FRB	155 °F	Quick		5.6	TY313	N/A	22
TOTAL THIS FLOOR: 100										

KEYNOTE LEGEND

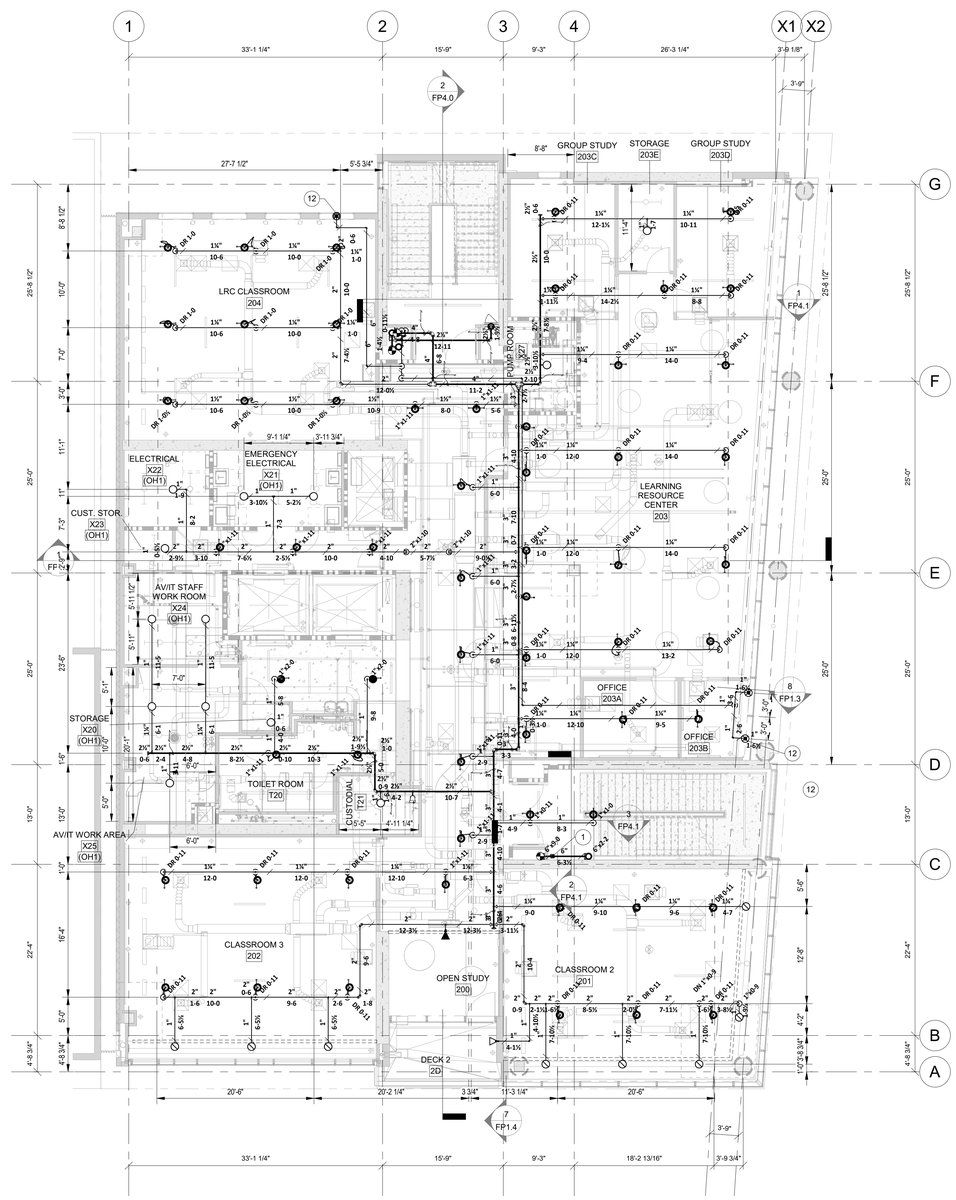
1 6" CLASS 1 MANUAL STANDPIPE W/ 2 1/2" HOSE VALVE
2 6" CLASS 1 MANUAL COMBINATION STANDPIPE W/ 2 1/2" HOSE VALVE AND AUTOMATIC SPRINKLER RISER CONNECTION
3 6" BUTTERFLY VALVE WITH ACCESS PANEL IN CEILING FOR STANDPIPE ISOLATION PER NFPA 14 § 6.3.2
5 4" AUTOMATIC SPRINKLER RISER SEE STANDPIPE PLAN FOR RISER DETAILS
6 24"x36" ACCESS PANEL FOR ASR ACCESS
7 RECESSED HOSE VALVE CABINET WITH 2 1/2" HOSE VALVE
9 NON COMBUSTIBLE ELVATOR SHAFT - NO HYDRAULIC FLUID. NO SPRINKLER PROTECTION IN PIT PER NFPA 13 § 8.15.5.2
12 ALTERNATE MEANS REQUEST B - WINDOW SPRINKLERS INSTALLED ON INTERIOR SIDE OF EXTERIOR GLAZING TO PROTECT STAIRWELL WITH GLAZING LESS THAN 180" FROM ADJACENT GLAZING.
13 ALTERNATE MEANS REQUEST C - WINDOW SPRINKLERS BOTH SIDES OF INTERIOR GLAZING IN STAIR-SHAFT WALL.
15 AUTOMATIC RISER FOR WINDOW SPRINKLER HEADS - PER DSA COMMENT ON AMMR. SEE COMBINATION STANDPIPE PLAN FOR DETAILS.

SPRINKLER SCHEDULE L2

TYPE	SIZE	MANUF.	MODEL	TEMP.	RESP.	TYPE	K-FAC.	SIN	ESCUTCHEON	COUNT
CONC. SSP	1/2"	TYCO	RFII	155 °F	Quick	SSP	5.6	TY3531	CONC. WHITE	2
CONCEALED SIDEWALL	1/2"	TYCO	RFII	155 °F	Quick	HSW	5.6	TY3521	CONC. WHITE	1
RECESSED HSW	1/2"	TYCO	TY-FRB	200 °F	Quick	HSW	5.6	TY3331	REC. WHITE	1
RECESSED SSP	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	REC. WHITE	57
SSP ON BRANCH PIPING	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	N/A	8
SSU ON LINE	1/2"	TYCO	TY-FRB	155 °F	Quick	SSU	5.6	TY313	N/A	13
VSW Window Sprinkler	1/2"	TYCO	WS	200 °F	Quick	VSW WS	5.6	TY3488	N/A	2
TOTAL THIS FLOOR: 84										



1 FIRST FLOOR PIPING PLAN
1/8" = 1'-0"



2 SECOND FLOOR PIPING PLAN
1/8" = 1'-0"

OSHPD/DSA STAMP (IF APPLIES):

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. MASON No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

ECO FIRE SPRINKLERS, INC.
P.O. Box 327
Copperopolis, CA 95228
CA C16 Lic. 1004513
209.785.5522
EcoFireSprinklers.com

FIRE SPRINKLER CONTRACTOR ECO FIRE SPRINKLERS, INC. C16 LIC NO 1004513

ISSUE SCHEDULE	NO.	DATE
DSA SUBMITTAL & BID SET		7/18/2022

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVA ST.
BERKELEY, CA 94704

BCC WEST

SHEET TITLE:

FIRST FLOOR AND SECOND FLOOR PIPING PLAN

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: C211554

SHEET NUMBER: FP2.1

07/18/2022 DSA SUBMITTAL & BID SET

7/25/2022 12:32:06 AM

SPRINKLER LEGEND

- 1/2" QR CONCEALED SSP
- 1/2" QR CONCEALED WINDOW SPRINKLER
- 1/2" QR RECESSED SSP
- 1/2" QR SSP ON BRANCH PIPING/BELOW DUCT
- 3/4" QR ECP ON BRANCH PIPING
- 1/2" QR WINDOW SPRINKLER
- 1/2" QR STANDARD SPRAY RECESSED HSW
- 1/2" QR STANDARD SPRAY CONCEALED HSW
- 1/2" QR SSU ON BRANCH LINE/ARMOVER

SPRINKLER SCHEDULE L1

TYPE	SIZE	MANUF.	MODEL	TEMP.	RESP.	TYPE	K-FAC.	SIN	ESCUTCHEON	COUNT
CONC. SSP	1/2"	TYCO	RFII	155 °F	Quick		5.6	TY3531	CONC. WHITE	15
CONC. WINDOW SPRINKLER	1/2"	TYCO	CWS	155 °F	Quick		5.6	TY3498	CONC. WHITE	3
CONCEALED SIDEWALL	1/2"	TYCO	RFII	155 °F	Quick	CONC. HSW	5.6	TY3521	CONC. WHITE	3
RECESSED SSP	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	REC. WHITE	38
SSP ON BRANCH PIPING	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	N/A	19
SSU ON LINE	1/2"	TYCO	TY-FRB	155 °F	Quick		5.6	TY313	N/A	22
TOTAL THIS FLOOR: 100										

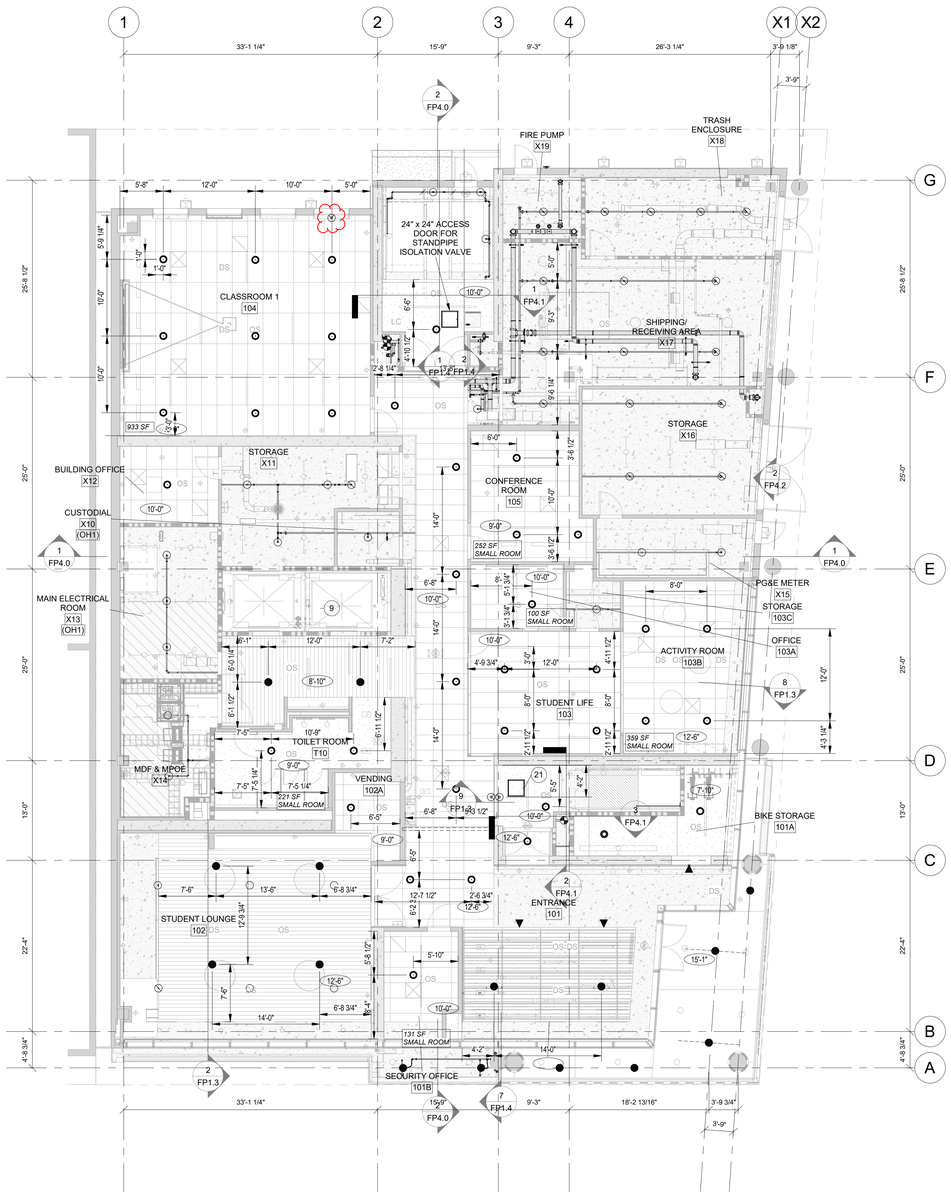
KEYNOTE LEGEND

9 NON COMBUSTIBLE ELVATOR SHAFT - NO HYDRAULIC FLUID. NO SPRINKLER PROTECTION IN PIT PER NFPA 13 § 8.15.5.2

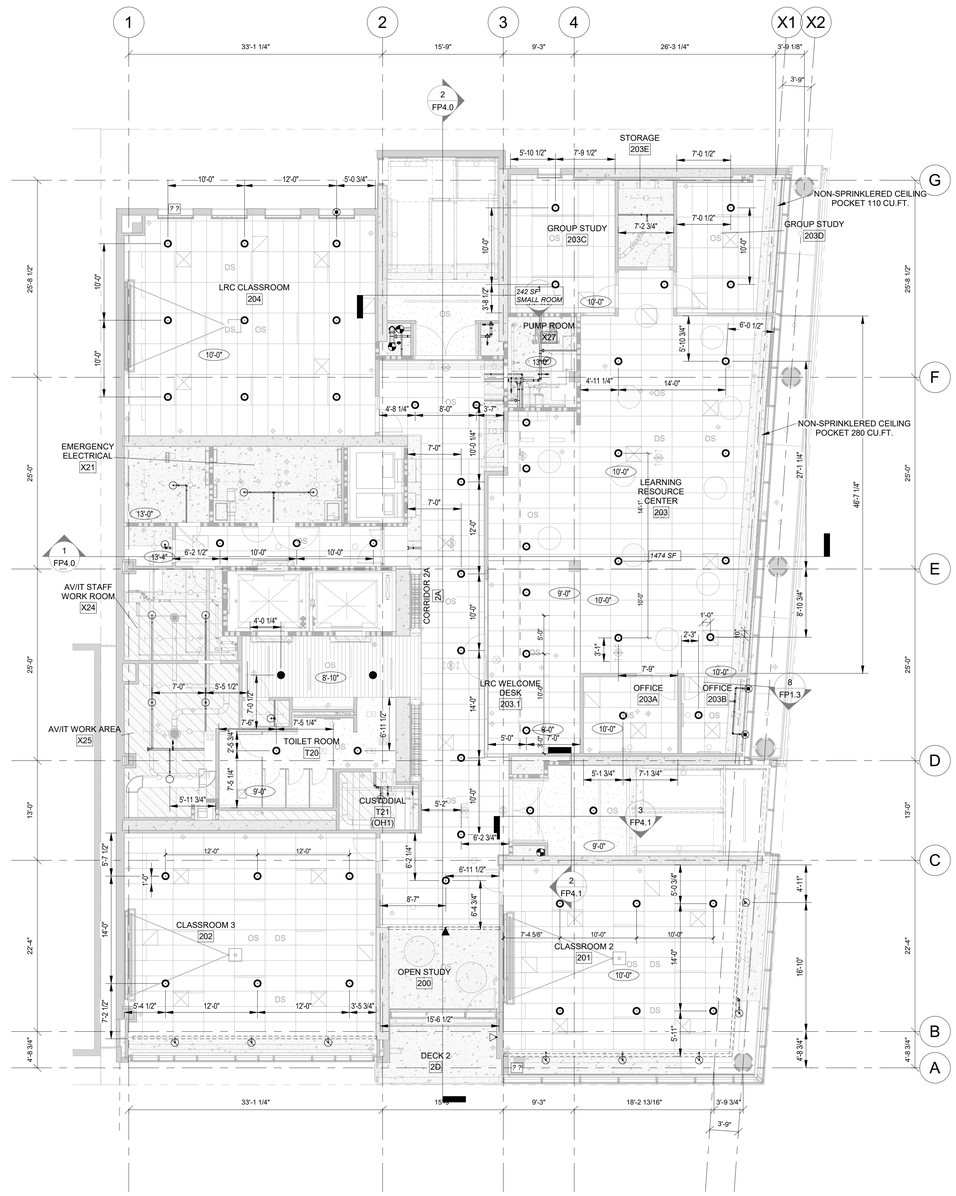
21 24"x24" ACCESS PANEL FOR STANDPIPE ISOLATION CONTROL VALVE

SPRINKLER SCHEDULE L2

TYPE	SIZE	MANUF.	MODEL	TEMP.	RESP.	TYPE	K-FAC.	SIN	ESCUTCHEON	COUNT
CONC. SSP	1/2"	TYCO	RFII	155 °F	Quick	SSP	5.6	TY3531	CONC. WHITE	2
CONCEALED SIDEWALL	1/2"	TYCO	RFII	155 °F	Quick	HSW	5.6	TY3521	CONC. WHITE	1
RECESSED HSW	1/2"	TYCO	TY-FRB	200 °F	Quick	HSW	5.6	TY3331	REC. WHITE	1
RECESSED SSP	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	REC. WHITE	57
SSP ON BRANCH PIPING	1/2"	TYCO	TY-FRB	155 °F	Quick	SSP	5.6	TY323	N/A	8
SSU ON LINE	1/2"	TYCO	TY-FRB	155 °F	Quick	SSU	5.6	TY313	N/A	13
VSW Window Sprinkler	1/2"	TYCO	WS	200 °F	Quick	VSW WS	5.6	TY3488	N/A	2
TOTAL THIS FLOOR: 84										



1 FIRST FLOOR RCP
1/8" = 1'-0"



2 SECOND FLOOR RCP
1/8" = 1'-0"

OSHPD/DSA STAMP (IF APPLIES):

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
www.ratcliffarch.com

LICENSED ARCHITECT MICHAEL D. MASON No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

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209.785.5522
EcoFireSprinklers.com

FIRE SPRINKLER CONTRACTOR ECO FIRE SPRINKLERS, INC. C16 LIC NO 1004513

ISSUE SCHEDULE	NO.	DATE
DSA SUBMITTAL & BID SET		7/18/2022

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVA ST.
BERKELEY, CA 94704

BCC WEST

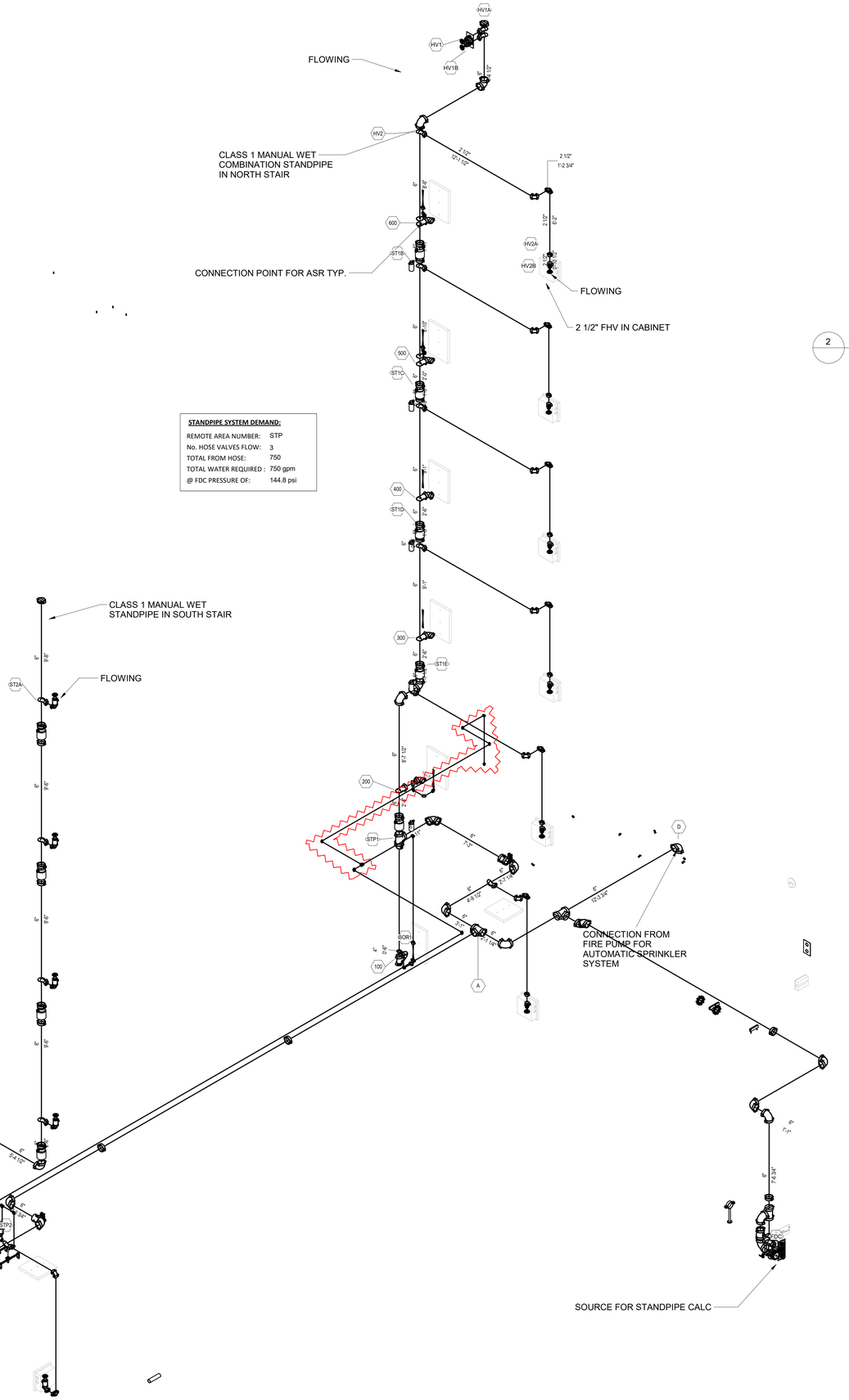
SHEET TITLE:

FIRST AND SECOND FLOOR REFLECTED CEILING PLAN

SCALE: 1/8" = 1'-0"
PROJECT NUMBER: C211554

SHEET NUMBER: FP3.1

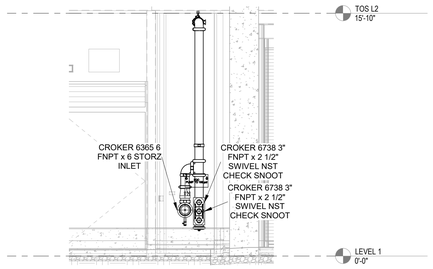
DSA SUBMITTAL & BID SET 07/18/2022



STANDPIPE SYSTEM DEMAND:

REMOTE AREA NUMBER:	STP
No. HOSE VALVES FLOW:	3
TOTAL FROM HOSE:	750
TOTAL WATER REQUIRED :	750 gpm
@ FDC PRESSURE OF:	144.8 psi

1 STANDPIPE ISO



2 FDC ELEVATION
1/4" = 1'-0"

OSHPD/DSA STAMP (IF APPLIES):

RATCLIFF
5856 Doyle Street
Emeryville, CA 94608
Tel 510 899 6400
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LICENSED ARCHITECT MICHAEL D. MASON No. C-25627 REN. 12-31-22 STATE OF CALIFORNIA

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EcoFireSprinklers.com

FIRE SPRINKLER CONTRACTOR ECO FIRE SPRINKLERS, INC. C16 LIC NO 1004513

ISSUE SCHEDULE	NO.	DATE
DSA SUBMITTAL & BID SET		7/18/2022

PERALTA COMMUNITY COLLEGE DISTRICT
BERKELEY CITY COLLEGE
2118 MILVA ST.
BERKELEY, CA 94704

BCC WEST

SHEET TITLE:

STANDPIPE ISO, FDC DETAILS

SCALE: 1/4" = 1'-0"
PROJECT NUMBER: C211554

SHEET NUMBER: FP4.2

DSA SUBMITTAL & BID SET 07/18/2022

7/25/2022 10:39:09 AM

PROJECT MANUAL

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 08 – OPENINGS

DIVISION 09 – FINISHES

DIVISION 10 – SPECIALTIES

DIVISION 11 – EQUIPMENT

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. Owner's Project Requirements (OPR) and Basis of Design Document (BOD) are included by reference for information only.

1.2 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning activities.
2. Commissioning meetings.
3. Commissioning reports.
4. Use of commissioning process test equipment, instrumentation, and tools.
5. Construction checklists, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
6. Commissioning tests and commissioning test demonstration.
7. Adjusting, verifying, and documenting identified systems and assemblies.

As applied to the commissioning requirements for building enclosure (BECx), mechanical (including building automation system), electrical, plumbing (MEPCx), metering systems, security systems, renewable energy and irrigation controls.

B. Commissioning is a systematic process of verifying that the building systems perform interactively according to the construction documents and the Owner's operational needs. The commissioning process shall encompass and coordinate the system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training. Commissioning during the construction and post-occupancy phases is intended to achieve the following specific objectives according to the contract documents:

1. Verify that the applicable equipment and systems are installed in accordance with the contact documents and according to the manufacturer's recommendations.
2. Verify and document proper integrated performance of equipment and systems.
3. Verify that Operations & Maintenance documentation is complete.
4. Verify that all components requiring servicing can be accessed, serviced and removed without disturbing nearby components including ducts, piping, cabling or wiring.
5. Verify that the Owner's operating personnel are adequately trained to enable them to operate, monitor, adjust, maintain, and repair building systems in an effective and energy-efficient manner.
6. Document the successful achievement of the commissioning objectives listed above.

C. Various sections of the project specifications require equipment startup, testing, and adjusting services. Requirements for startup, testing, and adjusting services specified in the technical sections of these specifications are intended to be provided in coordination with the commissioning services and are not intended to duplicate services. The DBE shall coordinate the work required by individual specification sections with the commissioning services requirements specified herein.

D. The commissioning process does not take away from or reduce the responsibility of the DBE to provide a finished and fully functioning product.

E. Related Requirements:

1. SECTION 01 11 00: SUMMARY OF WORK
2. SECTION 01 11 13: WORK COVERED BY CONSTRUCTION DOUCMENTS
3. SECTION 01 11 20: DESIGN SERVICES AND DELIVERABLES
4. SECTION 01 14 10: CONSTRUCTION MANAGEMENT PLAN
5. SECTION 01 33 50: SUBMITTALS
6. SECTION 01 35 00: CAL GREEN ENVIRONMENTAL REQUIREMENTS
7. SECTION 01 45 00: QUALITY CONTROL
8. SECTION 01 60 00: PRODUCT REQUIREMENTS
9. SECTION 01 70 00: EXECUTION AND CLOSEOUT REQUIREMENTS / DEMONSTRATION AND TRAINING
10. SECTION 01 73 00: EXECUTION
11. SECTION 01 77 00: CLEANING AND CLOSEOUT REQUIREMENTS
12. SECTION 01 81 00: BUILDING INFORMATION MODELLING (BIM) PERFORMANCE REQUIREMENTS
13. SECTION 01 81 13: SUSTAINABABLE DESIGN REQUIREMENTS – LEED V4.1®
14. SECTION 01 89 00: SITE CONSTRUCTION PERFORMANCE REQUIREMENTS
15. SECTION 03 30 00: CAST-IN-PLACE CONCRETE
16. DIVISION 07: COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT. ALSO REFER TO THE PROJECT CX PLAN FOR ADDITIONAL DETAILS FOR THE ENCLOSURE SYSTEMS BEING COMMISSIONED AND RELATED CHECKLISTS.
17. DIVISION 08: COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT. ALSO REFER TO THE PROJECT CX PLAN FOR ADDITIONAL DETAILS FOR THE ENCLOSURE SYSTEMS BEING COMMISSIONED AND RELATED CHECKLISTS.
18. DIVISION 22: PLUMBING – COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT.

19. DIVISION 23: HEATING VENTILATING AND AIR CONDITIONING – COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT.
20. DIVISION 25: CONTROLS FOR HVAC – COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT.
21. DIVISION 26: ELECTRICAL – COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT.
22. DIVISION 27: COMMUNICATIONS – COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT.
23. DIVISION 28: ELECTRONIC SAFETY AND SECURITY – COMMISSIONING REQUIREMENTS APPLY TO THE SYSTEM(S) SHOWN IN SECTION 3.9 COMMISSIONED SYSTEMS, OF THIS DOCUMENT.
24. SECTION 32 84 00: IRRIGATION

F. References

1. ASHRAE STANDARD 202-2018 COMMISSIONING PROCESS FOR BUILDING AND SYSTEMS.
2. ASHRAE GUIDELINE 0-2013 THE COMMISSIONING PROCESS.
3. ASHRAE GUIDELINE 1.1-2007, HVAC COMMISSIONING GUIDELINES.
4. ASHRAE GUIDELINE 1.4-2014, PROCEDURES FOR PREPARING FSM.
5. ASTM E2813-2018 STANDARD PRACTICE FOR BUILDING ENCLOSURE COMMISSIONING.
6. ASTM E2947-2016 STANDARD GUIDE FOR BUILDING ENCLOSURE COMMISSIONING.
7. NIBS GUIDELINE 3-2012 BUILDING ENCLOSURE.
8. CAL GREEN.
9. LEED™, NEW CONSTRUCTION REFERENCE GUIDE.

1.3 DEFINITIONS

A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.

B. Acceptance Phase: Phase of construction after startup and initial checkout when functional performance tests, O&M documentation review and training occurs.

C. Approval: Acceptance that a piece of equipment or system has been properly installed and is functioning in the tested modes according to the Contract Documents.

D. Architect/Engineer (A/E): The prime consultant (architect) and sub-consultants who comprise the design team. As it pertains to commissioning, the A/E is the design professional responsible for the design of the portion of the project being commissioned.

E. Basis of Design (BoD) document: A document that records concepts, calculations, decisions, and product selections used to meet the OPR and to satisfy applicable regulatory requirements, standards, and guidelines. The document includes both narrative descriptions and lists of individual items that support the design process.

F. Building Automation System (BAS): The central building control system and energy management system. Also referred to as a Controls System.

G. Building Management System (BMS): In general practice, this is just a different name for the BAS.

H. Building Envelope and Enclosure: The terms “building envelope and “building enclosure” as they refer collectively to all materials, components, systems, and assemblies intended to provide shelter and environmental separation between interior and exterior, or between two or more environmentally distinct interior spaces in a building or a structure.

I. Building Envelope Commissioning (BECx): The process that begins with the establishment of the OPR and endeavors to ensure that the exterior envelope and those elements intended to provide elemental separation within a building or structure meet or exceed the expectations of the Owner as defined in the OPR.

J. Building Envelope Commissioning (BECx) Construction Checklists: A form used by the DBE / subcontractor to verify that appropriate components are onsite, ready for installation, correctly installed, and functional.

K. Building Envelope Testing Matrix: A matrix table developed by the CxA outlining all project specific specified building envelope required testing. Identifying the required test (AAMA and or ASTM or other) to be performed including limits and responsibilities for performing and witnessing of the tests.

L. Construction-Operations Building Information Exchange (COBie): A performance specification that typically includes documentation from the Operations and Maintenance Data, in addition to other asset identification attributes.

M. Commissioning (Cx): - A quality-focused process for enhancing the delivery of a project. The process focuses upon verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated and maintained to meet the Owner’s Project Requirements.

N. Commissioning Activity Schedule: A commissioning schedule designed to provide team members with a descriptive overview of commissioning activities as they relate to parallel construction activities regardless of changes to the construction schedule. (See Exhibit B this specification and Cx Plan)

O. Commissioning Authority (CxA): An entity identified by the Owner who leads, plans, schedules, and coordinates the commissioning team to implement the Commissioning Process. This role

is also responsible for commissioning building enclosure systems. The CxA reports directly to the Owner without assuming oversight responsibilities.

P. Commissioning Coordinator (CxC): A person or entity employed by the DBE to manage, schedule and coordinate the commissioning process.

Q. Commissioning Plan (Cx Plan): A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the Commissioning Process. The Cx Plan, where applicable, may include appendices for the BECx Plan and MBCx Plans for one comprehensive commissioning plan document.

R. Construction Manager (CM): Owner's on-site representative in day-to-day activities, including supervision and management of construction activities.

S. Contract Documents: They include a wide range of documents that will vary from project to project and with the Owner's needs and regulations, laws, and countries, construction management process, subcontractor agreements or requirements, requirements and procedures for submittals, changes, and other construction requirements, timeline for completion, and other Construction Documents.

T. Contractor (C) or General Contractor (GC): The person or entity under contract with the Owner pursuant to the Construction Contract to serve as the General Contractor for the construction work. (this project is not using General contractor – rather DBE)

U. Control System: A component of environmental, HVAC, security and fire systems for reporting, monitoring and issuing of commands.

V. Computerized Maintenance Management System (CMMS): CMMS is a software toll used to schedule and record the operation and preventative maintenance schedule associated with equipment utilized in the facility.

W. DBE: Acronym for Design Build Entity. The person or entity under contract with the Owner pursuant to the Construction Contract to serve as the Design Building for the construction work.

X. Data Logging: Monitoring flows, currents, status, pressures, etc. of equipment using stand-alone data loggers separate from the control system.

Y. DDC: Acronym for Direct Digital Controls. This is the most typical controls platform for BAS' / BMS'.

Z. Deferred Functional Tests: Functional Tests that are performed later, after substantial completion, equipment, seasonal requirements, design, or other site conditions that disallow tests from being performed.

AA. Deficiency or Commissioning Issue: A condition identified by the Commissioning Agent or other member of the Commissioning Team that adversely affects the commissionability, operability, maintainability, or functionality of a system, equipment, or component. A condition that is in conflict with the Contract Documents and/or performance requirements of the installed systems and components.

BB. Factory Testing: Testing of equipment on-site or at the factory, by factory personnel with District's representative present.

CC. Facilities Manager (FM): The Owner representative responsible for the operation and maintenance of the physical facilities and grounds.

DD. Functional Performance Test (FPT): Test of the dynamic function and operation of equipment and systems using, simulations, manual (direct observation) and/or monitoring methods. Systems are tested under various modes. The systems are run through all the control system's sequences of operation and components are verified to be responding as intended per the specified sequence of operations. FPTs are performed after pre-functional checklists and startup is complete and are performed by the DBE / subcontractor and witnessed by the CxA.

EE. Installation Verification: Observations or inspections that confirm the system or component has been installed in accordance with the contract documents and to industry accepted best practices.

FF. Integrated System Testing: Integrated Systems Testing procedures entail testing of multiple integrated system's performance to verify proper functional interface between systems. Typical Integrated Systems Testing includes verifying that building systems respond properly to loss of utility, transfer to emergency power sources, re-transfer from emergency power source to normal utility source; interface between HVAC controls and Fire Alarm systems for equipment shutdown, interface between Fire Alarm system and elevator control systems for elevator recall and shutdown; interface between Fire Alarm System and Security Access Control Systems to control access to spaces during fire alarm conditions; and other similar tests as determined for each specific project.

GG. Issues Log: A formal and ongoing record of problems or concerns and their resolution that have been raised by members of the commissioning team during the course of the commissioning process. Maintained by the CxA.

HH. Monitoring: The recording of equipment operation parameters (flow, current, status, pressure, etc.) using data loggers or the trending capabilities of control systems.

II. Monitoring Based Commissioning (MBCx): A subset of commissioning that verifies the presence and adequate performance of the metering in a building, in addition to the process of performing monitoring algorithms on a building automation system for predictive maintenance and monitoring.

JJ. Owner's Project Requirements (OPR): A collection of documents that details the functional requirements of Project and expectations of how it will be used and operated. This document includes Project and design goals, measurable performance criteria, budgets, schedules, success criteria, and supporting information.

KK. Owner: Project Owner or designated representative.

LL. Owner-Contracted Tests: Tests paid for by the Owner outside the Contract and for which the CxA does not oversee. These tests will not be repeated during functional tests if properly documented.

MM. Overwritten Value: Writing over a sensor value in the control system to see the response of a system (e.g., changing the outside air temperature value from 50ºF to 75ºF to verify economizer operation). See also "Simulated Signal."

NN. Phased Commissioning: Commissioning that is completed in phases (by floors, for example) due to the size of the structure or other scheduling issues, in order minimize the total construction time.

OO. Pre-functional Checklists (PFC): Checklists prepared by the CxA, in conjunction with the Subs, and provided to the DBE / subcontractor to document the complete installation of equipment or systems. These checklists are essentially elementary component tests to verify proper installation of equipment and are primarily static inspections and procedures to prepare the equipment or system for initial operation (e.g., belt tension, oil levels OK, labels affixed, gages in place, sensors calibrated, amp readings, etc.) Pre-functional checklists are completed by the DBE / subcontractors prior to or along with the manufacturer's start-up procedure and checklist.

PP. Pre-Functional Test (PFT): An inspection or test that is done before functional testing. PFT's include installation verification and system and component start up tests.

QQ. Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment.

RR. Seasonal Performance Tests: Functional Tests that are deferred until the system(s) will experience conditions closer to their design conditions.

SS. Site Observation Visit: On-site inspections and observations made by the Commissioning Agent for the purpose of verifying component, equipment, and system installation, to observe DBE / subcontractor testing, equipment start-up procedures, or other purposes.

TT. Start-up: The initial starting or activating of dynamic equipment or the initial energization and programming of control systems.

UU. Systems, Subsystems, and Equipment: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, and equipment.

VV. Test, Adjust, Balance (TAB): A systematic process or service applied to heating, ventilating and air-conditioning (HVAC) systems and other environmental systems to achieve and document air and hydronic flow rates. The standards and procedures for providing these services are referred to as "Testing, Adjusting, and Balancing" and are described in the Procedural Standards for the Testing, Adjusting and Balancing of Environmental Systems, published by NEBB or AABC.

WW. Test Procedures: Written details developed by the CxA, and included in the FPTs, that details the expectations for tests conducted on components, equipment, assemblies, systems, and interfaces among systems.

XX. Thermal Scans: Thermographic pictures taken with an Infrared Thermographic Camera. Thermographic pictures show the relative temperatures of objects and surfaces and are used to identify leaks, thermal bridging, thermal intrusion, electrical overload conditions, moisture containment, and insulation failure.

YY. Trends / Trending: Recordings of control point value history or monitoring value history over time. Trends are automatically recorded by the building automation system or other electronic data gathering equipment. Trend data gathered over a period of time is often used to analyze and verify proper performance of equipment, systems, or sequence of operations.

ZZ. Training Plan: A written document that details the expectations, schedule and deliverables of commissioning process activities related to training of project operating and maintenance personnel, users and occupants.

AAA. Trending: The monitoring by a building management system or other electronic data gathering equipment and analyzing of the data gathered over a period of time to verify proper equipment or systems sequence of operations.

BBB. Warranty Phase Commissioning: Commissioning efforts executed after a project has been completed and accepted by the Owner. Warranty Phase Commissioning includes follow-up on verification of system performance, measurement and verification tasks and assistance in identifying warranty issues and enforcing warranty provisions of the construction contract.

CCC. Warranty Visit: A commissioning meeting and site review where all outstanding warranty issues and deferred testing is reviewed and discussed.

1.4 COMMISSIONING TEAM INTERACTION & PROCESS

A. A project team will be created to coordinate the commissioning effort. This team will coordinate and communicate with the rest of the project team, attend meetings, and solve problems. This team includes representatives from the DBE, subcontractors, and owner.

B. The DBE shall in addition to their representative also appoint a representative from each subcontractor involved in commissioned systems including mechanical, electrical, controls, test adjust balance, plumbing, building envelope, and security systems.

C. With these fundamental practices in mind, the commissioning process described herein has been developed to recognize that, in the execution of the Commissioning Process, the Commissioning Agent must develop effective methods to communicate with every member of the construction team involved in delivering commissioned systems while simultaneously respecting the exclusive contract authority of the Construction Project Manager (CM). Thus, the procedures outlined in this specification must be executed within the following limitations:

1. No communications (verbal or written) from the Commissioning Agent shall be deemed to constitute direction that modifies the terms of any contract between the Owner and the DBE.

2. Commissioning Issues identified by the Commissioning Agent will be delivered to the Construction Manager and copied to the designated Commissioning Representatives for the DBE and subcontractors on the Commissioning Team for information only in order to expedite the communication process. These issues must be understood as the professional opinion of the Commissioning Agent and as suggestions for resolution.

3. In the event that any Commissioning Issues and suggested resolutions are deemed by the Construction Manager to require either an official interpretation of the construction documents or require a modification of the contract documents, the Construction Manager will issue an official directive to this effect.

4. All parties to the Commissioning Process shall be individually responsible for alerting the Construction Manager of any issues that they deem to constitute a potential contract change prior to acting on these issues.

5. Authority for resolution or modification of design and construction issues rests solely with the Construction Manager, with appropriate technical guidance from the Architect/Engineer and/or Commissioning Agent.

1.5 OWNER'S RESPONSIBILITIES

A. Participate in resolution of issues that may occur as a result of the commissioning process.

B. Assign operation and maintenance personnel and schedule them to participate in commissioning team activities including, but not limited to, the following:

1. Coordination meetings.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Testing meetings.
4. Demonstration of operation of systems, subsystems, and equipment.
5. Provide feedback to Cx for the project warranty phase testing and review, as well as access to the site and controls system during the warranty test.

1.6 COMMISSIONING COORDINATION RESPONSIBILITIES

A. Design Build Entity (DBE) Responsibilities

1. Provide utility services required for the commissioning process.
2. DBE is responsible for construction means, methods, job safety, or management function related to commissioning on the job site.
3. DBE shall assign representatives with expertise and authority to act on behalf of the DBE and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:
   a. Participate in construction-phase commissioning meetings including controls coordination meeting to review and resolve any issues with the sequence of operations.
   b. Participate in maintenance orientation and inspection.
   c. Participate in operation and maintenance training sessions.
   d. Certify that Work is complete and systems are operational according to the Contract Documents, including calibration of instrumentation and controls.
   e. Perform quality control of all work and certify it is complete prior to request for inspection.
   f. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
4. DBE shall integrate all commissioning activities into DBE's master construction schedule.
5. DBE shall provide a means to effectively commission the BMS system including the following at minimum:

a. Schedule the controls DBE that was an integral part of programming the building BMS to run the tests

b. Provide a table with chairs

c. Provide a 17” 1080p monitor with 10' cables for connection to the controls DBE’s laptop.

6. DBE or Subcontractors shall provide a COBie information or delivery plan acceptable to the scope of work described in Specification Sections: 01 33 00, 01 60 00, 01 70 00, 01 73 00, 01 77 00, and 01 81 13.

7. Subcontractors shall assign representatives with expertise and authority to act on behalf of subcontractors and schedule them to participate in and perform commissioning team activities including, but not limited to, the following:

a. Participate in construction-phase coordination meetings.

b. Participate in maintenance orientation and inspection.

c. Complete pre-functional checklists for all equipment. Submit completed forms with start-up reports immediately after start up.

d. Complete building enclosure construction checklists as required throughout the installation of building enclosure systems as identified. Submit completed forms upon installation completion of each building enclosure system.

e. Schedule and perform building enclosure testing as specified in the technical specification sections with CxA as witness.

f. Schedule and perform duct air leakage testing as specified in the technical specification sections with CxA as witness.

g. Provide flushing plans, disinfection reports and water treatment reports to the CxA for review.

h. Participate in pre-TAB meeting and jobsite inspections to verify TAB readiness.

i. Provide draft completed TAB report to CxA for review. CxA will identify up to 20% of TAB report for TAB subcontractor to demonstrate compliance to the completed TAB report.

j. Participate in procedures meeting for testing.

k. Perform point-to-point, calibration and checkout of the building automation system and provide completed report to the CxA for review.

l. Participate in final review at acceptance meeting.

m. Provide schedule for operation and maintenance data submittals, equipment startup, and testing to CxA for incorporation into the commissioning plan. Update schedule on a weekly basis throughout the construction period.

n. Provide information to the CxA for developing construction-phase commissioning plan.

o. Participate in training sessions for operation and maintenance personnel.

p. Verify that all systems function correctly by testing each mode of operation, alarm and system function.

q. Gather and submit operation and maintenance data for systems, subsystems, and equipment to the CxA, as specified.

r. Perform quality control of all work and certify it is complete prior to request for inspection.

s. Complete and sign Systems Functional Testing Readiness Certification and Notification Letter for Commissioning and provide to CxA (See EXHIBIT A of this specification section).

t. Provide technicians who are familiar with the construction and operation of installed systems and who shall develop specific test procedures and participate in testing of installed systems, subsystems, and equipment.

u. DBE to provide to the CxA control point history trend reports of energy and water meter data aggregated by monthly usage for each meter and any related calculated metering trends. Provide these trends for a full year of data once meters have been confirmed to be reporting correctly.

v. DBE to provide to the CxA control point history trend reports of all systems operation at startup and post occupancy.

w. DBE to provide to the CxA the design lighting levels per each space.

x. DBE to provide to the CxA the building occupancy schedules and equipment run time schedules for the “as-built” condition(s).

y. DBE to provide to the CxA the As-Built drawings / documents. Including the BoD, and as-programmed setpoints and minimum outside air requirements for each system.

z. Perform seasonal testing, at the direction of the CxA, to prove functional performance of the HVAC and controls in the opposite season.

aa. Perform 10-month Cx warranty review. Intent is to review the operation of the commissioned systems onsite prior to the expiration of warranty. DBE should be prepared to review open Cx Master Issues Log items for completion, warranty log issue review, as well assessment of the functionality and operation of the commissioned building systems. Input will be solicited from building owners on operation and performance of the building systems.

B. Architect and Design Engineer Responsibilities

1. Responsible for developing the construction contract documents and clarifying the design intent during the construction phase of the project.

2. Performs construction observation.

3. Contracted to DBE.

4. Coordinate with the CxA specified building enclosure test plans developed by the architect and or CxA.

C. CxA's Responsibilities

1. Organize and lead the commissioning team.
2. Prepare a Commissioning Plan. Collaborate with design team, owner, DBE and subcontractors to develop test and inspection procedures. Identify commissioning team member responsibilities, by name, firm, and trade specialty, for performance of each commissioning task.
3. Work with the DBE to schedule commissioning activities. The DBE shall integrate all commissioning activities into the master construction schedule. All parties will address scheduling issues in a timely manner in order to expedite the commissioning process.
4. Review and comment on submittals for compliance with the approved project documents and identify any potential conflicts.
5. Conduct commissioning team meetings for the purpose of coordination, communication, and conflict resolution; discuss progress of the commissioning processes. The CxA shall prepare and distribute minutes to commissioning team members and attendees within five (5) workdays of the commissioning meeting.
6. At the beginning of the construction phase, conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for permanent power; operation and maintenance data submittals; operation and maintenance training sessions; TAB Work; and Project completion.
7. Periodically observe and inspect construction and report progress and deficiencies. In addition to compliance with the Contract Documents, inspect systems and equipment installation for adequate accessibility for maintenance and component replacement or repair.
8. Prepare Project-specific pre-functional checklists, functional test procedures checklists, and building enclosure construction checklists.
9. Compile test data, inspection reports, and certificates and include them in the systems manual and commissioning report.
10. Review and comment on operation and maintenance documentation for compliance with the Contract Documents. Operation and maintenance documentation requirements are specified in Division 01 Section "Operation and Maintenance Data."
11. Review DBE’s operation and maintenance training program. Operation and maintenance training is specified in Division 01 Section "Demonstration and Training."
12. Prepare commissioning status reports.
13. Perform and direct warranty functional testing and site review at a point in time 10 months after the start of warranty.

14. Assemble the final commissioning documentation, including the Commissioning Report including applicable Project Record Documents.

1.7 COMMISSIONING DOCUMENTATION

A. Commissioning Plan: A document, prepared by CxA, that outlines the process, schedule, allocation of resources, and documentation requirements of the commissioning effort, and shall include, but is not limited to the following:

1. Description of the organization, layout, and content of commissioning documentation to be provided along with identification of responsible parties.
2. Identification of systems and equipment to be commissioned.
3. Description of the level of commissioning for each system
4. Description of schedules for testing procedures along with identification of parties involved in performing and verifying tests.
5. Identification of items that must be completed before the next operation can proceed.
6. Description of responsibilities of commissioning team members.
7. Description of observations to be made.
8. Description of requirements for operation and maintenance training, including required training materials.
9. Provide a schedule for commissioning activities with specific dates coordinated with overall construction schedule.
10. Define the process for completing pre-functional and startup checklists for systems, subsystems, and list of specific equipment requiring these checklists.
11. Include Step-by-Step procedures for Functional Testing of systems, subsystems, and equipment with descriptions for methods of verifying relevant data, recording the results obtained, and listing parties involved in performing and verifying tests.

B. Pre-Functional Checklists: CxA shall develop pre-functional checklists for all equipment to be commissioned. Pre-Functional Checklists shall be completed and signed by the DBE / subcontractor, verifying that systems, subsystems, equipment, and associated controls are ready for testing. The Commissioning Agent may spot check Pre-Functional Checklists to verify accuracy and readiness for testing. Inaccurate or incomplete Pre-Functional Checklists shall be returned to the DBE / subcontractor for correction and resubmission.

C. Site Visit Reports: CxA shall record test data, observations, and measurements on site visit forms. Updated Issues Log, photographs and other means appropriate for the application shall be included with Report.

D. Start-Up Reports: Subcontractor/Manufacturer created forms that document that factory start-up procedures have been followed for all equipment and systems to be commissioned. Provided by subcontractors.

E. Functional Performance Testing: CxA shall develop functional performance test procedures for all equipment and systems to be commissioned. Site Visit Reports: CxA shall record test data,

observations, and measurements on site visit forms. Photographs and other means appropriate for the application shall be included with data.

F. Building Enclosure Construction Checklists: CxA shall develop BECx checklists for the installation and verification of procedures.

G. Test and Inspection Reports: CxA shall compile test and inspection reports and test and inspection certificates and include them in Systems Manual and commissioning report.

H. Commissioning Schedule: CxA shall review and provide input to the master project and construction schedules for commissioning activities.

I. Issues Log: CxA shall prepare and maintain an issues log that describes installation, and performance issues that are at variance with the Contract Documents. CxA will identify and track issues as they are encountered, documenting the status of unresolved and resolved issues.

1. Creating an Issues Log Entry:

   a. Identify the issue with unique numeric or alphanumeric identifier by which the issue may be tracked.

   b. Assign a descriptive title of the issue.

   c. Identify issue date.

   d. Include information that may be helpful in diagnosing or evaluating the issue.

   e. Note recommended corrective action.

   f. Identify commissioning team member responsible for corrective action.

   g. Identify person documenting the issue.

2. Documenting Issue Resolution:

   a. Log date correction is completed or the issue is resolved.

   b. Collect descriptions from contracting team.

      1) of corrective action or resolution taken
      2) description of diagnostic steps taken to determine root cause of the issue, if any.
      3) Statement that the correction was completed and system, subsystem, and equipment are ready for retest, if applicable.

J. Commissioning Report: CxA shall document results of the commissioning process including performance of systems, subsystems, equipment and issues. The commissioning report shall indicate whether systems, subsystems, and equipment have been completed and are performing according to the OPR, BoD and Contract Documents. The commissioning report shall include, but is not limited to, the following:

1. Discussion of performance of commissioned systems including any variance from OPR, BOD and the Contract Documents; record of conditions; and, if appropriate, recommendations for resolution. This report shall be used to evaluate systems, subsystems, and equipment and shall serve as a future reference document during

OWNER occupancy and operation. It may also include a recommendation for accepting or rejecting systems, subsystems, and equipment.

2. Commissioning Plan.
3. Testing plans and reports.
4. Issues log.
5. Completed test checklists.
6. Listing of off-season test(s) not performed and a schedule for their completion.

K. Systems Manual: CxA shall gather required information and compile Systems Manual. Systems manual shall include, but is not limited to, the following:

1. As-built system narratives, schematics, and list of installed equipment
2. Operation and maintenance data

1.8 CXA SUBMITTALS

A. Commissioning Plan: CxA shall submit a draft commissioning plan. Deliver one copy to DBE and one to OWNER. Present submittal in sufficient detail to evaluate data collection and arrangement process. One copy, with review comments, will be returned to the CxA for preparation of the final commissioning plan.

B. Pre-functional Checklists: CxA shall submit sample checklists and forms to DBE and subcontractors for review, comment and approval. DBE / subcontractor completed pre-functional checklists are required to be submitted for review and approved prior to proceeding with functional performance testing.

C. Functional Test Plan: CxA shall submit draft Functional Test Plan and checklists for comment. The final Functional Test Plan will be submitted and used for functional testing.

D. Site visit reports: CxA shall submit site visit reports as they are created.

E. Final Commissioning Report: CxA shall submit the draft commissioning report. One copy, with review comments, will be returned to the CxA for preparation of final submittal. The final report submittal must address previous review comments.

F. The CxA will provide appropriate DBE / subcontractors with a specific request for the type of submittal documentation the CxA requires facilitating the commissioning work. These requests will be integrated into the normal submittal process and protocol of the construction team. At minimum the request will include the manufacturer and model number, the manufacturer printed installation and detailed start-up procedures, sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details. In addition, the factory checkout sheets or field technicians shall be submitted for review

1.9 COORDINATION

A. Scheduling: The DBE shall work with the Commissioning Agent to incorporate the commissioning activities into the construction schedule. The Commissioning Agent will provide sufficient information (including, but not limited to, tasks, durations and predecessors) on

commissioning activities to allow the DBE to schedule commissioning activities. All parties shall address scheduling issues and make necessary notifications in a timely manner in order to expedite the project and the commissioning process. The DBE shall update the Master Construction schedule as directed by the Owner.

B. Coordinating Meetings: CxA shall conduct coordination meetings of the commissioning team as needed to review progress on the commissioning plan, to discuss scheduling conflicts, and to discuss upcoming commissioning process activities.

C. Pretesting Meetings: CxA shall conduct pretest meetings with the commissioning team to review startup reports, coordinate controls sequence of operations, review pretest inspection results, review testing and balancing procedures, review testing personnel and instrumentation requirements, and manufacturers' authorized service representative services for each system, subsystem, equipment, and component to be tested.

D. Testing Coordination: CxA shall coordinate with the Owner representative and DBE to plan the sequence of testing activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

E. The Subcontractors shall provide sufficient notice to the CxA (2 weeks minimum) regarding their completion schedule for the pre-functional checklists and startup of all equipment and systems. The DBE / subcontractor(s) will use the Readiness Letter in EXHIBIT A to notify the CxA that the systems are ready.

F. General

1. Functional testing is conducted after pre-functional testing and startup has been satisfactorily completed.

2. The BAS is sufficiently tested and approved by the CxA before it is used for TAB or to verify performance of other components or systems.

3. The air and water balancing is completed and approved before functional testing of air-related or water-related equipment or systems.

4. Testing proceeds from components to subsystems to systems.

5. When the proper performance of all interacting, individual systems has been achieved, the interface or coordinated responses between systems is checked.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 BUILDING ENCLOSURE CONSTRUCTION CHECKLISTS

A. Building Enclosure Construction Checklists are developed by the CxA and completed by the appropriate installing subcontractors for all major building enclosure systems being commissioned. The checklists are to be completed during the installation phase of each system. These checklists are to ensure that each building enclosure system is being installed

according to the specified installation standards. The building enclosure checklists are in addition to the manufacturer's installation checklists and DO NOT replace the manufacturer's installation checklists. The Subcontractor and vendors shall also execute manufacturer's installation checklists and provide CxA with a copy of the signed and dated completed checklists which will be submitted with the Building Enclosure Construction Checklists.

B. Execution of Building Enclosure Construction Checklists

1. Construction checklists will be provided to the CM and DBE by the CxA.
2. The DBE shall maintain a master copy of signed checklists.
3. The installing subcontractors shall update the checklists as work is completed. Only individuals that have direct knowledge and witnessed that a line-item task on the pre-functional checklist was actually performed shall initial or check that item off.
4. The CxA will periodically review the checklists for completeness and report on progress at the Cx meetings.

3.2 SUBMITTALS

A. The CxA shall provide the Design Builder with a specific request for the type of submittal documentation required to facilitate the commissioning work. These requests shall be integrated into the submittal process and protocol of the project.

B. The submittal shall be reviewed and approved by the Design Builder's design team prior to being submittal to the CxA.

C. At minimum, the submittal request shall include:

1. Equipment manufacturer and model number.
2. Selection and operating data (Example: Flows, pressures, temperatures, fan curves, etc.).
3. The manufacturer's printed installation and detailed start-up procedures.
4. Full sequences of operation and control drawings.
5. O&M data, performance data, performance test procedures, details, and results of owner-contracted tests.
6. Installation and checkout materials that are shipped inside the equipment and the manufacturer field checkout sheet forms to be used by the factory or field technicians.

D. The CxA shall review and approve submittals related to the commissioned equipment for conformance to the Owner Project Requirements, Design documents and as it relates to the commissioning process, the functional performance of the equipment, completeness and adequacy for developing test procedures.

E. The CxA's review is intended to aid in the development of functional testing procedures and to verify compliance with equipment specifications. The Commissioning authority shall notify the Owner and the DB of items missing or areas that are not in conformance with contract documents or Owner Project Requirements and which require resubmission.

F. The CxA may request additional design narrative from the A/E and Controls Subcontractor, depending on the completeness of the basis of design documentation and sequences provided with the design document Specifications.

G. These submittals to the CxA do not constitute compliance for O&M manual documentation. The O&M manuals are the responsibility of the Design Builder, though the CxA will review and approve them.

3.3 PRE-FUNCTIONAL CHECKLISTS AND FACTORY START UP REPORTS

A. The following procedures apply to all equipment to be commissioned.

B. Pre-functional Checklists are developed by the CxA and completed by the appropriate installing DBE / subcontractors for all major equipment and systems being commissioned before functional testing can begin. The checklist captures equipment nameplate and characteristics data, confirming the as-built status of the equipment or system. These checklists also ensure that the systems are complete and operational, so that the functional performance testing can be scheduled. The Subcontractors and vendors shall execute factory startup and provide the CxA with a copy of the signed and dated completed start-up checklists which will be submitted with the Pre-Functional checklists.

C. Startup and Initial Checkout Plan: The Subcontractor shall develop detailed startup plans for all equipment. The primary role of the DBE / subcontractor in this process is to ensure that there is written documentation that each of the manufacturer recommended procedures have been followed and completed. Parties responsible for startup shall be identified in the Startup Plan and in the checklist forms.

1. The full startup plan shall at a minimum consist of the following items:

a. The Pre-Functional Checklists.

b. The manufacturer's standard written startup procedures copied from the installation manuals with check boxes by each procedure and a signature block added by hand at the end.

c. The manufacturer's normally used field checkout sheets.

D. The Commissioning Agent will review/approve the full start-up plan.

E. Execution of Pre-functional Checklists and Startup.

1. Pre-Functional checklists will be provided to the project site by the CxA.

2. The DBE shall maintain a master copy of signed checklists.

3. The installing subcontractors shall update the checklists as work is completed. Only individuals that have direct knowledge and witnessed that a line-item task on the pre-functional checklist was actually performed shall initial or check that item off.

4. The CxA will periodically review the checklists for completeness and report on progress at the Cx meetings.

5. DBE will provide electronic copies of completed checklists to the CxA.

F. BAS Startup Testing, Adjusting, and Calibration

1. Work and/or systems installed under this Division shall be fully functioning prior to Demonstration and Acceptance Phase. DBE / Subcontractor shall start, test, adjust, and calibrate all work and/or systems under this Contract, as described below:

    a. Inspect the installation of all devices. Review the manufacturer's installation instructions and validate that the device is installed in accordance.

    b. Verify proper electrical voltages and amperages, and verify that all circuits are free from faults.

    c. Verify integrity/safety of all electrical connections.

    d. Coordinate with TAB subcontractor to fine tune control settings that are determined from balancing and testing procedures. Record the following control settings as obtained from TAB subcontractor, and note any TAB deficiencies in the BAS, Pre-functional checklists and initiate an associated Action Item:

        1) Optimum duct static pressure setpoints for VAV air handling units.

        2) Minimum outside air damper settings for air handling units.

        3) Optimum differential pressure setpoints for variable speed pumping systems.

        4) Calibration parameters for flow control devices such as VAV boxes and flow measuring stations.

        5) BAS subcontractor shall provide access to the front-end Building Automation System as a minimum to the TAB and CxA to facilitate calibration. Connection for any given device shall local to it (i.e: at the VAV box or at the thermostat). Shall be made at front end and shall allow querying and editing of parameters required for proper calibration and start up.

    e. Test, calibrate, and set all digital and analog sensing, and actuating devices. Calibrate each instrumentation device by making a comparison between the BAS display and the reading at the device, using an instrument traceable to the National Bureau of Standards, which shall be at least twice as accurate as the device to be calibrated (e.g., if field device is +/-0.5% accurate, test equipment shall be +/-0.25% accurate over same range). Record the measured value and displayed value for each device in the BAS Pre-functional Report.

    f. Check each digital control point by making a comparison between the control command at the controller and the status of the controlled device. Check each digital input point by making a comparison of the state of the sensing device and the OI display. Record the results for each device in the BAS Pre-functional checklists.

    g. Verify proper sequences by using the approved checklists to record results and submit with BAS Pre-functional checklists. Verify proper sequence and operation of all specified functions. There is inherent duplication between the functional performance testing of the Testing Subcontractor, and the thorough checking testing of the sequences by the BAS. Generally, the sequence checkouts

indicated as the responsibility of the Testing Subcontractor under functional testing, must first be tested by the BAS under pre-functional testing.

h. Verify proper systems operation under emergency power. Cooperate and coordinate with Testing Subcontractor and CxA for comprehensive building power outage tests.

i. Verify all safety devices trip at appropriate conditions. Adjust setpoints accordingly.

j. Verify that all alarm thresholds for all analog devices are entered. Request direction from Owner as to alarm threshold parameters.

k. Tune all control loops to obtain the fastest stable response without hunting, offset or overshoot.

G. For interface and DDC control panels:

1. Ensure devices are properly installed with adequate clearance for maintenance and clearly labeled in accordance with the record drawings

2. Ensure terminations are safe, secure and labeled in accordance with the record drawings

3. Check power supplies for proper voltage ranges and loading.

4. Ensure wiring and tubing are run in a neat and workman-like manner, either bound or enclosed in trough.

5. Check for adequate signal strength on communication networks.

6. Check for stand-alone performance of controllers by disconnecting the controller from the LAN. Verify the event is enunciated at OIs. Verify that the controlling LAN reconfigures as specified in the event of a LAN disconnection.

7. Ensure that controller memory and control network through-put are adequate to support the extensive trending requirements. Reconfigure the system to provide a reliable and robust system as necessary.

8. Ensure all outputs and devices fail to their proper positions/states.

9. Ensure buffered and/ or volatile information is held through power outage.

10. With all system and communications operating normally, sample and record update/enunciation times for critical alarms fed from the panel to the OI.

11. Check for adequate grounding of all DDC panels and devices.

H. Meters

1. All meters (Electric, Gas, Water) calibration will be verified in the field after installation.

2. All Meters will be verified by the DBE / subcontractor to be reporting correctly; including – correct units, intervals, and trending back to the DDC controls system operator workstation graphics.

I. For Operator Interfaces:

1. Verify all elements on the graphics are functional and properly bound to physical devices and/or virtual points and that hot links or page jumps are functional and logical.
2. Output all specified system reports for review and approval.
3. Verify the alarm printing and logging is functional and per requirements
4. Verify trend archiving to disk and provide a sample to the CxA for review.
5. Verify paging/dial out alarm enunciation is functional.
6. Verify functionality of remote OIs and that a robust connection can be established consistently.
7. Verify that required third party software applications required with the bid are installed and functional.
8. Verify proper interface with fire alarm system.

J. Submit Start-Up Test Report. Report shall be completed, submitted and approved prior to functional testing.

K. Deficiencies, Non-Conformance and Approval in Checklists and Startup.

1. The DBE / Subcontractor shall clearly list any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully, at the bottom of the procedures form or on an attached sheet. The procedures form and any outstanding deficiencies are provided to the CxA within two days of test completion.
2. The CxA reviews the report and reports to the Owner Representative. The CxA shall work with the DBE / subcontractor and vendors to correct and retest deficiencies or uncompleted items.

3.4 FUNCTIONAL PERFORMANCE TESTING

A. Common Elements for All Systems

1. Have the required submitted documentation convenient to testing area. Validate that all required documentation has been submitted and is per the contract requirements (very cursory review). CxA shall review the content of the documentation and validate that it is per contract documents.
2. CxA shall review the startup documentation at the start of functional performance testing. Review the startup tests and checklist documentation. CxA shall validate that startup is acceptably executed and complete. CxA shall ensure that any items indicated as outstanding in the checklists is entered as an Action Item and enter one if it is not. The checklists and start up tests/measurements shall be spot checked at the beginning of FPT to ensure accuracy. CxA shall complete a test that indicates he has reviewed the pre-functional checklists and finds them acceptable and note any outstanding items.
3. CxA shall check for and as applicable direct DBE / subontractor to demonstrate that access is sufficient to perform required maintenance.
4. CxA shall validate that all prerequisite work is complete and confirm via a test record that the CxA feels it is.

5. Specifically check labeling and ensure conformance to contract requirements.
6. Check proof indication, alarming on failure and restart/acknowledgement as applicable.
7. CxA shall observe operating conditions encountered at the start of FPT. CxA shall examine for normal functionality and record parameters as a test.
8. All dynamic systems powered by electricity shall be tested to simulate a power outage to ensure proper sequencing. Those on emergency power or uninterruptible power shall be tested on all sources.
9. CxA shall inspect the installation and compare it to contract requirements. Record the inspection as a test.
10. Capacities and adjusted and balanced conditions as applicable will generally be checked.
11. Verify all sequence modes and sequences of operation. CxA must initiate all modes and may not refer to or rely on a pre-functional test done by the BAS. Some examples of generic modes that apply to most systems include:
    a. Off Mode
    b. Failed Mode: Proof, safeties, power outage etc. See below for stress testing.
    c. Start Sequence in various modes
    d. Stop sequences in various modes
12. All adjusted, balanced, controlled systems shall be assessed to determine the optimal setting for the system as applicable. The optimal settings should be determined to establish reliable, efficient, safe and stable operation.
13. Dynamic Graphics: The graphic for all components, systems, and areas sampled and required to be represented by a graphic shall be checked for adequacy and accuracy. Furthermore, when setpoints are required to be adjustable, verify that they can be adjusted directly from the graphic screen.
14. All interfaces between two systems or equipment of different manufacturers must be checked for accuracy and functionality.
15. “Stress Testing”: CxA shall analyze systems to identify possible conditions where functionality may be compromised. CxA shall design non-destructive tests that will demonstrate either the automated response to the conditions or so that team can identify the best method for responding or fixing the condition. All tests and finding shall be documented.
16. COBie Data: The Construction-Operations Building Information Exchange (COBie) for each piece of equipment is to be provided during the submittal phase. Information included in the COBie submittal should contain at minimum the manufactures O&M manuals, physical location, asset information including, but not limited to the manufacture’s serial and model numbers, the owner’s equipment identification tag, and installation date. Since COBie Data is available in many different formats, a compatible format is to be provided that will work with the owners Computerized Maintenance

Management Software (CMMS). In general, information pertinent to Specification 01 78 00 shall be included in the COBie.

B. Objectives and Scope. The objective of functional performance testing is to demonstrate that each system is operating according to the Contract Documents. Each system will be tested to verify that the system response is as designed. HVAC systems will be checked for conformance to the design sequences of operation and stable control, lighting control will be checked in each type of lighting area, security system cameras will be verified functional and able to see the correct areas. Proper system responses to such conditions as power failure, out of limit condition, equipment failure, etc. shall also be tested.

C. Early duct air leakage tests shall be performed to ensure green and building code compliance. Point-to-point testing will be performed by controls subcontractor on all applicable systems, with results given to CxA prior to functional performance testing.

D. Development of Test Procedures: The test procedures are written by the CxA based upon the final operational sequences from available project documentation. The CxA shall develop specific test procedures and forms to verify and document proper operation of each system. Prior to execution, the CxA shall provide a copy of the test procedures to the DBE / subcontractor who shall review the tests for feasibility, safety, equipment and warranty protection. The test procedure checklists developed by the CxA shall include the following information:

1. System and equipment or component name(s).
2. Equipment location and ID number.
3. Date.
4. Project name.
5. Participating parties.
6. Reference to the specification section describing the test requirements, if applicable.
7. A copy of the specific sequence of operations.
8. Prerequisites for the test.
9. Special cautions, alarm limits, etc.
10. Specific step-by-step procedures to execute the test.
11. Acceptance criteria of proper performance with a Yes / No/NA check box.
12. A section for comments.

E. Test Methods.

1. Systems Functional Performance Testing shall be achieved by manual testing (i.e., persons manipulate the equipment and observe performance) and/or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by standalone data loggers. The DBE / Subcontractor and Commissioning Agent shall determine which method is most appropriate for tests that do not have a method specified.

a. Simulated Conditions: Simulating conditions (not by an overwritten value) shall be allowed, although timing the testing to experience actual conditions is encouraged wherever practical.

b. Overwritten Values: Overwriting sensor values to simulate a condition, such as overwriting the outside air temperature reading in a control system to be something other than it really is, shall be allowed, but shall be used with caution and avoided when possible. Such testing methods often can only test a part of a system, as the interactions and responses of other systems will be erroneous or not applicable. Simulating a condition is preferable. e.g., for the above case, by heating the outside air sensor with a hair blower rather than overwriting the value or by altering the appropriate setpoint to see the desired response. Before simulating conditions or overwriting values, sensors, transducers and devices shall have been calibrated.

c. Simulated Signals: Using a signal generator which creates a simulated signal to test and calibrate transducers and DDC constants is generally recommended over using the sensor to act as the signal generator via simulated conditions or overwritten values.

d. Altering Setpoints: Rather than overwriting sensor values, and when simulating conditions is difficult, altering setpoints to test a sequence is acceptable. For example, to see the Air Conditioning compressor lockout initiate at an outside air temperature below 54 F (12 C), when the outside air temperature is above 54 F (12 C), temporarily change the lockout setpoint to be 4 F (2 C) above the current outside air temperature.

e. Indirect Indicators: Relying on indirect indicators for responses or performance shall be allowed only after visually and directly verifying and documenting, over the range of the tested parameters, that the indirect readings through the control system represent actual conditions and responses. Much of this verification shall be completed during systems startup and initial checkout

2. Functional testing is performed by the subcontractors with the method and degree of testing as defined in this specification for each system. Each function and test shall be performed under conditions that simulate actual conditions as close as is practically possible. The Subcontractor executing the test shall provide all necessary materials, system modifications, etc. to produce the necessary flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions. At completion of the test, the Subcontractor shall return all affected building equipment and systems to their pre-test condition.

3. Multiple identical pieces of equipment may be functionally tested using a sampling strategy. The sampling strategy will be defined in these specifications with the commissioned systems list.

F. Coordination and Scheduling: See the *COORDINATION* section for coordination and scheduling details.

G. Problem Solving: The CxA will recommend solutions to problems found; however, the burden of responsibility to solve, correct and retest problems is with the DBE / Subcontractor and Owner's consultants.

3.5 FUNCTIONAL PERFORMANCE TESTING OF METERING

A. Objectives and Scope. The objective of metering functional performance testing is to demonstrate that each meter is operating according to the Contract Documents and tested to verify that the system performance is as designed.

B. Problem Solving: The CxA will recommend solutions to problems found; however, the burden of responsibility to solve, correct and retest problems is with the DBE / Subcontractor and Owner's consultants.

C. Coordination and Scheduling: See the *COORDINATION* section for coordination and scheduling details.

3.6 FUNCTIONAL PERFORMANCE TESTING OF BUILDING ENCLOSURE SYSTEMS

A. Objectives and Scope: The objective of functional performance testing of building enclosure systems is to help ensure that each enclosure system is installed and functions according to Facility Design Standards and the Contract Documents. Various building enclosure systems will be selected for testing which will be performed on the mock-up and or in-situ testing. Testing will be performed in accordance with ASTM and or AAMA testing standards as specified in each applicable section of these specifications and or as defined by the Building Enclosure Test Plan as provided by the architect.

B. Coordination and Scheduling (BECx)

1. Conduct building enclosure testing before installation of insulation and interior closure of the wall. The exterior sections of the building envelope assemblies shall be completed with discrepancies and problems remedied before testing of the exterior wall system or mock-up assemblies.

2. Building enclosure subcontractors will provide installation foremen to witness execution of building enclosure tests conducted on the mock-up assemblies to resolve installation issues and establish future installation practices necessary to correct deficiencies observed prior to commencing with installation of the exterior wall systems. DBE / subcontractors will ensure that the installation foremen are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem solving.

3. The CxA will witness DBE / subcontractor performed building enclosure testing. The DBE / subcontractor will be responsible to provide 14 days' notice to the CxA regarding their testing schedule for DBE / subcontractor performed building enclosure testing. The DBE / subcontractor will use the Testing Readiness letter in EXHIBIT A to notify the CxA that the systems are ready.

C. Deficiencies, Non-Conformance (BECx)

1. The CxA will record the results of building enclosure functional test on a Testing Report. All deficiencies or non-conformance issues shall be noted on the Cx Master Issues Log and reported to the DBE.
2. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CxA. In such cases the deficiency and resolution will be documented on the Testing Report.
3. Every effort will be made to expedite the testing process and minimize unnecessary delays, while not compromising the integrity of the procedures. However, the CxA will not be pressured into overlooking deficient work or loosing acceptance criteria to satisfy scheduling or cost.
4. A complete round of tests will be performed, with results and deficiencies reported to the DBE and subcontractors. The responsible subcontractors will then have and the opportunity to correct the deficiencies and schedule re-testing. One CxA retest witnessing of failed test area will be provided by CxA at no additional charge. Cost of additional CxA re-test witnessing is outlined by the next section.
5. If there is a dispute about a deficiency the deficiency shall be documented on the Cx Master Issues Log with the DBE / subcontractor's response. The final interpretive authority is the AOR.

3.7 OPERATION AND MAINTENANCE TRAINING REQUIREMENTS

A. Before the operation and maintenance training, CxA shall review training preparation for compliance with project documents.

B. Training is required per contract specifications. At a minimum, training is required for Mechanical systems, Lighting, and Controls systems.

C. The CxA requires submission of training records including attendance lists to verify appropriate people received the training.

3.8 GENERAL WARRANTY AND SEASONAL TESTING REQUIREMENTS

A. Coordinate MEP and Building Enclosure Subcontractor Call-back and Warranty Enforcement.

1. Perform review of commissioned systems:
   a. Timed at approximately 2 months prior to the expiration of the project warranty period.
   b. Project warranties have a typical duration of 12 months. Verify for this project.
   c. The Warranty Period walk through inspection for the commissioned systems and building enclosure would then be typically scheduled at 10 months and should include representatives from the Owner, A/E, Facilities Management, CM, GC, subcontractors and manufacturers.

3.9 MEP Cx WARRANTY AND SEASONAL TESTING REQUIREMENTS

A. The Warranty Phase of a project can incorporate one or both of these two complimentary activities:

1. Seasonal Testing: Seasonal variation in operations or control strategies may require additional testing during peak cooling and heating seasons to verify systems performance. If the project finishes in the summer, testing of the heating systems may not be effective or conclusive, and can be postponed to colder weather if seasonal testing is included in the scope. The CxA coordinates this activity. Tests are executed and deficiencies corrected by the appropriate subcontractors, witnessed by Owner's staff and the CxA.
2. Warranty Testing: The CxA will perform an evaluation of the systems in the Cx scope to provide additional experienced review of operation prior to the expiration the warranty. The CxA will request input from the Owner's operations staff and occupants about the performance of the building systems, as well as perform targeted evaluation of systems and controls. Additionally, open items on the Master Issues Log are often reviewed for completion, or significant issues observed during previous phases are evaluated to ensure they are still in a corrected state. A warranty walk review typically is performed onsite. However, videoconference and BMS remote review by the CxA may be arranged in place of the onsite warranty walk.

B. These two activities often have overlapping scope and intent and will be performed during the same site evaluation(s), where possible.

C. The warranty period typically begins at the project's Substantial Completion or shortly thereafter.

3.10 BECx WARRANTY TESTING REQUIREMENTS

A. Building Enclosure warranty activities align with NIBS Guideline 3-2012 Building Enclosure Commissioning Process BECx and include the following additional activities:

1. CxA will coordinate with the Owner, CM, GC to arrange a building enclosure warranty walk.
2. The warranty walk review is generally performed onsite. However, a videoconference review by the BECxA may be arranged in place of the onsite warranty walk.
3. The Cx Master Issues log will be distributed by the CxA highlighting any unresolved "open" issues discovered during the construction phase.
4. Participation by the Owner's operations staff is required.
5. A report will be issued summarizing the warranty walk process, findings and open issues needing to be addressed by the GC.

3.11 COSTS OF COMMISSIONING WORK (MEPCx, BECx)

A. The cost to the DBE and Subcontractors to comply with the specified requirements and to support the work of the CxA shall be included in the DBE's and Subcontractor's bid price.

B. It is the DBE / subcontractor's responsibility to QC and pre-test all building equipment and systems. The CxA shall confirm function of each system. If a device, piece of equipment, sequence, or system fails a test, corrections shall be made immediately and retested.

C. If at any point in the Commissioning Functional Testing Process, should an issue or failure arise that requires significant time to correct or cannot be corrected immediately during the testing process, that results in a delay or prevents the CxA from completion of the functional testing, incurred costs shall be reimbursed by the DBE. The associated costs of re-testing are defined in Exhibit A - Readiness Letter (FTRL).

(continued next page)

3.12 COMMISSIONED SYSTEMS

System	Equipment	Level Note
HVAC System	Air Handling Units	5
	Transfer Fans	5
	Exhaust Fans	5
	Spit Systems	5
	Variable Refrigerant Systems	5
	Air Cooled Heat Pump Chiller Units	5
	Air Terminal Units	3
	Pumps	5
	Fan Coil Units	3
	Test and Balance Report Values	3
Building Management System	Sequences of Operation, Monitored Points, and Alarms	5
	Metering/Monitoring Devices and Equipment	5
	Software Commissioning, GUI Presentation Commissioning, System Access Performance Criteria, Software Tools/Source Code Commissioning, Instrument Data Sheets, Middleware Commissioning, Internet Protocol Commissioning	5
Metering Verification	Metering	5
	M&V Monitoring Review	3
Electrical System	Sweep or Scheduled Lighting Controls	3
	Day-Light Dimming Controls	3
	Lighting Occupancy Sensors	3
	Emergency Generator/ATS	5
	Electrical Panels	3
Plumbing System	Domestic Water Heaters	5
	Thermostatic Mixing Valves	5
	Duplex booster pump	5

System	Equipment	Level Note
	HW Circulation Pump	5
Irrigation	Irrigation Controls	3
Building Enclosure	Slab/Foundation - Under Slab Vapor Barrier	3
	Walls – Exterior Waterproofing Membranes, Flashing, Windows, Doors, Storefront, Curtain Walls and Wall Systems	3
	Roofing – Flashing, Decking, Drainage and Roofing Systems	3
Security Electronics and Alarm Systems	Access Control & Alarms System	5
	Video Surveillance	5
	Elevator Control Access Control & Video	5
	Duress Alarm System	4
	Video Intercom	4
	Motion Detection	4
	Glass Break Detection	4
	Tamper Switches	4
Fire/Life Safety Systems	HVAC/Fire System Integration	1
	Fire Alarm System	1

Testing Levels Defined:

Level 1 - The CxA will periodically observe and inspect the installation of equipment and systems and review project documentation (test reports) to verify operational requirements meet the contract documents.

Level 2 - The CxA will periodically observe and inspect the installation of equipment and systems and review project documentation (test reports). The CxA may spot check some of the system functions verify operational requirements are met.

Level 3 - The CxA will periodically observe and inspect the installation of equipment and systems and review project documentation (test reports) and will witness subcontractor performance testing of the system. DBE / subcontractor shall test up to 20% of the system to prove operational requirements are met. The test sections shall be chosen at random by the CxA. Failure of any test section shall require retesting of that section and an additional test section equivalent in scope.

Level 4 - The CxA will periodically observe and inspect the installation of equipment and systems and review project documentation (test reports) and will witness subcontractor performance testing of the system. DBE / subcontractor shall test up to 50% of the system to prove operational requirements are met. The test sections shall be chosen at random by the CxA. Failure of any test section shall require retesting of that section and an additional test section equivalent in scope.

Level 5 - The CxA will periodically observe and inspect the installation of equipment and systems and review project documentation (test reports) and will witness subcontractor performance testing of the system. DBE / subcontractor shall test up to 100% of the system to prove operational requirements are met. The test sections shall be chosen at random by the CxA. Failure of any test section shall require retesting of that section and an additional test section equivalent in scope.

3.13 METHODS OF TESTING

A. HVAC Systems

1. CxA may witness duct air leakage testing during rough-in. DBE / subcontractor to forward all duct air leakage reports to CxA for review.
2. CxA will visit the site during rough-in of ductwork, piping and equipment to verify proper maintenance clearances and access are being maintained.
3. The CxA may witness subcontractor and/or factory start-up of equipment.
4. The TAB contactor shall re-measure up to 20% of the TAB report values for the CxA to observe and to verify balance values are within allowable design tolerances.
5. Stand-alone controls will be tested independent of item B below.
6. DBE / subcontractor will demonstrate to the CxA that the operation of each system through all modes, alarms, and operating parameters meet the contract documents.
7. DBE / subcontractor will demonstrate IAQ requirements and performance via site demonstrations and documentation to CxA.

B. Building Management System

1. After receipt of the controls subcontractor's calibration and point to point reports by the CxA, the controls contactor will re-measure some of the points for the CxA to verify that the calibration and communication is correct. The points to be verified will be selected by the CxA.
2. Controls subcontractor shall provide an as-built shop drawing to the CxA for use in executing FPT.
3. All of the user graphics interfaces and displayed operating points will be demonstrated for the CxA by the controls subcontractor.
4. Controls subcontractor shall manipulate the system to demonstrate that it performs all of the specified modes of operation.
5. Points selected by the CxA will be trended for 1-2 weeks by the controls subcontractor to verify control operation and response. System to in auto without alarms.

C. Metering Verification Commissioning

1. After receipt of the subcontractor's calibration the points will be verified by the CxA
2. All metering installations (Electric, Gas, Water) will be verified via pre-functional checklists, and factory startup. Copied of these forms will be provided to the CxA.
3. Metering reporting will be reviewed for accuracy and correct units during a functional performance test.
4. Trending of meters will be verified to be recording correctly.
5. Predictive Maintenance and Monitoring will be reviewed via trend reports and analysis and testing of benchmarks, metrics, and monitoring rules for accuracy of algorithms.

D. Building Envelope

1. Specified building enclosure systems installation and testing is defined in each applicable specification section. Specified installation and testing may include but not limited to the following installation and testing standards.
   a. Vapor Barrier Installation – ASTM E1643 – Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
   b. Insulation Installation Inspection – ASTM C1060-90 – Standard Practice for Thermographic Inspection of Insulation Installations in Envelope Cavities of Frame Buildings.
   c. Windows and Curtain Wall Installation – ASTM E1105 – Standard Test Method for Field Determination of Water Penetration of Installed Window, Skylights, Doors and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.
   d. Dissimilar Enclosure Material Intersections – AAMA 501.2 – Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
   e. Exterior Sealants – ASTM C1193 – Standard Guide for Use of Joint Sealants, Appendix X1 – Method A, Field Applied Sealant Joint Hand Pull Tab.
   f. Horizontal Waterproofing Installation – ASTM D 5957 – Standard Guide for Flood Testing Horizontal Waterproofing Installations.
2. The exterior shell design details and specifications will be reviewed for good practice by the CxA.
3. Construction checklists will be developed by the CxA for the critical envelope installations which will be used by the subcontractors to certify that the installations have been completed as specified. The CxA will conduct site visits to spot check the installations.
4. Copies of any required enclosure testing and test plans will be submitted to the CxA for review and comment prior to performing any tests.
5. Testing will include pull-off strength of coatings per ASTM D 4541, thermo graphic insulation inspection per ASTM C1060-90, horizontal waterproofing installation flood test per ASTM D 5957, Infrared roof survey per ASTM D 1153, sealant pull testing per ASTM

C 1193, field water spray testing per AAMA 501.2. DBE / subcontractor will perform tests and CxA will witness and review test results.

6. CxA will be notified 14 days prior to any scheduled building enclosure field tests allowing time for CxA to witness field tests, as required. See Building Enclosure Testing Matrix for additional information included in the Cx Plan.
7. Site observations will be performed as outlined in the Commissioning Activity Schedule (see Exhibit B).

E. Electrical Systems

1. During the installation the CxA will perform the following for the electrical systems:
   a. Periodically observe the installation of equipment.
   b. Review the completed Pre-functional Checklists (PFC).
   c. Verify the PFC's by observing the completed work and comparing to the values listed in the PFC.
   d. Review the factory authorized programming and checkout report of the lighting control panels and devices.
   e. The DBE / subcontractor is to provide NETA certified third party testing of the power distribution system and provide the CxA with a certified test report.
   f. CxA will review DBE / subcontractor provided as-builts for proper identification and labeling of all equipment, piping and devices.
2. To test the performance of the lighting control system the CxA will perform the following tasks:
   a. Witness the subcontractor testing each scene from each wall station.
   b. Verify these scenes match the design intent from the contract documents.
   c. Witness the subcontractor testing the integration to the other integrated systems such as audio visual and monitoring abilities from the BMS.
   d. Verify this integration allows control and/or monitoring from the other systems.
   e. Verify connectivity to the emergency lighting circuits.
   f. Witness the subcontractor testing the emergency lighting circuits.
3. Upon completion of the emergency power system, factory start-up and DBE / subcontractor pretesting, the CxA will witness a DBE / subcontractor test to verify complete system power loss and verify proper power provision of critical systems. The test will not be scheduled until all other systems dependent on emergency power have been tested and approved.

F. Plumbing

1. Domestic hot water will be tested by the CxA by measuring the hot water temperature at a percentage of the fixtures along with the time it takes to reach that temperature.

2. DBE / subcontractor shall demonstrate domestic hot water boilers, pumps and controls through all modes of operation and alarms.
3. DBE / subcontractor shall demonstrate to the CxA that the sanitary sewer and domestic booster pump operation through all modes and alarms meets approved sequence of operations.
4. After subcontractor has adjusted all fixtures for proper flush and sink fixture metering, the CxA will test plumbing fixtures for proper operation.
5. The DBE / subcontractor shall demonstrate the water management system to the CxA.
6. The CxA will test the compressed air and vacuum systems for proper operation.

G. Irrigation

1. The CxA will witness the subcontractor demonstration of the irrigation controller and coverage using the DBE / subcontractor's as-built drawings.

H. Security ACAMS (Access Control and Alarm Monitoring System), Video Surveillance Systems

1. Receive all installation and pre-functional test documentation from systems subcontractor(s).
2. Confirm all IP and MAC addresses have been requested from the owners IT department and installed by the DBE / subcontractor.
3. Verify cable and system component installation complies with the specifications and drawings.
4. Verify that the access control and video system software is the correct version and is programmed and operational.
5. Verify correct panel and door hardware power supplies and batteries are connected and operational.
6. Verify card reader operation at the door is per the specification.
7. Verify door alarms for forced, held open, closed, and reader reset functions are operational.
8. Verify intrusion and duress alarm's function.
9. Verify camera field of view meets owner's requirements.
10. Verify camera recording and video storage meets specifications.

I. Fire/Life Safety

1. The CxA will review the results of the subcontractor 's test documents to verify that the system was tested and meets specification. Interaction with other systems such as HVAC will be specifically reviewed.

3.14 COST OF RE-TESTING AND SYSTEMS FUNCTIONAL TESTING READINESS CERTIFICATION AND NOTIFICATION LETTER FOR COMMISSIONING (FTRL)

A. If CxA arrives onsite, on the scheduled date for functional testing (as indicated on the Readiness Letter (FTRL), see Exhibit A of this specification section) which cannot be completed due to systems readiness failure, systems technician no-show, or other circumstances not caused by CxA resulting in failed functional testing; it is understood that the CxA's client (listed on Readiness Letter (FTRL)) will be invoiced for expenses incurred by CxA. The DBE / subcontractor also agrees to reimburse said client for incurred expenses. CxA expenses will be invoiced as noted in the Readiness Letter (FTRL).

B. It is the DBE / subcontractor's responsibility to QC and pre-test all building equipment and systems. The CxA shall confirm function of each system. If a device, piece of equipment, sequence, or system fails a test, corrections shall be made immediately and retested. Corrections that cannot be corrected immediately or that delay completion of CxA testing shall be reimbursed by the DBE / subcontractor.

(continued next page)

3.15 Exhibit A: Systems Functional Testing Readiness Certification and Notification Letter for Commissioning

Peralta CCD / Berkley City College West
2118 Milvia St., Berkley, CA 94704

This letter shall serve as certification to 3QC that all applicable systems checked below have been fully tested to perform as specified in the Construction Documents, in accordance with 3QC's Functional Testing Checklists, and that all functional testing prerequisites as outlined in the Commissioning Specifications and Commissioning Plan have been completed and submitted to 3QC for review. 3QC is hereby officially notified to begin onsite functional testing of the following systems:

Systems Ready for Functional Testing by 3QC *(Completed by DBE or CM at Risk as systems become available and are ready for testing and meeting all criteria explained here within – Check only the systems that are ready at this time, use additional copies of this letter if needed as systems become ready.)*		
Check Applicable System	**Systems**	**Date GC is Requesting for CxA on-site Functional Testing ****
☐	**TAB Verification**	
☐	**BMS, BAS, DDC or EMS**	
☐	**HVAC Systems**	
☐	**Plumbing Systems**	
☐	**Lighting Control Systems**	
☐	**Fire Alarm Systems**	
☐	**Security Systems**	
☐	**Irrigation**	
☐	**Metering Systems Verification**	
☐	**Building Enclosure Testing or Testing Observation**	

***** = Systems Technician Required*** – The DBE / subcontractor certifies that a systems technician familiar with and capable of operating each system to be commissioned will be available onsite throughout functional testing by 3QC. For BMS, BAS, DDC or EMS systems this must be the commissioning technician/programmer.

Failed Functional Testing – If 3QC arrives onsite, on the date indicated above, for functional testing which cannot be completed due to systems readiness failure, systems technician no-show, or other circumstances not caused by 3QC resulting in failed functional testing; it is understood that 3QC's client (listed below) will be invoiced for expenses incurred by 3QC. The DBE / subcontractor also agrees to reimburse said client for incurred expenses. 3QC expenses will be invoiced as follows:

- Travel expenses as applicable
- $2,500/day for each on-site 3QC CxA

Signature of 3QC's Client or Representative Print Name Date

Signature of DBE or CM at Risk Print Name Date

3.16 Exhibit B: Commissioning Activity Schedule

Commissioning Activity Schedule									
GC' s Baseline Schedule Activity ID #	Commissioning (Cx) Construction and Post-Construction Phases Activity		Building System				Parallel Construction Site Activity	Duration of Cx Activity	CxA Required Site Visit
			BECx	MEPCx	Metering	Security			
	1	Cx Kick-off Meeting	●	●	●	●	DBE mobilized onsite	1 day	●
	2	CxA provides electronic jobsite Cx Site Binder to CM and or DBE; including Pre-Functional Checklists and Building Enclosure Checklists	●	●	●	●	CM and or GC to receive Cx Site Binder from CxA during Cx Kick-off Meeting	-	
	3	CxA identifies submittals required for Cx	●	●	●	●	DBE provides a submittal list for CxA to review and highlight required submittals to be reviewed for Cx	-	
	4	CxA reviews submittals	●	●	●	●	A/E reviews submittals	TBD	
	5	CxA reviews building enclosure shop drawings	●				Architect's review of building enclosure shop drawings	TBD	
	6	CxA begins to receive O & M Manuals	●	●	●	●	Subcontractors provides O & M Manuals to DBE	TBD	
	7	CxA reviews specified building enclosure mockup	●				Architect's review of mockup	1 day	●
	8	CxA Site Observation - foundation waterproofing. site observation, Update Cx Issues Log	●				10 - 25% of waterproofing installed	0.5 day	●
	9								
	10	CxA attends pre-installation meetings for deck waterproofing and roofing	●				Day of specified pre-installation meetings	0.5 days	

Commissioning Activity Schedule									
GC' s Baseline Schedule Activity ID #	Commissioning (Cx) Construction and Post-Construction Phases Activity		Building System				Parallel Construction Site Activity	Duration of Cx Activity	CxA Required Site Visit
			BECx	MEPCx	Metering	Security			
	11	Site Verification; Mechanical equipment, update Cx Equipment List & update Cx Issues Log		●			Mechanical equipment set	1 day	●
	12	CxA Site Observation: exterior wall weather barrier membrane & flashing, update Cx Issues Log	●				10 - 25% of exterior wall weather barrier membrane installed	1 day	●
	13	CxA witnesses specified building enclosure testing performed by DBE / subcontractor and or owner's testing agency (see Building Enclosure Testing Matrix in Cx Plan)	●				Building enclosure system is complete and ready for specified test	1.5 days	●
	14	CxA Site Observation: perimeter wall insulation, update Cx Issues Log	●				10% - 25% perimeter wall insulation installed prior to drywall installation	0.5 day	●
	15	Cx Site Observation - Specified roof water testing, roof insulation observation, & update Cx Issues Log as required	●					1 day	●
	16	CxA to start development of Cx Functional Test Checklists		●	●	●	Submittal reviews complete	-	
	17	CxA notified that permanent power is installed		●	●	●	Permanent power installed	-	

Commissioning Activity Schedule									
GC' s Baseline Schedule Activity ID #	Commissioning (Cx) Construction and Post-Construction Phases Activity		Building System				Parallel Construction Site Activity	Duration of Cx Activity	CxA Required Site Visit
			BECx	MEPCx	Metering	Security			
	18	Site Verification; Metering equipment install and coordination. Update Cx Equipment List and update Cx Issues Log as needed.		●	●		Metering installed and started up.	0.5 Day	●
	19	CxA receives copies of the field Air Duct Leakage Testing Report		●			Air duct leakage testing completed	-	
	20	CxA conducts onsite functional testing procedures coordination meeting with CM, GC, MEP, and Security subcontractors		●	●	●	1 month prior to Cx Functional Testing	0.5 day	●
	21	CxA issues Functional Test Checklists to CM, GC, MEP, and security subcontractors		●	●	●	1 Month prior to Cx Functional Testing	-	
	22	CxA receives jobsite Pre-Functional Checklists and Building Enclosure Checklists from Cx Site Binder completed, signed, and dated		●	●	●	2 Weeks prior to Cx Functional Testing	-	
	23	Building LEED flush-out schedule received by CxA		●			CM or GC coordinates LEED flush-out schedule with Cx functional testing activities	TBD	
	24	CxA receives field TAB Report reviewed by Engineer of Record		●			1 Week prior to Cx Functional Testing	-	

Commissioning Activity Schedule									
GC' s Baseline Schedule Activity ID #	Commissioning (Cx) Construction and Post-Construction Phases Activity		Building System				Parallel Construction Site Activity	Duration of Cx Activity	CxA Required Site Visit
			BECx	MEPCx	Metering	Security			
	25	CxA receives completed/signed Systems Functional Testing Readiness Certification and Notification Letter for Commissioning indicating Commissioned Systems are ready for Cx Functional Testing		●	●	●	1 Week prior to Cx Functional Testing	-	
	26	CxA starts functional performance tests (FPTs) on TAB, BMS, HVAC, Metering, domestic hot water, lighting controls, fire life safety, communication, security, and irrigation control systems		●	●	●	CM and or GC sent CxA the following functional testing prerequisites: a. CxA received signed notification letter that TAB, BMS (including all graphics), HVAC, domestic hot water, lighting controls, fire life safety, communication, security, and irrigation control systems are completed and ready for Cx functional testing. b. Pre-functional checklist completed and signed. c. CxA received TAB report		
	27	CxA verification of the TAB report air and water values		●			TAB subcontractor meets CxA onsite to verify TAB report	1 day	●

Commissioning Activity Schedule									
GC' s Baseline Schedule Activity ID #	Commissioning (Cx) Construction and Post-Construction Phases Activity		Building System				Parallel Construction Site Activity	Duration of Cx Activity	CxA Required Site Visit
			BECx	MEPCx	Metering	Security			
	28	CxA FPTs of BMS		●	●		Controls subcontractor meets CxA onsite to perform Functional Testing of BMS after BMS point-to-point & checkout is completed	0.5 day	●
	29	CxA FPTs of Metering		●	●		Controls subcontractor and meets CxA onsite to perform metering system functional testing	0.5 day	●
	30	CxA FPTs of HVAC		●			Controls subcontractor and HVAC subcontractor meets CxA onsite to perform functional testing of HVAC	1.5 days	●
	31	CxA FPTs of domestic hot water		●			Plumbing subcontractor meets CxA onsite to perform functional testing of domestic hot water	0.5 days	●
	32	CxA FPTs of lighting controls		●	●		Electrical lighting controls subcontractor and electrical subcontractor meets CxA onsite to perform functional testing of lighting controls	0.5 days	●
	33	CxA FPTs of irrigation controls		●	●		Landscaping subcontractor meets CxA onsite to perform functional testing of irrigation controls	1/4 day (Entire Site)	●
	34	CxA FPTs of security systems				●	Security subcontractor meets CxA onsite to perform functional testing of security systems	2 days	●

Commissioning Activity Schedule									
GC' s Baseline Schedule Activity ID #	Commissioning (Cx) Construction and Post-Construction Phases Activity		Building System				Parallel Construction Site Activity	Duration of Cx Activity	CxA Required Site Visit
			BECx	MEPCx	Metering	Security			
	35	CxA performs building enclosure punch list verification site observation	●				Building enclosure systems are completed and GC and or CM verified all building enclosure punch list items are completed	1 day	●
	36	CxA receives building systems owner training agendas and training schedule	●	●		●	Cx functional testing completed	-	
	37	CxA confirms that Cx issues are resolved. (Preferably all issues are resolved.)	●	●		●	CM receives responses addressing Cx issues	TBD	
	38	Cx Report	●	●	●	●	Cx systems testing completed	14 days	
	39	Cx Systems Manual	●	●	●	●	Cx systems O & M Manuals sent to CxA	14 days	
	40	Begin Meter Verification Period: Once the building is operating in normal occupancy / capacity the verification period begins. Duration is 2-3 months depending. Activities are intermittent throughout.			●		Subcontractors assist CxA in confirming correct operation and reporting of the metering, resolving issues that may surface.	1 day (dispersed)	
	41	Cx Warranty Review	●	●	●	●	10 months from date of owner's occupancy	1 day	●
	42	Quarterly Metering Review: begins once the Meter Verification period is complete. Re-occurs every 3 months.			●		Owner Representative provides data (or remote login access) to CxA. Subcontractors available to address issues that may surface.	1 day (dispersed)	

SCHEDULE NOTES: (see following page)

The following sequential priorities are required to be followed:

1. Equipment is not “temporarily” started (for heating or cooling), until pre-start checklist items and all manufacturer’s pre-start procedures are completed, dirt, dust and other environmental and building integrity issues have been addressed.
2. Functional performance testing does not begin until Pre-Functional, start-up and TAB is completed for a given system.
3. The controls systems and equipment under its control is not functionally tested until all points have been calibrated and Pre-Functional Checklists are completed.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes provision of cast-in-place concrete designated as cast-in-place architectural concrete, including concrete that is to be constructed with specific form facings, reinforcement accessories, materials, mixtures, placement and finish requirements at exposed surfaces.

1. Formwork, temporary shoring and footings design.

2. Requirements of Division 3 Cast-in-Place Concrete, Formwork and Reinforcement Sections are complementary to, and apply to, this Section except as modified and/or supplemented herein.

B. Related Sections:

1. Section 01 74 19 - Construction Waste Management.

2. Section 03 10 00 – Concrete Forms and Accessories

3. Section 03 20 00 – Concrete Reinforcement.

4. Section 03 30 00 – Cast-in-Place Concrete.

1.2 DEFINITIONS.

A. Aggregate Exposure: Projection of coarse aggregate from matrix or mortar after completion of exposure operations.

B. Cast-in-Place Architectural Concrete: Concrete that is exposed to view, is designated as architectural concrete, and that requires special concrete materials, formwork, placement, or finishes to obtain specified architectural appearance. At all exposed concrete shearwalls**,** ~~and~~ columns, **and other concrete components identified on Drawings**, interior and exterior.

C. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

~~D. Design Reference Sample: Sample designated by Architect in the Contract Documents that reflects acceptable surface quality and appearance of cast-in-place architectural concrete.~~

E. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.3 REFERENCES

A. American Architectural Manufacturers Association (AAMA)

1. AAMA 800 - Voluntary Specifications and Test Methods for Sealants.

B. American Concrete Institute (ACI):

1. ACI 117 - Standard Specification for Tolerances for Concrete Construction and Materials.

2. ACI 301 – Specifications for Structural Concrete for Buildings.

C. ASTM International (ASTM):

1. ASTM C33 - Standard Specification for Concrete Aggregates.

2. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.

3. ASTM C150 – Standard Specification for Portland Cement.

4. ASTM C404 - Standard Specification for Aggregates for Masonry Grout.

D. Concrete Reinforcing Steel Institute (CRSI):

1. CRSI "Manual of Standard Practice".

E. United States Department of Commerce (DOC):

1. DOC PS-1 - Voluntary Product Standard.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at 2118 Milvia Street, Berkeley, CA. 94704.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following **that this Section specifies as required**:

1. Form-facing panels.
2. Form joint tape.
3. Form joint sealant.
4. Wood sealer.
5. Form-release agent.
6. ~~Surface retarder.~~
7. Form ties.
8. Bar supports.
9. ~~Portland cement.~~
10. ~~Fly ash.~~
11. ~~Slag cement.~~
12. ~~Blended hydraulic cement.~~

~~13. Aggregates.~~
~~14. Admixtures:~~

~~a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.~~

B. Design Mixtures: For each concrete mixture **not submitted as required in Section 03 30 00**, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Durability exposure class.
4. Maximum w/cm.
5. Calculated equilibrium unit weight, for lightweight concrete.
6. Slump limit.
7. Air content.
8. Nominal maximum aggregate size.
9. Amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Intended placement method.
11. Alternative design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings: Prepare formwork shop drawings prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms.

1. Show formwork construction, including dimensioned locations of form-facing material joints, construction joints, form joint-sealant details, form-tie locations and patterns, inserts and embedments, cutouts, cleanout panels, and other items that visually affect cast-in-place architectural concrete.

a) Include separate layout for formwork used in mockups, as well as temporary footings and shoring for vertical mockups.

b) Indicate proposed schedule and sequence of stripping of forms, shoring removal, and reshoring installation and removal.

c) Location of construction joints is subject to approval of Architect.

~~D. Samples: For each of the following materials:~~

~~1. Form-facing panels.~~
~~2. Form ties.~~
~~3. Form liners, 12-by-12-inch Sample, indicating texture.~~
~~4. Exposed aggregates.~~
~~5. Chamfers and rustications.~~

~~E. Concrete Schedule: For each location of each Class of concrete indicated in "Concrete Mixtures" Article, including the following:~~

~~1. Concrete Class designation.~~
~~2. Location within Project.~~
~~3. Exposure Class designation.~~
~~4. Formed Surface Finish designation and final finish.~~
~~5. Curing process.~~

F. Placement Schedule: Submit before start of placement operations.

1.6 INFORMATIONAL SUBMITTALS

~~A. Material Certificates: For each of the following:~~

~~1. Cementitious materials.~~
~~2. Admixtures.~~
~~3. Form materials and form-release agents.~~

~~B. Material Test Reports: For the following, by a qualified testing agency:~~

~~1. Portland cement.~~
~~2. Fly ash.~~
~~3. Slag cement.~~
~~4. Blended hydraulic cement.~~
~~5. Aggregates[: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity].~~

~~C. Research Reports: For concrete admixtures in accordance with ICC AC198.~~

~~D. Preconstruction Test Reports: For each mix design.~~

E. Minutes of preinstallation conference.

1.7 QUALITY ASSURANCE

A. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Installer Qualifications: An experienced cast-in-place architectural concrete installer, as evidenced by not less than five consecutive years' experience, specializing in installing cast-in-place architectural concrete similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1. Provide written evidence of qualifications and experience.
2. Include locations, descriptions, and photographs of completed projects, including name of architect, substantiating the quality of the installer's experience.

C. Mockups: Before casting architectural concrete, construct mockups, using the same procedures, equipment, materials, finishing procedures, and curing procedures that will be used for producing architectural concrete, to verify selections made under Sample submittals and to demonstrate typical joints, surface finish, color, texture, tolerances, and standard of workmanship. Build mockups to comply with the following requirements, using materials indicated for the completed Work:

1. Construct mockups in a location identified as acceptable to Contractor, Owner's Representative and Architect. Furnish temporary footing and shoring design.

2. Construct mockups as follows:

a. Flat Surfaces: Cast-in-place architectural concrete, minimum 8 feet by 8 feet with 8-inch thickness. At least one face and the vertical sides of the mockup shall be utilized for visual comparison to work in the field.

b. Cylindrical Columns: Cast-in-place architectural concrete, diameter indicated on Drawings, minimum 48 inches in length.

3. If building components are anticipated to be constructed in multiple lifts, construct mockups in at least two lifts.

4. Demonstrate curing, cleaning, and protecting of cast-in-place architectural concrete, finishes, and contraction joints, as applicable.

5. Intentionally damage part of the exposed-face surface for each finish, color, and texture, and in presence of Architect demonstrate materials and techniques proposed for repair to match adjacent undamaged surfaces.

6. In presence of Architect, demonstrate materials and techniques proposed for repair of tie holes and surface blemishes to match adjacent undamaged surfaces.

7. Apply specified anti-graffiti coating to approximately one-half of the surface of the mockup.

8. Obtain Architect's approval of mockups before casting architectural concrete.

9. Upon conclusion of permanent work related to mockups and the approval of the Architect, demolish and remove all materials related to the mockup, footings and shoring. Dispose of material in accordance with Section 01 74 19 – Construction Waste Management.

~~1.8 PRECONSTRUCTION TESTING~~

~~A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.~~

~~1. Include the following information in each test report:~~

~~a. Admixture dosage rates.~~
~~b. Slump.~~
~~c. Air content.~~
~~d. Seven-day compressive strength.~~
~~e. 28-day compressive strength.~~

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.2 FORM-FACING MATERIALS

A. Comply with Section 03 10 00 "Concrete Forming and Accessories" for formwork and other form-facing material requirements, and as specified in this Section.

B. Form-Facing Panels for Exposed, As-Cast Finishes:

~~1. Steel- and glass-fiber-reinforced plastic, or other approved nonabsorptive panel materials that provide continuous, true, and smooth architectural concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.~~

1. Exterior-grade plywood panels, nonabsorptive, that will provide continuous, true, and smooth architectural concrete surfaces, high-density overlay, Class 1, or better complying with DOC PS 1[~~, or Finnish phenolic overlaid birch plywood~~].

~~C. Rustication Strips: Metal[, dressed wood, or rigid plastic, with sides beveled and back kerfed; nonstaining; in longest practicable lengths.~~

C. Forms for Cylindrical Columns: Steel forms of diameter and length required, without spiral or vertical seams. Provide forms with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.

D. Chamfer Strips: Metal, rigid plastic, elastomeric rubber, or dressed wood, 3/4 by 3/4 inch , minimum; nonstaining; in longest practicable lengths.

E. Form Joint Tape: Compressible foam tape; pressure sensitive; AAMA 800; minimum 1/4 inch thick.

F. Form Joint Sealant: Elastomeric sealant complying with ASTM C920, Type M or Type S, Grade NS, that adheres to form joint substrates, does not stain, does not adversely affect concrete surfaces, and does not impair subsequent treatments and finishes of concrete surfaces.

G. Wood Sealer: Penetrating, clear, polyurethane wood sealer formulated to reduce absorption of bleed water and prevent migration of set-retarding chemicals from wood and does not stain, does not adversely affect concrete surfaces, and does not impair subsequent treatments and finishes of concrete surfaces.

H. Form-Release Agent: Commercially formulated, colorless form-release agent that does not bond with, stain, or adversely affect architectural concrete surfaces and will not impair subsequent treatments and finishes of architectural concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

~~I. Surface Retarder: Water-soluble chemical liquid set retarder, for application on form-facing materials, capable of temporarily delaying final hardening of newly placed architectural concrete surface to depth of aggregate exposure specified.~~

K. Form Ties: Factory-fabricated, removable ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish ties with tapered tie cone spreaders that, when removed, will leave holes no larger than 3/4 inch in diameter on architectural concrete surface.

~~1. Furnish glass-fiber-reinforced plastic ties, not less than 1/2 inch and not more than 1 inch (25 mm) in diameter, of color [to match Architect's sample] [selected by Architect from manufacturer's full range].~~

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire fabric in place.

1. Manufacture bar supports in accordance with CRSI's "Manual of Standard Practice."
2. Where legs of wire bar supports contact forms, use gray, all-plastic] CRSI Class 1, gray, plastic-protected bar supports.

~~3. Maximum Coarse-Aggregate Size: 3/4 inch~~
~~4. Gradation: Uniformly graded.~~

~~B. Normal-Weight Fine Aggregate: ASTM C33/C33M manufactured or natural sand, free of materials with deleterious reactivity to alkali in cement, from same source for entire Project.~~

~~C. Air-Entraining Admixture: As specified in Section 033000 "Cast-in-Place Concrete."~~

~~D. Chemical Admixtures: As specified in Section 033000 "Cast-in-Place Concrete," and certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.~~

~~E. Water and Water Used to Make Ice: ASTM C94/C94M, potable or complying with ASTM C1602/C1602M, including all limits listed in Table 2 and requirements of paragraph 5.4.~~

2.4 CURING MATERIALS

A. Comply with Section 03 30 00 "Cast-in-Place Concrete."

~~2.5 CONCRETE MIXTURES, GENERAL~~

~~1. Fly Ash or Other Pozzolans: 25 percent by mass.~~
~~2. Slag Cement: 50 percent by mass.~~
~~3. Total of Fly Ash or Other Pozzolans, Slag Cement: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass.~~
~~4. Total of Fly Ash or Other Pozzolans: 35 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass.~~

~~B. Admixtures: Use admixtures in accordance with manufacturer's written instructions.~~
~~1. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.~~

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

A. Comply with Section 031000 "Concrete Forming and Accessories" for formwork, embedded items, and shoring and reshoring, and as specified in this Section.

B. Limit deflection of form-facing panels to not exceed ACI 301 requirements.

C. Limit cast-in-place architectural concrete surface irregularities, as follows:
1. Surface Finish-3.0: ACI 117 Class A, 1/8 inch.

D. Construct forms to result in cast-in-place architectural concrete that complies with ACI 117.

E. Seal form joints, chamfers, rustication joints, and penetrations at form ties with form joint tape or form joint sealant to prevent cement paste leakage.

1. Provide closure backing materials if indented rustication is used over a ribbed form line, and seal joint between rustication strip and form with joint sealant.

F. Chamfer exterior corners and edges of cast-in-place architectural concrete.

G. Coat contact surfaces of ~~wood rustications and~~ chamfer strips with wood sealer before placing reinforcement, anchoring devices, and embedded items.

H. Coat contact surfaces of forms with form-release agent, in accordance with manufacturer's written instructions, before placing reinforcement, anchoring devices, and embedded items.

~~I. Coat contact surfaces of forms with surface retarder, in accordance with manufacturer's written instructions, before placing reinforcement, anchoring devices, and embedded items.~~

3.2 REINFORCEMENT AND ACCESSORIES INSTALLATION

A. Comply with Section 03 20 00 – Concrete Reinforcing for fabricating and installing steel reinforcement and accessories.

3.3 FORM REMOVAL AND REUSE

A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for minimum 72 hours after placing concrete and in accordance with Section 03 30 00 – Cast-in-Place Concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Schedule form removal to maintain surface appearance that matches approved mockups.

2. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved its compressive strength in accordance with Section 03 30 00 – Cast-in-Place Concrete.

3. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

4. If glass-fiber-reinforced plastic form ties are required, cut off and grind ties flush with surface of concrete. Cut off tie at embedded tip of cone if using cone spreaders.

B. Clean and repair surfaces of forms to be reused in the Work. Remove fins and laitance. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for reuse at exposed surfaces.

1. Apply new form-release agent.

3.4 JOINTS

A. Construction Joints: Install construction joints true to line, with faces perpendicular to surface plane of cast-in-place architectural concrete, so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.

3.5 CONCRETE PLACEMENT

A. Comply with Section 03 30 00 Cast-in-Place Concrete.

3.6 FINISHING FORMED SURFACES

~~A. Comply with Section 03 30 00 Cast-in-Place Concrete.~~

~~B. Architectural Concrete Finish: Match Architect's design reference sample, identified and described as indicated, to satisfaction of Architect.~~

~~C. As-Cast Surface Finishes: Comply with Section 03 30 00 Cast-in-Place Concrete for the following:~~

~~1. ACI 301 (ACI 301M) Surface Finish 3.0 (SF-3.0.)~~

~~D. Final Concrete Finish: Comply with Section 033000 "Cast-in-Place Concrete."~~

A. Exposed surfaces shall comply with ACI 301 and the following requirements.

B. As-Cast Surface Finishes: Comply with ACI 301 Surface Finish 3.0.

1. Patch voids larger than 3/4 inch wide or 1/2 inch deep.

2. Remove projections larger than 1/8 inch.

3. Patch tie holes.

4. Surface Tolerance: ACI 117 Class A.

C. Grout-Cleaned Rubbed Finishes: Apply to as-cast surface finishes.

1. Clean concrete surfaces after contiguous surfaces are completed and accessible.

2. Do not clean concrete surfaces as Work progresses.

3. Mix 1 part portland cement to 1-1/2 parts fine sand, complying with ASTM C144 or ASTM C404, by volume, with sufficient water to produce a mixture with the

consistency of thick paint. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces.

4. **Wet concrete surfaces.**

5. **Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap, and keep surface damp by fog spray for at least 36 hours.**

6. **Maintain required surface and variances to match mockups.**

D. Maintain uniformity of architectural concrete finishes over construction joints unless otherwise indicated.

3.7 CONCRETE CURING

A. Comply with Section 03 30 00 Cast-in-Place Concrete using identical curing procedures to that used for ~~field sample panels~~ **mockups**.

3.8 REPAIR

A. Comply with ACI 301 ~~(ACI 301M)~~.

B. Repair damaged finished surfaces of cast-in-place architectural concrete when repairing is approved by Architect.

C. Match repairs to color, texture, and uniformity of surrounding surfaces and to repairs on approved field sample panels.

D. Remove and replace cast-in-place architectural concrete that cannot be repaired to Architect's approval.

3.9 FIELD QUALITY CONTROL

A. Comply with Section 03 30 00 "Cast-in-Place Concrete."

3.10 CLEANING

A. Clean cast-in-place architectural concrete surfaces after finish treatment to remove stains, markings, dust, and debris.

B. Wash and rinse surfaces in accordance with concrete finish applicator's written instructions.

1. Protect other Work from staining or damage due to cleaning operations.
2. Do not use cleaning materials or processes that could change the appearance of cast-in-place architectural concrete finishes.

3.11 PROTECTION

A. Protect corners, edges, and surfaces of cast-in-place architectural concrete from damage; use guards and barricades.

B. Protect cast-in-place architectural concrete from staining, laitance, and contamination during remainder of construction period.

3.12 FINAL ACCEPTANCE

A. Final acceptance of completed architectural concrete Work will be determined by Architect by comparing approved field sample panels with installed Work, when viewed at a distance of ~~20~~ **15** feet

END OF SECTION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Work Included: Concrete polishing, complete, as shown and specified.

B. Other Applicable Sections: Following Sections apply to Work under this Section.

1. Section 03 10 00 Concrete Formwork.

2. Section 03 20 00 Concrete Reinforcement.

3. Section 03 30 00 Cast-In-Place Concrete.

1.3 REFERENCES

A. General: Comply with the applicable provisions of the referenced standards except as modified by governing codes and the Contract Documents. Where a recommendation occurs in the referenced standards, it shall be considered mandatory. In the event of conflict, the more stringent standard or requirement shall govern.

1. American Concrete Institute (ACI):

a. ACI 301 “Specifications for Structural Concrete for Buildings”.

b. 302.1R “Recommend Practice for Concrete Floor and Slab Construction”.

2. American Society for Testing and Materials (ASTM)

a. ASTM D2047 “Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine”.

1.4 SYSTEM DESCRIPTION

A. Performance Requirements

1. Slip Resistance, Wet Dynamic Coefficient of Friction (DCoF): Wet DCoF of installed flooring and paving shall be as follows, when measured in accordance with NFSI/ANSI B101.3.

a. Level Surfaces: Not less than 0.42.

1.5 SUBMITTALS

A. Product Data: Submit for Architect's action. Submit manufacturer's literature and installation instructions for each material and accessory, clearly notating specified requirements. Include technical data sheet giving descriptive data, curing time, and application requirements.

B. Samples:

1. Provide polished and semi-polished samples for Architect's initial review and selection. Samples to be at least 12 in. square and will be returned to subcontractor. Selected sample will be kept for project record.

C. Quality Assurance/Quality Control Submittals: Submit for Architect's information.

1. Certificates:

a. Document Review: Submit a written statement signed by the Contractor and the Applicator stating that the Contract Documents, shop drawings and product data have been reviewed with qualified manufacturer representatives. The statement shall certify that selected materials are proper, compatible with contiguous materials and adequate for the application shown.

b. Installer's Qualifications

1.6 QUALITY ASSURANCE

A. Qualified Installer: Installer to have 5 years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the materials manufacturer.

B. Walkway Auditor: Certified by NFSI as a "Walkway Auditor Certificate Holder."

C. Regulatory Requirements: Comply with applicable requirements of the laws, codes, and regulations of Authorities Having Jurisdiction (AHJs). Obtain necessary approvals from AHJs.

D. Mock−Up(s):

1. Visual: Prepare a visual mock-up of the polished concrete, extent as shown. Or, if not shown, extent shall be at least 16 ft. by 16 ft. Notify Architect when mock-up is available for review. Do not proceed with work until Architect has approved the visual mock-up.

E. Pre-Installation Meetings: Before the start of Work, meet at the Project site to review methods and sequence of installation, special details and conditions, quality standards, testing and quality control requirements, job organization

and other pertinent topics related to the Work. The meeting shall include the Owner, Architect, Architect's consultants, Contractor, and subcontractors whose work is relevant to this Specification Section.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Comply with manufacturer's instructions. Concrete shall be cured a minimum of 28 days.

B. Application shall take place at least 10 days prior to racking and other in-store accessory installation providing a complete, uninhibited concrete slab for application.

C. Power Supply: Provide generator to supply required 480V, 3 phase, 50 amp power required to operate equipment.

PART 2 – PRODUCTS

2.1 POLISHED CONCRETE MATERIALS

A. Polished Concrete: Provide polished concrete floor system "Ultraflor Diamatic USA" or equal. Flooring system shall be NFSI certified and meet specified performance requirements. At areas noted as ~~C-1~~ **FC1** on finish plans. Semi-polished finish.

B. Aggregate for Concrete Mix: Coarse aggregate. See Section 03 30 00, 2.2 B.

C. Integral Color: Provide pricing for add alternate to include integrally colored concrete.

D. Densifier: QuestMark 7923 DiamondGuard II concrete Densifier hardening/sealing agent, or approved equal.

E. Sealer Coat: As recommended by Installer.

F. Water: Potable.

G. Epoxy Filler: QuestMark 3380 100% Solids Epoxy Liquid, or approved equal.

H. Joint Sealant: Two-component sealant.
1. Products: QuestMark 5830 Fast Set Flexible Joint Sealant, or approved equal. Color: Clear.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

A. Examine substrate, with installer present, for conditions affecting performance of finish. Correct conditions detrimental to timely and proper work. Do not proceed until unsatisfactory conditions are corrected.

B. Verify that base slabs meet finish and surface profile requirements in Division 3 section "Cast-in-Place Concrete" and Project Conditions above.

C. Prior to application, verify that floor surfaces are free of construction laitance.

3.2 APPLICATION OF SEALED CONCRETE

A. General: Apply concrete sealer in accordance with manufacturer's recommendations.

B. Apply two coats of concrete sealer, unless otherwise directed by Architect.

3.3 APPLICATION OF POLISHED CONCRETE

A. LEVEL 2 CUT / A slightly deeper cut the exposes the fine aggregates and begins to expose the coarse aggregates. Also referred to as a salt and pepper finish.

B. Specified polished floor details

a. Specified floor finish shall have a cut Level of 2
b. Specified floor finish shall have a gloss Level of B – Medium gloss reading of 41-55. 800 grit diamond finish.
c. Specified Flor-Color shall be TBD
d. See addendum for specific steps

1. GRIND/POLISH #1: DIAMATIC 60/80 Grit Metal Bonded Diamonds.
2. Broom and vacuum the floor to remove all residual dust.
3. GRIND/POLISH #2: DIAMATIC #1 Transitional Diamonds, Ceramic Bonded.
4. Broom and vacuum the floor to remove all residual dust.
5. GRIND/POLISH #3: DIAMATIC 200 Grit Resin Bonded Diamonds.
6. Broom and vacuum the floor to remove all residual dust.
7. Apply DIAMATIC FLOR-SIL™ per application instructions at a rate of 400 square feet per gallon.
8. Allow DIAMATIC FLOR-SIL™ to dry 1 hour before continuing on to the next step.
9. GRIND/POLISH #4: DIAMATIC 400 Grit Resin Bonded Diamonds.
10. Broom and vacuum the floor to remove all residual dust.
11. GRIND/POLISH #5: DIAMATIC 800 Grit Resin Bonded Diamonds.
12. Broom and vacuum the floor to remove all residual dust.

13. MICROPOLISH/BURNISH #1: FLOR-GRIT 800 Diamond Impregnated Pad.
14. Dry mop the floor clean to remove all debris.
15. Apply DIAMATIC FLOR-FINISH (High Gloss) per application instructions at a rate of 2,500- 3,000 square feet per gallon.
16. Allow to dry a minimum of 15-30 minutes.
17. MICROPOLISH/BURNISH #2: FLOR-GRIT 800 Diamond Impregnated Pad.
18. Dry mop the floor clean to remove all debris.
19. Apply DIAMATIC FLOR-FINISH (High Gloss) per application instructions at a rate of 3,000 square feet per gallon, 90 degrees to the first application.
20. Allow to dry a minimum of 15 minutes.
21. MICROPOLISH/BURNISH #3: FLOR-GRIT 1500 Diamond Impregnated Pad.

3.4 JOINT SEALANT

A. Install sealant in all construction, isolation, and control joints in exposed slabs, in accordance with manufacturer's recommendations. Coordinate timing of installation with floor polishing operations.

B. Allow slab to cure to the maximum extent possible before installing joint sealant, but not less than two months.

C. Remove all loose material from joints by wire brushing.

D. Provide backer material to provide joint depth to width ratio, and minimum depth required by sealant manufacturer.

E. Install sealants so that sealants completely fill recess and provide uniform, cross-sectional shapes and depths relative to joint widths.

F. Allow three day sealant cure time before foot traffic and one week before full service use.

3.5 WORKMANSHIP AND CLEANING

A. The premises shall be kept clean and free of debris.

B. Remove spatter from adjoining surfaces.

C. Repair damages to surface caused by cleaning operations.

3.6 QUALITY CONTROL

A. Contractor shall hire a Walkway Auditor to test entirety of the polished concrete floor. Floor auditing shall be conducted in accordance with NFIS/ANSI B101.3.

Where concrete floor does not meet specified performance requirements, Contractor shall provide remediation, at no additional cost, that is acceptable to the Owner and Architect.

3.7 PROTECTION

A. Protect finished work until fully cured in accordance with manufacturer's recommendations.

B. Use Ramboard, or equal floor covering/protection immediately following polishing and maintain through substantial project completion.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes rigid and semi-rigid board insulation for use at exterior wall cavities.

B. Related Sections:

1. Section 01 81 13 – Sustainability Requirements.
2. Section 05 40 00 – Cold Formed Metal Framing: Coordination with exterior wall assemblies.
3. Section 07 21 16 – Blanket Insulation: Provision of insulation at stud cavities.
4. Section 07 27 14 – Self-Adhered Sheet Air Barriers.
5. Section 07 90 00 – Joint Protection.
6. Section 09 21 16 - Gypsum Board Assemblies: Sheathing.
7. Divisions 22 and 23 - Mechanical and Plumbing Pipe and Duct Insulation:

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
2. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
3. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction.
4. ASTM C795 – Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.
5. ASTM C1104 - Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation
6. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
8. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer information on insulation product characteristics and accessories, performance criteria, and recommended installation methods.

B. Sustainable Design Submittals: Section 01 81 13 Sustainable Design Requirements.

1. Materials Resources Certificate: Certify recycled material content for recycled content products.

a. Product Cost Data: Products with recycled material content. Exclude cost of labor and equipment to install products.

C. Closeout: Warranty.

1.4 QUALITY ASSURANCE

A. Manufacturer: Company with minimum five years' experience specializing in manufacturing of products specified in this Section.

B. Installer: Company with minimum three years' experience specializing in installation of Work of this Section.

C. Fire Test Response Characteristics: Provide insulation and related materials with the fire-test response characteristics specified, as determined by testing identical products per test method indicated by Underwriters Laboratories, Intertek or other testing agency acceptable to authority having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver materials to Project site in manufacturers' original packaging. Clearly identify manufacturer, contents, brand name, applicable standard, and R-value.

B. Storage and Protection: Store materials off ground, protected against weather, condensation, and damage. Comply with manufacturer's recommendations for storage and protection during installation. Replace wet or damaged insulation materials.

1.6 ENVIRONMENTAL CONDITIONS

A. Do not install adhesives when temperature or weather conditions are detrimental to successful installation.

1.7 WARRANTY

A. Division 1 – Warranties.

PART 2 – PRODUCTS

2.1 BOARD INSULATION – CAVITY WALLS

A. Manufacturers: Furnish compliant products of one of the following or approved equal:

1. ~~Roxul~~ **Rockwool**

2.2 BOARD INSULATION – CURTAIN WALL CAVITY

A. Thermafiber Firespan 90 **with vapor-retarding foil face** (formaldehyde free)**; all seams and terminations to be taped air and vapor tight with compatible vapor impermeable tape for condensation resistance.**

1. Other acceptable products (Thermafiber Rainbarrier 45).

2.3 ACCESSORIES

A. Attachment Devices: Non-corrosive **stainless steel** mechanical fasteners in accordance with insulation manufacturer's written recommendations.

B. Adhesives: All-purpose construction adhesive in accordance with insulation manufacturer's written recommendations.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that substrate, air barrier, adjacent materials and insulation boards are dry and ready to receive insulation and adhesive, where applicable.

B. Verify that substrate surface is flat and free of materials or substances affecting adhesive bond.

3.2 INSTALLATION – CAVITY WALLS

A. Install per insulation manufacturer's written recommendations for substrate and means of cladding support.

1. Apply adhesive in beads or full-bedding and place boards to maximize contact bedding

2. Where not utilizing adhesive, friction fit boards between cladding support components and utilize impaling fasteners to substrate at recommended frequency.

3. Orient boards horizontally when possible. Butt edges and end joints to adjacent boards and protrusions and stagger end joints.

4. Place locking discs on any impaled-type fasteners.

B. Install insulation to maintain continuity of thermal protection to building elements and spaces. Cut and fit insulation tight to protrusions or interruptions to insulation plane, except keep insulation minimum three inches clear of heat emitting devices such as recessed light fixtures, chimneys and vents.

3.3 PROTECTION

A. Protect installed products and accessories from damage during construction. Replace damaged insulation boards at no additional cost to Owner.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes above-grade sheet materials for controlling vapor diffusion through slabs on-grade.

B. Related Sections:

1. Section 03 30 00 – Cast In Place Concrete.
2. Section 05 40 00 – Cold Formed Metal Framing.
3. Section 07 21 16 – Blanket Insulation.
4. Section 09 21 16 – Gypsum Board Assemblies.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction.
2. ASTM D1709 - Standard Test Methods for Impact Resistance of Plastic Film by the Free-Falling Dart Method.
3. ASTM E96 - Test Methods for Water Vapor Transmission of Materials.
4. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
5. ASTM E1643 - Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
6. ASTM E1745 - Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
7. ASTM F1249 - Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor.

1.3 PERFORMANCE REQUIRMENTS

A. Underslab Sheet Vapor Retarder:

1. General: Product shall have following characteristics to provide resistance to transmission of water vapor into concrete slab and durability to resist damage due to construction-related activities.
   a. Water Vapor Permeance: ASTM E154, Section 7 or ASTM D1249; 0.010 perms (grains/(ft^2*hr*in.Hg)) maximum.
   b. Tensile Strength: ASTM E154, Section 9; 45.0 lbf/in minimum.
   c. Puncture Resistance: ASTM D1709, Method B; 2300 grams minimum.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's published product literature, including physical and performance characteristics, standard installation details, installation instructions, and general recommendations.

1.5 QUALITY ASSURANCE

A. Installer's Qualifications:

1. Minimum 3 years' experience with specified materials on projects of similar scope and complexity.

2. Acceptable to manufacturer of vapor retarder materials.

PART 2 – PRODUCTS

2.1 UNDERSLAB SHEET VAPOR RETARDER

A. Manufacturers: Furnish compliant product of one of the following or approved equal:

1. Insulation Solutions, Incorporated.

2. Raven Industries, Incorporated.

3. Stego Industries, LLC.

B. Membrane: ASTM E1745, Class A; polyethylene or polyolefin film meeting specified Performance Requirements. Basis of Specification: Stego Industries' "Stego Wrap 15 mil".

C. Accessories:

1. Seaming Tape: Manufacturer's recommended compatible pressure-sensitive adhesive tape. Minimum 4 in. wide self-adhering type designed to maintain vapor retarder integrity.

2. Termination Tape: Manufacturer's recommended compatible pressure sensitive double-side adhesive tape. Minimum 4 in. wide self-adhering type designed to maintain vapor retarder integrity. Basis of Specification: Stego Industries' "Crete-Claw Tape".

~~2.~~**3.** Mastic Adhesive: Manufacturer's recommended mastic with ASTM E96 vapor transmission rate of 0.3 perms or less.

PART 3 – EXECUTION

3.1 GENERAL

A. Underslab Vapor Retarder Manufacturer's Instructions: Prepare substrates, apply primers and install the work, including components and accessories, in accordance with the manufacturer's instructions, except where more stringent requirements are

shown or specified. Examine the areas to receive the Work and remedy detrimental conditions.

1. Ensure sleeves, curbs, and projections that pass through vapor retarder are properly and rigidly installed.
2. Ensure base material is installed as specified, is free of projections and irregularities that may be detrimental to proper installation of vapor retarder.
3. Penetrations through the vapor retarder are not allowed except for reinforcing steel and permanent utilities.

3.2 UNDERSLAB VAPOR RETARDER INSTALLATION

A. Install in accordance with most stringent requirements of ASTM E1643, manufacturer's instructions, and as specified herein.

B. Place sheet to create fewest number of laps with long dimension parallel to length of the slab area. Make laps a minimum of 6" wide. Completely seal the laps and penetrations with waterproof seaming tape.

C. Further seal penetrations with liquid membrane or as recommended by manufacturer.

D. Lap vapor retarder and temporarily secure with seaming tape onto top surface of footing elements to the extent necessary to ensure they remain secured when thickened slab edges are cast. Maintain edges minimum 1-1/2 inches clear of vertical dowels.

E. Repair damaged areas by cutting patches of vapor retarder sheeting, overlapping damaged area 6 inches and taping all four sides with pressure sensitive tape. Ballast the sheet as required to hold in place and protect from damage during placement of reinforcing and concrete.

3.3 FIELD QUALITY CONTROL

A. Final Underslab Vapor Retarder Inspection: Arrange job walk with either project inspector and/or Architect immediately prior to the placement of concrete slab. Identify damaged areas and correct as indicated under Installation.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes fluid-applied air and weather barrier systems and accessories to control the movement of moisture and air through a wall.

B. Work Specified Elsewhere:

1. Section 07 62 00 – Sheet Metal Flashing and Trim.
2. Section 07 92 00 – Joint Sealants.
3. Section 09 21 16 – Gypsum Board Assemblies: Exterior Sheathing.

1.2 REFERENCES

A. Air Barrier Association of America (ABAA):

1. ABAA Quality Assurance Program.

B. American Society for Testing and Materials (ASTM):

1. ASTM C1193 – Guide for Use of Joint Sealants.
2. ASTM E96 – Test Methods for Water Vapor Transmission of Materials, Procedure B.
3. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.

1.3 PERFORMANCE REQUIREMENTS

1. Service Temperature: Minimum 175 degrees Fahrenheit.
2. Membrane Air Permeance: ASTM E2178; test pressure of 1.57 lb/ft^2 (75 Pa); maximum 0.002 cfm/ ft^2 (0.002 L/s/m^2).
3. Membrane Water Vapor Permeance: ASTM E96, Method B; minimum 10.0 perms.
4. Manufacturer's Warranted Maximum UV Exposure Limit: 60 days or greater.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data, tested physical and performance properties, installation instructions, and instructions for evaluating, preparing and treating substrate.

1. Include VOC content of each material, and applicable legal limit in the project jurisdiction.

B. Quality Assurance/Quality Control Submittals:

1. Submit a written statement signed by the Contractor and the Applicator stating that the Contract Documents and product data have been reviewed with qualified manufacturer representatives. The statement shall certify that proposed materials are permanently chemically compatible with each of the adjacent material proposed for use.

2. Installer's Qualifications.

C. Closeout Submittals:

1. Warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer: Obtain primary materials from a single manufacturer that is a currently accredited member of the ABAA. Secondary materials shall be obtained from a source acceptable to the primary materials manufacturer.

B. Qualified Installer: Installer to be currently accredited by the AABA and have 5 years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the materials manufacturer. Installation of weather barriers, membrane flashings, and sealant shall be the responsibility of the membrane applicator to ensure undivided responsibility.

C. Pre-Installation Meetings: Before the start of Work, meet at the Project site to review methods and sequence of installation, special details and conditions, quality standards, testing and quality control requirements, job organization and other pertinent topics related to the Work. The meeting shall include Owner Representatives, Architect, Contractor, and subcontractors whose work is relevant to this Specification Section.

D. Field Quality Assurance: Implement the ABAA Quality Assurance Program requirements. Cooperate with AABA and other inspectors, as well as Owner's testing and inspection agencies. Do not conceal Work until it has been inspected, tested and accepted.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Products delivered to the job site shall be in the original unopened containers or wrappings.

B. Storage and Protection: Handle all materials to prevent damage. Place all materials on pallets and fully protected from moisture with canvas tarpaulins.

1.7 PROJECT / SITE CONDITIONS

A. Proceed with weather barrier installation only after substrate preparation is complete. Obtain acceptance from the weather barriers manufacturer's representative of substrate surface before proceeding with installation. Weather barriers contractor is

responsible to ensure substrate is adequately prepared to receive weather barriers system.

1.8 WARRANTY

A. General: Warranties shall pay for all costs associated with repairs and replacement upon notification of defects.

B. Material Warranty: Provide material manufacturer's product warranty for a minimum of five (5) years from date of Substantial Completion.

C. Installation Warranty: Provide installation warranty for a minimum of five (5) years from date of Substantial Completion. Warranty shall include all accessories and materials of the air barrier assembly against failures including loss of air-tight seal, loss of watertight seal, loss of attachment, loss of adhesion and failure to cure properly.

PART 2 – PRODUCTS

2.1 FLUID-APPLIED MEMBRANE AIR BARRIERS

A. Manufacturers: Furnish compliant products of one of the following or approved equal:

1. Grace Construction Products.
2. Henry Company.
3. Sto Corporation.

B. System Description: Fluid-applied, single component, ~~acrylic membrane~~ **STPE** that cures to form a resilient, monolithic, fully-bonded elastomeric sheet when applied to construction substrates. Material shall allow the passage of water vapor, while forming a barrier against air and liquid water. Basis of specification: Grace Construction Products' "Perm-A-Barrier ~~VP~~ **VPL 50**" and associated accessories.

2.2 COMPONENTS

A. Fluid-Applied Vapor Permeable Membrane Air Barrier: UV-resistant, elastomeric, modified bituminous membrane. "Perm-A-Barrier ~~VP~~ **VPL 50**". (FAM).

B. Flashing Membrane: Self-adhering, UV-resistant, polyethylene film reinforced rubberized asphalt laminated to layer of butyl adhesive with release liner backing. "Perm-A-Barrier Detail Membrane". (SAFM).

C. Detail Membrane: Self-adhering, UV-resistant, polyethylene film reinforced rubberized asphalt bonded to aluminum film, approximately 40 mil thick. "Perm-A-Barrier Aluminum Flashing" at openings. (SADM).

D. High-Temperature Flashing Membrane: Self-adhering, UV-resistant, polyethylene reinforced film rubberized asphalt laminated to an aluminum foil, approximately 45 mil thick. "Protecto Wrap PS45".

D. Primer: Air and weather barrier manufacturer's water-based wall primer for self-adhering transition membrane. "Perm-A-Barrier WB Primer".

E. Sealants, Mastics Adhesives and Tapes: As recommended by Manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that substrates and conditions, including any cladding anchors, are ready to accept the Work of this section. Notify Architect in writing of any discrepancies.

B. All surfaces must be sound, dry, clean and free of oil, grease, dirt, excess mortar or other contaminants detrimental to the adhesion of the membranes. Fill voids, gaps and spalled areas in substrate to provide an even plane.

3.2 SURFACE PREPARATION

A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid-applied air barrier assembly.

B. Exterior sheathing panels: Ensure that the boards are sufficiently stabilized with corners and edges fastened with appropriate screws. Pre-treat all screw heads and board joints per air barrier manufacturer's recommendations.

C. Install primer to substrate if instructed by air barrier manufacturer.

D. Related Materials: Treat construction joints and install flashing as shown on Drawings and recommended by manufacturer.

E. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.

F. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

3.3 INSTALLATION

A. Install air barrier accessories and fluid-applied membrane air barrier material to provide continuity throughout the building envelope in a shingle fashion. Install materials in accordance with material manufacturer's instructions and the following (unless manufacturer recommends other procedures in writing based on project conditions or particular requirements of their recommended materials):

1. Position subsequent sheets of transition material so that membrane overlaps the membrane sheet below by a minimum of 2 inches, unless greater overlap is

recommended by the material manufacturer. Ensure transition membrane is securely sealed onto substrate with roller.

2. Overlap horizontally adjacent pieces of transition material a minimum of 2 inches, unless greater overlap is recommended by the material manufacturer.

3. Seal around all penetrations with termination mastic/sealant, detail flashing or other procedure in accordance with material manufacturer's instructions, ensuring chemical compatibility amongst adjoining materials.

4. Connect air barrier in exterior wall assembly continuously to the air barrier of the roof, to concrete below-grade structures, to windows, curtain wall, storefront, louvers, exterior doors, other intersection conditions and transitions from wet cavity to dry cavity and seal penetrations using accessory materials in accordance with the material manufacturer's instructions.

5. Provide transition material at changes in substrate plane with detail membrane under membrane to eliminate all inside and outside corners and to make a smooth transition from one plane to another.

6. Provide mechanically fastened non-corrosive metal sheet or other manufacturer approved transition material to span gaps greater than 1 inch in substrate plane and to make a smooth transition from one plane to the other. Transition membrane shall be installed continuously from air barrier material onto sheet metal maintaining 2 inch overlap on both edges.

7. Lap transition membrane over top edge of through-wall, head- or other metal flashings. Transition membrane shall be installed continuously from air barrier material onto sheet metal maintaining 2 inch overlap on both edges.

8. Provide backup for the membrane to accommodate anticipated movement or use other manufacturer approved transition material at deflection and control joints.

9. Provide transition to the joint assemblies at expansion and seismic joints.

10. Apply a bead or trowel coat of mastic along membrane seams at reverse lapped seams, rough cuts, and as recommended by the material manufacturer.

11. Seal top edge of the self-adhered membrane to substrate with termination mastic at end of each working day.

12. Inspect installation assembly prior to AABA inspection and repair punctures, damaged areas and inadequately lapped seams with a patch of detail membrane extending 6 inches beyond repaired areas.

3.4 FIELD QUALITY CONTROL

A. Inspections: Air-barrier materials, accessories and installation are subject to AABA's testing agency for inspection for compliance with requirements. Notify AABA in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Do not cover Work of this Section until testing and inspection is accepted. Arrange and pay for site audits by ABAA to verify conformance with the material manufacturer's

instructions, the site Quality Assurance Program used by ABAA, and this section of the project specification.

B. Perform audits at rate recommended by AABA.

C. Forward written audit reports to the Architect within 10 working days of the inspection and test being performed.

D. Air barriers will be considered defective if they do not pass tests and inspections. Remove and replace deficient air barrier components and retest as specified above.

3.5 CLEANING AND PROTECTION

A. Protect air barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.

B. Protect air and weather barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace main air barrier material when exposure exceeds manufacturer’s limit.

C. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

D. Remove masking materials after installation.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes single-ply thermoplastic-polyolefin (TPO) roofing membrane with flashings and other components required to comprise a complete, fully-functioning roofing system as shown and specified.

B. Related Sections:

1. Section 03 38 00 – Post Tensioned Structural Concrete
2. Section 05 40 00 – Cold Formed Metal Framing: Metal Backing for securement of membrane and flashing at parapet walls.
3. Section 06 10 53 – Miscellaneous Rough Carpentry: Nailers and blocking at openings.
4. Section 07 14 16 – Cold-Fluid Applied Waterproofing: Coordination at equipment pads.
5. Section 07 62 00 – Flashing and Sheet Metal.
6. Section 09 21 16 – Gypsum Board Assemblies: Sheathing.
7. Divisions 22 and 23: Pipes, Drains, Vents, Ducts, and their Flashings.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
2. ASTM D4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
3. ASTM D6878 – Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing.

B. Cool Roof Rating Council (CCRC)

1. CCRC-1 – Standard Practice for Measuring Solar Reflectance of a Flat, Opaque, and Heterogeneous Surface Using a Portable Solar Reflectometer.

C. Factory Mutual Global (FM):

1. FM DS 1-28 - Wind Loads to Roof Systems and Roof Deck Securement.
2. FM – Approval Guide.

D. National Roofing Contractors Association (NRCA):

1. NRCA - The NRCA Roofing Manual: Membrane Roof Systems.

E. Single Ply Roofing Institute (SPRI):

a. Wind Load Design Guide For Low Sloped Flexible Membrane Roofing Systems

b. Fastener Selection Guide

c. ANSI/SPRI FX-1 Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners.

d. ANSI/SPRI ES-1 Wind Design Guide For Edge Systems Used With Low Slope Roofing Systems

1.3 PERFORMANCE REQUIREMENTS

A. General: Installed roofing membrane system shall remain watertight and resist specified wind uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacturer, fabrication, installation, or other defects in construction.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent waterproofing membranes and sealants under conditions of service and application required, as demonstrated by membrane roofing and accessory item manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system identical to systems that have been successfully testing by a qualified testing and inspection agency to resist uplift pressure calculated according to ASCE / SEI 7.

D. Listings: UL 1897, 90 psf uplift pressure resistance; Factory Mutual I-90.

E. Energy Performance: Provide roofing system with initial solar reflectance not less than 0.70, emissivity not less than 0.75 and Solar Reflectance Index (SRI) not less than 78 when tested according to CRRC-1.

1.4 SUBMITTALS

A. Product Data: Product literature, installation instructions, and general recommendations from manufacturers of single ply membrane system for types of roofing required.

B. Manufacturer Certificates: Signed by roofing manufacturer certifying roofing system complies with specified Performance Requirements and verification that roofing system is appropriate for proposed project conditions. Provide certification that materials are compatible with sealants, flashings and other accessories materials at transition conditions.

C. Qualification Data: Roofing manufacturer’s written certification or license of installer.

D. Warranties: Provide sample special warranties for review prior to installation.

E. Provide documentation of roofing material w/ 3-year aged SRI of 64, or initial SR of 82.

1.5 QUALITY ASSURANCE

A. Qualified Installer: Installer to have 5 years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the materials manufacturer.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, and regulations of Authorities Having Jurisdiction (AHJs). Obtain necessary approvals from AHJs.

C. Labels and Approvals: Provide labeled materials that have been tested and listed by Underwriter's Laboratories (UL) in "Building Materials Directory" or by other nationally-recognized testing laboratory for application indicated with Class A rated materials system for roof slopes indicated.

D. Source: Manufacturer shall produce its own membrane. No private label membranes will be accepted.

E. Pre-Installation Meetings: Before the start of Work, meet at the Project site to review methods and sequence of installation, special details and conditions, quality standards, testing and quality control requirements, job organization and other pertinent topics related to the Work. The meeting shall include the Owner, Architect, Contractor, and subcontractors whose work is relevant to this Specification Section. Provide at least 72 hours advance notice to participants prior to convening pre-installation meeting.

1. Manufacturer's Representative: Present as required for compliance with manufacturer's warranty requirements during installation and shall review and approve completion of roof installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver materials in original unopened containers or packages bearing manufacturer's labels intact and with seals unbroken.

B. Storage and Protection: Store materials in a dry location in manner to prevent damage and intrusion of foreign matter.

1.7 WARRANTY

A. Installers: Provide five (5) year contractor guarantee starting from the date of final acceptance of all roofs. The bonding company must also cover the first year warranty. Provisions of the warranty must cover defects in workmanship and materials; and all corrective actions necessary to repair damage to the roof membrane and insulation materials caused by roof leaks or improper application.

1. Warranty: Must cover damage to building and contents resulting from failure to resist penetration of water during construction.

B. Manufacturer: Provide twenty (20) year manufacturer standard warranty for manufacturer's membrane and accessory products covering defects in workmanship and materials; and all corrective actions necessary to repair damage to the roof membrane and separation board materials caused by roof leaks or improper application. Warranty must include coverage of ponding water areas.

1.8 PROJECT / SITE CONDITIONS

A. Weather Conditions: Do not apply materials during adverse weather or when ambient temperature is below 50 degrees F, unless otherwise approved by roofing manufacturer.

PART 2 – PRODUCTS

2.1 THERMOPLASTIC-POLYOLEFIN ROOFING

A. Manufacturers: Provide compliant products of one of the following or approved equal.

1. Carlisle SynTec Systems.
2. Firestone Corporation.
3. Johns Manville.

B. System Description: Single-ply, fleece-back, thermoplastic-polyolefin (TPO) membrane fully-adhered to sloped lightweight insulating concrete substrate. Basis of Specification: Firestone Corporation's "UltraPly TPO XR Roofing System". Components and Accessories listed below are those of Firestone Corporation unless otherwise indicated.

2.2 COMPONENTS

A. Membrane: ASTM D6878; 60 mils thick heat weldable, polyester reinforced with fleece backing. Surface color: Manufacturer's standard white.

B. Walkway Pads: Membrane manufacturer's heat-weldable, textured TPO membrane walkway pad. Color: Light Gray or other low-contrast color with roofing membrane and as acceptable to Architect. "UltraPly TPO Walkway Pad" or equal.

C. Cover Board: ASTM C1177; fiberglass mat-faced, water-resistant gypsum core, formulated for roofing application. Georgia Pacific Gypsum LLC's DensDeck Prime® with Eonic Technology.

1. Fire Resistance Classifications: UL 790 and UL 1256.
2. Thickness: 1/2 inch thick or as indicated, 5/8 inch thick where substituted for sheathing at back of parapets.

D. Rigid Insulation: ASTM C1289, Type-II, Class 1, **full adhered,** faced rigid cellular polyisocyanurate roof insulation, CBC-compliant for foam plastic insulation. Straight

and tapered versions required to achieve thickness and slopes shown on Drawings. Firestone Corporation's "ISO 95+ GL" or approved equal.

1. Compressive Strength: ~~20~~ **25** psi minimum.

2. Long Term Thermal Resistance (LTTR) Value: 6.0 per inch thickness minimum.

E. Air/Vapor Barrier (Retarder): 40mil composite (35 mil self-adhering rubberized asphalt laminated to a 5 mil woven polypropelyne film) air and vapor barrier adhered to roof deck, to limit concrete cure moisture from drying into roofing assembly. Basis of Specification: Carlisle Syntec Systems "VapAir Seal 725TR", or approved equal.

2.3 ACCESSORIES

A. General: Meet VOC requirements of the Bay Area Air Quality Management District (BAAQMD).

B. Flashing Membrane: Heat weldable, reinforced 60-mil thick TPO resin sheet.

C. Bonding Adhesive: ISO Spray R or manufacturers approved adhesive.

D. Splice Cleaner: "Splice Wash, SW-100".

E. Seam and Lap Sealant: Manufacturer's liquid TPO sealing compound with a consistency equal to that of honey at room temperature.

F. Edge Sealant: Manufacturer's polymer-based sealant. VOC: 250 g/L or less. Color to match membrane. "UltraPly TPO Cut Edge Sealant LVOC".

G. General Purpose Sealant: Single component, non-sag sealant compatible with roof membrane. Color: White. VOC: 250 g/L or less.

H. Pre-molded / prefabricated detail components: Provide inside/outside corners and PVC pipe boots in sizes to fit diameters from 3/4-inch to 11 inches. Color: Match membrane.

I. Clad Sheet Metal Flashing: TPO-clad galvanized metal flashing as recommended by membrane manufacturer and as shown in Drawings. Color: Match membrane. "UltraPly TPO Coated Metal".

J. Clad Gravel Stops: TPO-clad metal flashing as recommended by membrane manufacturer and as shown in Drawings. Color: Match membrane.

K. Joint Cover Strips: For use in waterproofing joints of metal.

L. Seam Plates and Fasteners: Manufacturer's recommended corrosion-resistant fasteners and plates.

M. Metal Termination Bars: Manufacturer's standard "U" shaped, nominal 1-inch wide, flat, roll-formed aluminum or stainless steel bar.

N. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion resistant provisions, designed for fastening membrane to substrate and acceptable to membrane roofing system manufacturer: "Sarandisc XPS Plates with XP Fasteners".

O. Metal Batten: Manufacturer's standard, aluminum-zinc-alloy coated or zinc-coated steel sheets, 1-inch wide by 0.05-inch thick.

P. Metal Hose Clamp: Stainless steel worm drive type by Murray Corporation's "Gold Seal", or equal.

Q. Separator Tape: Aluminum tape for covering asphalt contaminated deck components or penetrations.

R. Metal Backing: Furnished under Section 05 40 00.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with following requirements and other conditions affecting performance of roofing system.

1. Verify roof openings and penetrations are in place and curbs are set and braced and roof drain bodies are securely clamped in place.

2. Verify blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and nailers match thicknesses of insulation.

3. Verify metal backing is properly located as required for securement of membrane, termination bars and flashings to framed vertical surfaces of walls and parapets.

4. Verify minimum concrete drying period recommended by roofing system manufacturer has passed.

5. Verify lightweight insulating concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D4263.

6. Verify concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed. Concrete shall be free of projections and depressions.

B. Notify Owner of any discrepancies between Drawings and actual field conditions, and of any elements requiring repair at time of installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with manufacturer's instructions for preparation of substrate to receive sheet membrane. Verify that penetrations, expansion joints, and blocking are in place and secured and that roof drains are properly clamped into position.

B. Clean substrate of dust, debris, oil, grease, and other substances detrimental to sheet membrane. Remove sharp projections.

C. Install flashings and accessory items as indicated and recommended.

D. Prime substrate where recommended by manufacturer of materials being installed.

E. Prevent compounds from entering and clogging drains and conductors, and from spilling or migrating onto surfaces of other work.

F. Notify Owner of any discrepancies between Drawings and actual field conditions, and of any elements that require repair at time of installation.

3.3 INSTALLATION

A. General: Comply with Manufacturer's instructions and NRCA Roofing Manual, except where more stringent requirements are indicated or specified.

1. Possible Inclement Weather during Installation

a. Temporary Waterstops: Install temporary waterstops at the end of each day's work. The new membrane shall be sealed to substrate so that water will not travel under the roofing. Seal the edge by placing in a continuous, heavy application of grid adhesive of 6 inch width. During inclement weather, contractor shall provide labor necessary to monitor waterstops. Remove temporary waterstops at the start of the next day's work by removing the contaminated edges of membrane and properly dispose. If any water enters under the roofing assembly, the contractor shall remove and replace the area at no additional expense to the Owner.

b. Concurrent Flashing Installation: Install flashings concurrently with the membrane in order to maintain a watertight condition as the work progresses. Schedule each day's work to coincide with the temporary waterstop locations.

2. Do not install the roofing membrane in direct contact with any product containing asphalt, coal tar pitch, creosote or penta-based materials. Do not allow waste products containing petroleum, grease, acid, solvents, vegetable or mineral oils, animal fats et cetera, or steam venting to come into direct contact with the roofing membrane.

3. Do not weld or otherwise use open flame near roofing material without appropriate safety precautions.

B. Rigid Insulation Installation:

1. Set layers of rigid insulation in cold adhesive in built up sections over deck substrate to achieve thicknesses and slopes indicated.

2. **Install in multiple layers with staggered joints. Fill gaps between insulation with foam.**

C. Cover Board Installation:

1. Install substrate boards over insulation with long joints in continuous straight lines, perpendicular to roof slopes, with end joints staggered between joints. Tightly butt substrate boards together and set in cold adhesive.

D. Membrane Installation: Start installation only in presence of manufacturer's technical representative when required for warranty.

1. Utilize manufacturer's recommended "Fold Method". Unroll the sheet roofing and position without stretching the membrane. Allow the membrane to relax at least 15 minutes when the temperature is above 60 degrees F., or 30 minutes when temperatures are cooler.

2. Prior to installation, inspect for damage. Remove sections of membrane that are creased or damaged.

3. Lap sheets as recommended by manufacturer depending upon installation method used, minimum 3-inches wide when automatic machine-welding and 4-inches wide when hand-welding. Shingle ("waterfall") side laps with slope of roof where possible. Turn sheets minimum of 4 inches up perimeter vertical surfaces, at obstructions in the field, and as shown.

4. Once the membrane has been properly positioned, fold the sheet back and apply bonding adhesive to substrate in accordance with manufacturer's instructions. Do not apply adhesive to the lap areas of the sheet that will be welded. Mechanically fasten to perimeter vertical surfaces & other obstructions using manufacturer's recommended seam plates and fasteners. The adhered membrane shall be smooth and free of wrinkles and buckles.

5. Seam Overlaps:

a. Clean and dry in accordance with Manufacturer's instructions. No sealants shall be present within lap areas.

b. Welding equipment shall be provided by or approved by membrane manufacturer. Mechanics intending to use equipment shall have successfully completed training course provided by manufacturer's representative prior to welding.

c. At laps without selvage edge, weld membrane cover strips over laps.

d. Hand Welding: Hand-welded seams shall be completed in three stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

i. Lap shall be tack welded every 36-inches to hold seam in place.

ii. Back edge of seam shall be welded with narrow but continuous weld to prevent loss of hot air during final welding.

iii. Nozzle shall be inserted into seam at a 45-degree angle to edge of membrane. Once proper welding temperature has been reached and membrane begins to “flow”, hand roller shall be positioned perpendicular to nozzle and rolled lightly.

e. Machine Welding: Machine welded seams shall be achieved by use of automatic welding equipment.

i. Follow manufacturer’s instructions and local codes for electric supply, grounding, and over current protection observed.

ii. Verify automatic welding machines requirements. Verify need for dedicated circuit power or dedicated portable generator.

f. T-Joints (Three-Way Laps):

i. When welding three-way overlap with membrane thicker than 60-mil, top edge of second membrane layer shall be shaved down to create smooth transition for top membrane layer to conform to for positive welding. Chamfer edge of membrane using means and methods acceptable to manufacturer.

6. Membrane Flashing: Flash penetrations, walls and drains with cured flashing membrane, as recommended by manufacturer. Use prefabricated accessories when feasible, in lieu of uncured flashing. Terminate flashings per manufacturer’s standard details.

a. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

b. Shingle joints on sloped substrate in direction of drainage.

c. Fully Adhered Application: Apply adhesive to substrate per Manufacturer’s recommendations. Fully embed membrane in adhesive except in areas directly over or within three inches of expansion joints.

d. Overlap edges and ends. Do not apply adhesive in lap areas that will be hot-air welded.

e. At vertical walls, extend flashing 4 inches minimum onto horizontal field membrane and underneath rigid flashings at top of wall and as shown. Lap with wall air barriers for continuous weather-resistant envelope, ensuring lapped materials are compatible. Provide horizontal termination bars per manufacturer's recommendations and as shown.

f. At flashing intersections with vertical surfaces:

i. Extend membrane up a minimum of four inches and as indicated onto vertical surfaces.

ii. Fully adhere flexible flashing over membrane and up to nail strips.

iii. Secure flashing with termination bar.

g. Around roof penetrations, use prefabricated flashing collars and seal flanges and flashing with flexible flashing.

h. Coordinate installation of roof drains and sumps and related flashings.

7. Sealants: Install in accordance with instructions of roofing system manufacturer and as specified in Section 07 90 00.

E. Walkway Pads: Adhere walkway pads in accordance with manufacturer's instructions. Where walkway intersects valleys in roof slope, install with 6-inch gap in walkway pad along valley to facilitate drainage.

3.4 SHEET METAL FLASHING INSTALLATION

A. General: Refer to 07 62 00 for installation of coated and un-coated metal flashings. Coordinate installation where metal flashing interfaces with roofing membrane to prevent metal from pulling free or buckling, and provide seal to prevent moisture from entering roofing system or Building.

B. Complete metal work in conjunction with waterproofing and flashings so that watertight condition exists daily.

C. Provide metal to achieve adequate resistance to bending and allow for normal thermal expansion and contraction.

D. Ensure metal joints are watertight. At prefabricated reglets and counter flashings, lap flashings a minimum of 4-inches and bed in sealant. At bent flashings, provide sealed butt joint with 8-inch backer plate.

E. Metal flashing shall have minimum 4-inches nailing flange and shall be fastened into solid wood blocking with fixings of same type with two rows of annular ring nails, 4-inches on center staggered, or into concrete anchors 6-inches on center staggered. Fixings shall penetrate wood nailer minimum of 1-1/4 inch.

F. Adjacent sheets of TPO coated metal shall be spaced 1/4-inch apart. End joints of metal shall be fastened 6-inches on center. Joints shall be covered with 1-inch wide aluminum tape. 4-inch wide membrane flashing strip shall be hot-air welded over joint (lap dimensions etc.).

3.5 FIELD QUALITY CONTROL

A. Continuous Inspection: Refer Quality Control article for field continuous inspection.

B. Welded Seam Quality Control:

1. **100% of c**ompleted welded seams shall be checked by installer **or manufacturer** after cooling for continuity using rounded screwdriver or other suitable blunt object.

2. Visible evidence that welding is proceeding correctly is smoke during welding operation, shiny membrane surfaces, and an uninterrupted flow of black material from edge of completed joints.

3. On-site evaluation of welded seams shall be made daily by Contractor at locations as directed by membrane manufacturer's representative.

4. 2-inch wide cross-section samples of welded seams shall be taken at least three times daily through completed seams. Correct welds display failure from shearing of membrane prior to separation of weld. Each test cut shall be patched by Contractor at no extra cost to Owner.

C. Final Roof Inspection: Upon completion of installation, representative of roof membrane manufacture shall inspect to verify that membrane system has been installed in accordance with manufacturer's approved specifications and details.

D. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

E. Additional inspections, at Contractor's expense, shall be performed to determine compliance of replaced or additional work with specified requirements.

3.6 CLEANING

A. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.7 PROTECTION

A. Protect membrane roofing system from damage and wear during remainder of construction period. At end of construction period, or at time when remaining construction will not affect or endanger roofing, make a final inspection of roofing and prepare a written report to Owner, describing nature and extent of deterioration or damage found.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Only install as much roofing as can be protected during the end of each day's work. Ensure temporary protection is provided at all terminations.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes design and provision of INTERIOR tubular aluminum-framed storefront systems, with or without supplementary internal support framing, operable window units where shown on Drawings, aluminum and glass entrance doors and frames, glass glazing, related flashings, anchorage and attachment devices.

B. Related Sections:

1. Section 01 81 13 – Sustainable Design Requirements.

2. Section 05 50 00 - Metal Fabrications: Steel fabricated attachment devices.

~~3. Section 07 42 43 – Composite Wall Panels: Infill panels in storefront.~~

~~4.~~**3.** Section 07 62 00 – Sheet Metal Flashing and Trim.

~~5.~~**4.** Section 07 90 00 – Joint Protection: System perimeter sealant and back-up materials.

~~6.~~**5.** Section 08 44 13 – Glazed Aluminum Curtain Walls.

~~7.~~**6.** Section 08 71 00 – Door Hardware.

~~8.~~**7.** Section 08 80 00 - Glazing.

1.2 REFERENCES

A. Aluminum Association:

1. AA ADM 1 - Aluminum Design Manual.

B. American Architectural Manufacturers Association/Window & Door Manufacturers Association:

1. AAMA/WDMA 101/I.S.2 - Specification for Windows, Doors and Unit Skylights.

2. AAMA 502 - Voluntary Specification for Field Testing of Windows and Sliding Glass Doors.

3. AAMA 503 - Voluntary Specification for Field Testing of Metal Storefronts. Curtain Wall and Sloped Glazing Systems.

4. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.

5. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

6. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

7. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

8. AAMA SFM-1 - Aluminum Store Front and Entrance Manual.

C. American Society of Civil Engineers:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International:

1. ASTM A36 - Standard Specification for Carbon Structural Steel.

2. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

3. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

4. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

5. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

6. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

7. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.

8. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Differential.

9. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.

E. California Code of Regulations,Title 24, Part 1:

1. CAC – California Administrative Code

F. National Fenestration Rating Council Incorporated:

1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.

G. SSPC: The Society for Protective Coatings:

1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

1.3 PERFORMANCE REQUIREMENTS

A. System Design: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall, including building corners.

1. As calculated in accordance with the current version of the California Building Code, as tested in accordance with ASTM E330. Refer to Structural Drawings.

2. Safety Factor: Unless otherwise specified, design components, parts, and assemblies including glazing stops, gaskets, adhesives, and sealants for a safety factor not less than 1.5. Failure of any part or assembly not acceptable at less than 1.5 times design wind load pressure. Failure defined as breakage, disengagement, permanent deformation of framing members in excess of L/1000 or 1/64-inch of their clear span, whichever is less; or permanent deformation of anchor assemblies beyond tolerance and slippage limitations.

3. Deflection Normal to Wall Plane: Limit mullion deflection to 1/175 for spans under 13’-6” or 3/4 inch, whichever is less, except L/360 at members adjacent to plaster or gypsum board surfaces; with full recovery of glazing materials.

B. System Assembly: Accommodate without damage to components or deterioration of seals, movement within system, movement between system and peripheral construction, dynamic loading and release of loads, deflection of structural support framing.

C. Air Infiltration: Limit air leakage through assembly to 0.06 cfm/min/sq ft of wall area, measured at reference differential pressure across assembly of 6.24 psf as measured in accordance with AAMA/WDMA 101/I.S.2.

D. Expansion / Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over 12 hour period without causing detrimental effect to system components and anchorage.

E. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior by weep drainage network.

F. Not Permitted: Assemblies shall be free from rattles, vibration harmonics, wind whistles, noises caused by thermal and structural movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of the system.

G. Design Modifications: Maintain general design concept without altering profiles or adversely affecting appearance, durability, or strength of materials. Modifications acceptable only as may be necessary to comply with design criteria. Submit variations in details and materials for review.

1.4 SUBMITTALS

A. Division 1 - Submittal Procedures: Submittal procedures.

1. Provide stamped engineered drawings indicating system dimensions, framed opening requirements and tolerances, affected related Work and expansion and contraction joint location and details. Furnish elevations of each section of storefront and include details of each condition for each storefront section, indicating anchorages, sealant application, glazing system, integration of flashings specified elsewhere, and as required for proper fabrication, assembly, and installation.

2. Calculations: Submit stamped engineered calculations to substantiate shop drawing compliance with the specified design criteria.

   a. Design Data: Indicate framing member structural and physical characteristics, dimensional limitations.

3. **Deferred Submittal: Per DSA IR 24-2, engineered drawings and calculations are to be submitted to and approved by DSA prior to construction of this work. Deferred Submittal documentation will be provided to Architect of Record (AOR) and Structural Engineer of Record (SEOR) for review prior to submission. SEOR will review for interface to structure. AOR will submit to DSA for review and approval. Deferred Submittal documents to be prepared and stamped by a structural engineer licensed by the State of California, as follows:**

   a. Connection Details in Deferred Submittal shall take precedence.
   b. Window systems shall be designed in accordance with 2019 CBC and ASCE 7-10.
   c. Wind loads shall be in accordance with CBC Section 1609A and ASCE 7-10.
   d. Wind speed determined per CBC Section 1609A.3 and Exposure Category determined per CBC 1609A.4.

   {Note for DSA, Wind Loads & Speed Not Applicable: All systems Section 08 41 13 are interior to building envelope.}

   e. Window Wall Framing: Out-of-plane deflection limit for individual panels of glass shall be in accordance with CBC Section 2409.3 (L/175, ¾" max.)
   f. Glazing: Out-of-place deflection limit for glazing shall not exceed L/60 where "L" is the shortest span of the glazing.
   g. Story Drift: Shall be accommodated in exterior wall systems in accordance with ASCE 7 Chapter 13.

   {Note for DSA, Story Drift Not Applicable: All systems Section 08 41 13 are interior to building envelope.}

   h. Fasteners: Design values shall be based on acceptable reference standards, product approvals in compliance with DSA IR A-5 or testing done by third-party testing laboratory in accordance with appropriate ASTM standards.
   i. Thermal breaks in aluminum extrusions are acceptable in meeting AAMA TIR A8.

   {Note for DSA, Thermal Breaks Not Applicable: All systems Section 08 41 13 are interior to building envelope.}

   j. Deferred Submittal shall be stamped and signed in accordance with DSA IR A-19.

B. Product Data: Submit component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, and internal drainage details.

C. Test Reports: Submit certified test reports showing compliance with specified Performance Requirements.

D. Samples: Submit 12 x 12 inches in size illustrating each type of finished aluminum surface, and glass glazing materials.

E. Sustainable Design Submittals: Section 01 81 13 Sustainable Design Requirements.

1. Materials Resources Certificate: Certify recycled material content for recycled content products.

a. Product Cost Data: Products with recycled material content. Exclude cost of labor and equipment to install products.

2. Indoor Air Quality Certificates: Certify volatile organic compound content for each interior adhesive and sealant and related primer.

F. Provide documentation showing paints and coatings in accordance with 01 81 13 Sustainable Design Requirement.

1.5 QUALIFICATIONS

A. Manufacturer and Installer: Companies specializing in manufacturing and installing aluminum glazing systems with minimum three years experience.

1.6 PRE-INSTALLATION MEETINGS

A. Before the start of Work, meet at the Project site to review methods and sequence of installation, special details and conditions, quality standards, testing and quality control requirements, job organization and other pertinent topics related to the Work. The meeting shall include the Owner's representative, Architect, Contractor, and subcontractors whose work is relevant to this Specification Section.

1.7 DELIVERY, STORAGE, AND PROTECTION

A. Packing, Shipping, Handling, and Unloading: Deliver units and accessories in manufacturer's original packaging, clearly identified with manufacturer's name and type of product, finish, and installation location.

B. Storage and Protection: Store in the original packaging, indoors, in an upright position, protected from damage. Handle in a manner to prevent twisting and other damage.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not install sealants nor glazing materials when ambient temperature is less than 40 degrees F during and 48 hours after installation.

1.9 COORDINATION

A. Coordinate the Work with installation of metal flashings, air and weather barriers, automatic entrance doors, and door hardware components or materials.

1.10 WARRANTY

A. Division 1 - Execution and Closeout Requirements: Product warranties and product bonds. Contractor shall make repairs and replacements upon notification of defects.

1. Assembly: Warrant for 10 years against excessive deflection, water penetration and failure of operable components.

2. Finishes: Warrant for 20 years against excessive deterioration of finishes.

PART 2 – PRODUCTS

2.1 ALUMINUM-FRAMED STOREFRONTS

A. Manufacturers: Provide one of the following or approved equal.

1. C.R. Laurence Company, Incorporated / U.S. Aluminum.

2. EFCO Corporation / Pella Company.

3. Kawneer North America.

B. Product Description: Kawneer's "Trifab 451" is the Basis of the Specification.

1. Aluminum Frame: 2 inches by 4-1/2 inches deep, ~~**thermally broken**;~~ flush front glazing; capacity for 1/4 inch to 1 inch glazing infills,; drainage holes; internal weep drainage system.

2. Mullions: Profile of extruded aluminum with internal reinforcement of aluminum or shaped steel structural section where required to meet specified Performance Requirements.

3. Doors: Manufacturer's heavy-duty aluminum framed glass doors; 1-3/4 to 1-7/8 inches thick, nominal 5 to 6 inch wide top rail and vertical stiles, ADA-compliant bottom rail; capacity for 1/4 inch to 1 inch infills, square glazing stops.

4. Frameless Glass Pivot Door: Basis of design CRL Wedge-Lock Dry Glazed Glass Securing system. 1/2" thick tempered glass with 14" high custom length 0" high alum. bottom and 4" high custom length square style non-clad door top rails and non-clad header. 10" high custom length square style non-clad door bottom rails with locks. Finish to be brushed stainless.

2.2 SUSTAINABILITY CHARACTERISTICS

A. Division 1 - Sustainable Design Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. Recycled Content Materials: Furnish materials with maximum available recycled content, and with no less than that required in Section 01 81 13.

C. Indoor Environmental Quality Characteristics:

1. Adhesives and Sealants: Maximum volatile organic compound content in accordance with Section 01 81 13.

2. Paints and Coatings: Maximum volatile organic compound content in accordance with Section 01 81 13.

2.3 COMPONENTS

A. Extruded Aluminum: ASTM B221; 6063 alloy, T5 temper typical; 6061 alloy, T6 temper for extruded structural members.

B. Sheet Aluminum: ASTM B209, 5005 alloy, H15 or H34 temper.

C. Steel Sections: ASTM A36; shaped to suit mullion sections, galvanized or alkyd type zinc chromate primer complying with FS TT-P-645.

D. Glass: Specified in Section 08 80 00. Provide grey glazing sealants.

E. Glazing Materials: Storefront manufacturer's standard types to suit application and to achieve weather, moisture, and air infiltration requirements.

F. Gaskets: All gaskets to be grey.

H. Hardware: Specified in Section 08 71 00.

I. Sealant and Backing Materials:

1. Sealant Used Within System (Not Used for Glazing): Manufacturer's standard materials to achieve weather, moisture, and air infiltration requirements. Color to be grey.

2. Perimeter Sealant: Specified in Section 07 90 00.

J. Fasteners: Stainless, aluminum or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.

K. Anchors: Stainless of size and type appropriate for intended use.

L. Shims: Multi-polymer plastic, 8000 psi, or stainless steel of same type used for anchors.

2.4 FABRICATION

A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal. Verify

with Architect any restrictions upon the use of stacked shims at load bearing conditions.

B. Accurately fit and secure joints and corners. Make joints flush, hairline.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Arrange fasteners and attachments to conceal from view.

E. Reinforce interior horizontal head rail to receive window treatment brackets and attachments, where required.

F. Prepare components with internal reinforcement for door hardware.

G. Reinforce framing members for imposed loads.

2.5 ALUMINUM FINISHES

A. High-Performance Organic Finish – Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Color: Match Glazed Aluminum Curtainwall as specified in Section 08 44 13.

B. Concealed Steel Items: Galvanized to ASTM A123; primed with iron oxide paint.

C. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar metals.

D. Shop Primer for Steel Components: SSPC Paint 25 red oxide.

E. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.

F. Extent of Finish:

1. Apply finish to surfaces cut during fabrication where visible in completed assemblies, including joint edges.

2. Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division - Administrative Requirements: Coordination and project conditions.

B. Verify dimensions, tolerances, and method of attachment with other Work.

C. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this Section.

3.2 INSTALLATION

A. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

B. Provide alignment attachments and shims to permanently fasten system to building structure. Do not stack shims where they will bear gravity loads unless approved by Architect.

C. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent Work as indicated.

D. Provide thermal isolation where components penetrate or disrupt building insulation.

E. Install sill flashings. Turn up ends and edges; seal to adjacent Work to form water tight dam.

F. Coordinate attachment and seal of perimeter air and vapor retarder materials.

G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

H. Install integral flashings and integral joint sealers.

I. Set thresholds in bed of mastic or sealant and secure.

J. Install hardware using templates provided. Refer to Section 08 71 00 for installation requirements.

K. Install infill panels using method required to achieve performance criteria.

L. Coordinate installation of glass with Section 08 80 00; separate glass from metal surfaces.

M. Coordinate installation of perimeter sealants with Section 07 90 00.

3.3 ERECTION TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch every 3 feet non-cumulative or 1/16 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 FIELD QUALITY CONTROL

A. Test to AAMA 502 or 503. Perform test at three different locations identified by Architect or Owner's Representative. Test at earliest date possible subsequent to

completion of storefront installation and curing of sealants. At locations of failed tests, correct deficiencies; inspect and correct for similar deficiencies found at other storefront locations. Re-test failed locations at no additional cost to Owner until all tests pass.

3.5 ADJUSTING

A. Adjust operating hardware for smooth operation.

3.6 CLEANING

A. Division 1 - Execution and Closeout Requirements: Final cleaning.

B. Remove protective material from pre-finished aluminum surfaces.

C. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

D. Remove excess sealant by method acceptable to sealant manufacturer.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Division 1 - Execution and Closeout Requirements: Protecting installed construction.

B. Protect finished Work from damage.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions of Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes items known commercially as finish or door hardware that are required for swing, sliding, and folding doors, except special types of unique hardware specified in the same sections as the doors and door frames on which they are installed.

B. This Section includes the following, but is not necessarily limited to:

1. Door Hardware, including electric hardware.
2. Storefront and Entrance door hardware.
3. Low-energy door operators plus sensors and actuators.
4. Thresholds, gasketing and weather-stripping.
5. Door silencers or mutes.

1.3 REFERENCES (USE DATE OF STANDARD IN EFFECT AS OF BID DATE.)

A. 2019 California Building Code, CCR, Title 24.

B. BHMA – Builders' Hardware Manufacturers Association

C. CCR – California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.

D. DHI – Door and Hardware Institute

E. NFPA - National Fire Protection Association.

1. NFPA 80 - Fire Doors and Other Opening Protectives
2. NFPA 105 - Smoke and Draft Control Door Assemblies

F. UL - Underwriters Laboratories.

1. UL 10C - Fire Tests of Door Assemblies
2. UL 305 - Panic Hardware

G. WHI - Warnock Hersey Incorporated

H. SDI - Steel Door Institute

1.4 SUBMITTALS & SUBSTITUTIONS

A. General: Submit in accordance with Conditions of the Contract and Division 1 Specification sections.

B. Submit product data (catalog cuts) including manufacturers' technical product information for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.

C. Submit six (6) copies of schedule organized vertically into “Hardware Sets” with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:

1. Include a Cover Sheet with;
   a. Job Name, location, telephone number.
   b. Architects name, location and telephone number.
   c. Contractors name, location, telephone number and job number.
   d. Suppliers name, location, telephone number and job number.
   e. Hardware consultant's name, location and telephone number.
2. Job Index information included;
   a. Numerical door number index including; door number, hardware heading number and page number.
   b. Complete keying information (referred to DHI hand-book "Keying Systems and Nomenclature"). Provision should be made in the schedule to provide keying information when available; if it is not available at the time the preliminary schedule is submitted.
   c. Manufacturers' names and abbreviations for all materials.
   d. Explanation of abbreviations, symbols, and codes used in the schedule.
   e. Mounting locations for hardware.
   f. Clarification statements or questions.
   g. Catalog cuts and manufacturer’s technical data and instructions.
3. Vertical schedule format sample:

Heading Number 1 (Hardware group or set number – HW -1)						
			(a) 1 Single Door #1 - Exterior from Corridor 101		(b) 90°	(c) RH
				(d) 3' 0"x7' 0" x 1-3/4" x (e) 20 Minute (f) WD x HM		
(g) 1	(h)	(i) ea		(j) Hinges - (k) 5BB1HW 4.5 x 4.5 NRP (l) ½ TMS	(m) 626	(n) IVE

2	6A A	1 ea		Lockset - ND50PD x RHO x RH x 10-025 x JTMS	626	SCH

(a) - Single or pair with opening number and location. (b) - Degree of opening (c) - Hand of door(s) (d) - Door and frame dimensions and door thickness. (e) - Label requirements if any. (f) - Door by frame material. (g) - (Optional) Hardware item line #. (h) - Keyset Symbol. (i) - Quantity. (j) - Product description. (k) - Product Number. (l) - Fastenings and other pertinent information. (m) - Hardware finish codes per ANSI A156.18. (n) - Manufacture abbreviation.

D. Make substitution requests in accordance with Division 1. Substitution requests must be made prior to bid date. Include product data and indicate benefit to the project. Furnish samples of any proposed substitution.

E. Wiring Diagrams: Provide product data and wiring and riser diagrams for all electrical products listed in the Hardware Schedule portion of this section.

F. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

G. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

H. Furnish as-built/as-installed schedule with close-out documents, including keying schedule and transcript, wiring/riser diagrams, manufacturers' installation and adjustment and maintenance information.

I. Fire Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

J. LEED Certification Points: Submit information and certifications necessary to achieve maximum points for LEED certification; coordinate and cooperate with Owner and Architect in providing information necessary for required LEED rating.

1.5 QUALITY ASSURANCE

A. Obtain each type of hardware (latch and lock sets, hinges, closers, exit devices, etc.) from a single manufacturer.

B. Supplier Qualifications: A recognized architectural door hardware supplier, with warehousing facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.

1. Responsible for detailing, scheduling and ordering of finish hardware.
2. Meet with Owner to finalize keying requirements and to obtain final instructions in writing. To maintain the integrity of patented key systems provide a letter of authorization from the specified manufacturer indicating that supplier has authorization to purchase the key system directly from the manufacturer.
3. Stock parts for products supplied and are capable of repairing and replacing hardware items found defective within warranty periods.

C. Hardware Installer: Company specializing in the installation of commercial door hardware with five years documented experience.

D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and tested by UL or Warnock Hersey for given type/size opening and degree of label. Provide proper latching hardware, door closers, approved-bearing hinges and seals whether listed in the Hardware Schedule or not.

1. Where emergency exit devices are required on fire-rated doors, (with supplementary marking on doors' UL labels indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware".

E. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.

F. Product packaging to be labelled in compliance with CA Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986.

1.6 DELIVERY, STORAGE AND HANDLING

A. Coordinate delivery of packaged hardware items to the appropriate locations (shop or field) for installation.

B. Hardware items shall be individually packaged in manufacturers' original containers, complete with proper fasteners. Clearly mark packages on outside to indicate contents and locations in hardware schedule and in work.

C. Provide locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, etc.

D. Contractor to inventory door hardware jointly with representatives of hardware supplier and hardware installer until each all are satisfied that count is correct.

1.7 WARRANTY

A. Provide warranties of respective manufacturers' regular terms of sale from day of final acceptance as follows:

1. Locksets: "ND" Ten (10) years.

2. Electronic: One (1) year.
3. Closers: Thirty (30) years--except electronic closers shall be two (2) years.
4. Exit devices: Three (3) years.
5. All other hardware: Two (2) years.

1.8 MAINTENANCE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.9 PRE-INSTALLATION CONFERENCE

A. Convene a pre-installation conference at least one week prior to beginning work of this section.

B. Attendance: Architect, Construction Manager, Contractor, Security Contractor, Hardware Supplier, Installer, Key Owner Personnel, and Project Inspector.

C. Agenda: Review hardware schedule, products, installation procedures and coordination required with related work. Review Owner's keying standards.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Item	Manufacturer	Acceptable Substitutes
Hinges	Ives	None-Owner Standard
Locks, Latches & Cylinders	Schlage	None-Owner Standard
Exit Devices	Von Duprin	None-Owner Standard
Closers	LCN	None-Owner Standard
Auto Operators	LCN	None-Owner Standard
Push, Pulls & Protection Plates	Ives	None-Owner Standard
Flush Bolts	Ives	None-Owner Standard
Dust Proof Strikes	Ives	None-Owner Standard
Coordinators	Ives	None-Owner Standard
Stops	Ives	None-Owner Standard

Overhead Stops	Glynn-Johnson	None-Owner Standard
Thresholds	Zero	None-Owner Standard
Seals & Bottoms	Zero	None-Owner Standard

MATERIALS

A. Hinges: Exterior out-swinging door butts shall be non-ferrous material and shall have stainless steel hinge pins. All doors to have non-rising pins.

1. Hinges shall be sized in accordance with the following:

   a. Height:
      1) Doors up to 42" wide: 4-1/2 inches.
      2) Doors 43" to 48" wide: 5 inches.

   b. Width: Sufficient to clear frame and trim when door swings 180 degrees.

   c. Number of Hinges: Furnish 3 hinges per leaf to 7'-5" in height. Add one for each additional 2 feet in height.

2. Furnish non-removable pins (NRP) at all exterior out-swing doors and interior key lock doors with reverse bevels.

B. Continuous Hinges: As manufactured by Ives, an Allegion Company. UL rated as required.

C. Heavy Duty Cylindrical Locks and Latches: Schlage "ND" Series as scheduled with "Rhodes" design, fastened with through-bolts and threaded chassis hubs.

1. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:

   a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access

   b. Offset lever pull – minimum 1,600 foot pounds without gaining access

   c. Vertical lever impact – minimum 100 impacts without gaining access

2. Cycle life - tested to minimum 16 million cycles per ANSI/BHMA A156.2 Cycle Test with no visible lever sag or use of performance aids such as set screws or spacers
3. UL 10C for 4’-0” x 10’-0” 3-hour fire door.
4. Cylinders: Refer to “KEYING” article, herein.
5. Provide solid steel anti-rotation through bolts and posts to control excessive rotation of lever.
6. Provide lockset that allows lock function to be changed to over twenty other common functions by swapping easily accessible parts.
7. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2 inch latch throw capable of UL listing of 3 hours on a 4’ x 10’ opening. Provide proper latch throw for UL listing at pairs.

8. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
9. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
10. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
11. Provide wired electrified options as scheduled in the hardware sets.
    a. 12 through 24 volt DC operating capability, auto-detecting
    b. Selectable EL (fail safe)/EU (fail secure) operating mode via switch on chassis
    c. 0.230A (230mA) maximum current draw
    d. 0.010A (10mA) holding current
    e. Modular / “plug in” request to exit switch
12. Lever Trim: Solid cast levers without plastic inserts, and wrought roses on both sides.

D. Exit devices: Von Duprin as scheduled.

1. Provide certificate by independent testing laboratory that device has completed over 1,000,000 cycles and can still meet ANSI/BHMA A156.3 - 2001 standards.
2. All internal parts shall be of cold-rolled steel with zinc dichromate coating.
3. Mechanism case shall have an average thickness of .140".
4. Compression spring engineering.
5. Non-handed basic device design with center case interchangeable with all functions.
6. All devices shall have quiet return fluid dampeners.
7. All latchbolts shall be deadlocking with ¾” throw and have a self-lubricating coating to reduce friction and wear.
8. Device shall bear UL label for fire and or panic as may be required.
9. All surface strikes shall be roller type and utilize a plate underneath to prevent movement.
10. Lever Trim: “Breakaway” design, forged brass or bronze escutcheon with a minimum of .130” thickness, match lockset lever design.
11. Removable Mullions: Removable with single turn of building key. Securely reinstalled without need for key.
12. Furnish glass bead kits for vision lites where required.
13. All Exit Devices to be sex-bolted to the doors.
14. Panic Hardware shall comply with CBC Section 11B.404.2.7 and shall be mounted between 34" and 44" above the finished floor surface.
    a. Provide exit devices UL certified to meet maximum 5 pound requirements according to the California Building Code section 11B-309.4, and UL listed for Panic Exterior Fire Exit Hardware.

E. Closers: LCN as scheduled. Place closers inside building, stairs, room, etc.

1. Door closer cylinders shall be of high strength cast iron construction with double heat treated pinion shaft to provide low wear operating capabilities of internal

parts throughout the life of the installation. All door closers shall be tested to ANSI/BHMA A156.4 test requirements by a BHMA certified testing laboratory. A written certification showing successful completion of a minimum of 10,000,000 cycles must be provided.

2. All door closers shall be fully hydraulic and have full rack and pinion action with a shaft diameter of a minimum of 11/16 inch and piston diameter of 1 inch to ensure longevity and durability under all closer applications.
3. All parallel arm closers shall incorporate one piece solid forged steel arms with bronze bushings. 1-9/16" steel stud shoulder bolts, shall be incorporated in regular arms, hold-open arms, arms with hold open and stop built in. All other closers to have forged steel main arms for strength, durability, and aesthetics for versatility of trim accommodation, high strength and long life.
4. All parallel arm closers so detailed shall provide advanced backcheck for doors subject to severe abuse or extreme wind conditions. This advanced backcheck shall be located to begin cushioning the opening swing of the door at approximately 45 degrees. The intensity of the backcheck shall be fully adjustable by tamper resistant non-critical screw valve.
5. Closers shall be installed to permit doors to swing 180 degrees.
6. All closers shall utilize a stable fluid withstanding temperature range of 120 degrees F. to -30 degrees F. without requiring seasonal adjustment of closer speed to properly close the door.
7. Provide the manufactures drop plates, brackets and spacers as required at narrow head rails and special frame conditions. NO wood plates or spacers will be allowed.
8. Maximum effort to operate closers shall not exceed 5 lbs., such pull or push effort being applied at right angles to hinged doors. Compensating devices or automatic door operators may be utilized to meet the above standards. When fire doors are required, the maximum effort to operate the closer may be increased but shall not exceed 15 lbs. when specifically approved by fire marshal. All closers shall be adjusted to operate with the minimum amount of opening force and still close and latch the door. These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position. Per 11B-404.2.8.1, door shall take at least 5 seconds to move from an open position of 90 degrees to a position of 12 degrees from the latch jamb.

F. Electro-Mechanical Automatic Operators - LCN Senior Swing. **Refer to Section 08 71 13 – Automatic Door Operators for more information.**

1. Requirements:

   a. Provide low energy automatic operator units that are electro-mechanical design complying with ANSI/BHMA A156.19.
      1) Opening: Powered by DC motor working through reduction gears.
      2) Closing: Spring force.
      3) Manual, hydraulic, or chain drive closers: Not permitted.
      4) Operation: Motor is off when door is in closing mode. Door can be manually operated with power on or off without damage to operator. Provide variable adjustments, including opening and closing speed adjustment.
      5) Cover: Aluminum.

b. Provide units with manual off/auto/hold-open switch, push and go function to activate power operator, vestibule interface delay, electric lock delay, hold-open delay adjustable from 2 to 30 seconds, and logic terminal to interface with accessories, mats, and sensors.

c. Provide drop plates, brackets, or adapters for arms as required to suit details.

d. Provide hard-wired motion sensors and/or actuator switches for operation as specified. Provide weather-resistant actuators at exterior applications.

e. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.
   1) Actuators to comply with CBC 11B-404.3.5 Controls.

f. Provide units with inputs for smoke evacuation doors, where specified, which allow doors to power open upon fire alarm activation and hold open indefinitely or until fire alarm is reset, presence detector input, which prevents closed door from opening or door that is fully opened from closing, hold open toggle input, which allows remote activation for indefinite hold open and close second time input is activated, vestibule inputs, which allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

G. Flush Bolts & Dust Proof Strikes: Automatic Flush Bolts shall be of the low operating force design. Utilize the top bolt only model for interior doors where applicable and as permitted by testing procedures.

1. Manual flush bolts only permitted on storage or mechanical openings as scheduled.
2. Provide dust proof strikes at openings using bottom bolts.

H. Door Stops:

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Do not install floor stops more than four (4) inches from the face of the wall or partition (CBC Section 11B-307).
3. Overhead stops shall be made of stainless steel and non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

I. Protection Plates: Fabricate either kick, armor, or mop plates with four beveled edges. Provide kick plates 10" high and 2" LDW. Sizes of armor and mop plates shall be listed in the Hardware Schedule. Furnish with machine or wood screws of bronze or stainless to match other hardware.

J. Thresholds: As Scheduled and per details.

1. Thresholds shall not exceed 1/2" in height, with a beveled surface of 1:2 maximum slope.
2. Set thresholds in a full bed of butyl-rubber or polyisobutylene mastic sealant complying with requirements in Division 7 “Thermal and Moisture Protection”.
3. Use ¼” fasteners, red-head flat-head sleeve anchors (SS/FHSL).
4. Thresholds shall comply with CBC Section 11B-404.2.5.

K. Seals: Provide silicone gasket at all rated and exterior doors.

1. Fire-rated Doors, Resilient Seals: UL10C Classified complies with NFPA 80 & NFPA 252. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements.
2. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C Classified complies with NFPA 80 & NFPA 252. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.
3. Smoke & Draft Control Doors, Provide UL10C Classified complies with NFPA 80 & NFPA 252 for use on “S” labeled Positive Pressure door assemblies.

L. Door Shoes & Door Top Caps: Provide door shoes at all exterior wood doors and top caps at all exterior out-swing doors.

M. Silencers: Furnish silencers for interior hollow metal frames, 3 for single doors, 2 for pairs of doors. Omit where sound or light seals occurs, or for fire-resistive-rated door assemblies.

2.2 KEYING

A. Furnish a Proprietary Schlage masterkey system as directed by the owner or architect. Key system to be designated and combinated by the Schlage Master Key Department even if pinned by the Authorized Key Center, Authorized Security Center or a local authorized commercial dealer.

B. Extend the original Schlage masterkey system established for ~~Merritt~~ **Berkeley City** College.

C. Furnish all cylinders in the Patent Protected Schlage Small Format Interchangeable Core. (SFIC) “Everest B” family of keyways. Pack change keys independently (PKI)

1. Confirm keyway with PCCD prior to ordering

D. Furnish construction keying for doors requiring locking during construction.

1. For SFIC systems provide 80-035 Small Format Construction Cores in either “BRN” or “GRN” combination for all locks that need to be locked during construction and M204-152 Disposable Cores for all cylinders not required to be locked.

2. For SFIC systems provide ten 48-310 Const. Keys in either “BRN” or “GRN” combination to match cores in # 1 above.
3. For SFIC systems provide two 48-311 Control Keys in either “BRN” or “GRN” combination to match cores in # 1 above. (const.)
4. For SFIC systems provide two control keys for installing the permanent cores (either 48-311 for non-patented keyways or 49-356 for patented keyways such as “Everest -B” family)

E. Furnish all keys with visual key control. *(Not all options listed below are*

1. Stamp key “Do Not Duplicate”.
2. Stamp (BHMA) key symbol on key.

F. Furnish all cylinders with visual key control.

1. Stamp (BHMA) key symbol on side of cylinder (CKC).

G. Furnish mechanical keys as follows:

1. Furnish 2 cut change keys for each different change key code.
2. Furnish 1 uncut key blank for each change key code.
3. Furnish 6 cut masterkeys for each different masterkey set.
4. Furnish 3 uncut key blanks for each masterkey set.
5. Furnish 2 cut control keys cut to the top masterkey for permanent I/C cylinders.
6. Furnish 1 cut control key cut to each SKD combination.

H. Furnish Schlage Padlocks and the cylinders to tie them into the masterkey system for gates, storage boxes, utility valve security, roof hatches and roll-up doors keyed as directed in the keying schedule.

1. Furnish KS41D1200 padlock for use with SFIC Schlage cylinders. Furnish 80-037 (Everest-B) with above.

I. Furnish one Schlage cabinet lock for each cabinet door or drawer so designated on the drawings or keying schedule to match the masterkey system.

1. Furnish CL721G for use with SFIC Schlage cylinders.

2.3 FINISHES

A. Generally to be satin chrome US26D (626 on bronze and 652 on steel) unless otherwise noted.

B. Furnish push plates, pull plates and kick or armor plates in satin stainless steel US32D (630) unless otherwise noted.

C. Door closers shall be powder-coated to match other hardware, unless otherwise noted.

D. Aluminum items to be finished anodized aluminum except thresholds which can be furnished as standard mill finish.

2.4 FASTENERS

A. Screws for strikes, face plates and similar items shall be flat head, countersunk type, provide machine screws for metal and standard wood screws for wood.

B. Screws for butt hinges shall be flathead, countersunk, full-thread type.

C. Fastening of closer bases or closer shoes to doors shall be by means of sex bolts and spray painted to match closer finish.

D. Provide expansion anchors for attaching hardware items to concrete or masonry.

E. All exposed fasteners shall have a phillips head.

F. Finish of exposed screws to match surface finish of hardware or other adjacent work.

G. All Exit Devices and Lock Protectors shall be fastened to the door by the means of sex bolts or through bolts.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify that doors and frames are square and plumb and ready to receive work and dimensions are as instructed by the manufacturer.

B. Beginning of installation means acceptance of existing conditions.

C. Fire-Rated Door Assembly Inspection: Upon completion of the installation, all fire door assemblies shall be inspected to confirm proper operation of the closing device and latching device and that only the manufacturer's furnished fasteners are used for installation and that it meets all criteria of a fire door assembly per NFPA 80 (Standard for Fire Doors and Other Opening Protectives) 2016 Edition. A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The inspection of the swinging fire doors shall be performed by a certified FDAI (Fire Door Assembly Inspector) with knowledge and understanding of the operating components of the type of door being subjected to the inspection. The record shall list each fire door assembly throughout the project and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.2 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and requirements of DHI.

B. Use the templates provided by hardware item manufacturer.

C. Mounting heights for hardware shall be as recommended by the Door and Hardware Institute. Operating hardware will to be located between 34" and 44" AFF.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

F. Set thresholds for exterior doors in full bed of butyl-rubber sealant.

G. If hand of door is changed during construction, make necessary changes in hardware at no additional cost.

H. Hardware Installer shall coordinate with security contractor to route cable to connect electrified locks, panic hardware and fire exit hardware to power transfers or electric hinges at the time these items are installed so as to avoid disassembly and reinstallation of hardware.

I. Hardware Installer shall also be present with the security contractor when the power is turned on for the testing of the electronic hardware applications. Installer shall make adjustments to solenoids, latches, vertical rods and closers to insure proper and secure operation.

J. All wiring for electro-mechanical hardware mounted on the door shall be connected through the power transfer and terminated in the interface junction box specified for in the Electrical Section.

K. Conductors shall be minimum 18 gage stranded, multicolored. A minimum 12 in. loop of conductors shall be coiled in the interface junction box. Each conductor shall be permanently marked with its function.

L. If a power supply is specified in the hardware sets, all conductors shall be terminated in the power supply. Make all connections required for proper operation between the power supply and the electro-mechanical hardware. Provide the proper size conductors as specified in the manufacturer's technical documentation.

3.3 ADJUST AND CLEAN

A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Clean adjacent surface soiled by hardware installation.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy, return to that work area and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's Personnel in proper adjustment and maintenance of hardware finishes, during the final adjustment of hardware.

E. Continued Maintenance Service: Approximately six months after the completion of the project, the Contractor accompanied by the Architectural Hardware Consultant, shall return to the project and re-adjust every item of hardware to restore proper functions of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware.

3.4 HARDWARE LOCATIONS

A. Conform to CCR, Title 24, Part 2; and ADAAG; and the drawings for access-compliant positioning requirements for the disabled.

3.5 FIELD QUALITY CONTROL

A. Contractor is responsible for providing the services of an Architectural Hardware Consultant (AHC) or a proprietary product technician to inspect installation and certify that hardware and its installation have been furnished and installed in accordance with manufacturers' instructions and as specified herein.

3.6 SCHEDULE

A. The items listed in the following schedule shall conform to the requirements of the foregoing specifications.

B. While the hardware schedule is intended to cover all doors, and other movable parts of the building, and establish type and standard of quality, the contractor is responsible for examining the Plans and Specifications and furnishing proper hardware for all openings whether listed or not. If there are any omissions in hardware groups in regard to regular doors they shall be called to the attention of the Architect prior to bid opening for instruction; otherwise, list will be considered Complete. No extras will be allowed for omissions.

C. The Door Schedule on the Drawings indicates which hardware set is used with each door.

Manufacturers Abbreviations (Mfr.)

BLU	=	Blumcraft	Frameless Glass Door Panic Hardware
DRM	=	Dorma	Frameless Glass Door Closer
GLY	=	Glynn-Johnson Corporation	Overhead Door Stops
IVE	=	Ives	Hinges, Pivots, Bolts, Coordinators, Dust Proof Strikes, Push Pull & Kick Plates, Door Stops & Silencers
JOH	=	L.E. Johnson	Sliding Door Hardware
LCN	=	LCN	Door Closers, Auto Operators, Actuators
SCH	=	Schlage Lock Company	Locks, Latches & Cylinders
VON	=	Von Duprin	Exit Devices

ZER = Zero International Thresholds, Gasketing & Weather-stripping

65016 OPT0241627 VERSION 3

GROUP NO. 01

1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-99-L-NL-06	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	FLOOR STOP	FS18S	BLK	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL		ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 02

1	EA	CONT. HINGE	224XY TWP	628	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	DOOR STOP	FS439 OR WS401/402CVX	682	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	153A	A	ZER
1	EA	THRESHOLD	PER DETAIL		ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 03

1	EA	CONT. HINGE	224XY TWP	628	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL		ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 04

2	EA	HINGE	5BB1HW 5 X 4.5 NRP	630	IVE
1	EA	ELECTRIC HINGE	5BB1HW 5 X 4.5 TW8	630	IVE
1	EA	EU MORTISE LOCK	L9095HDEU 06A CON 12/24 VDC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	153A	A	ZER
1	EA	THRESHOLD	PER DETAIL		ZER

GROUP NO. 05

1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-99-L-M996-06-FSE	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR SWEEP	39A	A	ZER
1	EA	THRESHOLD	PER DETAIL		ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 06

1	EA	CONT. HINGE	224XY	628	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630	689	LCN
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	THRESHOLD	PER DETAIL		ZER

GROUP NO. 07

2	EA	CONT. HINGE	224XY EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-AX-PA-3349A-EO-LBL 24 VDC	626	VON
1	EA	ELEC PANIC HARDWARE	RX-QELX-PA-AX-3349A-NL-OP-LBL-388 24 VDC	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
2	EA	LONG DOOR PULL	9264 36" 20" O	630-316	IVE
2	EA	OH STOP	100S	630	GLY
1	EA	SURF. AUTO OPERATOR	9553 REG2 MS AS REQ (120/240 VAC)	ANCLR	LCN
2	EA	ACTUATOR	INGRESS'R I36-3	630	WIK
2	EA	BOLLARD	SQ SERIES 6"X 6" PREPPED FOR INGRESS'R	630	WIK
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	POWER SUPPLY	PS906 900-2RS 120/240 VAC	LGR	SCE
			CARD READER - WORK OF DIVISION 28		

GROUP NO. 08

2	EA	CONT. HINGE	224XY EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
2	EA	ELEC PANIC HARDWARE	RX-PA-3349A-L-BE-E360-06-FS-WH 24 VDC	628	VON
2	EA	OH STOP	100S	630	GLY
2	EA	SURFACE CLOSER	4040XP ST-1630	689	LCN
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	THRESHOLD	PER DETAIL		ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 09

2	EA	CONT. HINGE	700	630	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	STOREROOM/CLOSET LOCK	CL3357 PZD, CYLINDER PER PG&E	626	C-R
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
2	EA	FLOOR STOP	FS18S	BLK	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
2	EA	DOOR SWEEP	39A	A	ZER
1	EA	ASTRAGAL	43SP	SP	ZER
1	EA	THRESHOLD	PER DETAIL		ZER

GROUP NO. 10

1	EA	CONT. HINGE	700	630	IVE
1	EA	CONT. HINGE	700 EPT	630	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	MANUAL FLUSH BOLT	FB458 12"	626	IVE
1	EA	MANUAL FLUSH BOLT	FB458 24"	626	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
2	EA	OH STOP & HOLDER	100H	630	GLY
1	EA	ASTRAGAL	43SP	SP	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 11

1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-PA-33A-L-BE-E360-06-299-FS-WH 24 VDC	628	VON
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	SET	SEAL SET	WEATHERSTRIP BY DOOR/FRAME MANUFACTURER		
1	EA	THRESHOLD	PER DETAIL		ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 12

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL OFFICE LOCK	ND91HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER

GROUP NO. 13

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL CLASSROOM LOCK	ND94HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	WALL STOP	WS401/402CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

GROUP NO. 14

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL CLASSROOM LOCK	ND94HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

GROUP NO. 15

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL CLASSROOM LOCK	ND94HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	US26D	IVE
3	EA	SILENCER	SR64	GRY	IVE

GROUP NO. 16

3	EA	HINGE	5BB1HW 5 X 4.5	652	IVE
1	EA	VANDL CLASSROOM LOCK	ND94HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

GROUP NO. 17

2	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1HW 4.5 X 4.5 TW8	652	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 18

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	DOOR STOP	FS439 OR WS401/402CVX	682	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
1	EA	DOOR BOTTOM	364AA	AA	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 19

2	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1 4.5 X 4.5 TW8	652	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	DOOR STOP	FS439 OR WS401/402CVX	682	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
1	EA	DOOR BOTTOM	364AA	AA	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 20

2	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1HW 4.5 X 4.5 TW8	652	IVE
1	EA	EU MORTISE LOCK	L9492HDEU 06A L583-363 RX DM CON 12/24 VDC	626	SCH
1	EA	OUTSIDE INDICATOR	L283-414 (OCCUPIED/VACANT) (PROVIDED BY GOOGLE)	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

TURNING INSIDE THUMBTURN TO SHUNT POWER TO CARD READER

GROUP NO. 21

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP ST-1630	689	LCN
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
1	EA	DOOR BOTTOM	364AA	AA	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 22

2	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1HW 4.5 X 4.5 TW8	652	IVE
1	EA	ELEC FIRE EXIT HARDWARE	RX-PA-AX-99-L-F-M996-06-FSE	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 23

1	EA	CONT. HINGE	224XY EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-99-L-M996-06-FSE	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	DOOR STOP	FS439 OR WS401/402CVX	682	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 24

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-99-L-M996-06-FSE	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	OH STOP	100S	630	GLY
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	DOOR STOP	FS439 OR WS401/402CVX	682	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
1	EA	DOOR BOTTOM	364AA	AA	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 25

3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-99-L-M996-06-FSE	626	VON
1	EA	SFIC RIM CYLINDER	80-159	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	DOOR STOP	FS439 OR WS401/402CVX	682	IVE
1	EA	GASKETING	188SBK OR BY FRAME MFR	BK	ZER
1	EA	DOOR BOTTOM	364AA	AA	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 26

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP/HOLDER	WS40	US26D	IVE
3	EA	SILENCER	SR64	GRY	IVE

GROUP NO. 27

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	VANDL STOREROOM LOCK	ND96HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

GROUP NO. 28

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	ND40S RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

GROUP NO. 29

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER

GROUP NO. 30

5	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1HW 4.5 X 4.5 TW8	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
2	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	ASTRAGAL	44STST OR BY HM DOOR MFR	STST	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 31

5	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1HW 4.5 X 4.5 TW8	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO RX 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	ASTRAGAL	44STST OR BY HM DOOR MFR	STST	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 32

8	EA	POCKET PIVOT	91105F	630	IVE
2	EA	FIRE EXIT HARDWARE	AX-9447-L-BE-F-06	626	VON
2	EA	SURFACE CLOSER	4000T	689	LCN
2	EA	MAGNET	SEM7840 12V/24V/120V	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	SET	MEETING STILE	328AA-S	AA	ZER
2	EA	DOOR SWEEP	8192AA	AA	ZER

MAG HOLDER TIED TO FIRE ALARM

GROUP NO. 33

2	EA	BOTTOM PIVOT	7215 BTM	626	IVE
2	SET	OVERHEAD CONC. CLOSER	RTS88	689	DRM
2	EA	EXIT DEVICE	PA-100-F W/ KEY LOCK	626	BLU
2	EA	SFIC MORTISE CYL.	80-131	626	SCH
2	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
2	SET	TOP AND BOTTOM RAILS/PATCH FITTINGS	BY FRAMELESS GLASS DOOR MANUFACTURER		

GROUP NO. 34

1	EA	CYLINDER	80-XXX EV B TYPE AS REQUIRED BY DOOR MFR BALANCE OF HARDWARE BY ROLL UP DOOR MFR	626	SCH

GROUP NO. 35

HARDWARE BY DOOR MANUFACTURER

GROUP NO. 36

4	EA	POCKET PIVOT	91105F	630	IVE
2	EA	FIRE EXIT HARDWARE	AX-9447-EO-F	626	VON
2	EA	SURFACE CLOSER	4000T	689	LCN
2	EA	MAGNET	SEM7840 12V/24V/120V	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	ASTRAGAL	47A	A	ZER

MAG HOLDER TIED TO FIRE ALARM

GROUP NO. 37

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	PASSAGE SET	ND10S RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	ASTRAGAL	44STST OR BY HM DOOR MFR	STST	ZER

GROUP NO. 38

8	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MANUAL FLUSH BOLT	FB458 24"	626	IVE
1	EA	VANDL CLASSROOM LOCK	ND94HD RHO	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
2	EA	OH STOP	90S	630	GLY
2	EA	WALL STOP	WS401/402CCV	626	IVE
2	EA	SILENCER	SR64	GRY	IVE

GROUP NO. 39

5	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	ELECTRIC HINGE	5BB1HW 4.5 X 4.5 TW8	652	IVE
1	SET	AUTO FLUSH BOLT	FB31P	630	IVE
1	EA	VANDL EU STOREROOM	ND80HDEU RHO 12V/24V DC	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	4040XP RW/PA TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	ASTRAGAL	44STST OR BY HM DOOR MFR	STST	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 40

1	SET	BARN DOOR TRACK AND HARDWARE	200WF	AL	JOH
1	EA	BARN DOOR STRIKE	2001BSTK	626	ACC
1	EA	LEVER TRIM	L9070L 06A LLL LLL LESS LOCK CASE	626	SCH
1	EA	CLASSROOM LOCK CASE	SL9145ADA	626	ACC
1	EA	SFIC MORTISE CYL.	80-131	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH

GROUP NO. 41

1	EA	CYLINDER	80-XXX EV B TYPE AS REQUIRED BY DOOR MFR	626	SCH
1	EA	SFIC EVEREST CORE	80-037 EV B	626	SCH
			HARDWARE BY FOLDING DOOR MFR		

GROUP NO. 42

6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	SET	CONST LATCHING BOLT	FB51P	630	IVE
1	EA	ELEC PANIC HARDWARE	RX-PA-AX-9949-L-M996-06-FSE-LBL	626	VON
1	EA	SFIC MORTISE CYL.	80-131	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	SURFACE CLOSER	4040XP EDA ST-1956 TBSRT	689	LCN
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401/402CCV	626	IVE
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	ASTRAGAL	44STST OR BY HM DOOR MFR	STST	ZER
			CARD READER - WORK OF DIVISION 28		
			POWER SUPPLY - WORK OF DIVISION 28		

GROUP NO. 43

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	PA-AX-98-EO	626	VON
1	EA	SURFACE CLOSER	4040XP SCUSH TBSRT	689	LCN
1	EA	GASKETING	188SBK PSA	BK	ZER
1	EA	DOOR BOTTOM	355AA	AA	ZER

END OF SECTION

PART 1- GENERAL

1.1 SUMMARY

A. This section includes the following types of automatic door operators:

1. In-ground, low energy door operators for swinging doors.

B. Related Sections:

1. Division 7 Sections for caulking to the extent not specified in this section.

2. Division 8 Section "Standard Steel Frames" for hollow metal door frames furnished separately in Division 8 Section.

~~2.~~**3.** Division 8 Section "~~Aluminum-Framed~~ **Interior** Entrances and Storefronts" for entrances furnished separately in Division 8 Section.

~~3. Division 8 Section "Sliding Automatic Entrances" for single and bi-parting sliding automatic entrance doors with sidelites.~~

4. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.

5. Division 26 and 28 Sections for electrical connections including conduit, liquid- tight connections, and wiring for automatic entrance door operators and access control devices.

1.2 REFERENCES

A. References: Refer to the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.

2. ICC/IBC - International Building Code.

3. NFPA 70 - National Electrical Code.

4. NFPA 80 - Fire Doors and Windows.

5. NFPA 101 - Life Safety Code.

6. NFPA 105 - Installation of Smoke Door Assemblies.

B. American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).

1. ANSI/BHMA A156.10 American National Standard for Power Operated Pedestrian Doors.

2. ANSI/BHMA A156.19 Standards for Power Assist and Low Energy Power Operated Doors.

C. American Association of Automatic Door Manufacturers (AAADM).

D. American Society for Testing and Materials (ASTM).

1. ASTM B221 Standard Specification for Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

2. ASTM B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.

E. American Architectural Manufacturers Association (AAMA).

1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

F. National Association of Architectural Metal Manufacturers (NAAMM).

1. Metal Finishes Manual for Architectural Metal Products.

G. International Code Council (ICC).

1. CBC: California Building Code.

1.3 DEFINITIONS

A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to activate the operation of the door.

1. Knowing act: Consciously initiating the opening of a power operated door using acceptable methods including wall mounted switches such as push plates and controlled access devices such as keypads, card readers and key switches.

B. Safety Device: A device that detects the presence of an object or person within a zone where contact could occur and provides a signal to stop the movement of the door.

C. Double Egress Doors: A pair of doors that swing with the two doors moving in opposite directions and no mullion between them.

1.4 PERFORMANCE REQUIREMENTS

A. Automatic door equipment accommodates medium to heavy pedestrian traffic.

B. Opening Force Requirements: Doors shall open with a manual force, not to exceed 30lbf (133N) to set the door in motion and 15 lbf to fully open the door applied at 1” (25 mm) from the latch edge of the door. The force required to prevent a stopped door from opening or closing shall not exceed 15 lbf (67 N) measured 1” (25 mm) from the latch edge of the door at any point during opening or closing.

C. Closing Time:

1. Doors shall be field adjustable to close from 90 degrees to 10 degrees in 3 seconds or longer as applicable per ANSI/BHMA A156.19 standards.

2. Doors shall be field adjusted to close from 10 degrees to fully closed in not less than 1.5 seconds.

1.5 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, fabrication, operational descriptions and finishes.

B. Shop Drawings: Submit manufacturer’s shop drawings, including elevations, sections and details, indicating dimensions, materials, operator, motion /presence sensor control device, anchors, hardware, finish, options and accessories.

1. Indicate required clearances, and location and size of each field connection.

2. Indicate locations and elevations of entrances showing activation devices.

3. Wiring Diagrams: For power, signal, and activation / safety device wiring.

C. Samples: Submit manufacturer’s samples of aluminum finish.

D. Manufacturers Field Reports: Submit manufacturer’s field reports from AAADM certified technician of inspection and approval of doors for compliance with ANSI/BHMA after completion of installation.

E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the work of this section in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the operators and their nearest service representatives. The final copies delivered after completion of the installation test to include spare parts list.

F. Warranties and Maintenance: Special warranties and maintenance agreements specified in this Section.

1.6 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 10 years of documented experience in manufacturing of doors and equipment of similar to that indicated for this Project and that have a proven record of successful in-service performance. Manufacturer to have a company certificate issued by AAADM.

B. Installer Qualifications: Installers, trained by the primary product manufacturers, with a minimum 3 years documented experience installing and maintenance of units similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Certified Inspector Qualifications: Certified by AAADM.

D. Source Limitations for Automatic Door Operators: Obtain each type of door, frame, operator and sensor components specified in this Section from a single source, same manufacturer unless otherwise indicated.

   1. Operator shall be furnished complete with the cement case, case cover and drive mechanism from a single manufacturer.

E. Certifications: Operators shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards.

   1. ANSI/BHMA A156.19 American National Standard for Power Assist and Low Energy Operated Doors.

   2. NFPA 101 - Life Safety Code.

F. Emergency Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.7 COORDINATION

A. Coordinate door operators with doors, frames and related work to ensure proper size, thickness, hand, function and finish. Coordinate hardware for automatic entrances with hardware required for rest of the project.

B. Coordinate sizes and locations of recesses in concrete if applicable. Concrete, reinforcement and formwork are specified in Division 03.

C. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to power supplies and access control system as applicable.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Automatic Door Operators shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.

C. During the warranty period a factory-trained technician shall perform service and affect repairs. An inspection shall be performed after each adjustment or repair.

D. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal business hours.

E. Manufacturer shall have in place a dispatch procedure that shall be available 24 hours a Day, 7 Days a week for emergency call back service.

PART 2- PRODUCTS

2.1 MANUFACTURER

A. Basis of Design Manufacturer: ASSA ABLOY Entrance Systems, 1900 Airport Road, Monroe, NC 28110. Toll Free (877) SPEC-123. Fax (704) 290- 5555 Website www.assaabloyentrance.com contact: specdesk.na.aaes@assaabloy.com

B. Acceptable Manufacturers: Subject to compliance with the requirements, provide products by one of the following:

1. ASSA ABLOY Entrance Systems, Inc.; an ASSA ABLOY Group Company.

2. Horton Automatics; a Division of Overhead Door Corporation.

3. Stanley Access Technologies; Division of The Stanley Works.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated, as indicated below:

1. Extruded Aluminum, Alloy 6063-T5.

2.3 SWING DOOR OPERATORS

A. Model: LCN 9553

B. Reference Standard: ANSI/BHMA A156.19.

1. Configuration: Operator to control pairs of swinging doors as indicated on the drawings and specified below:

a. Traffic Pattern: Two way.

b. Pairs of Doors: Simultaneous swing.

2. Automatic Door Operator: Electro-mechanical, non-handed operator, powered by ~~24~~ **120** volt~~, 1/4 hp motor~~. Operator shall be adjustable to compensate for different manual push forces as required.

a. Automatic operator shall be capable of operating and controlling up to a 700 pound (317.5 kg) door, 48 inches (1219 mm) in width.

b. ~~In-Ground~~ **Simultaneous Pair, Surface Mount, Push Side, Senior Swing** Operator Enclosure and Drive Unit:

~~1) Cement case shall be 12 gauge minimum thickness steel, fully welded enclosure.~~

~~a) Corrosion Protection: 6 to 10 mill powder coat finish suitable for continuous protection when in contact with concrete and masonry.~~

~~2)~~**1)** Removable top case cover shall be ~~12 gauge minimum thickness steel~~ **manufacturer's standard metal** with powder coat finish**; match curtain wall finish color**.

~~a) Cover shall be sealed to cement case by a neoprene gasket.~~

~~b) All penetrations including the operator drive shaft shall have seals to prevent water and moisture infiltration.~~

~~3)~~**2)** Drive Mechanism Assembly: Manufacturer's drive mechanism assembly designed to provide swing door operation from ~~an in-ground~~ **a surface mount** automatic door operator.

a) Operator shaft shall be directly coupled to the pivot assembly.

b) Weight of door shall be fully supported independently through a pivot bearing support. Door weight shall not be supported by the operator or the gear box assembly.

~~4)~~**3)** Connecting hardware to door shall be a door arm attached to the bottom rail of the swing door.

a) Output shaft adapter and door arm shall allow for ~~center~~ **hinge** pivoted installation as indicated on drawings.

b) ~~Top~~ **Hinge** pivot assembly shall be supplied by Division 8 Section "Door Hardware".

c. Operator Temperature Range: Capable of operating within temperature ranges of -31º F to 160º F (-35º C to 71º C).

d. Electrical Characteristics: Maximum power consumption is 300 watts (2.5 amps at 120 VAC), 50/60hz, built-in thermal overload protection.

3. Door Operation:

a. Opening Cycle The adjustable speed operator mechanically powers the drive shaft and the torque control maintains constant speed throughout the opening cycle regardless of stack pressures or wind speed. Operator shall allow manual door operation with operational forces as indicated to fully open the door applied at 1" (25 mm) from the latch edge of the door.

1) Manual push force shall be adjustable from 5 lbf to 15 lbf maximum.

b. Hold Open: The operator shall stop and hold the door open at the selected door opening angle for an adjustable period of time (1.5 seconds to 30 seconds).

c. Closing Cycle: Spring close with speed controlled power assist.

1) Upon loss of power, dynamic braking will control the door insuring controlled closing.

2) Selectable Torque Control: Automatically adjusts torque without changing the closing speed of the operator.

a) When the torque control is activated, the closing speed shall remain constant regardless of stack pressures or wind speed.

b) Torque Cancellation: The torque control is deactivated whenever there is a signal received from door mounted sensors.

c) The torque control is disabled during manual use of the door.

d. Wind Force Dampening: The operator electromechanically counteracts wind forces, slowing down the door movement to safely open or close the door.

e. Stack Pressure Compensation: Operator shall counteract positive stack pressures, negative stack pressures, and sudden changes of stack pressures. The operator never allows the door to open or close faster than the speed control settings, regardless of pressures.

f. Obstruction Control: The operator will stop and reverse the door movement.

g. Electric Lock Management:

1) Internal module for electrified locking integration.

2) Electric Lock Output: Selectable 12 VDC, maximum 1200 mA / 24 VDC, maximum 600 mA.

3) Lock monitoring prevents operator(s) from opening door(s) until release of electrified lock.

4) Operator pulls door closed before opening, automatically unjamming electric latch hardware.

5) Sequenced operation between operators for pairs of doors allowing lock release and astragal coordination.

h. Lock Retry Circuit: If attempt to fully close the door is unsuccessful, the operator will automatically reverse open 10 degrees and reclose in an attempt to successfully close the door.

i. Selectable Alarm Reset: The operator can be field set so that after receiving an alarm signal, the operator will not accept any activation impulses and will operate only as a manual door closer until manually reset.

j. Electronic Controls: Solid state integrated circuit controls the operation and switching of the swing power operator. The electronic control provides low voltage power supply for all means of actuation. The controls include time delay (1 to 30 seconds) for normal cycle.

k. Control Switch: Automatic door operators shall be equipped with the following type of multi-position function switch:

1) 4 position rotary switch remotely mounted (On-Off-Hold- Special Function).

4. Operator Interface:

a. Safety Sensor Integration for overhead presence safety device and door mounted reactivation safety sensors.

2.4 ACTIVATION DEVICES

A. General: Provide activation and safety devices in accordance with ANSI/BHMA standards, for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

B. Knowing Act Activation Device:

1. Touch-Activated Vertical Activation Column Door Control “INGRESS’R” as manufactured by Wikk Industries, Inc. Bollard mounted on Wikk Model B-6SQ-RT-32D-SM-INGR.

a. Vertical activation column with activation of automatic door from any approach and height level along vertical profile.

1) Size: 36” high x 2-1/2” wide 136 Series activation column mounted in a 36” high x 6” wide x 1-1/2” deep enclosure.

2) Engraved with "Push to Open" and a I.S.A. logo.

b. Tapered profile deflects impact from wheeled conveyances and directs movement into center vertical activation column.

c. Vandal and Weather Resistant.

d. Stainless Steel: Type 304, nominal thickness 18/19 gauge sheet metal.

1) Stainless Steel Finish: Satin US32D. Blue wheelchair I.S.A. logo.

e. Hard Wire: Hard-wired from flush junction boxes.

C. Manual Operation:

1. Operator shall allow manual door operation with operational forces adjustable from 5 lbf to 15 lbf maximum.

~~2. Floor plate: Floor Plate/Threshold: Manufacturer’s standard threshold as indicated. 1/2 inch high CBC and ADA compliant aluminum threshold extending the width of the door opening.~~

PART 3- EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, wall and floor construction, and other conditions affecting performance of swinging power operated doors.

B. Examine roughing-in for electrical source power to verify actual locations of wiring connections.

C. Verify that all electrical penetrations into the cement case enclosure have liquid tight fittings.

1. Water-test electrical conduit penetrations (high volt and low volt connections) in cement case to assure leak-free system.

D. Proceed only after such discrepancies or conflicts have been resolved.

3.2 INSTALLATION

A. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.

B. Operators: Install automatic door operators plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

1. Install ~~in-ground~~ **surface** operator housing in accordance with manufacturer's instructions and reviewed shop drawings.

2. Install operator drive mechanism assembly in accordance with manufacturer's instructions.

3. Adjust operator and drive mechanism to achieve smooth operation including back-check, latch, and proper limit stops.

4. Install exposed to view fittings using concealed fasteners where possible.

5. Install threshold and operator fittings per manufacturer's instructions.

C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

D. Sealants: Comply with requirements specified in division 7 Section "Joint Sealants" to seal between the operator housing and the adjacent surfaces and provide a water-tight closure.

E. Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.19 and manufacturers installation instructions.

3.3 ADJUSTING

A. Adjust automatic door operators, controls and hardware for smooth and safe operation and for weather tight closure. Adjust doors in compliance with ANSI/BHMA A156.19.

3.4 FIELD QUALITY CONTROL

A. Before placing doors into operation, AAADM certified technician shall inspect and approve doors for compliance with ANSI/BHMA A156.19. Certified technician shall be approved by manufacturer.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by automatic door operator installation.

B. Clean metal surfaces promptly after installation. Remove excess sealants, compounds, dirt and other substances. Repair damages and finish to match original finish.

3.6 DEMONSTRATION

A. Engage a factory-authorized representative to train Owner's maintenance personnel to adjust, operate, and maintain safe operation of the door.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes glass glazing for metal frames, doors, windows, glazed walls and other products referencing this Section.

B. Related Sections:

1. Section 07 90 00 – Joint Protection: Joint sealants.
2. Section 08 12 14 – Standard Steel Frames.
3 Section 08 14 16 – Flush Wood Doors.
4. Section 08 41 13 – Interior Entrances and Storefronts
5. Section 08 44 13 – Glazed Aluminum Curtain Walls.

1.2 REFERENCES

A. American National Standards Institute (ANSI)

1. ANSI Z97.1 - Standard For Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

B. American Society for Testing and Materials (ASTM)

1. ASTM C509 - Elastomeric Cellular Preformed Gasket and Sealing Compound.
2. ASTM C864 - Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
3. ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
4. ASTM C1036 – Standard Specification for Flat Glass.
5. ASTM C1048 – Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
6. ASTM C1193 – Standard Guide for Joint Sealants.
7. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E119 – Standard Test Methods for Fire Tests of Building Construction and Materials.
9. ASTM E1300 – Standard Practice for Determining Load Resistance of Glass in Buildings.
10. ASTM E2190 – Standard Specification for Insulating Glass Unit Performance and Evaluation.

3. California Code of Regulations, Title 24, Part 2 (CCR):

a. CBC – California Building Code.

C. Consumer Product Safety Commission (CPSC)

1. Safety Glazing Standard: CPSC 16 CFR Part 1201 for category I and II materials.

D. Glass Association of North America (GANA)

1. GANA - Sealant Manual.
2. GANA – Glazing Manual.
3. GANA – Laminated Glass Design Guide.

E. National Fire Protection Association (NFPA)

1. NFPA 80 – Standard for Fire Doors, Fire Windows.
2. NFPA 257 – Standard of Fire Test for Window and Glass Block Assemblies.

F. Underwriters Laboratories Inc. (UL)

1. UL 9 – Standard for Fire Tests of Window Assemblies.
2. UL 10C – Positive Pressure Fire Tests of Door Assemblies.
3. UL 263 – Fire Tests of Building Construction and Materials.

1.3 SYSTEM DESCRIPTION

A. Design and Performance Requirements:

1. Glass thicknesses and heat treatment, if specified, are minimum requirements. Engineer and provide glass thicknesses and heat treatment to comply with ASTM E1300.
2. Vertical Glass: Limit the statistical probability of failure to eight lites per thousand at Design Wind Pressures.
3. Glass Deflection - Vertical Lites, Interior or Exterior: Maximum center deflection no greater than 1 inch at center point at Design Wind Pressures.

B. Labeling: Each piece of tempered glass shall be permanently labeled with logo indicating glass type.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's literature and installation instructions for each material and accessory, clearly notating each specified requirement.

B. Samples: Each type and thickness of glass products, except for clear, 12 inches square.

C. Quality Assurance/Quality Control Submittals

1. Test Reports: Submit test reports, indicating the following products comply with specified requirements: insulated glass, coated float glass, heat soak testing for tempered glass, glazing sealants, glazing gaskets.

D. Closeout Submittals: Submit for Owner's documentation.

1. Warranties.

2. Maintenance Data.

1.5 QUALITY ASSURANCE

A. Qualified Installer: Installer to have five years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the materials manufacturer.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, and regulations of authority having jurisdiction.

C. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, and GANA Laminated Glass Design Guide for glazing installation methods.

D. Fire Rated Window Glazing: Rating as indicated on Drawings. Tested in accordance with NFPA 257 and complying with NFPA 80.

1. NFPA 257: Adjusted so two-thirds of test specimen is above neutral pressure plane at 10 minutes into test.

E. Fire Rated Door Glazing: Tested in accordance with UL 10C and complying with NFPA 80.

F. Apply permanent testing agency label to identify each fire rated glass lite.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver products in manufacturer's unopened containers fully identified. Protect from scratches and abrasions. Clearly label each lite with manufacturer's name and brand. Keep handling to minimum.

1.7 WARRANTY

A. Division 1 – Execution and Closeout Requirements: Product warranties and bonds.

B. Furnish five year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Furnish five year warranty to include coverage for delamination of laminated glass and replacement of same.

D. Furnish five year warranty to include coverage for deterioration of spandrel glass coating and replacement of same.

PART 2 − PRODUCTS

2.1 FLOAT GLASS MATERIALS

A. Annealed Glass: ASTM C1036, Type 1 transparent flat, Quality Q3, float glass.

B. Heat Strengthened Glass: ASTM C1048, Type 1 transparent flat, Quality Q3, Kind HS heat strengthened, Condition A uncoated, float glass.

C. Tempered Glass: ASTM C1036, Type 1 transparent flat, Quality Q3, Kind FT fully tempered, Condition A uncoated, float glass with horizontal tempering.

2.2 FLOAT GLASS PRODUCTS

A. Float Glass Manufacturers: Provide compliant fabricated glass products of one of the following or approved equal.

1. AGC Interpane Flat Glass North America, Inc.
2. Guardian Industries Corporation.
3. Pilkington North America, Inc.
4. Vitro Architectural Glass.

B. Laminated Glass Manufacturers: Provide compliant fabricated glass products of one of the following or approved equal:

1. GlassFab Tempering Services
   1448 Mariani Court
   Tracy, CA 95376
   PHONE (209) 229-1060
2. Old Castle
3. Saflex/Eastman Chemical Co.

C. Glazing Type (GL-01) - Insulating Glass Units: STC 44. ASTM E2190 certified by Insulating Glass Certification Council; edge-sealed. Purge interpane space with dry hermetic air. AGC Interpane is the basis of the specification.

1. Total Unit Thickness: 1 11/16”
2. Outboard lite: 6 mm clear glass heat strengthened (HS) with Ipasol Platin 47/27 on #2
3. 24 mm airspace. Grey T spacer with grey PIB (Argon fill)
4. Mid lite: 6 mm thick clear glass heat strengthened (HS)
5. Air space: 1.52 mm acoustic interlayer
6. Inboard lite: 6 mm thick clear glass heat strengthened (HS)

D. Glazing Type (GL-02) – 1 11/16” thick Insulated Glass Units: STC 44. ASTM E2190 certified by Insulating Glass Certification Council; edge-sealed. Purge interpane space with dry hermetic air. AGC Interpane is the basis of the specification.

1. Total Unit Thickness: 1 11/16”
2. Outboard lite: 6 mm clear glass heat strengthened (HS) with Ipasol Platin 47/27 on #2
3. 24 mm airspace. Grey T spacer with grey PIB (Argon fill)
4. Mid lite: 6 mm thick clear glass heat strengthened (HS)
5. Interlayer space: 1.52 mm acoustic interlayer
6. Inboard lite: 6 mm thick clear glass heat strengthened (HS) with RAL 9010 Silkscreen frit 2mm (on the portion of the lite), 80% coverage on #5

E. Glazing Type (GL-03) – 7/8” thick Laminated glass.

1. Total Unit Thickness: 7/8”
2. Outer pane: 10mm thick clear glass heat strengthened (HS)
3. Interlayer space: 1.52mm clear PVB
4. Inboard lite: 10mm thick clear glass heat strengthened (HS)

F. Glazing Type (GL-04): TBD

G. Glazing Type (GL-05) – 1” thick insulated glass

1. Outboard lite: 6 mm thick clear glass heat strengthened HS) with Ipasol Platin 47/27 on #2
2. Air space: 13mm grey spacer with grey PIB (Argon fill)
3. Inboard lite: 6mm thick clear glass heat strengthened (HS)

H. Glazing Type (GL-06) – Not Used.

I. Glazing Type (GL-07) Clear Laminated Glass, STC 40: Tempered float glass as specified, Class 1 clear. CPSC 16 CFR 1201 Category I and II safety.

1. Total Unit Thickness: 9/16”.
2. Outer pane: 1/4” thick clear glass – tempered.
3. Interlayer space: .060 Acoustic Interlayer – SAFLEX QS71
4. Inboard lite: 1/4” thick clear glass – tempered.

J. Glazing Type (GL-08) Clear monolithic glass. Tempered float glass as specified, Class 1 clear. CPSC 16 CFR Category I and II safety.

1. Minimum thickness ½".

K. Glazing Type (GL-09) – ~~1" thick insulated glass, STC 35. Tempered float glass as specified, Class 1 clear. CPSC 16 CFR 1201 Category I and II safety~~. **Not Used.**

~~1. Outboard lite: 6 mm thick clear glass – tempered.~~

~~2. Air space: 13mm grey spacer with grey PIB (air fill)~~

~~3. Inboard lite: 6mm thick clear glass – tempered.~~

L. Glazing Type (GL-10) Clear Laminated Glass: Tempered float glass as specified, Class 1 clear. CPSC 16 CFR 1201 Category I and II safety.

1. Total Unit Thickness: 3/8".

~~1.~~**2.** Outboard lite: 3/16" thick clear glass – tempered.

~~2.~~**3.** Interlayer space: ~~.030~~ **.060** PVB

~~3.~~**4.** Inboard lite: 3/16" thick clear glass – tempered.

2.5 GLAZING SEALANTS

A. General: Use product of one manufacturer. Design recommended by manufacturer.

1. Elastomeric Glazing Sealants: Materials compatible with adjacent materials including glass, laminated glass core, insulating glass seals and glazing channels

a. Silicone Glazing Sealant: ASTM C920, Type S, Grade NS, Class and Use suitable for glazing application indicated, single component, capable of water immersion without loss of properties, non-staining, non-bleeding, cured Shore A Hardness Range of 15 to 25. Color: Grey

i. Structural Silicone: Furnish high-modulus structural silicone glazing materials where sealant bonds glass to substrate.

b. Polyurethane Glazing Sealant: ASTM C920, Type S, Grade NS, Class and use suitable for glazing application indicated, single component chemical curing, non-staining, non-bleeding, Shore A Hardness Range 20 to 35. Color: Grey

c. Structural Silicone (sealant at interior butt joint glazing. Same as item "a" above), Color: Clear.

2. Dense Gaskets: ASTM C864 or ASTM C1115, resilient extruded shape to suit glazing channel retaining slot. Color: Grey

3. Soft Gaskets: ASTM C509, resilient extruded shape to suit glazing channel retaining slot, grey color.

4. Pre-formed Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2

percent, designed for compression of 25 percent to effect an air barrier and vapor retarder seal. Color: Grey.

2.6 GLAZING ACCESSORIES

A. Setting Blocks: Elastomeric material recommended by glass manufacturer, 60 to 70 Shore D durometer hardness, length of 0.1 inch for each square foot of glazing or minimum of 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area. For laminated glass or heavy/large units (>= 10 sq. meters and / or 500 kg) an elastic support from maximum 2 mm should be added.

B. Spacer Shims: Elastomeric material recommended by glass manufacturer, 50 to 60 Shore A durometer hardness, minimum 3 inch long x one half the height of glazing stop x thickness to suit application.

C. Glazing Clips: Manufacturer's standard type.

D. Glazing Film: Polyester, pressure-sensitive decorative glass and window film. Fire Rating tested according to ASTM E84 and classified as Class A. Basis of Specification: 3M Fasara Glass Finish.

1. Location: As indicated in Drawings.
2. Pattern: To be selected by Architect from manufacturer's full range of available patterns.
3. Color: To be selected by Architect from manufacturer's full range of available colors.

PART 3 − EXECUTION

3.1 EXAMINATION

A. Division 1 – Administrative Requirements: Coordination and project conditions.

B. Verify openings for glazing are correctly sized and within acceptable tolerance.

C. Verify surfaces of glazing channels or recesses are clean, free of obstructions impeding moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION

A. Unless otherwise shown or specified, perform installation in accordance with GANA Glazing Manual and Sealant Manual.

1. Glazing Sealants: Comply with ASTM C1193. Color to be Grey.
2. Fire Rated Openings: Comply with NFPA 80.

B. Use one of the following glazing methods, all colors to be Grey.

1. Exterior dry method (gasket glazing).
2. Exterior wet/dry method (pre-formed tape and sealant).
3. Exterior (and Interior) wet method (sealant and sealant).
4. Interior dry method (tape and tape).
5. Interior wet/dry method (tape and sealant).

3.4 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

3.5 PROTECTION

A. Protect glass from damage after installation. Mark exposed panes with an “X” by using removable plastic tape.

B. Remove and replace glass damaged or broken prior to Substantial Completion at no additional cost to Owner.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Work includes fixed louvers, frames and accessories.

B. Related Sections:

1. Section 01 81 13 – Sustainable Design Requirements.

2. Section 07 16 20 – Cement Plastering.

3. Section 07 27 26 – Fluid-Applied Membrane Air Barriers

4. Section 07 62 00 – Sheet Metal Flashings and Trim.

5. Section 07 90 00 – Joint Protection.

6. Division 23 – Mechanical.

1.2 REFERENCES

A. Air Movement and Control Association International, Inc.:

1. AMCA 500- L - Test Methods for Louvers, Dampers, and Shutters.

B. American Architectural Manufacturers Association:

1. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

C. ASTM International:

1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

2. ASTM A666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

3. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

4. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.3 PERFORMANCE REQUIREMENTS

A. Wind Load: Furnish blade wall thickness and integral structural supports, designed by manufacturer, to carry a wind load of not less than 20 psf.

1.4 SUBMITTALS

A. Division 1 – Submittal Procedures: Submittal procedures.

B. Product Data: Submit data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.

C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, tolerances; head, jamb and sill details inclusive of anchorage; blade configuration, screens, blankout areas required, and frames.

D. Samples: Submit minimum 6 inches square with specified finish.

E. Manufacturer's Certificate: Certify products meet or exceed specified performance requirements.

F. Sustainable Design Submittals: Section 01 81 13 Sustainable Design Requirements.

1. Materials Resources Certificate: Certify recycled material content for recycled content products.

a. Product Cost Data: Products with recycled material content. Exclude cost of labor and equipment to install products.

2. Indoor Air Quality Certificates: Certify volatile organic compound content for each interior adhesive and sealant and related primer.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with AMCA Certification for Water Penetration, Air Performance, and Wind Driven Rain, in compliance with AMCA 500-L. Attach AMCA seal to louvers.

1.6 QUALIFICATIONS

A. Manufacturer and Installer: Companies specializing in manufacturing and installing Products specified in this section with minimum three years' experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Division 1 - Product Requirements: Product storage and handling requirements.

B. Protect louvers from accelerated weathering by removing or venting sheet plastic shipping wrap.

C. Handle and store pre-finished material off ground with weather protection to prevent twisting, bending, or abrasion, and to provide ventilation.

1.8 COORDINATION

A. Division 1 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with adjacent assemblies, providing sequencing for installation of air and weather barrier and flashing installations.

C. Verify field measurements prior to fabrication.

1.9 WARRANTY

A. Division 1 - Execution and Closeout Requirements: Product warranties and product bonds. Contractor shall make repairs and replacements upon notification of defects.

1. Furnish 20 year manufacturer warranty against excessive deflection and deterioration of finishes.

PART 2 – PRODUCTS

2.1 WALL LOUVERS – DRAINABLE STYLE

A. Manufacturers: Furnish compliant products of one of the following or approved equal:

1. Construction Specialties, Incorporated.

2. Airolite ~~K6747 (59% free area)~~ **GS-607 (51% free area)**.

B. System Description: Construction Specialties ~~PL-4080 Perforated High Performance~~ **Fixed Galvanized Steel Formed Mullion** Louver is basis of design.

1. Unit Depth: ~~7.5 inches~~ **6-inches** maximum.

2. Blade Wall Thickness: ~~0.068" inches~~ **20 gauge** minimum and as required for unit width, integral support spacing.

3. Net Free Area: AMCA 500; ~~46.8~~ **53** percent minimum.

4. Maximum Pressure Drop: AMCA 500; ~~0.20~~ **0.11** inch water gauge at 1,000 feet per minute.

5. Water Penetration: AMCA 500; 0.01 oz/sq ft maximum of free area at minimum ~~822~~ **945** ft/min face velocity.

2.2 SUSTAINABILITY CHARACTERISTICS

A. Division 1 - Sustainable Design Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. Recycled Content Materials: Furnish materials with maximum available recycled content, and with no less than that required in Section 01 81 13.

C. Indoor Environmental Quality Characteristics:

1. Adhesives and Sealants: Maximum volatile organic compound content in accordance with Section 01 81 13.

2.3 COMPONENTS

~~A. Aluminum: ASTM B221; alloy 6063-T5; extruded shape; prefinished with shop applied fluoropolymer finish.~~

~~B.~~**A.** Birdscreen: Interwoven aluminum mesh; 0.063 inch; 1/2 inch open weave; removable, rewireable frame.

~~C.~~**B.** Blank-Off Panels: ASTM B209; 0.040 inch aluminum sheet; factory installed with removable screws and neoprene gaskets.

2.4 ACCESSORIES

A. Fasteners and Anchors: Stainless steel type.

B. Flashings: Of same material as louver frame and specified in Section 07 62 00.

C. Sealants: Elastomeric silicone building sealant as specified in Section 07 90 00.

2.5 FABRICATION

A. Louver Frame: Channel shape; welded corner joints, ~~0.081 inch~~ **16 gauge** minimum material thickness. Form perimeter of frame with return to retain backer rod for sealant application.

B. Intermediate Mullions: Concealed, profiled to suite louver frame.

C. Head and Sill Flashings: Fabricate to required shape, single length in one piece for each location.

D. Screens and Blank-Off Panels: Factory install on interior of louver.

2.6 ~~ALUMINUM~~ FINISHES

A. Superior-Performance Organic Finish – Three-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Apply finish to both sides of panel.

2. Color: Match Glazed Aluminum Curtainwall as specified in Section 08 44 13.

B. Extent of Finish:

1. Apply finish to surfaces cut during fabrication where visible in completed assemblies, including joint edges.

2. Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 - Administrative Requirements: Coordination and project conditions.

B. Verify prepared openings and flashings are ready to receive Work and opening dimensions are as indicated on shop drawings.

3.2 INSTALLATION

A. Install louvers plumb, level, true, and properly align with adjacent work.

B. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.

C. Secure louvers in opening framing with concealed fasteners.

D. Install perimeter backer rod and sealant in accordance with Section 07 90 00.

3.3 ADJUSTING

A. General: Touch-up minor scratches and blemishes with coating manufacturer's recommended product and system; match original finish for color and gloss. Replace damaged units that cannot be repaired to Architect’s satisfaction at no additional cost to Owner.

3.4 CLEANING

A. Clean louver surfaces in accordance with manufacturer’s instructions.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Work includes interior ceramic wall tiling and floor tiling with or without waterproofing and isolation membrane; solid surface door thresholds.

B. Work Specified Elsewhere:

1. Section 07 90 00 – Joint Protection: Sanitary sealant.

1.2 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI A108.5 - Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.
2. ANSI A108.6 - Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
3. ANSI A108.10 - Installation of Grout in Tilework.
4. ANSI A108.13 - Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
5. ANSI A118.3 - Specifications for Chemical Resistant, Water Cleanable Tile-Setting and Grouting Epoxy.
6. ANSI A118.4 - Specifications for Latex-Portland Cement Mortar.
7. ANSI A118.7 - Specifications for Polymer Modified Cement Grouts for Tile Installation.
8. ANSI A137.1 - Specifications for Ceramic Tile.

B. American Society for Testing and Materials (ASTM)

1. ASTM C270 - Standard Specification for Mortar for Unit Masonry

C. Tile Council of North America, Inc. (TCNA):

1. TCNA - Handbook for Ceramic Tile Installation.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements

1. Slip Resistance: ANSI A137.1; Dynamic Coefficient of Friction (DCOF) 0.42 or greater for tile used on floors.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's literature and installation instructions for each material and accessory, clearly notating specified requirements.

B. Samples: Furnish sufficient samples to establish full range of colors and textures for materials exposed in the finished Work. Label samples to indicate product and location in the Work. Samples will be reviewed for appearance only. Compliance with other requirements is the responsibility of the Contractor.

1. For Initial Selection: Manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures, and patterns available for each type and composition of tile indicated. Include samples of grout and accessories requiring color selection.

2. For Verification: For products which involve color and texture variations, submit sets showing full range of variations expected.

a. Tile: Each type and composition of tile and for each color and texture required, at least 12 inches square, mounted on plywood or hardboard backing and grouted.

b. Trim and Accessories: Full-size units of each type for each color required.

c. Thresholds: 6-inch lengths.

d. Metal Edge Strips: 6-inch lengths.

C. Quality Assurance/Quality Control Submittals:

1. Test Reports: Slip Resistance Test Reports.

D. Closeout Submittals:

1. Maintenance Data.

1.5 QUALITY ASSURANCE

A. Qualified Installer: Installer to have 5 years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the materials manufacturer.

B. Single-Source Responsibility for Tile: Obtain each color, grade, finish, type, composition, and variety of tile from single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirement of ANSI A137.1 for labeling sealed tile packages.

B. Storage and Protection: Protection: Prevent damage or contamination to materials by water, freezing, foreign matter, and other causes.

C. Handling: Handle tile with temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If, despite these precautions, coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.7 PROJECT/SITE CONDITIONS

A. Environmental Conditions: Maintain and protect Work during and after installation per Reference Standards and manufacturer's printed recommendations.

B. Ventilation: Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

C. Temperature: Maintain temperatures at 50 degrees F. (10 degrees C.) or more in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by Reference Standards or manufacturer's instructions.

1.8 MAINTENANCE

A. Extra Materials:

1. General: Deliver extra materials to Owner at Project site. Furnish extra materials that match products installed as described below, packaged with protective covering for storage and identified with labels clearly describing contents.

2. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed, for each type, composition, color, pattern and size.

PART 2 – PRODUCTS

2.1 CERAMIC TILE

A. General: ANSI 137.1; 20 percent minimum recycled content.

B. Ceramic Tile ‘CT1’ – See finish plans. Ceramic Floor Tile.

~~C. Ceramic Tile ‘CT2’ – See finish plans. Ceramic Wall Tile.~~

~~D.~~ **C.** Ceramic Tile ~~“CB1”~~ **“BB1”** – See finish plans. Match wall tile. ~~Coved~~ **Bullnose** tile base.

2.2 MORTAR AND GROUT

A. Manufacturers: Furnish products of one of the following or approved equal:

1. Custom Building Products.

2. Laticrete International, Incorporated.

3. Mapei International.

B. Thin-Set / Bond Coat: ANSI 118.4; single-step, polymer-fortified, cementitious thin-set mortar. Basis of Specification: Laticrete International, Inc.'s "254 Platinum".

C. Thick-Bed Mortar: ASTM C270; TCNA Extra-Heavy service rating; single-step, polymer-fortified, portland cement mortar. Basis of Specification: Laticrete International, Inc.'s "3701 Fortified Mortar Bed".

D. Grout: ANSI 118.3; water-cleanable, moderate chemical-resistant, non-sagging, sanded epoxy compound suitable for specified joint widths. Basis of Specification: Laticrete International, Inc.'s "SpectraLock PRO Premium Grout".

1. Colors:

a. Floors: To be selected from manufacturer's extended selection.

b. Walls: To be selected from manufacturer's extended selection.

2.3 ACCESSORIES

A. Bonded Waterproofing and Crack Isolation Membrane: ANSI A118.10; load-bearing, liquid rubber polymer with reinforcing fabric. Basis of Specification: Laticrete International's "Laticrete 9235".

B. Cleavage Membrane: ANSI A108.1A; unbonded.

C. Wire Reinforcing: ANSI A108.1A; 16 gauge, 2 inch x 2 inch.

D. Solid Surface Thresholds: ASTM E84, Class A; resinous polymer with homogenous color throughout. Honed finish, 1/2 inch high, 2 inches deep and full width of wall or frame opening, beveled one side as shown on drawings, radiused edges from bevel to vertical face. Dupont's "Corian" or approved equal. Color: To be selected.

2.3 MIXES

A. General: Mix mortars and grout per Reference Standards and manufacturer's recommendations, including those requirements for accurate proportioning of materials, water, or additive content; type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 – Administrative Requirements: Coordination and project conditions.

B. Verify inserts, accessories, plumbing, and similar items are placed or provided for.

C. Verify surfaces are ready to receive work.

3.2 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install Gypsum Tile Backer Board as specified elsewhere. Tape joints and corners with 2-inch wide alkali-resistant glass fiber mesh tape, cover with skim coat of dry-set mortar to feather edge.

3.3 INSTALLATION SYSTEMS

A. General: Install membranes, tile, thresholds, and grout in accordance with manufacturer's recommendations, applicable requirements of ANSI A108.1 through A108.10, and TCNA Handbook recommendations for systems specified.

B. Floor Installation - Thin-Set Methods:

1. Over interior concrete slab on-grade substrates, install in accordance with TCNA Handbook Method F115. Waterproofing membrane is not required.

2. Over interior elevated concrete substrates, install in accordance with TCNA Handbook Method F115A. Furnish waterproofing membrane.

C. Floor Installation - Mortar-Set Methods:

1. Over interior concrete slab on-grade substrates, install in accordance with TCNA Handbook Method F121. Furnish cleavage membrane and reinforcing. Bonded waterproofing membrane is not required.

2. Over interior elevated concrete substrates, install in accordance with TCNA Handbook Method F121. Furnish cleavage membrane, reinforcing and waterproofing membrane.

D. Wall Installation:

1. Over coated glass mat water-resistant gypsum backer board in accordance with TCNA Handbook Method W245. Furnish waterproofing membrane at shower and bathtub walls.

2. Over interior concrete and masonry install in accordance with TCNA Handbook Method W202. Furnish waterproofing membrane at shower and bathtub walls.

3.4 INSTALLATION

A. At full mortar installations with bonded waterproofing membrane, apply cleavage membrane below mortar bed and waterproofing membrane above.

B. At full mortar installation where finish is indicated to slope, slope as indicated on Drawings and in no case greater than 1/4 inch per foot.

C. Install full mortar beds minimum 1-1/4 inches thick or as indicated on Drawings. Ensure proper alignment with adjacent floor finishes.

D. Lay ceramic tile to pattern indicated on Drawings. Do not interrupt tile pattern through openings. If floor pattern is not indicated on Drawings, lay out monolithic tile floors to minimize cut tiles along perimeter by more than one-half the tile width. Layout is subject to Architect's final approval.

E. Where large floor tile units will not conform to dished areas at floor drains, review floor lay out with Architect. Cut tiles on diagonal to facilitate conformance to slope. Final tile lay out around drain shall be symmetric.

F. Place thresholds, edge strips at exposed tile edges.

G. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor, base, and wall joints.

H. Place tile with joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.

I. Form internal angles coved and external angles bullnosed. Use metal cove at all floor-to-wall intersections.

J. Install ceramic accessories rigidly in prepared openings.

K. Sound tile after setting. Replace hollow sounding units.

L. Keep expansion joints and divider strips free of adhesive or grout.

M. Allow tile to set for minimum of 48 hours prior to grouting.

N. Grout tile joints. Use specified grout type unless otherwise indicated.

O. Apply sanitary sealant as specified in Section 07 90 00 along junction of tile edge strip and dissimilar materials and junction of dissimilar planes.

3.5 CLEANING

A. Division 1 - Execution Requirements: Final cleaning.

B. Clean tile and grout surfaces.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Division 1 - Execution Requirements: Protecting installed construction.

B. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Work includes interior suspended and braced grid ceiling assemblies, with or without lay-in panels, including fascias and trim, as shown and specified.

B. Related Sections:

1. Section 01 81 13 – Sustainable Design Requirements.
2. Section 09 21 16 – Gypsum Board Assemblies: Specifications of expansion anchors and powder actuated fasteners. Suspended gypsum board ceilings.
3. Division 21 – Fire Suppression: Coordination of fire sprinklers.
4. Division 23 – Heating, Ventilating, and Air Conditioning: Coordination of air supply, ducts, and connections.
5. Division 26 – Electrical: Coordination of lighting fixtures and equipment outlet boxes.
6. Division 27 – Communications: Coordination of communications devices installation.
7. Division 28 – Electronic Safety and Security: Coordination of intrusion detection devices and fire detection and alarm devices.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. ASTM A641 - Standard Specification for Zinc–Coated (Galvanized) Carbon Steel Wire.
2. ASTM C635 - Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
3. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
5. ASTM E580 Section 5 - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions (Seismic Design Category D, E & F).

B. Ceiling and Interior System Contractors Association (CISCA):

1. CISCA - Ceiling Systems Handbook.

C. California Department of General Services – Division of the State Architect (DSA):

1. DSA IR 25-2.13 – Metal Suspension Systems for Lay-In Panel Ceilings (2013 CBC).

1.3 PERFORMANCE REQUIREMENTS

A. Fire-Hazard Classification: Provide suspended panel ceiling systems that are identical to those tested for following fire hazard characteristics, per ASTM test method indicated below, by UL or other testing and inspecting organizations acceptable to authorities have jurisdiction. Identify panel ceiling components with appropriate markings of applicable testing and inspecting organization.

1. Test Method: ASTM E84.
2. Flame Spread: 25 or less.
3. Smoke Developed: 50 or less.

B. Grid Capacity: Deflection of installations shall not exceed a maximum of L/360 of span.

C. Acoustical-Type Tile Performance:

1. Light Reflectance: 85 percent minimum; manufacturer's standard white finish.
2. Noise Reduction Coefficient (NRC): 70 percent minimum.

1.4 SUBMITTALS

A. Submit the following items under provisions of Division 1.

B. Product Data: Submit manufacturer's literature and installation instructions for each material and accessory, clearly notating specified requirements.

C. Shop Drawings: Indicate tile layout and related junctions with other work or ceiling finishes, splicing locations, changes in level, interrelation of mechanical and electrical and other items related to system and means of support of fixtures installed through ceiling panels.

D. Samples:

1. Exposed Suspension System Components: 12-inch long piece of each grid type specified in Part 3.
2. Ceiling Panels: Minimum 6 inch square, each type and finish specified in Part 3.

E. Sustainable Design Submittals: Section 01 81 13 Sustainable Design Requirements.

1. Materials Resources Certificate: Certify recycled material content for recycled content products.
2. Product Cost Data: Products with recycled material content. Exclude cost of labor and equipment to install products.

F. Provide documentation showing ceiling products have been tested in according to California Department of Public Health (CDPH) Standard Method v1.2–2017

1.5 QUALITY ASSURANCE

A. Qualified Installer: Installer to have 5 years' experience in the installation of specified materials on comparable projects. The firm shall have the approval of the materials manufacturer.

B. Regulatory Requirements: Comply with applicable requirements of the laws, codes, and regulations of AHJ.

C. Single-Source Responsibility: Obtain each type of ceiling system unit from single source with resources to provide products of consistent quality in appearance and physical properties without delaying progress of Work.

D. Coordination of Work: Coordinate layout and installation of ceiling system units and suspension system components with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system components, and partition system.

E. Visual Mock-Up: Build portion of suspended ceiling as shown. Include lighting fixtures, air distribution system, drapery pocket, ceiling trim, and other items shown within bay.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading: Deliver suspended ceiling units to Project site in original, unopened packages.

B. Storage and Protection: Store suspended ceiling units in fully enclosed space protected against damage from moisture, direct sunlight, surface contamination, and other causes.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Storage: Before installing suspended ceiling units, permit them to reach room temperature and stabilized moisture content.

B. Space Enclosure: Do not install suspended ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those expected for final occupancy.

1.8 MAINTENANCE

A. Extra Materials: Deliver 2 percent full-size units of each type of extra materials of amount installed to Owner at Project site. Furnish extra materials that match products installed, are packaged with protective covering for storage, and are identified with appropriate labels.

PART 2 – PRODUCTS

2.1 SUSPENDED PANEL CEILING SYSTEMS:

A. Manufacturers: Provide compliant products of one of the following or approved equal:

1. Armstrong World Industries, Incorporated.

2. United States Gypsum Corporation.

B. System Description: Wire-suspended ceiling grid system with or without lay-in panels of types scheduled in Part 3. Basis of Specification: Listed Components and Accessories are products of Armstrong World Industries.

2.2 SUSTAINABILITY CHARACTERISTICS

A. Division 1 - Sustainable Design Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:

1. Recycled Content Materials: Furnish panel and grid materials with maximum available recycled content, and with no less than that required in Section 01 81 13.

2.3 INTERIOR SYSTEM COMPONENTS

A. General: Provide each component as products of a single manufacturer. Material to contain 25-percent recycled content.

B. Suspension System Components: ASTM C635; ASTM E580, Section 5.1.

1. Grid: ASTM C635; classified Heavy Duty, hot-dipped galvanized. Double-web, rotary-stichted steel construction with 9/16 inch or 15/16 inch type exposed flange design, specific profiles as listed in Part 3 – Ceiling System Schedule.

a. All runners, splices, expansion devices and intersection connectors shall be designed to carry a mean ultimate test load of not less than 180 lbs in compression and tension per ASTM E580.

b. Finish: Manufacturer’s standard white; or match the actual color of the selected ceiling tile, unless noted otherwise.

2. Hanger Wires: ASTM A641; Class 1 galvanized steel; 12 gauge minimum and as indicated on Drawings, soft temper and 70 ksi minimum tensile strength.

3. Perimeter Moldings: Angle molding per Drawings, with matching corner caps and splice pieces; same finish and flange width as that of exposed suspension system members, 15-gauge with hemmed edge, typical.

4. Spreader Strut: Slotted angles or channels designed to snap tight to runners to prevent spreading.

C. Lateral Force Bracing Components:

1. Bracing Wires: ASTM C635; soft-annealed galvanized steel; 12 gauge minimum and as indicated on Drawings.

2. Compression Struts: C-studs as indicated on Drawings and specified in Section 09 21 16.

D. Ceiling Panels: ASTM E84; Class A. Refer to Part 3 – Ceiling System Schedule for Types.

2.5 ACCESSORIES

A. General: Provide manufacturer's standard miscellaneous items and accessories suitable for use intended and required for complete installation.

B. Runner End Detaining Clip: Integrate assembly with "Seismic Rx Suspension System, ICC Report ESR-1308" (Armstrong World Industries). Provide Armstrong's BERC2 clip, or equal, where grid is not attached to the wall.

C. Seismic Joint Clip: "SJCG" (Armstrong World Industries), or equal. Two piece unit designed to accommodate a seismic separation joint.

D. Main Beam Seismic Joint Clip: "SJMR15" (Armstrong World Industries), or equal.

E. Transition Fascias:

1. Straight Transition Fascia: Width as shown with 3/4 inch horizontal legs, straight sections with special bosses formed for attachment to tee-bar connection clip or hanging clip; commercial quality, extruded aluminum, factory-finished in factory-applied baked polyester paint to match tee-bar.

2. Manufacturer and Products: Armstrong World Industries, Inc.'s "Axiom Series Transition Channels".

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine substrates and structural framing to which ceiling system attached or abuts, with Installer present, for compliance with requirements specified in this and other sections that affect installation and anchorage of ceiling system. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Install suspended panel ceiling systems per DSA IR 25-2.13; ASTM E580, Section 5; ASTM C636; Drawings and manufacturer's instructions.

B. Ceiling Suspension System:

1. Main and Secondary Grid Members: Install at spacing indicated on Drawings, four foot maximum.

   a. Suspend and brace grid with specified wires at indicated spacing.

C. Lateral Force Bracing:

1. Furnish compression strut at each splayed bracing wiring set. Do not install struts more than 1 in 6 out of plumb.

2. Powder-actuated devices are not permitted for attachment of bracing wires.

3. Bracing Omission:

   a. Bracing may be omitted at small ceiling areas per the Referenced Standards.

   b. Bracing may be omitted at free floating ("cloud") ceilings not attached to any perimeter walls.

D. Acoustic-Type Ceiling Panels:

1. General: Make joints straight and true to line with exposed surfaces flush and level.

~~2. Cut panel edges to match tegular profile for partial panels having tegular edges.~~

~~3.~~**2.** Paint cut edges of panels with manufacturer's standard white low-gloss paint, except edges within 1 inch of wall.

E. Metal and Wood Ceiling Panels: Provide positive attachment to ceiling runners when weight exceeds one-half psf.

F. Ceiling Fixtures, Air Terminals, and Other Devices:

1. Ceiling panels may not support any fixtures, terminals or devices.

2. Install devices in ceiling per Referenced Standards.

3.3 ERECTION TOLERANCES

A. Do not deviate from level in excess of 1/8 inch in 12 feet.

3.4 CLEANING

A. Cleaning: Clean exposed surfaces of ceiling tiles. Comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

3.5 CEILING SYSTEM SCHEDULE

~~A. Acoustic Panels (ACT1): Armstrong's "Ultima" Techzone No.1915 conforming to the following:~~

~~1. Size: 24 x 48 x 9/16 inches with 6" slots with fine textured finish.~~

~~2. Composition: Mineral fiber~~

~~3. Edge: Beveled tegular~~

~~4. Surface Color: White.~~

~~5. Ceiling Suspension: 9/16" Suprafine XL grid.~~

~~B. Acoustic Panels (ACT2): Armstrong's "ULTIMA Tegular" No.1912 conforming to the following:~~

~~1. Size: 24 x 24 x 3/4 inch with fine textured finish.~~

~~2. Composition: Mineral fiber~~

~~3. Edge: Beveled Tegular Lay-In~~

~~4. Surface Color: White.~~

~~5. Ceiling Suspension: 9/16" Suprafine XL grid.~~

C. Acoustic Panels ~~(ACT3)~~ **(ACT1)**: Armstrong's "ULTIMA ~~Tegular~~ **High NRC**" No.~~1912~~ **1943** conforming to the following:

1. Size: 24 x 48 x ~~3/4~~ **7/8** inch with fine textured finish.
2. Composition: Mineral fiber
3. Edge: ~~Tegular~~ **Square** Lay-In
4. Surface Color: White.
5. Ceiling Suspension: 9/16" Suprafine XL grid.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Un-perforated metal ceiling panels
2. Acoustical backing.
3. Suspension assemblies
4. Accessories; provide other necessary items including devices for attachment overhead construction, secondary members, splines, splices, connecting clips, wall connectors, wall angles, and other devices required for a complete installation.
5. Supplemental support framing: Provide fully engineered secondary framing as required to meet code, conforming to layout shown in drawings, to support direct-hung metal ceilings suspension system.
6. Coordinate layout and installation of items penetrating or being installed in ceiling systems with responsible trades.

B. Related Sections:

1. Sections 05 40 00 – Cold-Formed metal Framing
2. Sections 09 20 00 – Plaster and Gypsum Board
3. Sections 09 50 00 – Acoustical Ceilings
4. Sections 09 90 00 – Paintings and Coatings
5. Division 23 – Heating, Ventilating and Air Conditioning
6. Division 26 – Electrical

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. E 84 – “Standard Test Method for Surface Burning Characteristics of Building Materials”
2. E 488 – “Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements”
3. B 209 – “Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate”
4. C 423 – “Sound Absorption and Sound Absorption Coefficients by Reverberation Room Method”

5. E 580 – "Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint"

6. C 635 – "Standard Specification for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings"

7. C 636 – "Recommended Practice for Installation of Metal Ceiling Suspensions Systems for Acoustical and Lay-in Panels"

8. A 641 – "Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire"

9. A 653 – "Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip process.

10. E 1264 – Classification for Acoustical Ceiling Products"

11. E 1477 – Standard Test Method for Luminous Reflectance factor of Acoustical Materials by use of Integrating-Sphere Reflectometers"

12. D 1044 – Practice for Abrasion Resistance

13. D 1002 – Practice for Adhesion Resistance

B. Architectural Woodworking Institute (AWI) and or WIC requirements shall be met for woodworking materials.

C. NEMA Standard 11-14-95 for Chemical Resistance

1.3 SUBMITTALS

A. Product Data: Manufacturers product data for each type of product specified in this section.

B. Product Certification: Manufacturer's certifications that products comply with specified requirements and governing codes including product data, laboratory test reports and research reports showing compliance with specified standards.

C. Shop (Coordination) Drawings: Submit shop drawings for reflected ceiling plans (RCP's), drawn to scale, and coordinating penetrations and ceiling mounted items. Show the following details:

1. Reflected ceiling plan including joint patterns & details.

2. Metal ceiling suspension system plan with appropriate components, suggested hanger locations & details.

3. Method of attaching suspension system hangers to building structure.

4. Ceiling-mounted items including: light fixtures, air outlets and inlets, speakers, sprinklers, and other interfaces.

5. Special moldings at walls, column penetrations, and other junctures of acoustical ceilings with adjoining construction.

6. Framing and support details for work supported by ceiling suspension system.

7. List of materials, dimensions, hanger fastenings and any special details.

8. Minimum drawing scale: 1/8” = 1’-0”.

9. Provide full scale drawings of perforation patterns. Provide minimum 1”=1’-0” scale layout for each panel type showing perforation layout and orientation as required.

D. Samples for Verification: Full-size units (or as specified below) of each type of ceiling assembly indicated; in sets for each color, texture, and pattern specified, showing the full range of variations expected in these characteristics. Submit samples for each type specified.

1. 12-inch square, (acoustical) metal pan units.

2. 12-inch long samples of each exposed molding or trim.

3. 12-inch long samples of each suspension component.

E. Qualification Data: For firms and persons specified in "Quality Assurance" (Section 1.5). Provide documents to demonstrate their capabilities and experience. Include lists of at least 5 completed projects with project names and addresses, names and addresses of Architects and employers, and other information specified.

F. Provide documentation showing ceiling products to meet LEED emissions requirements.

1.5 QUALITY ASSURANCE

A. Qualified Installer: Installer to have a minimum 5 years experience in the installation of specified materials on comparable projects. The firm shall have the approval of the mateials manufacturer.

B. Manufacturer

1. To certify a minimum of 5 years experience manufacturing similar products to those specified.

2. Provide support documentation including name and date of project completion. Include names and contact numbers of Architect and employers for reference

3. Manufacturer shall be single source and shall be the fabricator and supplier of appropriate major components.

C. Fire-Test-Response Characteristics: Provide acoustical metal pan ceilings that comply with one of the following requirements:

1. Fire-response tests performed by UL, ITS/Warnock Hersey, or another independent testing and inspecting agency that is acceptable to authorities having jurisdiction and that performs testing and follow-up services.

2. Surface-burning characteristics of acoustical metal pan ceilings comply with ASTM E 1264 for Class A materials as determined by testing identical products per ASTM E 84.

D. Mock-Ups: Before releasing acoustical metal ceilings, if requested, construct mock-ups for each form of construction and finish required to verify selections made under sample submittals and to demonstrate aesthetic effects and qualities of materials and execution. Build mock-up to comply with the following minimum requirements, using materials indicated for completed work:

1. Locate mock-ups in the location and of the size indicated or, if not indicated, as directed by the Architect. Minimum mock-up size to be 10'x 10' unless otherwise specified.

2. Notify Architect seven days in advance of the dates and times when mock-ups will be constructed.

3. Demonstrate the proposed range of aesthetic effects and workmanship.

E. Pre-installation Conference: Conduct conference at Project site as directed by the project Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical metal ceiling units and suspension system components in original, unopened packages clearly labeled with the following information: name of manufacturing source and location; product type, description and quantity; clients name and shipping address.

B. Panel's protective layer to be removed only after installation is complete to help prevent panel surface damage.

C. Store components in a fully enclosed space where they will be protected against physical damage from direct moisture, significant change in humidity, direct sunlight, significant change in temperature, surface contamination, and any other preventable cause.

D. Exercise care in handling components to prevent damage to the surfaces and edges and prevent distortion or other physical damage. Comply with prescribed stacking instructions to prevent damage to thee components.

1.7 PROJECT CONDITION

A. Space Enclosure: Do not install acoustical metal pan ceilings until after spaces are enclosed and weather tight and after wet work and work above ceilings is complete and accepted by project Architect.

B. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Allow materials to reach

ambient temperature and humidity for a minimum of 24 hours (48 hours recommended), prior to starting installation.

1.8 WARRANTY

A. Provide specified manufacturers warranty against defects in workmanship, discoloration, or other defect considered undesirable by the Architect or Owner.

B. This warranty shall remain in effect for a minimum period of five (5) years from date of initial acceptance.

1.9 MAINTENANCE & EXTRA MATERIALS

A. Maintenance Instructions: Provide manufacturers standard maintenance and cleaning instructions for finishes provided.

B. Extra Materials: Furnish extra materials described below that match products installed, are packaged with protective covering for storage, and are identified with labels describing contents. Only typical system components are included with attic stock.

1. Acoustical Metal Ceiling Pan Units: Full-size units equal to 1½ percent (1½%) of amount installed.

2. Ceiling Suspension System Components: Quantity of each grid and exposed component equal to 1½ percent (1½%) of amount installed.

PART 2 – PRODUCTS

2.1 LINEAR METAL CEILING AND WALL SYSTEMS:

A. Manufacturer: Ceilings Plus - 6711 E. Washington Blvd., Los Angeles, CA 90040. 800-822-3411 – www.ceilingsplus.com.

B. Supply specified item or comply with Section 01 60 00 “Substitutions”. Specified manufacturer’s standard of quality and manufacturing tolerances shall be the criteria for evaluating “equivalent” products. Substitution shall be equal to or of better quality than the specified product in the opinion of the Architect and / or owner.

2.2 MATERIALS

A. Wall and Ceiling ~~PL1~~ **AMC1** - Ceilings Plus “Planx” – Non-perforated – S-22 Oak Line Sarante.

1. Panels are to be manufactured from single sheets of aluminum selected for surface flatness, smoothness and freedom from surface blemishes where exposed to view in a finished unit. Do not use material where the exposed surface exhibit pitting, seam marks, roller marks, stains, discolorations, or variations in flatness exceeding those permitted by referenced standards for stretcher-leveled aluminum alloy sheets.

2. Panels to die formed with a +/-1” x .3” minimum integral returns on panel sides. No fasteners of any kind shall be visible on exposed face surfaces of ceiling panels or support tees. Down light openings and other ceiling penetrations shall be factory precision cut whenever viable.

3. Panel material shall be primed aluminum sheet type 3105 (painted) / 5005 (anodized) series alloy that has a minimum 70% (50% @ 5005) recycled content. It shall be machine stretcher-leveled and a minimum of .040” thickness, or greater if required, so that the panel deflection does not exceed L/360.

4. The panel finish shall be:

   a. “Sarante” PVC free, faux wood veneer that is permanently bonded to the aluminum sheet with formaldehyde free, water based adhesive of minimum bond strength of 8 psi @ 25 degrees C.

5. Linear member sizes shall be 5 ½” unperforated face panels with ½” reveal – 6” module – 8’-0” typical lengths. 1’-2” x 8’-0” fascia panels (style white). Return panels, width varies x 9’-8” (style white)

6. End Profile: Panel end joints are butt condition with a splice plate (black), unless specified otherwise.

7. The plenum shall be 100% accessible.

8. Fire Tests: Complete system test including suspension, primed aluminum and finish shall meet ASTM E 84 Class A.

B. Provide and install ~~“white”~~ brakeshape finish trim on each side of each suspended area (or as specified). **Finish to match slat color, as selected on Drawings, see Finish Schedule.**

2.3 METAL SUSPENSION SYSTEMS. GENERAL

A. Metal Suspension Standard: Provide panel manufacturer's metal suspension systems of types, structural classifications, materials, and finishes indicated that comply with applicable ASTM C 635 requirements.

1. Main and cross runners to be Standard “Heavy Duty” tee bar (as per ASTM C 635).

2. Face of main and cross runners to be factory finished matte black unless known otherwise.

3. Face of main runners to be slotted and factory formed to accept panel side flanges

4. Provide suspension system made from steel sheet with an average recycled content such that post-consumer recycled content plus one half or pre consumer content is not less than 25 percent.

B. Suspension Systems: Provide complete suspensions systems with main runners, cross runners, hangers, trim molding, seismic retention clips, load resisting struts and other

suspension components required to support ceiling and other ceiling supported construction (some of these parts may be supplied by the installer).

C. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table 1, “Direct-Hung”, unless otherwise indicated (supplied by installer)

1. Provide anchor, for use in the particular application, as approved by the “Structural Engineer of record”.

2. Structural substrate, as indicated to support attachment device, also to be approved by the “Structural Engineer of record”.

3. Anchors specified must provide corrosion resistance as per metal type and application.

   a. Anchors into Concrete (with or without steel deck)

      i. Pre-installed – Cast in Place Anchors

      ii. Post-installed - Expansion Anchors

      iii. Post-installed – Chemical Anchors

      iv. Post-installed – Powder Actuated Fasteners

4. “Direct-Hung” Suspension Systems: System composed of main runners supported by hangers to building structure, and complying with the following requirements:

   a. Hangers: Type and metal standard with ceiling system manufacturer, sized to comply with structural classification indicated.

   b. Wire Hangers, where applicable, Braces, and Ties: Provide wires complying with the following requirements

      i. Zinc-Coated Carbon-Steel Wire: ASTM A 641 (ASTM A 641M), Class 1 zinc coating, soft temper.

      ii. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, Direct Hung) will be less than yield stress of wire, but provide not less than 2mm diameter.

      iii. Extruded Aluminum members shall comply with ASTM B209.

   c. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

   d. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.

   e. Angle Hangers: Angles with legs not less than 22mm wide, formed with 1mm thick, galvanized steel sheet complying with ASTM A 653/A 653M, G90 coating designation, with bolted connections.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and structural framing to which acoustical metal panels attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect installation and anchorage, and other conditions affecting performance of metal panel ceilings.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordination: Furnish layouts for cast-in-place anchors, clips, and other ceiling anchors whose installation is specified in other Sections.

B. Measure each ceiling area and establish layout of acoustical metal pan units to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width units at borders, and comply with layout shown on reflected ceiling plans.

C. Survey substrate for wall attachment to assure squareness and proper elevation for wall panel installation.

3.3 INSTALLATION

A. General: Install acoustical metal pan ceilings, per manufacturers shop drawings provided, per manufacturer's written instructions and to comply with publications referenced below.

1. CISCA "Ceiling Systems Handbook.

2. Standard for Ceiling Suspension System Installations - ASTM C 636.

3. Standard for Ceiling Suspension Systems Requiring Seismic Restraint - ASTM E 580

4. IBC (International Building Code) standard for Seismic Zone for local area.

B. Suspend ceiling hangers from building's approved structural substrates and as follows:

1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, counter-splaying, or other equally effective means.

3. Where width of ducts and other construction within ceiling plenum produce hanger spacings that interfere with location of hangers at spacing required to support standard suspension system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices. Size

supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.

4. Where used secure wire hangers to ceiling suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure; that are appropriate for substrate; and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

5. Space hangers not more than 48 inches on center, along each member supported directly from hangers, unless otherwise indicated; and provide hangers not more than 8 inches from ends of each member. Supply supporting calculations from licensed Structural Engineer verifying hanger spacing meets all requirements, when spacing exceed those recommended.

6. Fine level grid to 1/8 inch in 10 feet from specified elevation(s), square and true.

7. Adjust suspension system runners so they are square (within .5 degree from 90 degrees) and securely interlocked with one another. Remove and replace dented, bent, or kinked members.

C. Secure bracing wires to ceiling suspension members and to supports acceptable to Architect / Engineer and or inspector. Suspend bracing from building's structural members and / or structural deck, as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs(unless directed otherwise).

D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical metal pan. Method of edge trim attachment and design of edge trims to be approved by Architect.

1. Screw attach moldings to substrate at intervals not more than 18” O.C. and not more than 6” from ends, leveling with ceding suspension system to a tolerance of 1/8” in 10’. Miter corners accurately and connect securely.

2. Do not use exposed fasteners, including pop rivets, on moldings and trim without prior written approval. Or unless detailed otherwise.

E. Scribe and cut metal panel units for accurate fit at penetrations by electrical, fire sprinkler or other work through ceilings. Stiffen edges of cut units as required to eliminate evidence of buckling or variations in flatness exceeding referenced standards for stretcher-leveled metal sheet.

F. Install metal panel units in coordination with suspension system.

1. Align joints in adjacent courses to form uniform, straight joints parallel to room axis in both directions, unless otherwise indicated. Install directionally patterned or textured panels in directions indicated on approved shop drawings. Panel-joints shall flow smoothly and in a straight line within 1/8” in 10’. Intersections shall be continuous

2. Fit adjoining units to form flush, tight joints. Scribe and cut units for accurate fit at borders and around construction penetrating ceiling.

3. Remove protective film from panels only when space is completely clean and free of airborne particles. Use white cotton gloves for final installation of panels into grid system.

3.4 ADJUSTING AND CLEANING

A. Adjust ceiling components to provide a consistent finish and appearance in conformity with established tolerances and requirements.

B. Clean exposed surfaces of acoustical metal panel ceilings and walls. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage, including dented and bent units.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Work Included: Finished suspended wood ceiling systems, complete, as shown and specified.

B. Work Specified Elsewhere:

1. Metal Fabrications: 05 50 00

2. Suspended Panel Ceiling System: 09 51 00

3. Painting and Coating: 09 90 00

4. Air Supply, Ducts, and Conections: Division 23

5. Light Fixtures: Division 26

1.2 QUALITY ASSURANCE

A. Installer Qualifications: The installer must be a firm with a minimum of two (2) years of successful experience in installation of suspended wood ceilings of similar requirements to this project. The installer must be acceptable to the architect, manufacturer, and owner's representative.

B. Environmental Standards: The wood ceiling shall originate from well managed forests as certified by accredited and recognized industry certifying organizations.

1.3 PROJECT CONDITIONS

A. Installation shall be done only when the temperature and humidity closely approximate the interior conditions that will exist when the building is occupied. The heating and cooling systems shall be operating before, during, and after installation, with the humidity of the interior spaces maintained between 25% and 55%, temperature between 60 to 90 degrees F.

B. It is important that plenums have proper ventilation, especially in high moisture areas. There shall be no excessive build up of heat in the ceiling areas.

C. Prior to the start of installation, all exterior windows and doors are to be in place, glazed, and weather-stripped. The roof is to be watertight, and all wet trades' work is to be completed, and thoroughly dry.

D. Mechanical, electrical, and other utility service installations above the ceiling plane shall have been completed. No materials should rest against, or wrap around, the ceiling suspension components or connecting hangers.

1.4 SUBMITTALS

A. Product Data: Submit product data sheets and installation instructions for all supplied ceiling materials.

B. Shop Drawings: Submit shop drawings showing Panel Grille lengths, and placement of hangers, T-rail carriers, and other details needed to show proper installation. Show locations for linear wood grille access panels.

C. Samples: Submit 12" (305mm) wide x 12" (305mm) long wood ceiling sample, in the specified Panel Grille style, with finish applied.

D. Provide documentation showing ceiling products to meet LEED emissions requirements

1.5 DELIVERY, STORAGE, AND HANDLING

A. Panel Grilles and components shall be delivered to the project site in original, unopened packages.

B. The Panel Grilles shall be stored flat and level in a fully enclosed space. For a minimum of seventy-two (72) hours immediately prior to ceiling installation, the Panel Grilles shall be stored in the room in which they will be installed. The temperature and humidity of the room shall closely approximate those conditions that will exist when the building is occupied. The Panel Grilles must be stored off the floor.

C. Care in handling must be exercised to avoid damage.

1.6 WARRANTIES

A. Manufacturer: All materials supplied by the ceiling manufacturer shall be guaranteed against manufacturing defects for one (1) year.

B. Contractor: All work shall be guaranteed for one (1) year from the date of Substantial Completion of the work.

PART 2 – PRODUCT

2.1 LINEAR WOOD PANELS

A. The wood strips shall be made from prime grade, all-natural White Birch with a transparent stained finish, RC Satin Clear Blend. Provide assembly from Rulon International, or equal **products from one of the following acceptable manufacturers**.

1. Acceptable Alternate Manufacturers:

a. 9Wood.

b. Decoustics by Certainteed Architectural Products.

B. Panelized Linear Wood Panels, (ALW1) are assembled ~~from boards using 4 ½”~~ **into** modules, having wood strips ¾” thick X 3-3/4” wide with a ¾” ABS spacers between the boards. A fiberfelt spacer shall be factory-installed between the wood strips. The fiberfelt spacer is provided in a standard black color. **See Drawings for board sizes, patterns, spacing and panel modules and layouts.**

C. Standard Panel Grilles shall be assembled 1' wide - in nominal lengths of 2’ to 10’. Wood strips shall be manufactured without finger-joints, and fastened together with wood backers on reverse side (upside). The battens shall be positioned 5-1/2” from the ends and 12" on center, for support of the system. Woodbackers shall be painted black.

D. Woodbacker clips shall be used to suspend Linear Wood Panels when removability of panels is necessary for access above the ceiling.

E. All dimension tolerances are ± 1/8".

F. **Basis of Specification** Manufacturer: Wood strip panel grilles: Rulon International ~~or equal~~.

2.2 SUSPENSION SYSTEMS

A. Panel Grilles shall be suspended from suspended standard heavy-duty 15/16" Tee-rail carriers provided and installed under Specification Section 09 51 00. Coordinate tee-rail suspension system location with panel grille layout if installed by separate contractor. Provide suspension grid in flat black color.

B. Suspend Panel Grilles using manufacturer’s methods for connection so removability of panel grilles, where shown, is possible for access above the ceiling.

2.3 ACCESSORIES, EDGES, BORDERS, AND PERIMETER TRIMS

A. Edges, borders, and perimeter trims, shall as shown in the drawings. All wood ceiling products specified shall be supplied by the ceiling manufacturer.

B. Panel Grille black-out scrim: Anchorage 2335 by Guilford of Maine or equal recommended by panel grille system manufacturer.

1. Color: Black polyester fabric.

2. Weight: 15.0 +/- 1.0 oz/liny d.

3. Width 66” minimum useable.

C. Acoustic Insulation: 2” thick batt insulation with black facing.

2.4 FINISHES AND COLORS

A. All Panel Grilles shall be factory-finished with RC Satin Clear Blend.

B Finishes shall be stain or sealer coats, spray-applied to a smooth-sanded surface.

PART 3 – EXECUTION

3.1 PREPARATION

A. Ceiling Layout: The contractor shall measure ceiling areas, and establish layout of Panel Grilles and T-rails, in accordance with installation instructions.

B. Coordination:

1. The contractor shall furnish the layout for supports that shall be installed for suspension of ceilings.

2. Furnish concrete inserts, steel deck hanger clips, or similar devices for installation and in time to coordinate the work.

3. The contractor shall coordinate with the work of other trades the location of devices which will penetrate the Panel Grilles or interfere with the installation. Recessed or surface devices located within the ceiling panels are to be located and cut in the field. This includes but is not limited to light fixtures, HVAC equipment, and fire suppression system components.

3.2 INSTALLATION

A. General: The contractor shall install materials in accordance with manufacturers printed instructions. The installation shall comply with all applicable Codes, regulations and industry standards.

B. Perimeters: Using a leveling device, the contractor shall lay out and install the perimeter trim as specified.

C. Suspension: The T-rail carriers shall be suspended and leveled in a direction perpendicular to the wooden strip direction. #12 gauge wire hangers shall be used to support T-rail carriers. Hangers shall be placed at 4' intervals along the carrier.

D. Black-out scrim: Install fabric to suspension grid as recommended by Panel Grille manufacturer. Lay out fabric to minimize joints. Joints should overlap a minimum 3” to prevent open joints.

E. Wood Suspension: Panel Grilles shall be suspended from the T-rail carrier system by dowel clips. Install Panel Grille wood slats in alignment.

F. Install acoustical insulation above suspension system as Panel Grilles are being installed and as recommended by Panel Grille manufacturer.

3.3 ADJUSTMENT, CLEANING, AND REPAIR

A. The contractor shall make final adjustments to level or contours.

B. Upon completion of ceiling installation, all Panel Grilles and borders shall be cleaned free of dirt, dust, grease, oils, and fingerprints.

C. All work which cannot be successfully cleaned or repaired, shall be removed and replaced.

3.4 INSPECTION

A. Upon completion of ceiling installation, the owner's representative shall inspect all finished surfaces to ensure that work has been performed in a manner satisfactory to the owner. Any deficiencies in the installed ceiling shall be corrected by the contractor at no additional cost to the owner, or to the ceiling manufacturer.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes resilient flooring, resilient wall base, and accessories.

B. Related Sections:

1. Section 01 81 13 – Sustainable Design Requirements.
2. Section 07 26 20 – Concrete Vapor Emission Control: Includes attendance at concrete vapor emission control pre-installation meeting; leveling of concrete floor surfaces.
3. Section 07 90 00 – Joint Protection: Sealants.
4. Section 09 68 13 – Tile Carpeting: Use of resilient base.
5. Section 09 68 16 – Sheet Carpeting: Use of resilient base.

1.2 References

A. American Society for Testing and Materials International (ASTM):

1. ASTM D2047 – Standard Test Method for Static Coefficient of Friction.
2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E648 - Test Method for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.
4. ASTM F1861 - Specification for Resilient Wall Base.
5. ASTM F2034 – Standard Specification for Linoleum Sheet Flooring.

B. National Fire Protection Association:

1. NFPA 253: Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

C. South Coast Air Quality Management District (SCAQMD):

1. SCAQMD Rule 1168: Adhesive and Sealant Applications.

1.3 SUBMITTALS

A. Division 1 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate seaming plan, custom patterns and inlay designs.

C. Product Data: Submit data describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

D. Samples:

1. Submit manufacturer's complete set of color samples for initial selection.

2. Submit two samples, 20 x 20 inch in size illustrating color and pattern for each resilient flooring product specified.

E. Sustainable Design Submittals: Section 01 81 13 Sustainable Design Requirements.

1. Indoor Environmental Quality Certificates: Certify volatile organic compound content for each interior flooring system and adhesive.

F. Provide product documentation that ensures all flooring meets LEED VOC emissions requirements

1.4 CLOSEOUT SUBMITTALS

A. Division 1 - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning and polishing.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Division 1 - Product Requirements: Product storage and handling requirements.

B. Protect roll materials from damage by storing on end.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Division 1 - Product Requirements.

B. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

C. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.8 MAINTENANCE MATERIAL

A. Division 1 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish 5 percent of flooring of each type and color specified.

PART 2 – PRODUCTS

2.1 RESILIENT FLOORING

A. Resilient Sheet Type ~~"RF1"~~ **"RES1**": ASTM F2034, Type I; PVC-free; homogenous sheet linoleum with natural jute backing and welded seams. Forbo Flooring Systems' "Marmoleum".

1. Critical Radiant Flux: ASTM E648, Class 1.
2. Thickness: 1/8 inch nominal (2.5 mm).
3. Minimum Roll Width: 78 inches.
4. Seam Rod: Manufacturer's matching.
5. Coefficient of Friction: ASTM D2047; 0.6 or greater wet and dry.
6. Color: As indicated on drawings.

2.2 RESILIENT BASE

A. Manufacturers: Furnish compliant products of one of the following or approved equal:

1. Allstate Rubber.
2. Burke Flooring.
3. Johnsonite / Tarkett.

B. Product Description: ASTM F1861; ASTM E84, Class C or better, PVC-free rubber wall base and manufacturer's recommended low-VOC adhesive. Basis of Specification: Products of Johnsonite are listed below.

C. Resilient Base Types:

1. Resilient Base Type "RB1": Type ~~TS~~ **TDC**, Group 1, Styles A. ~~4-1/2~~ **4-3/8** inches high with standard profile **at carpet tile**: Johnsonite "Tightlock" series. Color: As indicated on drawings. ~~Use coved style at exposed concrete and straight style at carpet tile.~~
2. **Resilient Base Type "RB2": Type TDCR, Group 1, Style A. 4-1/2 inches high with coved profile at resilient flooring and exposed concrete: Johnsonite "Tightlock" series. Color: As indicated on drawings.**

2.3 SELF-COVED BASE

A. Manufacturer: Same as specified resilient flooring.

B. Height: 4 inches unless indicated otherwise on Drawings.

2.4 SUSTAINABILITY CHARACTERISTICS

A. Division 1 - Sustainable Design Requirements: Requirements for sustainable design compliance.

B. Indoor Environmental Quality Characteristics:

1. Adhesives and Sealants: Maximum volatile organic compound content in accordance with Section 01 81 13.

2.5 ACCESSORIES

A. Adhesives: Recommended by flooring manufacturer. VOC Limit: 60 g/L.

B. Transitions Accessories: Adhered vinyl, disabled access-compliant profiles.

1. Resilient Flooring Reducer: Underslung type, 1-5/8 inch maximum exposed width. Mercer No. 735 or equal.

C. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 – Administrative Requirements: Verification of existing conditions before starting work.

B. Section 07 26 20 – Concrete Vapor Emission Control: Furnish at all new concrete slabs scheduled to receive resilient flooring. Verify that existing concrete floors meet maximum vapor emission rates required by resilient flooring manufacturer for warranty of flooring and installation, and exhibit negative alkalinity, carbonization, and dusting. Furnish emission control system at existing concrete floors that do not meet the required rates.

C. Verify floor and lower wall surfaces are free of substances capable of impairing adhesion of new adhesive and finish materials.

3.2 PREPARATION

A. Smooth and level concrete floor surfaces that are out of tolerance per Section 07 26 20.

B. Prohibit traffic until filler is cured.

C. Clean substrate.

D. Apply primer as required to prevent "bleed-thru" or interference with adhesion by substances cannot be removed.

3.3 EXISTING WORK

A. Extend existing resilient flooring installations using materials and methods compatible with existing installations, or as specified.

3.4 INSTALLATION - GENERAL

A. Install flooring in accordance with manufacturer's printed instructions.

B. Installed flooring shall be fully bonded to substrate, free from damage, flaws, or other defects detrimental to appearance, uniform in pattern, spacing, margin, and finish.

C. Spread adhesive evenly in quantity recommended by flooring manufacturer to ensure adhesion uniformly over the entire area of installation.

D. Avoid applying excessive amount of adhesive to sub-floor. Bleeding of adhesive on finished floor requires removal of flooring and adhesive and re-laying of flooring at no expense to Owner.

E. Where adhesives with a limited "pot life" are used, install flooring within allowable time limit.

3.5 INSTALLATION - SHEET FLOORING

A. Lay flooring with joints and seams in accordance to seaming plan or as directed by Architect. Align joints and seams parallel to building lines to produce symmetrical pattern as appropriate.

1. Lay sheets in same direction.

B. Lay flooring with tight and straight joints, level and true, free from waves, blisters, buckles, cracks, projecting edges, or other imperfections.

C. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

D. Heat Welded Seams: Join flooring with heat welded seams.

1. General procedures consist of routing flooring for joint, position welding rod of proper size into routed space, and thermally fusing rod to flooring material to form homogeneous and seamless floor.

2. Use equipment and procedures developed by flooring manufacturer.

3. Fuse welding rod and flooring at least 65-percent through thickness of material.

4. Remove excess welding rod material upon completion of welding. Finished surface across joint shall be flush, free from recessed or raised areas.

5. Correct un-welded seams at no extra expense to Owner.

E. Self-Coved Base: Terminate flooring with integral coved base to walls, columns, cabinets, and other construction.

1. Use coved base filler as backing at floor to wall junction.
2. Extend sheet flooring vertically to height indicated.
3. Cover top edge with cap strip.

F. Roll finished flooring with minimum 150-pounds roller, in each direction to insure solid contact between flooring and sub-floor, free from air pockets, bulges, low and high corners or edges.

3.5 INSTALLATION - TILE FLOORING

A. Install tile in direction indicated. To degree possible, install in consistent direction in adjacent rooms.

B. Fully-butt tiles by setting into place without sliding. Hand roll all seams immediately.

C. Roll entire floor or sections of floor per manufacturer's instructions. Do not exceed rolling time constraints relative to adhesive set.

3.6 INSTALLATION – RUBBER BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use pre-molded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.7 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Clean, seal, and maintain resilient flooring products.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Division 1 - Execution and Closeout Requirements: Protecting installed construction.

B. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes carpet tile, fully adhered, and accessories.

B. Related Requirements:

1. Section 07 26 20 – Concrete Vapor Emission Control.
2. Section 09 65 00 – Resilient Flooring: Base finish.
3. Divisions 26 and 27 – Electrical and Communications: Electrical and telecommunications floor cover plates for carpeted floor finish.
4. Section 01 81 13 Sustainable Design Requirements.

1.2 REFERENCES

A. American Association of Textile Chemists and Colorists:

1. AATCC Test Method 134 - Electrostatic Propensity of Carpets.

B. ASTM International:

1. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
2. ASTM E662 – Test Method for Specific Optical Density of Smoke Generated by Solid Materials.

C. Carpet and Rug Institute:

1. CRI Carpet Installation Standard - Standard for Installation of Commercial Carpet.
2. CRI Green Label Plus Testing Program.
3. CRI Model Specifications for Commercial Carpets.

D. National Fire Protection Association:

1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

E. South Coast Air Quality Management District:

1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.3 SUBMITTALS

A. Division 1 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples:

1. Submit full carpet tiles illustrating color and pattern design for each carpet color selected. Matching roll carpet samples if applicable.

2. Submit 6 inch long samples of edge strip.

D. Provide product documentation that ensures all flooring meets LEED VOC emissions requirements

1.4 CLOSEOUT SUBMITTALS

A. Division 1 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.5 QUALITY ASSURANCE

A. Surface Burning Characteristics:

1. Floor Finishes: Comply with one of the following:

a. Critical Radiant Flux: ASTM E648, compliant; and NFPA 253, Class I, minimum 0.45 watts/sq cm.

b. Specific Optical Density Smoke Rating: ASTM E662; 450 or less.

B. Texture Appearance Retention Rating: Rating classifications as determined by CRI Model Specifications for Commercial Carpets.

1. Greater than or equal to 3.0 TARR for Heavy Traffic Level Classification.

C. Static Control: AATCC-134; 3.5 KV or less under standard test conditions of 70 degrees Fahrenheit and 20 percent relative humidity.

D. Indoor Environmental Quality Characteristics

1. Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

2. Carpet: Maximum volatile organic compound content in accordance with CRI Green Label Plus Testing Program.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

B. Installer: Company specializing in performing work of this section with minimum three years' experience.

1. FCIB or IFCI certified carpet installers.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Division 1 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.

B. Store materials in area of installation for 48 hours prior to installation.

1.8 MAINTENANCE MATERIAL

A. Division 1 - Execution and Closeout Requirements: Requirements for maintenance materials.

B. Extra Stock Materials:

1. Furnish additional five percent of installed carpet tile quantity of each color and pattern selected. Wrap, label with carpet type, pattern, and color, and store as directed by Owner.

PART 2 – PRODUCTS

2.1 CARPET TILE

A. Manufacturers:

1. As indicated on drawings.

2. Substitutions: Not Permitted.

2.2 COMPONENTS

A. Carpet Type CPT-~~1~~**1B**: As indicated on drawings.

1. Color: As indicated on drawings.

2. Tile Size: 24 x 24 inch, nominal.

3. Construction: ~~Textured Loop~~ **Patterned Loop Pile**.

4. Gauge: ~~1/10~~ **1/12"**.

5. Stitches per Inch: ~~10 or more~~ **8**.

6. Pile Height: ~~0.100 – 0.120 inches~~ **0.185" (5mm)**.

7. Average Density: ~~6,900 or more~~ **96 oz/sq yd**.

8. Fiber: ~~Invista Antron Legacy Type 6,6 nylon~~ **TDX Nylon**.

9. Pile Weight: 20 oz/sq yd.

10. Primary Backing Material: ~~100% woven synthetic~~ **Synthetic Non-Woven**.

B. Carpet Type CPT2: As indicated on drawings.

1. Color: As indicated on drawings.

2. Tile Size: 24 x 24 inch, nominal.

3. Construction: Stratatec® Patterned Loop.

4. Gauge: 5/64”.

5. Stitches per Inch: 9.60 /in.

6. Pile Height: 0.140 " (4 mm).

7. Average Density: 122.88 oz/yd³.

8. Fiber: Dynex SD® Nylon.

9. Pile Weight: 20 oz/sq yd.

10. Primary Backing Material: Synthetic Non-Woven.

C. Carpet Type CPT3: As indicated on drawings.

1. Color: As indicated on drawings.

2. Tile Size: 24 x 24 inch, nominal.

3. Construction: Tufted Patterned Loop.

4. Gauge: 1/13".

5. Stitches per Inch: 10 /in.

6. Pile Height: 0.235 " (6 mm).

7. Average Density: 100 oz/yd³.

8. Fiber: Dynex SD® Nylon.

9. Pile Weight: 20 oz/sq yd.

10. Primary Backing Material: Synthetic Non-Woven.

D. Carpet Type CPT4: As indicated on drawings.

1. Color: As indicated on drawings.

2. Tile Size: 24 x 24 inch, nominal.

3. Construction: Stratatec® Patterned Loop.

4. Gauge: 5/64".

5. Stitches per Inch: 10.80 /in.

6. Pile Height: 0.185 " (5 mm).

7. **Average Density: 3697.92 oz/yd³.**
8. **Fiber: Dynex® Nylon.**
9. **Pile Weight: 20 oz/sq yd.**
10. **Primary Backing Material: Synthetic Non-Woven.**

E. Carpet Type CPT5: As indicated on drawings.

1. **Color: As indicated on drawings.**
2. **Tile Size: 24 x 24 inch, nominal.**
3. **Construction: Stratatec® Patterned Loop.**
4. **Gauge: 5/64".**
5. **Stitches per Inch: 10.80 /in.**
6. **Pile Height: 0.185 " (5 mm).**
7. **Average Density: 3697.92 oz/yd³.**
8. **Fiber: Dynex® Nylon.**
9. **Pile Weight: 20 oz/sq yd.**
10. **Primary Backing Material: Synthetic Non-Woven.**

2.3 ACCESSORIES

A. Reducer Edge Strips: Adhered vinyl, disabled access-compliant profile, 1-1/2” exposed width, color as selected by Architect. Mercer’s “No. 800” or equal.

B. Adhesive: Recommended by carpet manufacturer, pressure-sensitive, water-resistant type.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 – Administrative Requirements: Verification of existing conditions before starting work.

B. Prior to start of Work, examine surfaces to receive carpet and verify that surfaces are clean, dry, sound, level and free of oil, grease, wax, and other foreign matter that would impair installation. Do not start Work until unsatisfactory conditions are corrected.

C. Section 07 26 20 – Concrete Vapor Emission Control: Furnish at all new concrete slabs scheduled to receive resilient flooring. Verify that existing concrete floors meet maximum vapor emission rates required by resilient flooring manufacturer for warranty of flooring and installation, and exhibit negative alkalinity, carbonization, and dusting.

Furnish emission control system at existing concrete floors that do not meet the required rates.

D. Matching: Check matching of carpet before cutting and ensure there is no visible variation between dye lots.

3.2 PREPARATION

A. Division 1 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Smooth and level concrete floor surfaces that are out of tolerance per Section 07 26 20.

C. Clean substrate.

D. Apply primer as required to prevent interference with adhesion by substances that cannot be removed.

3.3 INSTALLATION

A. Install carpet tile in accordance with CRI Carpet Installation Standard and manufacturer's recommendations.

B. Do not mix carpet from different cartons unless from same dye lot.

C. Cut carpet tile clean, straight and unfrayed. Fit carpet tight to intersection with vertical surfaces without gaps.

D. Install carpet tile in square pattern, with pile direction relative to next unit and building orientation per Architect's direction or specified in Part 2. Do not change run of pile in any one room or from one room to next. Locate change of color or pattern between rooms under door centerlines.

E. Fully adhere carpet tile to substrate, free from damage, flaws, or other defects detrimental to appearance, uniform in pattern, spacing, margin, and finish

F. Adhere carpet tile with self-stick adhesive backing by removing protective membrane and pressing tile back onto clean and dry substrate.

G. Trim carpet tile neatly at walls and around interruptions. Where no base is scheduled, fit carpet snugly, leaving no gaps.

H. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated. Use full-length pieces only. Butt tight to vertical surfaces. Where splicing cannot be avoided, butt ends tight and flush.

3.4 CLEANING

A. Division 1 - Execution and Closeout Requirements: Requirements for cleaning.

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Clean and vacuum carpet surfaces.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes high performance coatings and special preparation of surfaces, complete as shown and specified:

~~1. Steel handrails, stringers and metal pans at metal stairs.~~
1. Exposed HSS support steel and plates at roof screens
2. Corrugated panels at Roof Screen.
~~4. Aluminum door frames.~~
~~5. Interior Entrances and Storefronts mullions, frames and door stiles and rails. Two coat~~
3 .Exterior mechanical louvers.

B. Related Sections:

1. Section 01 81 13 – Sustainable Design Requirements (CalGreen).

2. Section 05 50 00 – Metal Fabrications

3. Section 08 12 14 – Standard Steel Frames

~~4. Section 08 12 16 – Aluminum Door and Glazing Frames.~~

4. Section 08 13 14 – Standard Steel Doors

5. Section 08 33 10 – Overhead Coiling Doors

~~6. Section 08 36 13 – Sectional Glass and Aluminum Overhead Doors~~

~~7. Section 08 41 13 – Interior Entrances and Storefronts~~

6. Section 08 44 13 – Glazed Aluminum Curtain Walls

~~9. Section 08 51 13 – Aluminum-Framed Storefronts and Entrances~~

7. Section 08 91 00 - Louvers

8. Section 09 90 00 - Painting and Coating.

9. Section 10 22 39 – Folding Panel Partitions

1.2 REFERENCES

A. Green Seal:

1. GC-03 - Anti-Corrosive Paints.

2. GS-11 - Product Specific Environmental Requirements.

B. South Coast Air Quality Management District:

1. SCAQMD Rule 1113- Architectural Coatings.

C. SSPC: The Society for Protective Coatings:

1. SSPC SP 2 - Hand Tool Cleaning.
2. SSPC SP 3 - Power Tool Cleaning.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedure: Submittal procedures.

B. Product Data: Submit manufacturer's literature and installation instructions for each material and accessory, clearly notating specified requirements.

C. Samples: Furnish sufficient samples to establish full range of colors and textures for materials exposed in the finished Work. Label samples to indicate product and location in the Work. Samples will be reviewed for appearance only. Compliance with other requirements is the responsibility of the Contractor.

1. Opaque Colors and Finishes: Submit samples, on hardboard, using materials accepted for Project, of each color and paint finish selected with texture to simulate actual conditions. Prepare three samples, 8-1/2 inches by 11 inches, with required number of paint coats clearly visible.

D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

E. Sustainable Design Submittals: Section 01 81 13 Sustainable Design Requirements.

1. Air Quality Certificates: Certify volatile organic compound content for each interior sealant and related primer.

1.4 CLOSEOUT SUBMITTALS

A. Division 1 - Execution Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit maintenance and cleaning requirements for coatings, repair and patching techniques.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

B. Applicator: Company specializing in performing work of this section with minimum three years' experience and approved by manufacturer.

C. Test galvanized surfaces for passivator removal prior to painting as specified in this Section, with project inspector or Architect present.

1. On at least 100 square feet of surface as directed, provide full-coat finish samples until required sheen, color and texture are obtained.

1.6 DELIVERY, STORAGE AND HANDLING

A. Division 1 – Product Requirements: Product storage and handling requirements.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Paint Materials: Store at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Division 1- Product Requirements.

B. Do not install materials when ambient temperature is outside range required by coatings manufacturers, and in no case below 55 degrees F or above 90 degrees F.

C. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.

D. Restrict traffic from area where coating is being applied or is curing.

1.8 WARRANTY

A. Division 1 - Execution and Closeout Requirements: Product warranties and product bonds.

B. Warranty: Include installation coverage for bond to substrate, degradation of chemical resistance for a minimum of 5 years.

1.9 MAINTENANCE MATERIALS

A. Division 1 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Supply 1 gallon of each color of each type of coating specified, for Owner's maintenance use.

C. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

PART 2 – PRODUCTS

2.1 LEED REQUIREMENTS

A. For paints and coatings applied inside the weatherproofing line and applied on site, provide products with VOCs that comply with limits found in Section 01 81 13 Sustainability Requirements.

2.2 MANUFACTURERS

A. High-Performance Fluoropolymer Coating at Exterior Steel Substrates:

1. Surface Preparation: SSPC-SP6/NACE3 Commercial Blast Cleaning with a minimum angular anchor profile of 1.5 mils.

2. Shop Primer: Tnemec Series 90-97 Tneme-Zinc. Zinc-rich aromatic urethane. 2.5 to 3.5 mils DFT.

3. Field-Appled Finish Coat: Tnemec Series 1071V Fluoronar. Thermoset solution fluoropolymer. Semi-gloss finish. 2.0 to 3.0 mild DFT.

B. High-Performance Coatings at Interior Steel Substrates:

1. Shop Primer: Tnemec 27WB Typoxy. Apply at 3.0 to 5.0 mils DFT.

2. Touch all damaged or bare spots per SSPC-SP 15 (feather-in all edges) and spot prime with Tnemec 27WB at 3.0-4.0 mil DFT.

3. Field - Applied Finish Coat:

a. Semi-Gloss Sheen: Tnemec 750 UVX semi-gloss. Apply at 3.0 – 5.0 mils DFT.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 - Administrative Requirements: Coordination and project conditions.

B. Verify substrate surfaces are ready to receive work as instructed by coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.

3.2 PREPARATION

A. Clean surfaces of loose foreign matter.

B. Remove substances that would bleed through finished coatings. When removal is not possible, seal surface with shellac.

C. Remove finish hardware, fixture covers, and accessories and store.

D. Existing Painted and Sealed Surfaces:

1. Prepare per manufacturer's recommendations.
2. Clean with mixture of trisodium phosphate and water to remove surface grease and foreign matter.

E. Galvanized Surfaces:

1. Clean and prepare with an etching metal prep and passivator remover.
2. To ensure removal of passivator coatings, test prepared area with two- to five-percent copper sulfate solution. If the galvanized surface blackens, the passivator has been removed and the surface is ready for coating system application.
3. If the copper sulfate solution has no effect on color of the galvanized surface, either re-treat with remover or lightly abrade it with a Scotch pad, using care not to remove layer of galvanization.

F. Ferrous Metal:

1. Solvent clean.
2. Remove loose rust, loose mill scale, and other foreign substances using hand tools according to SSPC-SP 2 or power tools according to SSPC-SP 3.
3. Protect adjacent surfaces and materials not receiving coating from overspray; mask when necessary to provide adequate protection. Repair damage.

3.3 INSTALLATION

A. Apply all components per manufacturer's recommendations and as specified.

B. Apply primer to previously uncoated surfaces, unless specifically not required by coating manufacturer.

C. Wood: Prior to priming patch with filler to produce smooth, even surface.

D. Concrete: Prior to priming, patch with masonry filler to produce smooth surface.

E. Apply coatings to thicknesses required.

F. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.4 CLEANING

A. Division 1 - Execution and Closeout Requirements: Final cleaning.

B. Collect waste material which may constitute fire hazard, place in closed metal containers, and remove daily from site.

C. Clean surfaces immediately of overspray, splatter, and excess material.

D. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes markerboard ("whiteboard") units or walls, tackboard ("bulletin board" **and "tack strips"**), **and acoustical panels** factory and/or field assembled to sizes indicated on Drawings; and, loose marker trays for installation over dry erase wallcoverings.

B. Related Sections:

1. Section 09 21 16 – Gypsum Board Assemblies.
2. Section 09 97 37 – Dry Erase Wall Coverings
3. Division 26 – Electrical: Coordination with lighting control devices, wall outlet locations.
4. Division 27 – Communications: Coordination with device locations.

1.2 REFERENCES

A. ASTM International:

1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
4. ASTM F2034 - Standard Specification for Linoleum Sheet Floor Covering.

B. Porcelain Enamel Institute:

1. PEI S-104 Performance Specification for Porcelain Enamel Markerboards and Chalkboards.

C. South Coast Air Quality Management District:

1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.3 SUBMITTALS

A. Division 1 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on white boards, trim and accessories. Include certification of VOC-compliant adhesives and core material urea-formaldehyde content.

1.4 CLOSEOUT SUBMITTALS

A. Division 1 - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit Operation and Maintenance Data.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years' experience.

1.6 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.7 WARRANTY

A. Division 1 - Execution and Closeout Requirements: Product warranties and product bonds.

B. Furnish five year manufacturer warranty for visual display boards.

C. Warranty: Include coverage of markerboard surface from discoloration due to cleaning, crazing or cracking, staining.

PART 2 – PRODUCTS

2.1 VISUAL DISPLAY BOARDS

A. Manufacturers: Furnish compliant products of one or more of the following or approved equal. Furnish single manufacturer per classification of visual display board.

1. Claridge Products and Equipment, Incorporated.
2. Marsh Industries, Incorporated.
3. Platinum Visual Systems
4. PolyVision Americas.
5. Steelcase.

B. Marker Board Type "WB1" - Porcelain enameled steel face, narrow profile trim (where provided) with continuous solid pen tray with smoothly curved and polished ends. Provide smooth butt-joints at face, concealed fasteners and hanger devices. Basis of Specification: Platinum Visual Systems' "Narrow Hanger Trim System (NTS)". Size: 48 inches high, length as indicated on Drawings.

2.2 TACKABLE/ACOUSTICAL WALL PANELS

A. Tackable Surface Type "TACK" – Colored, jute-backed, bulletin board 100% cork framed in 5/16"x1-1/2"x1/16"thick clear satin finish aluminum angle, mitered

corners; adhered. Provide smooth mitered corners at frame; adhered or concealed fasteners that do not visibly telegraph through cork surface. Frame to be free of sharp edges or burrs. Cork Basis of Specification: Wolf Gordon's "Colored Bulletin Board Cork". Color and Size: As indicated on Drawings.

1. Fire Rating: Class C, ASTM E84.

2. Flame Spread / Smoke Developed: 75 / 450.

B. Tack Felt (Strip) Type "WPL2" – 9.5mm thick, 60% recycled PET (polyester fibers) with exposed edges. Basis of Specification: Sutherland Felt Company's "Designer Board Felt". Color: As indicated on Drawings.

1. Fire Rating: Class A, ASTM E84.

C. Acoustical Panel Type "WPL3" – 12mm thick, 100% PET plastic with at least 60% recycled content, decorative, acoustically-absorbent panel with felt-like finish. Color/Pattern and Size: As indicated on Drawings.

1. Fire Rating: Class A, ASTM E84.

~~2.2~~ **2.3** COMPONENTS

A. Outer Steel Face Sheet: PEI S-104; porcelain enamel finished steel, 28 gauge minimum.

1. Maximum Size Available: 4 foot by 16 foot length minimum when required.

B. Markerboard Core: ASTM E84; Class A medium density fiberboard or mineral fiberboard, nominal 1/2 inch thick minimum, with no added urea-formaldehyde resins.

C. Markerboard Backing Surface: ASTM B209; aluminum sheet, 0.005 inch thick minimum. Foil backing not acceptable.

D. Markerboard Splice Joint: Concealed spline of sheet steel where required.

E. Tackboard Face: ASTM E84, Class B; 1/4 inch thick homogenous linoleum surface calendared on manufacturer's standard backing.

F. Aluminum Frame: ASTM B221, 6063 alloy, T5 temper. 3/4 inch maximum profile; concealed fasteners, and integrated hanger to coordinate with concealed hanger bars. Pen tray where Specified. No map rail.

~~2.3~~ **2.4** ACCESSORIES

A. Adhesives: Manufacturer's recommended with maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

B. Hanger Bars: Manufacturer's standard for concealed mounting of frame to wall.

C. Marker Tray: Standard continuous solid aluminum chalktray with ribbed section and smoothly curved and polished ends aluminum with smoothly curved, polished ends; clear anodized. Platinum Visual Systems' CR315, or approved equal.

D. Screw-On Marker Tray Trim For Installation @ DEW Walls: Platinum Visual Systems' CR310, or Claridge Products and Equipment, Inc. "Chalk/Maker Tray Model No. 264", or equal. Provide size, in single units, and configuration shown on Drawings.

1. Mounting: Exposed fasteners for surface-mount over specified dry-erase wall covering (DEWP/DEW) per Section 09 97 37 Dry Erase Wall Coverings

2. Aluminum Finish: Clear anodic finish.

E. Adhesive-Backed Marker Tray For Installation @ DEW Walls: Claridge Products and Equipment, Inc. "Adhesive-Backed Tray Model No. GM-Tray 1", or equal. Provide 12"-long, in single units, and configuration shown on Drawings.

1. Mounting: Manufacturer's standard double-sided tape for surface-mount over specified dry-erase wall covering (DEW) per Section 09 97 37 Dry Erase Wall Coverings.

2. Aluminum Finish: Satin anodized finish.

F. Temporary Protective Cover: Adhered polyethylene or other sheet, manufacturer's standard.

~~2.4~~ **2.5** FACTORY FINISHING

A. Porcelain Enamel: Glass fibered enamel, baked to vitreous surfaces; standard white color, high gloss.

B. Aluminum Frame and Accessories: Anodized to clear satin finish.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 - Administrative Requirements: Coordination and project conditions.

B. Verify internal wall blocking is ready to receive Work and positioning dimensions are as indicated on drawings.

3.2 INSTALLATION

A. Secure units level and plumb.

B. Butt multiple adjacent panels tight with concealed spline to hairline joint.

C. Carefully cut holes in markerboards for wall switches and other devices so that cover plates will conceal holes. Do not locate devices within markerboard field unless

position is specifically dimensioned on drawings. Otherwise, review with Architect prior to locating.

D. Furnish one magnetic marker tray for each face sheet panel.

3.3 CLEANING

A. Division 1 - Execution and Closeout Requirements: Final cleaning.

B. Cover chalkboard surfaces with protective cover, taped to frame.

C. Remove temporary protective cover at date of Substantial Completion.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Non-internally illuminated panel signs.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings

1. Include plans, elevations of all faces with message/icons, sections, details, and mounting/ footing attachments to other existing surfaces.

2. Provide message list, typestyles, graphic symbols, and layout for each sign at least half size and full-size details of graphic layouts.

3. Include full-size templates for cutout characters and graphic symbols.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:

1. Acrylic Sheet

D. Samples for Verification: For each of the following products and for full range of color and sign material indicated, of sizes indicated:

1. Acrylic Sheet: 8 x 8 inches for each color / finish required.

2. Full size representative samples of specified typestyles of tactile and surface printed characters and graphic symbols.

3. Hardware: Actual sample of each type.

1.3 QUALITY ASSURANCE

A. Installer Qualifications TBD.

B. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

C. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.

D. Regulatory Requirements: Comply with applicable provisions in the California Building Code and ADA-ABA Accessibility Guidelines and ICC A117.1.

E. Pre-fabrication Samples: Construct samples to verify selections made under sample submittals, demonstrate aesthetic effects, and set quality standards for materials and execution. Comply with the following requirements, using materials indicated for the completed Work:

1. Prepare one representative sample for each Sign Type specified in paragraph 2.2.
2. Sign Subcontractor to provide samples in on- or off-site location and of size indicted, or if not indicated, as directed by the Project Representative.
3. Employ workers that will be employed during the project fabrication, and supervisory personnel who will oversee the sample fabrication.
4. Demonstrate the proposed range of aesthetic effects and workmanship.
5. Sign Subcontractor to provide notice to Project Representative 14 days in advance of dates & times when samples will be available for review.
6. Sign Subcontractor required to receive Project Representative's approval of samples prior to fabrication of Work in this section. Allow ~~21~~ **10** days for initial review and each re-review of each sample.
7. Sign Subcontractor to provide resubmit samples as required to obtain Project Representative's approval.
8. Sign Subcontractor to retain samples during construction in an undisturbed condition as a standard for judging the completed work.
9. Sign Subcontractor to remove samples when directed. When permitted by the Project Representative, approved samples may become part of the completed Work.

F. Pre-installation Conference: Conduct conference at Project site:

1. Sign Subcontractor to provide review of and finalize construction schedule and verify availability of materials, Sign Subcontractor's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Sign Subcontractor to provide review temporary protection requirements for signage during and after installation.

G. "Related Sections" heading in the technical specifications is included only to help guide Contractor to other Sections related to Work of that Section. Completeness is not guaranteed nor should it be interpreted as in anyway controlling Contractor's right to distribute Work.

1.4 PROJECT CONDITIONS

A. Weather Limitations: Sign Subcontractor to proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.

B. Field Measurements: Sign Subcontractor to provide verification of sign locations by field measurements before fabrication and indicate measurements on Shop Drawings.

C. Sign Subcontractor to provide final attachment method information in Shop Drawings.

1.5 COORDINATION

A. Coordinate installation of anchorages for signage requiring hardware mounting. Furnish setting drawings, templates, and directions for installing anchorages and other items that are to be embedded in surfaces.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of pylon signs that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following

a. Deterioration of sign materials beyond normal weathering.

b. Deterioration of tactile graphics and graphic image colors.

2. Warranty Period: Sign Subcontractor to provide information determined from date of Substantial Completion.

PART 2 – PRODUCTS

2.1 SUMMARY

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Thomas Swan Sign Company

2. Martinelli Environmental Graphics

3. Creo Industrial Arts

4. Priority Signs

5. Arrow Signs

B. Changeable Message Inserts: Fixed non-glare, clear acrylic “window” to receive paper name insert.

1. Furnish insert material and template for creating text and symbols for [PC-Windows] [Macintosh] computers for owner production of paper inserts.

C. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with California Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by California Grade 2 Braille. Produce precisely formed

letters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.

1. Panel material: 3/16” thick acrylic or aluminum (exterior).
2. Raised copy Thickness: 1/32 inch minimum.

D. Sign Schedule.

1. Exterior Panel Signs
   a. Sign Size: See Design Intent Drawings.
   b. Panel Material: 3/16” thick aluminum.
   c. Finish / Color: See Design Intent Drawings.
   d. Mounting: Fix sign panel with 316 stainless steel studs, 1/16” thick VHB double-faced foam tape and clear silicone adhesive.
2. Interior Panel Signs
   a. Sign Size: See Design Intent Drawings.
   b. Panel Material: 3/16” thick acrylic.
   c. Finish / Color: See Design Intent Drawings.
   d. Mounting: Fix sign panel with 1/16” thick VHB double-faced foam tape and clear silicone adhesive.
3. Other Sign Types TBD

PART 3 – EXECUTION (TBD)

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes toilet**,** ~~janitor's~~ **custodial** closet accessories, and waste receptacles.

B. Related Requirements:

1. Section 09 21 16 – Gypsum Board Assemblies: Backing for mounting of accessories
2. Section 10 21 13 - Toilet Compartments.
3. Division 26 – Electrical: Provision of power to electrical accessories.

1.2 REFERENCE STANDARDS

A. ASTM International:

1. ASTM A123 - Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A153 - Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware.
3. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
4. ASTM A653 - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.
5. ASTM A666 - Standard Specification for Annealed or Cold Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
6. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
7. ASTM C1036 - Standard Specification for Flat Glass.

1.3 PERFORMANCE REQUIREMENTS

A. Installation of grab bars and attachments shall be adequate to resist minimum 250 lb. concentrated load applied at any point in any direction.

1.4 COORDINATION

A. Division 1 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with placement of internal wall reinforcement and where required reinforcement of toilet partitions to receive anchor attachments.

1.5 SUBMITTALS

A. Division 1 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data on accessories, describing size, finish, details of function, and attachment methods.

1.6 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience.

1.7 WARRANTY

A. Division 1 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish five-year manufacturer's warranty for electric hand dryers.

C. Furnish fifteen-year manufacturer's warranty for mirror glass and stainless steel mirror frames.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer List: Except where equal products are identified as acceptable below, provide without substitution the products listed below.

2.2 MATERIALS

A. Accessories: Shop assembled, free of dents and scratches, and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

1. Grind weld joints smooth.

2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.

B. Keys: Furnish two keys for each keyed accessory to Owner; master key accessories to Owner's system].

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269, Type 304 stainless steel.

E. Mirror Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality Q1 mirror select; type with copper and silver coating, and organic overcoating.

F. Fasteners, Screws, and Bolts: Manufacturer’s standard stainless steel or ASTM A153 hot-dip galvanized, tamper-proof.

G. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.3 TOILET ROOM ACCESSORIES

A. Grab Bars 'GB' : Surface-mounted, stainless steel satin finish. 1-1/2 inches outside diameter, minimum 18 gauge wall thickness, concealed flange mounting with snap flange cover. 1-1/2 inches exact clearance between wall finish and inside of mounted grab bar. Furnish manufacturer's standard through-mounting kit where mounting required at toilet compartment panel. Bobrick Washroom Accessories' "B-6806".

1. Lengths: Minimum 42-inch (GB42) at rear of water closet, minimum 48-inch (GB48) at side of water closet, and as indicated on Drawings. ~~(OFCI)~~ **(CFCI)**

B. Paper Towel Dispenser 'PTD': Kimberley Clark Hands Free, Sanitouch #09990 (Black) ~~(OFCI)~~ **(CFCI)**

C. Soap Dispenser 'SD': GoJo/FMX**-20**/Gray #5250-**06** (No substitution) 2000ml . ~~(OFCI)~~ **(CFCI)**

D. Mirrors 'M1': Surface-mounted, satin stainless steel framed, 1/4 inch thick float glass mirror. Mitered, welded, ground and polished frame corners. Full-mirror, minimum 0.03 inch galvanized steel sheet backing and non-absorptive filler material. Bobrick Washroom Equipment Incorporated's "B-165 1836" or equal. (CFCI)

E. Recessed Seat-Cover Dispenser, Sanitary Napkin Disposal and Toilet Tissue Dispenser 'SCD'/'SND'/'TPD': Bobrick ClassicSeries® Stainless steel "B-3574" (CFCI)

F. Coat Hook 'CH': Surface-mounted, stainless steel. Bobrick Washroom Equipment Incorporated's "B-76727" or equal. ~~(OFCI)~~ **(CFCI)**

G. Baby Changing Station 'BCS': Koala Kare Model ~~"KB110-SSRE"~~ **"KB310-SSRE"** ~~(OFCI)~~ **(CFCI)**

H. Waste Receptacle 'WR': Recessed waste receptacle, Type-304 stainless steel. Bobrick "B-35643" ~~(OFCI)~~ **(CFCI)**

I. Sanitary Napkin Vendor 'SNV': Sanitary Napkin / Kotex Vendor Bobrick "B-47069" **(CFCI)**

J. Hand Dryer 'HD': Dyson Airblade V **(CFCI)**

2.4 ~~JANITOR'S~~ **CUSTODIAL** CLOSET ACCESSORIES

A. Mop and Broom Holder: Surface-mounted, stainless steel. Bobrick Washroom Equipment Incorporated's "B-223 x 24". **(CFCI)**

B. Utility Shelf with Mop / Broom Holders Bobrick "B-239" **(CFCI)**

2.5 WASTE RECEPTACLES

A. General: Furnish receptacles of type and quantity as indicated below. Rubbermaid Commercial models are listed as the Basis of the Specification.

1. Trash: One receptacle in each classroom, office, and cubicle.
2. Recycle:
   a. Small: One receptacle in each office and cubicle.
   b. Medium: One receptacle in each classroom.

B. Receptacles **(CFCI)**:

1. Trash Receptacle (Medium): 7 gallon (28 quart) capacity. Color: Black. Nominally 14.5”x10.5”x15.0” (LxWxH). Model No. FG295600BLA.
2. Recycle Receptacle (Small): 3.25 gallon (13 quart) capacity. Color: Blue. Nominally 11.38”x8.25”x12.13” (LxWxH). Model No. FG295573BLUE.
3. Recycle Receptacle (Medium): 7 gallon (28 quart) capacity. Color: Blue. Nominally 14.5”x10.5”x15.0” (LxWxH). Model No. FG295600BLUE.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 - Administrative Requirements: Requirements for installation examination.

B. Verify exact location of accessories for installation.

C. Verify field measurements and rough-in dimensions for recessed accessories are as indicated on product data.

D. Comply with Manufacturer’s installation instructions, Drawings and Section 09 21 16 for installation of anchorage backing in walls.

3.2 PREPARATION

A. Division 1 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Deliver inserts and rough-in frames to Site for timely installation.

C. Provide templates and rough-in measurements as required.

3.3 INSTALLATION

A. Do not install accessories until after completion of all finishes to adjacent wall and ceiling surfaces.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Turn over to Owner all keys and special tools required for lockable or secured accessories.

D. Mounting Heights and Locations: As indicated on Drawings.

E. Furnish one Mop and Broom Holder at each ~~Janitor's~~ **Custodial** closet

3.4 REPAIR

A. Clean and repair existing toilet accessories that remain or are to be reinstalled.

3.5 CLEANING

A. Division 1 - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean mirrors and exposed surfaces using procedures as recommended by accessory manufacturer.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes residential appliances indicated.

B. Related Sections:

1. Division 22 – Plumbing.

2. Division 26 – Equipment Wiring Connections.

1.2 REFERENCES

A. National Fire Protection Association:

1. NFPA 54 - National Fuel Gas Code.

B. Underwriters Laboratories Inc.:

1. UL - Electrical Appliance and Utilization Equipment Directory.

1.3 SUBMITTALS

A. Submit following items under provisions of Division 1.

B. Product Data: Submit data on equipment and accessories.

1.4 CLOSEOUT SUBMITTALS

A. Division 1 - Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit relevant instructions.

1.5 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified with minimum five years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Division 1 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Inspection: Accept appliances on-Site. Inspect for damage.

D. Store appliances according to manufacturer's instructions.

PART 2 – PRODUCTS

2.1 RESIDENTIAL KITCHEN APPLIANCES

A. General: Furnish all kitchen appliances from a single manufacturer. Maytag models are listed as the basis of the specification.

B. Refrigerator/Freezer – Full-Height: Free-standing, one-door style with frost-free bottom-freezer and filtered ice-maker. Reversible hinge. Finish: Stainless. Energy Star qualified. Nominally 70”x33”x33” (HxWxD). Maytag “MBF2258FEZ” or approved equal.

C. Microwave Oven: Large capacity, built-in over-range type, with convection cooking function. 1000 watt. Finish: Stainless. Nominally 17”x30”x16” (HxWxD) and 1.9 cu ft compartment. Maytag Model “MMV6190FZ” or approved equal.

D. Dishwasher: Integrated dishwasher, ADA compliant. Finish: Stainless. Nominally 34”x24”x24” (HxWxD). Maytag Model No. “MDB4949SKZ” or approved equal.

2.2 LAUNDRY APPLIANCES

A. General: Furnish washer and dryer as a matching set. Maytag models are listed as the Basis of the Specification.

B. Front-Load Washer: 3 cubic foot capacity. Energy Star rated. Nominally 38”x27”x29” (HxWxD). Maytag Model No. “MHN33PR”.

C. Front-Load Dryer: Electric. 6.7 cubic foot capacity. Energy Star rated. Nominally 39”x27”x29” (HxWxD). Maytag Model No. “MDE23PR”.

2.3 MISCELLANEOUS APPLIANCES

A. Food Disposal: Continuous feed, 1/2-HP motor, galvanized steel grinding elements with two stainless steel 360º swivel lugs. Insinkerator “Badger 5” or approved equal.

B. Coffee Machine: Programmable 14-cup coffee maker. 14-cup brew capacity, or selectable 1-4 cup mode. Charcoal filter, gold-tone permanent filter, and dishwasher-safe glass carafe included. Finish: Stainless. Cuisinart Model “DCC-3200P1” or approved equal.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Division 1 – Administrative Procedures: Coordination and project conditions.

B. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

C. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install appliances according to manufacturer's written instructions.

B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.

C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

D. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

E. Install gas appliances according to requirements of NFPA 54.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.

2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.

3. Operational Test: After installation, start units to confirm proper operation.

4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.

B. An appliance will be considered defective if it does not pass tests and inspection.

3.4 PROTECTION

A. Division 1 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Do not permit operation of appliances, other than for testing, prior to Substantial Completion.

END OF SECTION

SANITARY (TOILET) ACCESSORIES CUTSHEETS

BOBRICK

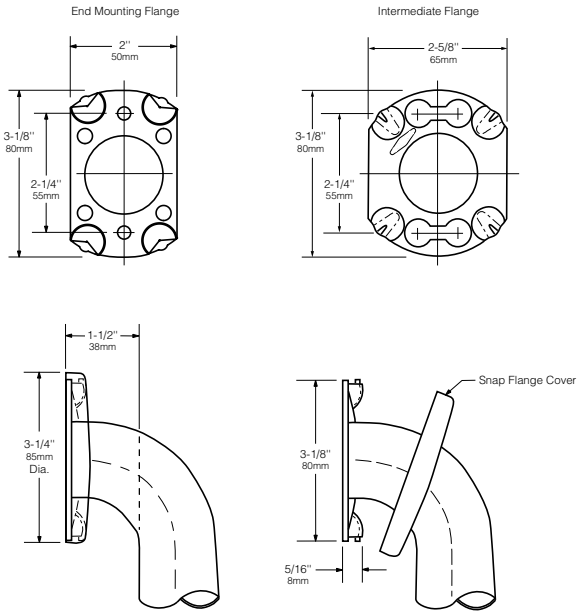
Technical Data

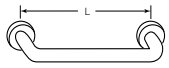
1½" (38mm) DIAMETER STAINLESS STEEL GRAB BARS WITH SNAP FLANGE

B-6806 SERIES

Specify Finish Required:

- ☐ Satin finish
- ☐ Satin finish with peened gripping surface; add suffix .99 to model number

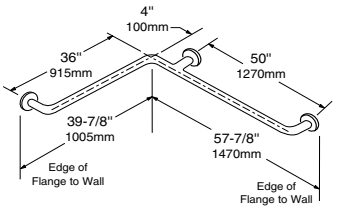




HORIZONTAL

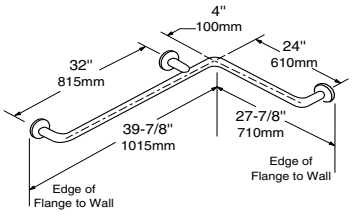
VERTICAL

B-6806 x 12, 18, 24, 30, 36, 42, 48



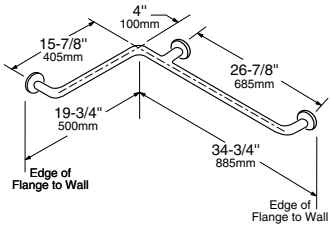
TWO-WALL WHEELCHAIR COMPARTMENT

B-68137



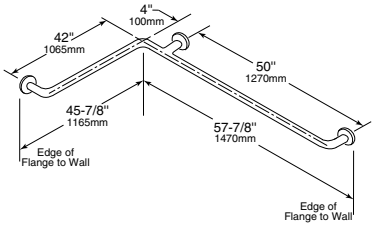
HORIZONTAL TUB / SHOWER COMPARTMENT BAR 24 x 36

B-68616



HORIZONTAL TWO-WALL BAR for Shower Stall

B-6861



TWO-WALL TOILET COMPARTMENT BAR 42 x 54

B-6897

continued . . .

Rev. 9/1/17 S/B Printed in U.S.A.

MATERIALS:

Grab Bar — 18-8 S, type-304, 18-gauge (1.2mm) stainless steel tubing with satin-finish. 1-1/2" (38mm) outside diameter. Ends are heliarc welded to flanges. Clearance between the grab bar and wall is 1-1/2" (38mm).

Concealed Mounting Flanges — 18-8 S, type-304, 11-gauge (3.2mm) thick, stainless steel plate; end flanges 2" x 3-1/8" (50 x 80mm) with holes for attachment to wall. Intermediate flanges 2-5/8" x 3-1/8" (65 x 80mm) wide x 3-1/8" (80mm) diameter.

Snap Flange Covers — 18-8 S, type-304, 22-gauge (0.8mm) drawn stainless steel with satin-finish. 3-1/4" (85mm) diameter x 1/2" (13mm) deep. Each cover snaps over mounting flange to conceal mounting screws.

STRENGTH:

Bobrick grab bars that provide 1-1/2" (38mm) clearance from wall can support loads in excess of 900 pounds (408kg) if properly installed. Other grab bar configurations can support loads in excess of 250 pounds (113kg) if properly installed, complying with accessible design (including ADAAG in the U.S.A.) for structural strength

Safety Warning: Grab bars are no stronger than the anchors and walls to which they are attached and, therefore, must be firmly secured in order to support the loads for which they are intended. To avoid potential injury, the building owner or maintenance personnel should remove the grab bar from service if the grab bar is not adequately secured to wall or if there is any observed damage to the welds.

INSTALLATION:

Provide concealed anchor device or backing as specified or required in accordance with local building codes before wall is finished. Fasten concealed mounting flanges to anchor device or backing with at least two screws opposing each other in each flange. Snap flange covers over each mounting flange to conceal mounting screws. Concealed anchor devices and mounting screws are not included with Bobrick grab bars and must be specified as an accessory.

For Grab Bars with an Intermediate Flange(s), Pull Snap-Flange Covers away from mounting flanges. Place grab bar in desired mounting location. Use intermediate flange as a template to mark location of mounting screws at intermediate flange only. Mark screw locations at the center of the slot in the middle of the double-keyhole shaped mounting holes (2) in the intermediate flange. Remove grab bar from wall. Drive the intermediate flange mounting screws into wall at marked locations. **Note:** Make sure to leave a space of just over 1/8" (3.17mm) between the underside of the screw head and the wall. Install grab bar on the wall by placing the round ends of the intermediate flange double-keyhole shaped mounting holes over the mounting screws (2) are located in the middle of the flange slots. Install the mounting screws into the wall at the end flanges and secure tightly. Tighten the mounting screws at the intermediate flange. Press all snap-flange covers into place to conceal mounting flanges.

Note: Recommend use of 1/4" or #14 sheet metal or wood screws to install Intermediate Flange. #12 screws may also be used.

Important Notes:

1. **Mounting Kits —** Bobrick offers a mounting kit for installing grab bars; **one Bobrick mounting kit is required for each flange.**

Mounting Kit No.	Description
252-30	Consists of # (3) 14 x 2½" type-304 stainless steel, Phillips round-head, sheet-metal screws.

2. **Grab Bar Fastener —** Bobrick offers a grab bar fastening system that secures all Bobrick grab bar series; **one Bobrick fastener is required for each flange.** Install grab bar without backing in wall requires minimum 5/8" (16mm) thick painted or tiled drywall.

WingIt™ Fastener No.	Description
251-4	Consists of 10–32 x 5/16" round-head, Phillips 18/8 stainless steel screws. (1) WingIt grab bar fastener.

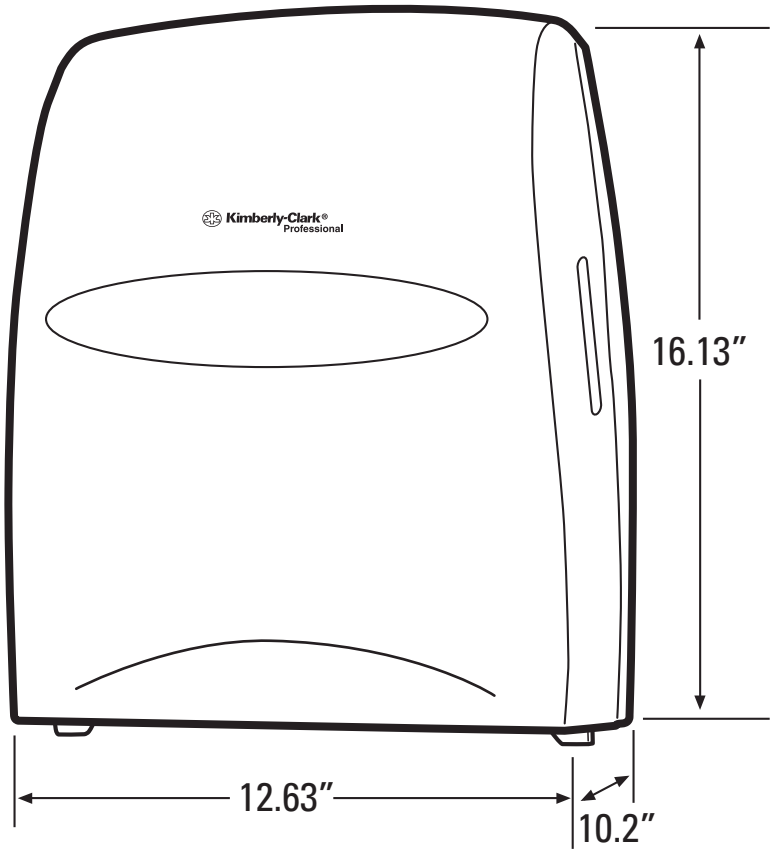
3. **Optional Anchor Device —** Bobrick grab bar anchor device includes stainless steel machine screws to be used for attaching grab bars to anchors. **one Bobrick concealed anchor device is required for each flange.**

Optional Anchor No.	Description
2583	Anchor for 3/4" to 1" (19-25mm) panel 1 anchor required for each flange.
2586	Anchor for 1/2" to 1" (13mm) panel 1 anchor required for each flange.

SPECIFICATION:

Grab bar shall be type-304 stainless steel with satin-finish. Grab bar shall have 18-gauge (1.2mm) wall thickness and 1-1/2" (38mm) outside diameter. Clearance between the grab bar and wall shall be 1-1/2" (38mm). Concealed mounting flanges shall be 11-gauge (3.2mm) thick stainless steel plate, 2" x 3-1/8" (50 x 80mm), and equipped with at least two screw holes for attachment to wall. Flange covers shall be 22 gauge (0.8mm), 3-1/4" (85mm) diameter x 1/2" (13mm) deep, and shall snap over mounting flange to conceal mounting screws and/or WingIt fasteners. Ends of grab bar shall pass through concealed mounting flanges and be heliarc welded to form one structural unit. Grab bar shall comply with accessible design (including ADAAG in the U.S.A.) for structural strength.

Grab Bar shall be Model _____ (insert model number) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.



09990

SANITOUCH® HARD ROLL TOWEL DISPENSER

Made of high impact plastic with a smoked transparent cover with a gray back. Dispenser automatically advances and cuts a nominal 12" of towel when activated by pulling exposed towel. No-touch dispensing system helps minimize the spread of dirt and germs. Dispenses one 8" diameter roll with 1.5" core. Features include emergency feed knob and choice of key-activated spring lock or push button operation. One per case.

Suggested mounting height is 48" maximum from the bottom of housing.

When installed properly and used with the corresponding product, this dispenser meets the ADA Standards for Accessible Design, local rules may vary.

NOTE: Unless otherwise noted, suggested mounting height is the distance from the floor to the bottom of the dispenser.





Sanitouch Manual Hard Roll Towel Dispenser

PRODUCT CODE #09990

POWER SOURCE	Manual
COLOR	Black
BRAND	Kimberly-Clark Professional™

COLOR

Black White

TYPE

1.5" hub 1.75" hub

Product Overview & Guides

Reduce maintenance time and run-outs with a high-capacity washroom towel system. The Sanitouch Hard Roll Paper Towel Dispenser is a reliable and efficient hand-drying system that's perfect for your workplace. Whether you have a retail location, office or high-traffic location, your washroom guests will only touch the towel they use, thanks to the touch free, one-at-a-time dispensing system. This wall mount dispenser is made of durable plastic and comes in an attractive shade of black, called Smoke, so it will go with any washroom décor. Compatible with Kleenex® and Scott®Brand Hard Roll towels with a 1.5" core, by providing high-quality towels in your washroom, you'll increase your maintenance efficiency.

- The Sanitouch Hard Roll Paper Towel Dispenser (in Black), by Kimberly-Clark Professional, is a high-capacity wall mount system for less maintenance time, run-outs and complaints
- Hygienic, touchless paper towel roll dispensing – your washroom guests will only need to touch the towel they use
- One-at-a time, hands free pull dispensing for controlled usage and less waste
- Durable, high-impact plastic dispenser gives you a smooth and quiet operation, with no batteries needed
- Use with universal hard roll towels with a 1.5" core (check out compatible Scott®and Kleenex® Brand paper towels)

Specifications

Details

BRAND	Kimberly-Clark Professional™
UNIT SIZE	12.63" x 16.13" x 10.2"
COLOR	Black
COUNTRY OF ORIGIN	Mexico
POWER SOURCE	Manual

GTIN	10036000099901
MATERIAL NUMBER	100999003
QUANTITY PER CASE	1
QUANTITY PER CASE UOM	Unit(s) / Case
QUANTITY PER UNIT	1
QUANTITY PER UNIT UOM	Unit(s) / Pack

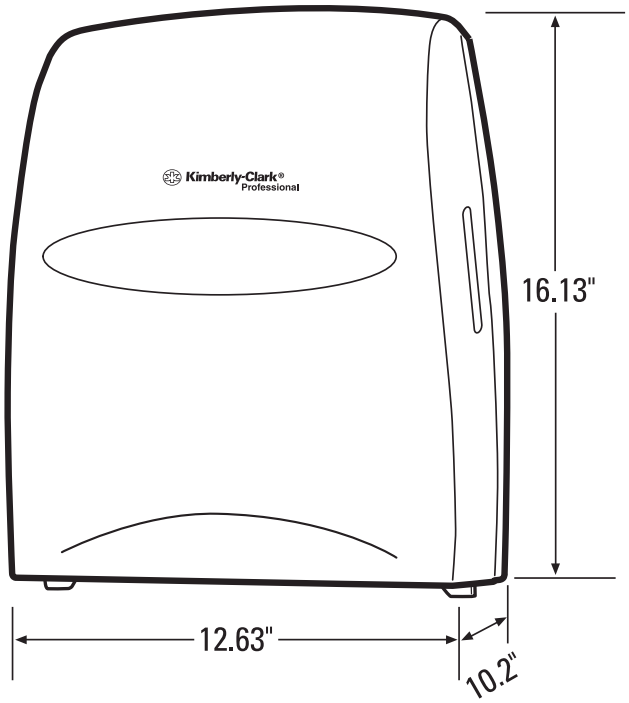
Dimensions

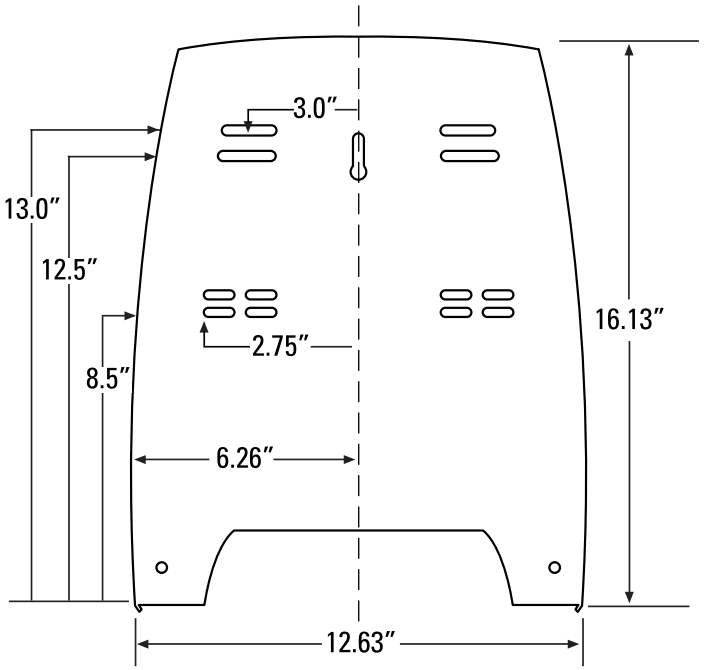
UNITS PER CASE	1
UNIT SIZE	12.63" x 16.13" x 10.2"

Shipping Data

UNITS PER CASE	1
QUANTITY PER CASE	1
QUANTITY PER CASE UOM	Unit(s) / Case
QUANTITY PER UNIT	1
QUANTITY PER UNIT UOM	Unit(s) / Pack

Kimberly-Clark Professional™ Manual Hard Roll Towel Dispenser





- Made of ABS plastic
- Choice of white with clear window or black with translucent window
- Dispenses one 8" diameter, 950' roll towel
- Dispenser advances and cuts a nominal 12" of towel when activated by pulling exposed towel
- Includes emergency feed knob
- Choice of key-activated spring lock or push-button operation
- One per case

Product Codes:

09991	09990	09995	09996
White, 1.5" Core	Black, 1.5" Core	White, 1.75" Core	Black, 1.75" Core

Suggested mounting height is 48" from the floor or 12" above a counter to the bottom of the dispenser.
When installed properly and used with the corresponding product, this dispenser meets ADA Standard 28 CFR Part 36, local rules may vary.

"SD"

GOJO® FMX-20™ Dispenser

Push-Style Dispenser for GOJO® Foam Soap

High-capacity foam soap dispenser.

- High-capacity design
- ADA compliant, one-handed push operation
- Converts to a locking dispenser - key sold separately
- Compatible with GOJO® FMX-20™ 2000 mL refills

Where to Buy

SKU: 5270-06
Size: 2000 mL

Colors:

WHITE/GRAY

Dispenser Installation

Downloads

Dispenser Dimensions (PDF)

Dispenser Installation (PDF)

SKU	5270-06
Size	2000 mL
Case Pack	6
Case Weight	12.0 lbs
Overall Case Dimensions	14.25 h x 12.12 w x 13.38 d
Overall Unit Dimensions	4.68 h x 6.5 w x 11.66 l
Case Cu. Ft.	1.34 ft^3
Cases Per Layer	9
Cases Per Pallet	27
Layers Per Pallet	3
Dispensing System	FMX
Product Type Packaging	Wall Mount Dispensing
Refill Material	Lightweight PET plastic bottle, polypropylene collar, mixed material plastic pump.
Refill Recyclability	Remove pump on refill for easy recycling.
Refill Features	SANITARY SEALED™ refills are hygienic locking out germs.
Dispenser Material	Durable ABS Plastic with rugged polycarbonate view windows (both recycling code number 7).

Mounting Options	Mounts to wall with adhesive tape (included) or optional mounting screws (not included). Multiple hole pattern allows use of existing wall holes.
Mounting Clearance	10" (25.4 cm) clearance from bottom of dispenser to surface
Country of Manufacture	United States
UPC (Each)	073852056266
Case UPC (GTIN)	10073852056263

BOBRICK

Technical Data

MIRROR WITH STAINLESS STEEL CHANNEL FRAME

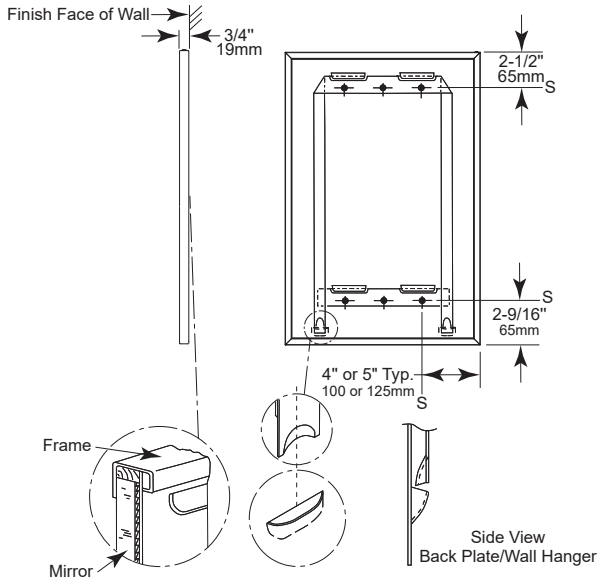
B-165 SERIES

Designer's Notes:

1. Special-order sizes available on request.
2. Maximum size mirror available, 96" x 72" (244 x 183cm); minimum size, 12" x 12" (30 x 30cm).
3. All Bobrick framed mirrors are manufactured to overall width and height dimensions. EXAMPLE: A 24" x 36" (61 x 91cm) mirror will be furnished 24" x 36" (61 x 91cm) outside-of-frame to outside-of-frame.
4. To specify special sizes use Series Number followed by width x height in inches. EXAMPLE: B-165 2024 20" x 24" (51 x. 61cm)
5. Bobrick framed mirrors are manufactured to a tolerance 1/8" (3.2mm).
6. For sufficient space to lift mirror onto wall hanger(s), provide 1" (25mm) minimum clearance above top of mirror frame.
7. Provide 1/2" (12.7mm) minimum clearance on each side.

Snap Locking Design (Rear View)

Figure: 1

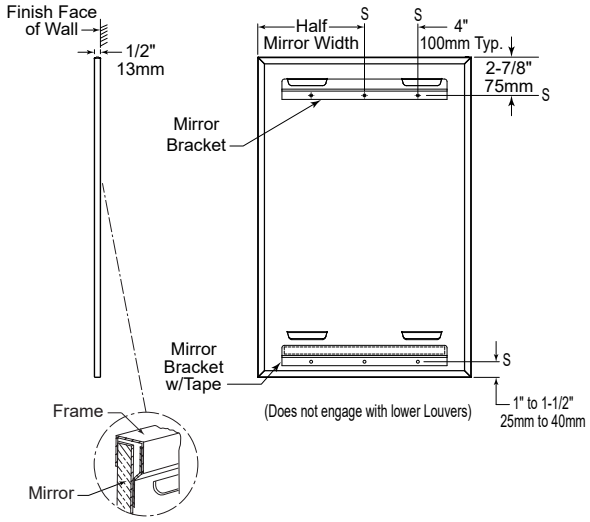


STANDARD B-165 SERIES MIRRORS

MODEL NO.	OVERALL SIZE W	OVERALL SIZE H
B-165 1824	18" (46cm)	24" (61cm)
B-165 1830	18" (46cm)	30" (76cm)
B-165 1836	18" (46cm)	36" (91cm)
B-165 2430	24" (61cm)	30" (76cm)
B-165 2436	24" (61cm)	36" (91cm)
B-165 2448	24" (61cm)	48" (122cm)
B-165 2460	24" (61cm)	60" (152cm)

"2S" Tab Design (Rear View) - for all other mirrors up to a width of 36"

Figure: 2



Note: Mirrors greater than 36" in width will have multiple hanger brackets with a typical 8" off each edge.

continued . . .

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MATERIALS:

Frame — Type-430 stainless steel, 1/2" x 1/2" x 3/8" (13 x 13 x 9.5mm) channel with 1/4" (6mm) return at rear for Snap Locking Design; 1/2" x 1/2" x 1/2" (13 x 13 x 13mm) channel for Lock Tab Design, with bright polished finish. One piece frame with 90 degree mitered corners. Galvanized steel back has integral horizontal hanging brackets near the top for hanging the mirror and near the bottom to prevent the bottom of the mirror from pulling away from the wall.

Mirror — No. 1 quality, 1/4" (6mm) select float glass: selected for silvering, electrolytically copper-plated by the galvanic process, and guaranteed for 15 years against silver spoilage. Back is protected by full-size, shock-absorbing, water-resistant, nonabrasive, polyethylene padding.

Concealed Wall Hanger — For snap locking design: Heavy gauge steel construction. Incorporates upper and lower members, which engage backplate louvers to keep mirror against the wall. For "2S"-Tab design: Incorporates upper bracket engaging in upper louver and double sided tape below the bottom louver securing mirror to concealed wall hanger.

INSTALLATION:

Mount wall hanger on wall with screws (not furnished) at points indicated by an *S*. For plaster or dry wall construction, provide backing to comply with local building codes, then secure wall hanger with screws (not furnished). When providing a concealed backing, allow backing to cover minimum range of mounting hole locations shown on drawing. For other wall surfaces, provide fiber plugs or expansion shields for use with screws (not furnished), or provide 1/8" (3mm) toggle bolts or expansion bolts.

Snap Locking Design: Hang mirror on wall hanger with all four backplate louvers engaged behind horizontal wall hanger members. To do this, mirror must be centered in front of the wall hanger horizontally, pressed flat against the wall approximately 1" (25mm) above final position and then lowered into final position.

"**2S**" **Tab Design**: Comprises of two brackets, while the bottom one is furnished with double side tape. Bottom hanger bracket's mounting holes must be 1" - 1 1/2" above mirror's bottom edge. Note: Bottom hanger bracket is not supposed to engage with louvers of mirror's backplate. Hang mirror on wall top hanger bracket with the top two louvers engaged behind top wall hanger bracket.To do this, mirror must be centered in front of the wall hanger horizontally, pressed only at the top against the wall approx. 1" (25mm) above final position an then lowered into final position. When lowering, pull mirror's bottom edge off the wall by preventing bottom bracket from engaging. Once lowered, mirror must be pressed against wall to engage with double sided tape of lower wall hangar bracket.

Snap Locking Design — Locking devices automatically secure mirror to concealed wall hanger when it is lowered into final position (see figure 3). Locking devices may be unlocked by inserting two flat blade screwdrivers behind each side of mirror near the bottom or under the bottom of the mirror and pulling mirror bottom forward and then up.

"**2S**" **Tab Design —** Secure mirror to concealed wall hanger by pressing mirror against double sided tape of lower hanger once it is lowered into final position (see figure 4).

Snap Locking Design
(Front View)

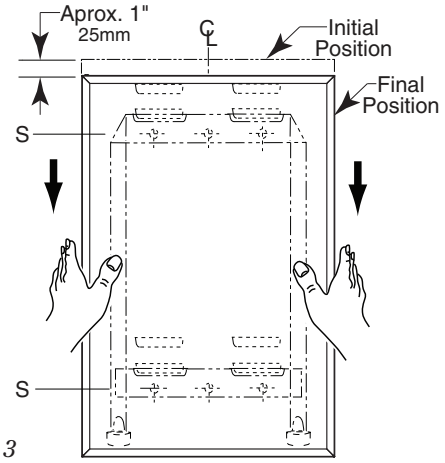


Figure: 3

"2S"-Tab Design - up to 36" Width
(Front View)

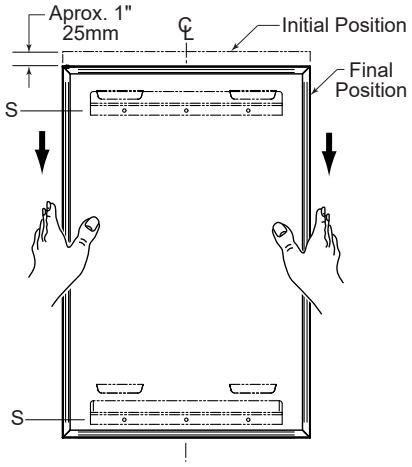


Figure: 4

SPECIFICATION:

Mirror shall have a one-piece type-430 stainless steel channel frame, with 90° mitered corners; all exposed surfaces shall have bright polished finish. Select float glass mirror shall be guaranteed for 15 years against silver spoilage. The back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, polyethylene padding. Galvanized steel back shall have integral horizontal hanging brackets located at top and bottom for mounting on concealed wall hanger to prevent the mirror from pulling away from the wall. Locking devices secure mirror to concealed wall hanger. Mirror shall be removable from the wall.

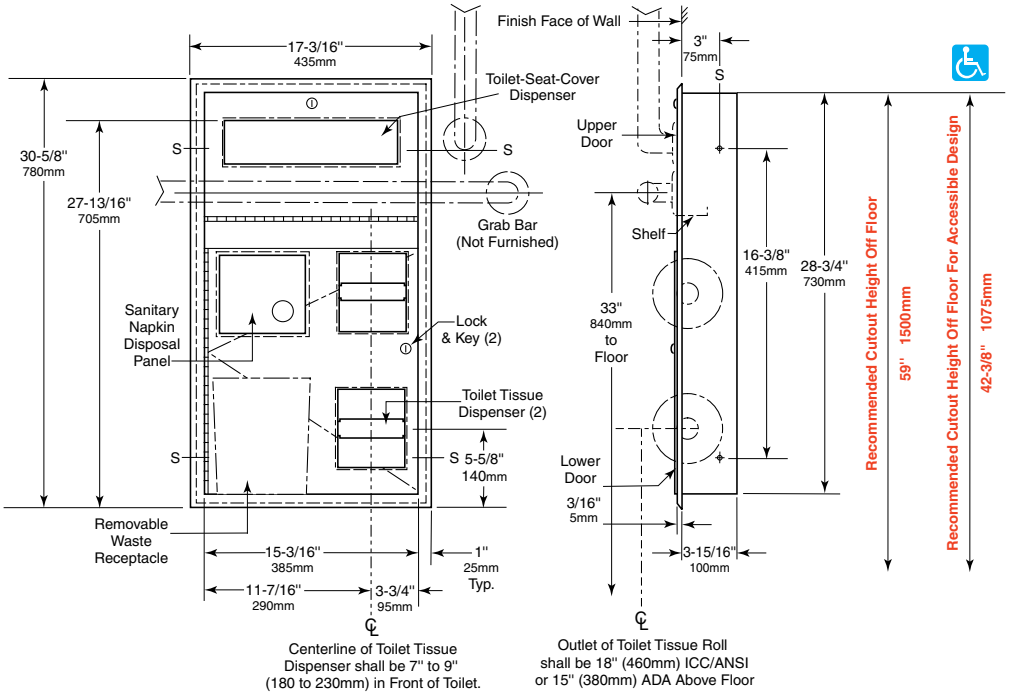
Framed Mirror shall be Model B-165 _____ (insert width and height) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

BOBRICK

Technical Data

ClassicSeries®
RECESSED TOILET SEAT-COVER DISPENSER, SANITARY NAPKIN DISPOSAL, AND TOILET TISSUE DISPENSER

B-3574



Rough Wall Opening
16" (405mm) wide
29-1/4" (745mm) high
4" (102mm) minimum recessed depth
See Designer's Notes under Installation for Rough Wall Opening Location Information

MATERIALS:

Cabinet — 18-8, Type-304, heavy-gauge stainless steel. All-welded construction. Exposed surfaces have satin finish.

Flange — 18-8, Type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn and beveled, one-piece, seamless construction.

Doors (2) — 18-8, Type-304, 18-gauge (1.2mm) stainless steel with satin finish. One-piece, seamless construction. Secured to cabinet with a full-length stainless steel piano-hinge. Equipped with a tumbler lock keyed like other Bobrick washroom accessories.

Toilet Tissue Dispensers (2) — .100" (2.5mm) thick ABS. Equipped with two theft-resistant, heavy-duty, one-piece molded ABS spindles.

Disposal Panel — 18-8, Type-304, 22-gauge (0.8mm) stainless steel with hemmed edges; exposed surface has satin finish. Secured to cabinet with a spring-loaded, full-length stainless steel piano-hinge. Equipped with an international graphic symbols identifying napkin disposal.

Waste Receptacle — Leak-proof molded polyethylene. Removable for servicing. Capacity: 0.8-gal. (3.0-L).

OPERATION:

Doors unlock with key provided and swing open for filling. Toilet seat-cover dispenser holds 500 single- or half-fold paper covers. Spindles may be removed from cabinet only when door is open. Receptacle is removable for servicing. Unit holds two standard-core toilet tissue rolls up to 5-1/4" (135mm) diameter (1800 sheets).

Designer's Note: It is recommended that one full toilet tissue roll remain wrapped until the other roll has been depleted to avoid wasting ends of both rolls.

continued . . .

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INSTALLATION:

Provide framed rough wall opening 16" wide x 29-1/4" high (405 x 745mm). Minimum recessed depth required from finish face of wall is 4" (102mm). Top of wall opening should be 42-3/8" (1075mm) from finish face of floor to allow placement of horizontal grab bar at 33" (840mm) height across front of unit and installation of 18" vertical grab bar (ICC A117.1-2009). Allow clearance for construction features that may protrude into rough wall opening from opposite wall. Coordinate with mechanical engineer to avoid pipes, vents, and conduits in wall. If unit projects above top of wainscot, provide aluminum channel or other filler to eliminate gap between flange and finish face of wall. Mount unit in wall opening with shims between framing and cabinet at all points indicated by an *S,* then secure unit with #8 x 1-1/4" (4.2 x 30mm) sheet-metal screws (not furnished).

Designer's Notes:

1. Recessed B-3574 mounts flush against side wall in accessible toilet compartment has toilet tissue dispenser on right side of unit.
2. Position unit on wall with centerline of toilet tissue dispenser 7" - 9" (180 - 230mm) in front of leading edge of toilet.
3. For unit to mount on right side of toilet (when seated on toilet) see model B-35745.
4. For visual placement of models inside toilet compartment, refer to Technical Bulletin TB-92.

SPECIFICATION:

Recessed toilet seat-cover dispenser, sanitary napkin disposal, and toilet tissue dispenser shall be Type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Toilet tissue dispensers shall be ABS plastic. Flange shall be drawn and beveled, one-piece, seamless construction. Unit shall mount flush against side wall in accessible toilet compartment to allow clearance for grab bar across front of unit and installation of 18" vertical grab bar (ICC A117.1-2009). Doors shall be one-piece, seamless construction; secured to cabinet with a full-length stainless steel piano-hinge; and equipped with a tumbler lock keyed like other Bobrick washroom accessories. Toilet seat-cover dispenser holds 500 paper covers. Self-closing disposal panel shall be secured to door with a spring-loaded, full-length stainless steel piano-hinge, has hemmed edges and equipped with an international graphic symbol identifying napkin disposal. Sanitary napkin disposal shall be furnished with a removable, leak-proof, molded polyethylene receptacle with a capacity of 0.8-gal. (3.0-L). Unit shall be equipped with two theft-resistant, heavy-duty, one-piece molded ABS toilet tissue spindles that hold standard-core rolls up to 5-1/4" (135mm) diameter (1800 sheets). Spindles shall be removable from cabinet only when door is open.

Recessed Seat-Cover Dispenser, Sanitary Napkin Disposal, And Toilet Tissue Dispenser shall be Model B-3574 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

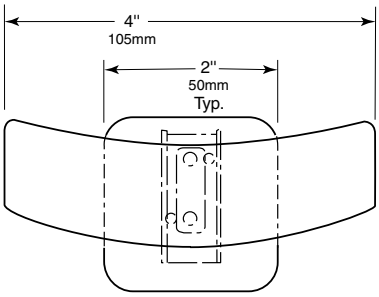
BOBRICK

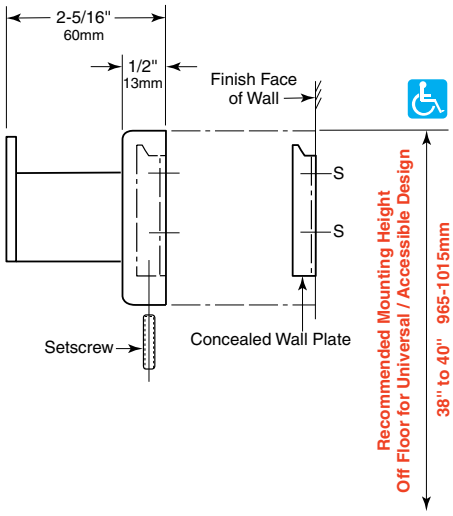
Technical Data

ClassicSeries® SURFACE-MOUNTED DOUBLE ROBE HOOK

B-672 B-6727

Specify Model Required:
- ☐ Model B-672 Bright polished stainless steel
- ☐ Model B-6727 Satin-finish stainless steel





MATERIALS:

Flange and Support Arm — 18-8, type-304, 22-gauge (0.8mm) stainless steel. Concealed, 16-gauge (1.6mm) stainless steel mounting bracket. All-welded construction. Secured to wall plate with a stainless steel setscrew.

Concealed Wall Plate — 18-8, type-304, 16-gauge (1.6mm) stainless steel.

Cap — 18-8, type-304, 10-gauge (3.6mm) stainless steel. Welded to the support arm.

INSTALLATION:

To remove concealed wall plate from back of flange and mounting bracket, loosen setscrew. Mount wall plate so prongs are at top; secure with two sheet-metal screws, furnished by manufacturer, at points indicated by an *S*. Engage mounting bracket onto prongs of wall plate, then secure into position by tightening setscrew at bottom of flange.

For partitions with particle-board or other solid core, secure with sheet-metal screws furnished, or provide through-bolts, nuts, and washers.

For hollow-core metal partitions, provide solid backing into which the furnished sheet-metal screws can be secured.

For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with sheet-metal screws furnished.

For other wall surfaces, provide fiber plugs or expansion shields for use with sheet-metal screws furnished, or provide 1/8" (3mm) toggle bolts or expansion bolts.

SPECIFICATION:

Surface-mounted double robe hook shall be type-304 stainless steel with _____ (insert one: bright polished or satin) finish. Flange and support arm shall be 22 gauge (0.8mm) and equipped with a concealed, 16-gauge (1.6mm) mounting bracket that is secured to a concealed, 16-gauge (1.6mm) wall plate with a stainless steel setscrew. Cap shall be 10 gauge (3.6mm), welded to the support arm.

Surface-Mounted Double Robe Hook shall be Model _____ (insert model number) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

Revised 6/30/15 Printed in U.S.A.

KB310-SSRE Horizontal Stainless Steel Recessed-Mounted Baby Changing Station

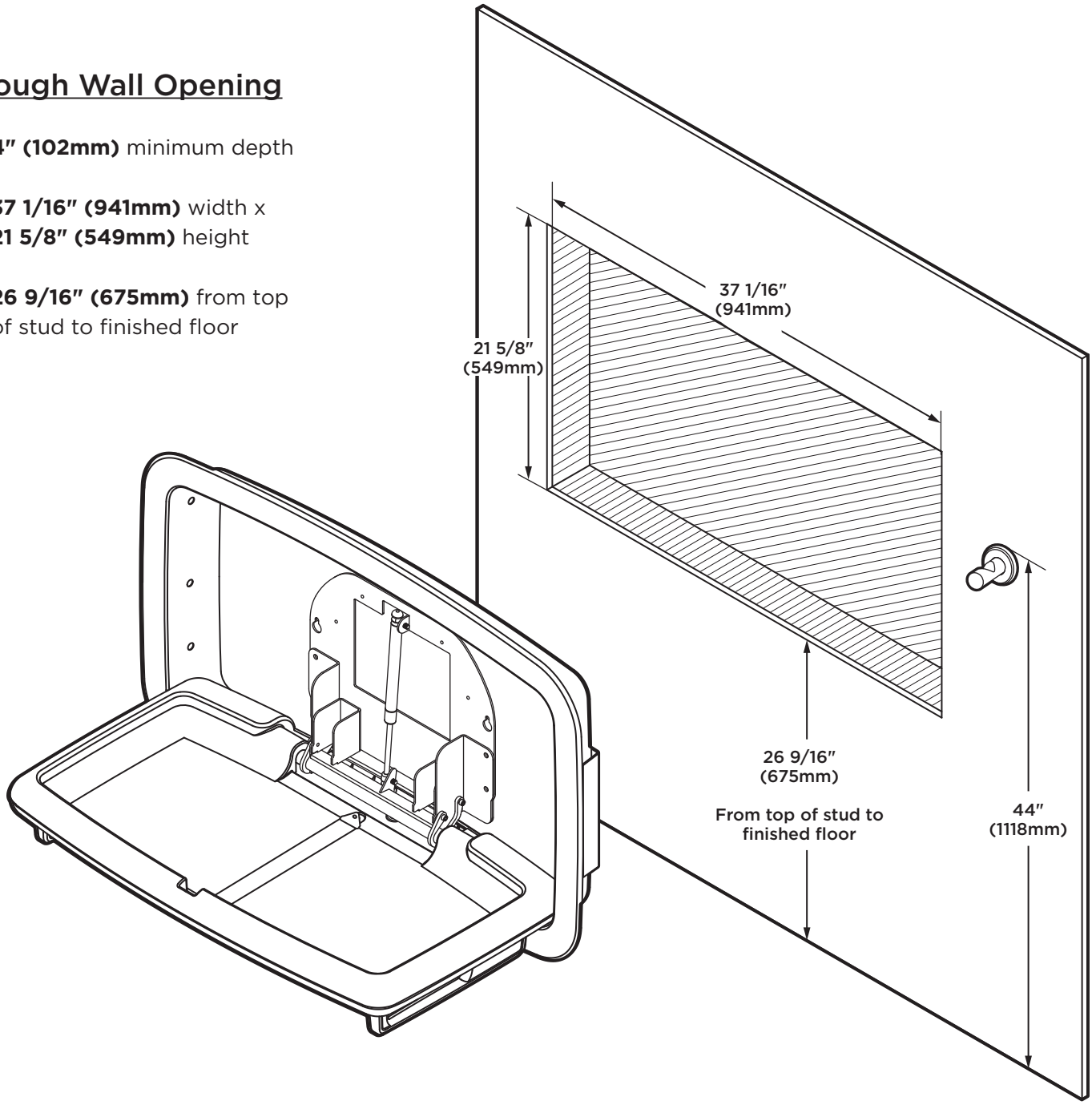
Technical Data Sheet

Color

- **KB310-SSRE Stainless Steel**
- **KB310-SSRE-MBLK Matte Black**

Rough Wall Opening

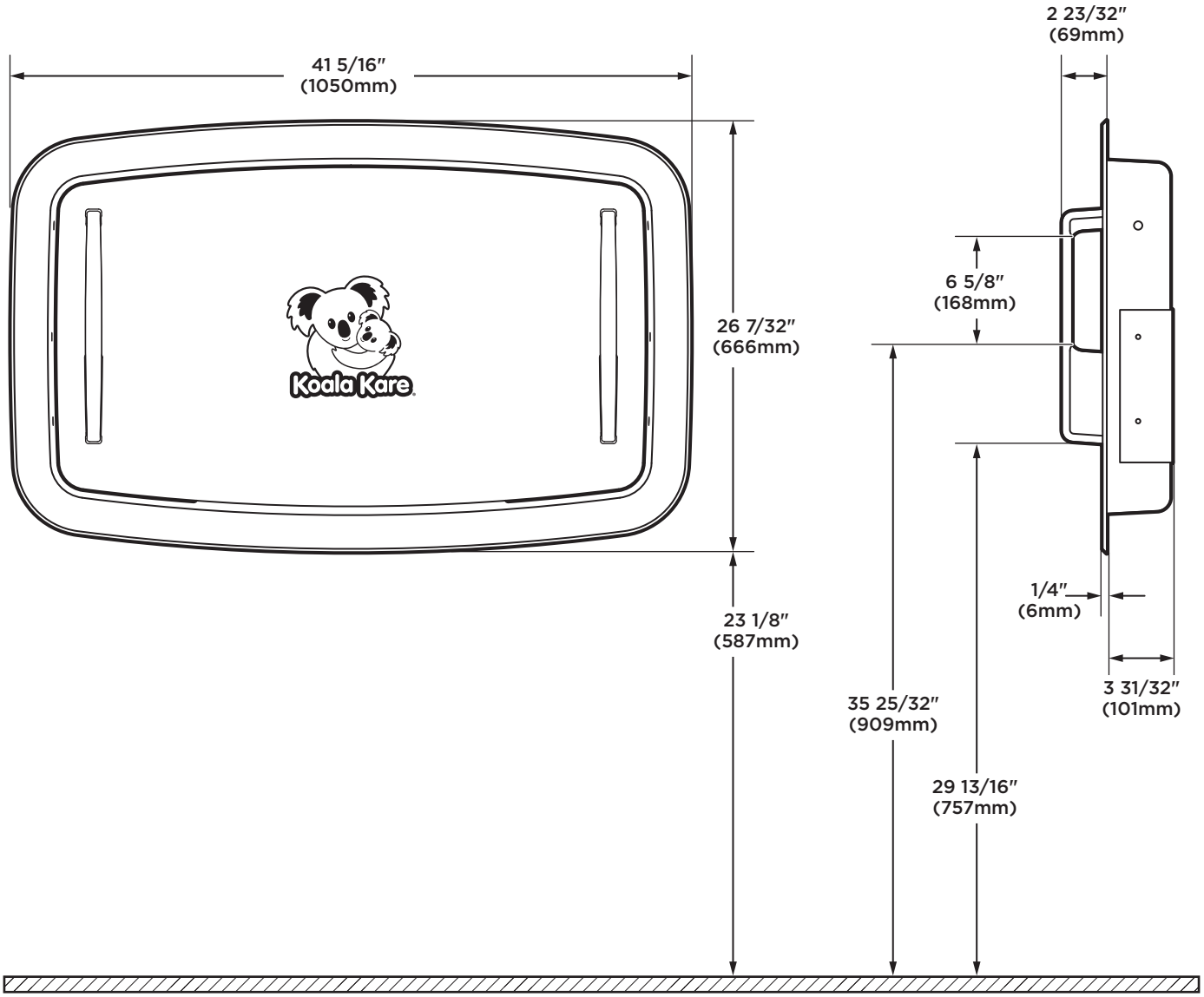
- **4" (102mm)** minimum depth
- **37 1/16" (941mm)** width x **21 5/8" (549mm)** height
- **26 9/16" (675mm)** from top of stud to finished floor



*Diagrams are not to scale.

KB310-SSRE Horizontal Stainless Steel Recessed-Mounted Baby Changing Station

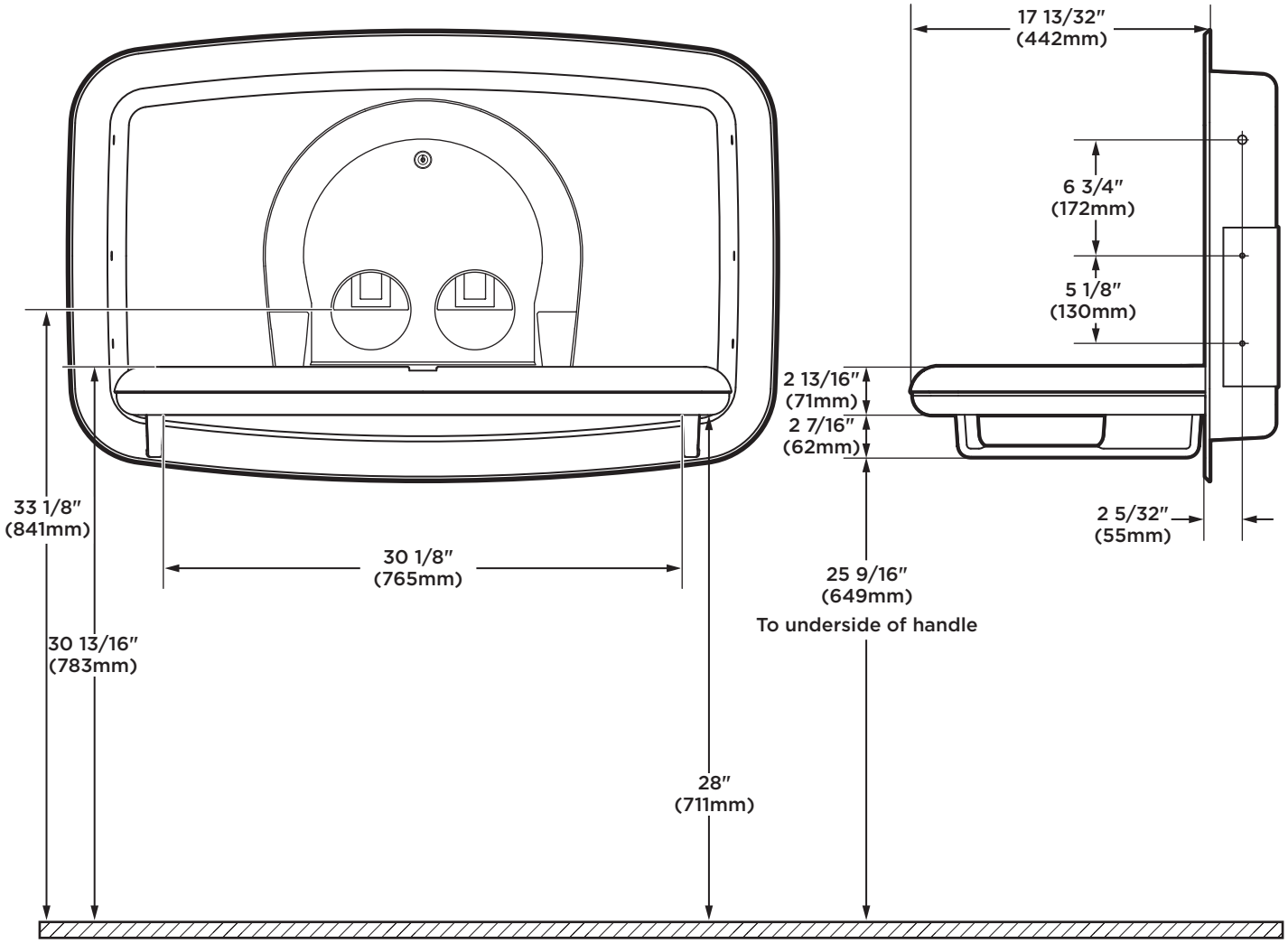
Closed Position



*Diagrams are not to scale.

KB310-SSRE Horizontal Stainless Steel Recessed-Mounted Baby Changing Station

Open Position



*Diagrams are not to scale.

KB310-SSRE Horizontal Stainless Steel Recessed-Mounted Baby Changing Station

Information

Material

Grey injection-molded polypropylene with Microban® antimicrobial additive embedded into the bed surface. Reinforced steel-on-steel hinge mechanism and plated or powder coated steel mounting chassis with mounting hardware included. Satin finished 304 stainless steel deep drawn outer shell and recessed pan. Injection molded aluminum handles with satin stainless steel finish. Solid stainless steel external bag hook. Labeled usage instructions and safety messages. Contoured changing surface area 535 sq. In (3452 sq. cm) and comes complete with safety strap. Dual cavity liner dispenser holds approximately 50 KB150-99 bed liners.

Note: For EN 12221:2008+A1:2013 compliant units a safety strap can not be provided with the unit. Should you require one, it can be ordered separately P/N 310-44-KIT.

Operation

Concealed pneumatic cylinder and metal mounting chassis provides controlled, slow opening and closing of bed. Polypropylene is easy to clean and resists odors and bacterial growth. Complies with ASTM static load performance requirements when properly installed. Internal liner dispenser with integrated spring tab dispensed one liner at a time. Handles guide patron to operate unit with less than 5lbs of force and act as cane detection if unit is left in open (down) position.

Warning: To ensure that the unit supports the intended loads, baby changing stations must be properly installed according to the manufacturer's instructions.

Specification

Baby changing station shall have durable, single piece deep drawn 304 satin finished stainless steel outer shell and recessed pan, with injection-molded polypropylene interior. Design of unit shall be recess-mounted. Unit shall be equipped with a pneumatic cylinder for controlled opening and closing of bed. Bed shall be secured to metal mounting chassis with a concealed steel-on-steel hinge. No hinge structure shall be exposed on interior or exterior surfaces. Unit shall have mounting hardware included. Unit shall have Microban® antimicrobial embedded into plastic material on the changing surface. Unit shall fully comply with ADA regulations when properly installed. Bed shall have smooth concave changing area with a safety strap and external stainless steel hook for bags or purse provided.

The design and manufacture of Koala products is intended to be compliant with the 2010 ADA Standards for Accessible Design and the 2009 ICC A117.1, Accessible and Usable Buildings and Facilities. Unit shall conform to ASTM F2285-04(16) Standard Safety Performance Specification for Diaper Changing Tables for Commercial Use, ANSI Z535.4 Product Safety Signs and Labels, EN 12221:2008+A1: 2013. Unit shall have a built-in Liner Dispenser for use with 3-ply chemical free biodegradable bed liners, instructional graphics and safety messages in 4 languages. Unit shall be backed by manufacturer's 5-year limited warranty on materials and workmanship and include a provision for replacement caused by vandalism.

Unit shall be manufactured in the U.S.A.

ADA Requirements

Additional information on how this product complies with ADA requirements can be found in the KB310 & KB311 Baby Changing Stations Accessibility Compliance document on **www.koalabear.com**.

The illustrations and descriptions herein are applicable to production as of the date of this Technical Data Sheet. The manufacturer reserves the right to, and does from time to time, make changes and improvements in designs and dimensions without notice.

Koala Kare Products
A Division of Bobrick

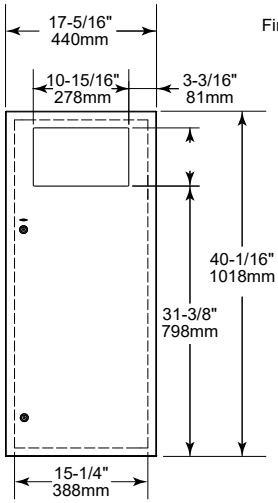
6982 South Quentin Street, Centennial, CO 80112-3945
Main: 303.539.8300 | **Toll Free:** 888.733.3456 | **Fax:** 303.539.8399
Website: koalabear.com | **Email:** customerservice@koalabear.com

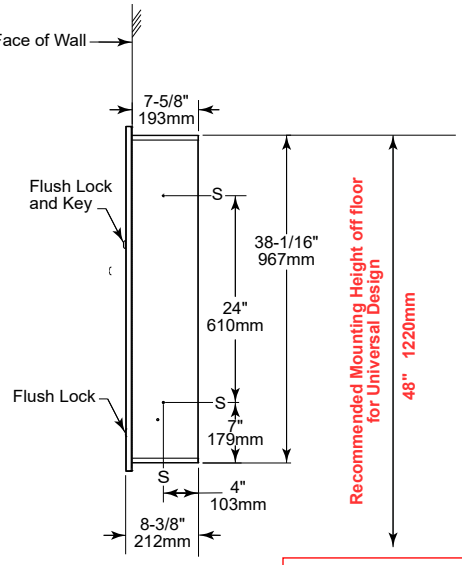
BOBRICK

Technical Data

TrimLineSeries™ RECESSED WASTE RECEPTACLE

B-35643





Rough Wall Opening
15-3/4" (400mm) wide
38-1/2" (978mm) high
7-11/16" (195mm) min depth

MATERIALS:

Cabinet — 18-8, Type-304, heavy-gauge stainless steel. All-welded construction. Exposed surfaces have satin-finish.

Door — 18-8, Type-304, 18-gauge (1.2mm) stainless steel with satin-finish. Secured to cabinet with a concealed, full-length stainless steel piano-hinge. Equipped with two tumbler locks keyed like other Bobrick washroom accessories. Tumbler locks flush with the door - no protrusion.

Waste Receptacle — Leak-proof, rigid molded plastic waste receptacle. Removable for servicing. Capacity: 12-gal. (45.4-L).

OPERATION:

To service waste receptacle, unlock door with key provided and remove waste container. Cable door-swing limiter prevents damage to washroom accessories and walls.

INSTALLATION:

Provide framed rough wall opening 15-3/4" wide x 38-1/2" high (400 x 978mm). Minimum recessed depth required from finish face of wall is 7-11/16" (195mm). Allow clearance for construction features that may protrude into rough wall opening from opposite wall. Coordinate with mechanical engineer to avoid pipes, vents, and conduits in wall. Mount cabinet with shims between framing and cabinet at all points indicated by an S, then secure unit with (4) #10 x 1-1/4" (4.8 x 32mm) sheet-metal screws (not furnished).

Replacement Parts:

Skirt Kit	35649-53
Door Replacement Kit	35649-173
Lock and Key	38030-20
Plastic Waste Receptacle	39003-31

SPECIFICATION:

Recessed waste receptacle shall be Type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Door shall be Type-304, 18 gauge (1.2mm) secured to cabinet with a concealed, full-length stainless steel piano-hinge, cable door-swing limiter and equipped with two tumbler locks keyed like other Bobrick washroom accessories. Tumbler locks flush with the door - no protrusion. Waste receptacle shall be furnished with a removable, leak-proof, rigid molded plastic waste-container with a minimum capacity of 12-gal. (45.4-L).

Recessed Waste Receptacle shall be Model B-35643 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

Revised 3/1/21 Printed in U.S.A.

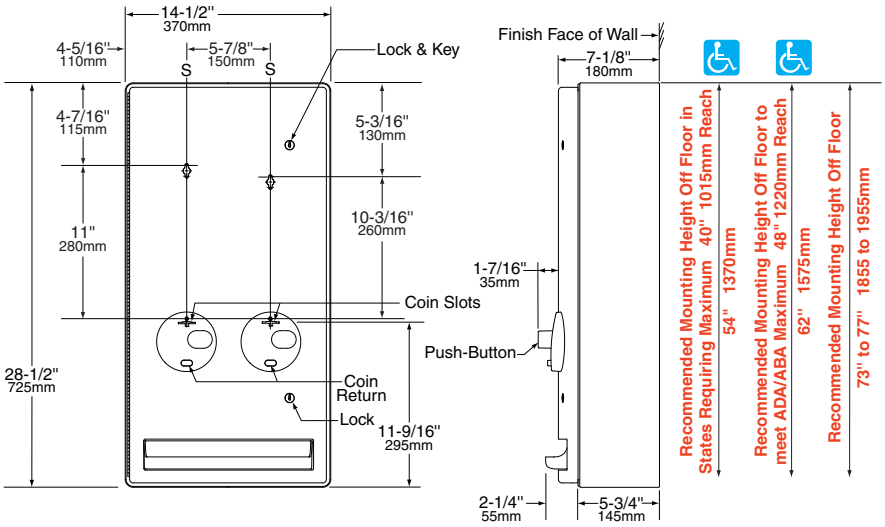
BOBRICK

Technical Data

ConturaSeries® SURFACE-MOUNTED NAPKIN/TAMPON VENDOR

B-47069 SERIES

Specify Model Required:
- ❑ B-47069 25 Surface-Mounted 25¢ single-coin operation
- ❑ B-47069C Surface-Mounted Free no-coin operation



MATERIALS:

Cabinet — 18-8, Type-304, 18-gauge (1.2mm) stainless steel. All-welded construction.

Flange — 18-8, Type-304, 22-gauge (0.8mm) stainless steel with satin finish. Drawn, one-piece, seamless construction. Radius on corners and return edges complement corners and edges on door.

Skirt — 18-8, Type-304, 22-gauge (0.8mm) stainless steel with satin finish. Radius on corners complement corners and edges of flange and door.

Door — 18-8, Type-304, 18-gauge (1.2mm) stainless steel with satin finish. Secured to cabinet with a concealed full-length stainless steel piano-hinge. Equipped with two tumbler locks keyed like other Bobrick washroom accessories. Door has no brand-name advertising for products dispensed. Graphic symbols identify products dispensed and coin denomination.

Coin Mechanisms (2) — Impact-Resistant PC-ABS Push Buttons. Coin mechanisms can be converted in the field to any standard coin denomination without having to buy new coin mechanisms (Free, 25¢ or 50¢). Accepts one or two quarters (U. S. or Canadian) as designated by factory setting. Coin Box is equipped with tumbler lock that opens with different key than furnished for door locks.

Coin Return Push-Button (2) — Impact-Resistant PC-ABS Push-Button cancels selection and returns coin into product tray.

Product Tray — Impact-Resistant PC-ABS, provides convenient access to dispensed product.

continued . . .

OPERATION:

After coin is inserted in dispensing mechanism of patron's choice, pushing button dispenses boxed sanitary napkin or tampon tube. Mechanical operations; no batteries or electricity required. Coin slot of each dispensing mechanism is identified by a graphic symbol. Capacity: 20 sanitary napkins and 30 tampons. Coin slots are automatically blocked with a red indicator when supply is depleted. Coin Return Push-Button cancels the selection and returns coin into product tray. Wrong coins (penny, nickel, dime) by-pass mechanisms and drop into product tray. Vendor dispenses sanitary napkin packages measuring 2-7/8" x 3/4" x 4-1/8" to 3-1/8" x 1-1/8" x 4-3/8" (73 x 19 x 105mm to 80 x 29 x 111mm) and tampon tubes measuring 4-5/8" long x 9/16" diameter minimum to 5-1/8" long x 3/4" diameter maximum (118 x 14 to 130 x 19mm).

INSTALLATION:

Mount unit on wall with four sheet-metal screws (not furnished) at points indicated by an *S*. For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with sheet-metal screws (not furnished). For other wall construction, provide fiber plugs or expansion shields for use with sheet-metal screws, or provide 1/8" (3mm) toggle bolts or expansion bolts. If unit projects above top of wainscot, provide aluminum channel or other filler to eliminate gap between unit and finish face of wall.

SPECIFICATION:

Surface-Mounted sanitary napkin/tampon vendor shall combine two dispensing mechanisms in one cabinet to provide sanitary napkins or tampons at user's option. Mechanical operations; no batteries or electricity required. Dispensing mechanisms shall be pre-set at factory for _____ (insert one: Free, 25¢ or 50¢) operation, but shall be convertible in the field to allow the change of coin denomination without removing unit from wall. Door shall be furnished with graphics indicating specified coin denomination. Unit shall be Type-304 stainless steel with all-welded construction; exposed surfaces shall have #4 satin finish. Stainless steel skirt shall have satin finish and have 90° return on edges; radius on corners complement corners and edges of flange and door. Front of door shall have same degree of arc and match other Bobrick ConturaSeries accessories in the washroom. Radius on corners and edges of flange, skirt, and door shall complement other Bobrick ConturaSeries washroom accessories. Flange shall be drawn, one-piece, seamless construction. Door shall be drawn, 18-gauge (1.2mm), one-piece, seamless construction; secured to cabinet with a full-length stainless steel piano-hinge; and equipped with a stainless steel cable door-swing limiter and two flush tumbler locks keyed like other Bobrick washroom accessories. Vendor product selection and coin return pushbutton-operation shall be certified ADA-ABA, ICC/ANSI A117.1 complaint by third party (certification available on request) for operation with one hand with less than 5 pounds of force (22.2 N) without tight grasping, pinching or twisting of the wrist. Push-Button coin return shall cancel selection and return coin into product tray. Wrong coins (penny, nickel, dime) shall by-pass mechanisms and drop into product tray. Product tray shall be impact-resistant PC-ABS plastic and provide easy access to dispensed product. Coin Box shall be equipped with a tumbler lock that is keyed differently than door locks. Unit shall not carry brand-name advertising.

Surface-Mounted Napkin/Tampon Vendor shall be Model _____ (insert model number) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

"HD"

HU 02

dyson airblade V

LOW VOLTAGE AND HIGH VOLTAGE TECHNICAL SPECIFICATION

Electrical

Input voltage: Low voltage = 100–120V, High voltage = 200–240V

Frequency: 100–115V at 50/60Hz, >115–120V at 60Hz; 200–240V at 50/60Hz

Standby power consumption: Less than 0.5W

Motor specification: 1000W, digital V4 brushless motor

Motor switching rate: 5,500 per second

Motor speed: 83,000rpm

Amp: Dedicated hand dryer circuit required. Reference NEC/local electrical code for loading. 9.09A at 110V; 4.54A at 220V

Heater type: None

Construction

Fascia: Polycarbonate

Antibacterial coating type:
HU02 (Sprayed Nickel) contains antibacterial additive in paint.
HU02 (White) contains antibacterial moulded additive.
Can help prevent the growth of bacteria.

Back plate mounting bracket: ABS/PBT Plastic

Exterior screw type: Anti-tamper 4/25" (4mm) Pin-Hex

Water ingress protection to IP24

Net weight: 6.32lbs / 2.86kg

Filter

Sealed HEPA filter (glass fiber and fleece prelayer)

Removes bacteria, viruses and 99.97% of particles as small as 0.3 microns.

Operation

Touch free capacitive sensor activation

Hand dry time measurement: 12 seconds
(measurement based on NSF P335 to a measurement of 0.1g residual moisture)

Sound power level: 79dB(A)

Sound pressure level @ 2m: 63dB(A)*

Operation lock-out period: 30 seconds

Airspeed at aperture: 420mph at Low voltage, 430mph at High voltage

Maximum altitude: 9,842 feet / 3,000 meters

Operating airflow: up to 5.3 gallons/sec and up to 42.38CFM

Operating temperature range: 32°–104°F / 0°–40°C

Logistics

Unit barcode:
Sprayed Nickel – Low voltage: 885609009933, High voltage: 885609009797
White – Low voltage: 885609009896, High voltage: 885609009179

Packaged weight: 9.52lbs / 4.32kg

Packaged dimensions:
Height 5 3/4" (145mm) × Width 17 7/8" (455mm) × Depth 10 3/4" (274mm)

Pallet quantity: 56

Standard warranty

5 year parts (self-service)

Product range (Select one)

HU02 Sprayed Nickel

Part number/SKU
☐ Low Voltage: 307174-01
☐ High Voltage: 307172-01

HU02 White

Part number/SKU
☐ Low Voltage: 307173-01
☐ High Voltage: 307171-01

Accreditations

Carbon Trust, NSF International, Quiet Mark

ADA compliant

Contributes to LEED certification

Contributes towards satisfying Feature W08 under the WELL Building Standard™

*Sound pressure measured at 6.56 feet (2 meters) distance, in a semi-anechoic chamber.

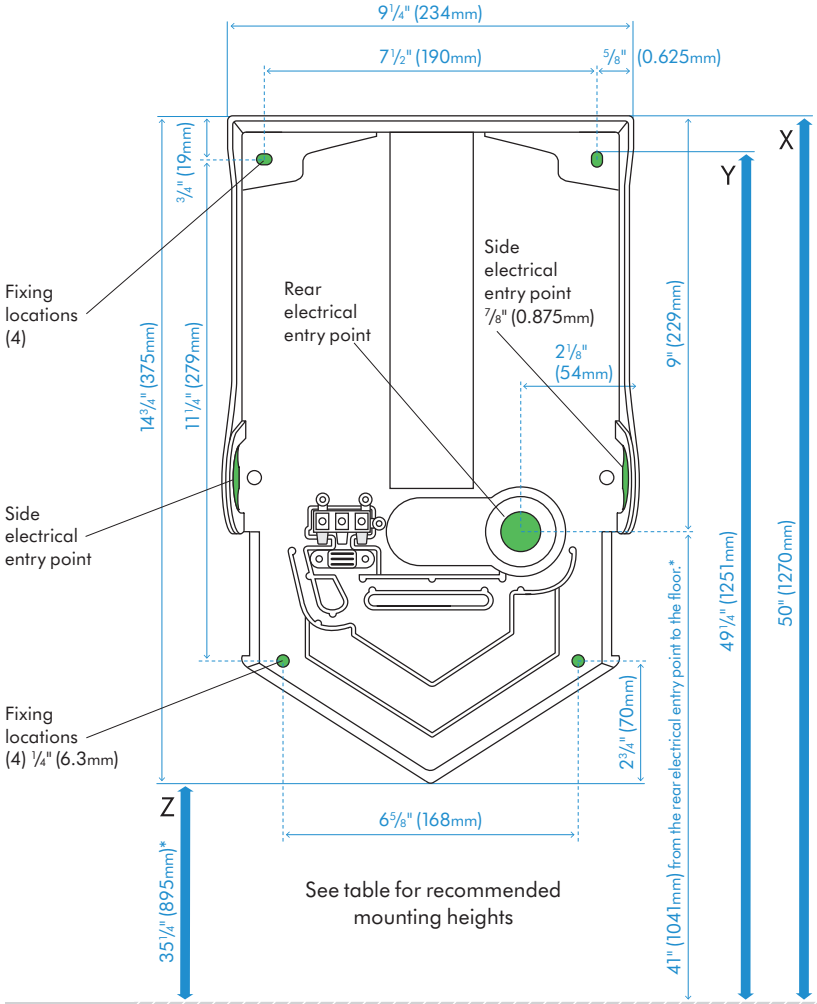
For more information, please contact Dyson:
1-888-397-6622 | design@dyson.com | www.dyson.com

dyson airblade V

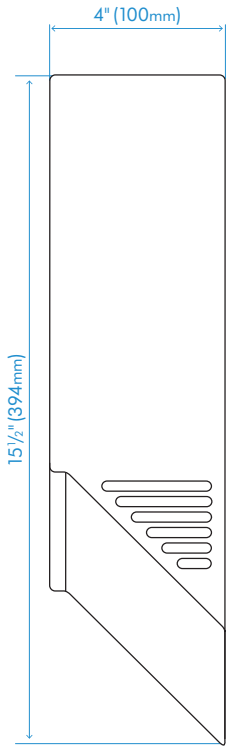
TECHNICAL SPECIFICATION

HU 02

REAR ELEVATION



SIDE ELEVATION



Machine fascia shown above in Side Elevation.

All dimensions shown in inches (+/– 3/16") and in millimeters (+/– 5mm).

Holes indicated in green area are measured to the center of the hole.

Machine dimensions
Height 15½" (394mm) × Width 9 7/32" (234mm) × Depth 4" (100mm)
Minimum clearance
8 11/16" (220mm) clearance either side and 1 3/16" (30mm) above machine.

*Please look into local guidelines for ADA compliance.

Recommended installation heights from floor			
Adult	X 50" (1270mm)	Y 49 ¼" (1251mm)	Z 35 ¼" (895mm)
Wheelchair/child	X 48 ¾" (1238mm)	Y 48" (1219mm)	Z 34" (863mm)
Rear cable entry point from floor			
Adult	41" (1041mm)		
Wheelchair/child	39 ¾" (1009mm)		

For more information, please contact Dyson: 1-888-397-6622 | design@dyson.com | www.dyson.com

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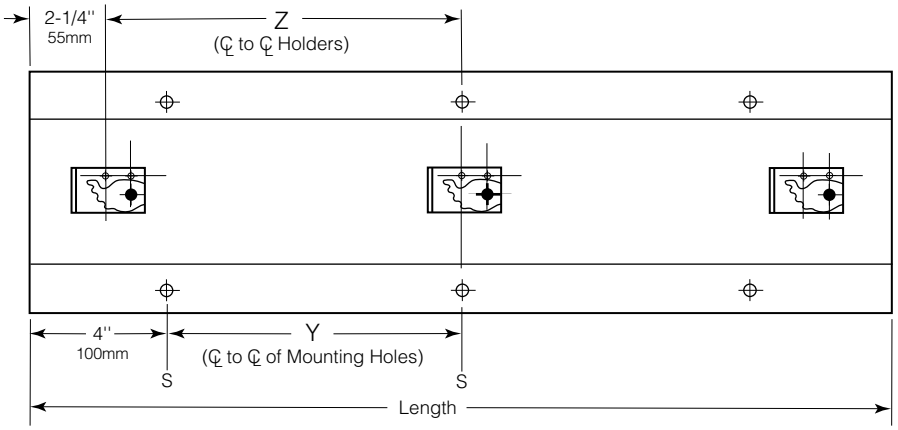
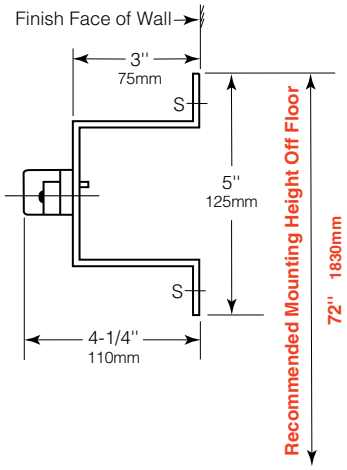
BOBRICK

Technical Data

STAINLESS STEEL MOP AND BROOM HOLDER

B-223





STANDARD STOCK SIZES

Model No.	Length	No. of Holders	Dim. Y	No. of Mtg. Holes	Dim. Z
B-223 x 24	24" (610mm)	3	8" (205mm)	6	9-3/4" (250mm)
B-223 x 36	36" (915mm)	4	14" (355mm)	6	10-1/2" (265mm)

MATERIALS:

Mounting Base — 18-8, type-304, 22-gauge (0.8mm) stainless steel with satin finish.

Mop and Broom Holders — Spring-loaded rubber cam holders with anti-slip coating. Powder coated steel retainers.

OPERATION:

Surface-mounted holder is designed to keep mops and brooms away from wall. Spring-loaded rubber cam holders accommodate handles from 7/8" to 1-1/4" (20 to 30mm) diameter.

INSTALLATION:

Secure unit to wall with six sheet-metal screws, furnished by manufacturer, at points indicated by an *S*. For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with stainless steel mounting screws. For other wall surfaces, provide fiber plugs or expansion shields for use with stainless steel mounting screws, or provide 1/8" (3mm) toggle bolts or expansion bolts.

SPECIFICATION:

Mop and broom holder shall be type-304 stainless steel with satin finish. Unit shall be _____ (insert length) long with _____ (insert number) spring-loaded rubber cam holders.

Stainless Steel Mop and Broom Holder shall be Model _____ (insert model number) of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

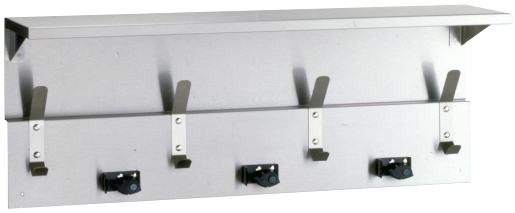
Rev. 6/30/15 R/A, S/B Printed in U.S.A.

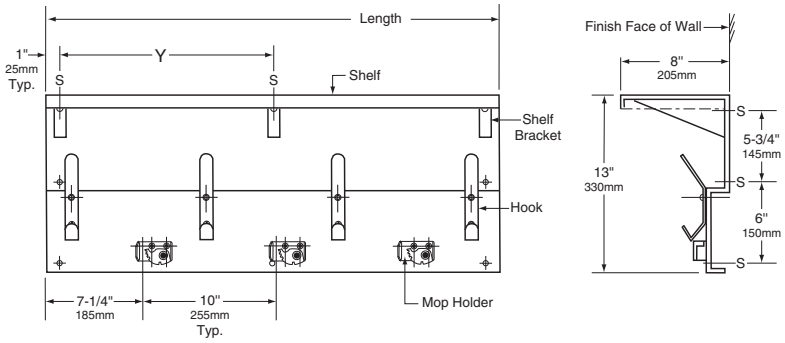
BOBRICK

Technical Data

UTILITY SHELF WITH MOP/BROOM HOLDERS AND RAG HOOKS

B-239





STANDARD STOCK SIZES

Model No.	Length	Dim. Y	Shelf Brackets	No. of Hooks	No. of Mtg. Holes	No. of Mop Holders
B-239 x 34	34" (865mm)	NA	2	4	6	3

MATERIALS:

Mounting Base and Shelf — 18-8, type-304, 18-gauge (1.2mm) stainless steel with satin finish. All-welded construction. Shelf is 8" (205mm) deep with 3/4" (19mm) return edge on all three sides. Front edge is hemmed for safety.

Shelf Support Brackets — 18-8, type-304, 16-gauge (1.6mm) stainless steel with satin finish. Welded to mounting base and shelf.

Mop/Broom Holders — Spring-loaded rubber cams with anti-slip coating. Plated steel retainers.

Hooks — 18-8, type-304, 12-gauge (2.8mm) stainless steel with satin finish. Each hook attached to mounting strip with two rivets.

OPERATION:

Utility shelf with holders is designed to keep mops and brooms away from wall. Spring-loaded rubber cam holders accommodate handles from 7/8" to 1-1/4" (22 to 30mm) diameter. Utility shelf above handle area provides clear access to stored materials.

INSTALLATION:

Secure unit to wall with Phillips-head screws, furnished by manufacturer, at points indicated by an *S*. For plaster or dry wall construction, provide concealed backing to comply with local building codes, then secure unit with screws furnished. For other wall surfaces, provide fiber plugs or expansion shields for use with screws furnished, or provide 1/8" (3mm) toggle bolts or expansion bolts.

SPECIFICATION:

Utility shelf with mop/broom holders and rag hooks shall be type-304 stainless steel with all-welded construction; exposed surfaces shall have satin finish. Shelf shall be 18 gauge (1.2mm), 8" (205mm) deep with 3/4" (19mm) return edges, and shall have front edge hemmed for safety.

Utility Shelf With Mop/Broom Holders And Rag Hooks shall be Model 239 x 34 of Bobrick Washroom Equipment, Inc., Clifton Park, New York; Jackson, Tennessee; Los Angeles, California; Bobrick Washroom Equipment Company, Scarborough, Ontario; Bobrick Washroom Equipment Pty. Ltd., Australia; and Bobrick Washroom Equipment Limited, United Kingdom.

Revised 11/09 Printed in U.S.A.