Grossmont Union High School District

High School Distr

GROSSMONT KITCHEN AND WEIGHT ROOM MULTI PRIME CN-2982 THROUGH CN-2991

Addendum No. 1

Date: July 20, 2022

The following changes, additions, deletions or corrections shall become a part of the Contract Documents dated July 19, 2022 for the project named above and all other conditions shall remain the same. The bidders shall be responsible for transmitting this information to all affected subcontractors and suppliers prior to the closing of bids.

Bid Opening:

The bid opening will remain at 2:00 p.m. on Tuesday, August 25, 2022.

Please incorporate the attached:

- 1. Bleacher Plans (Advertised as Attachment K)
- 2. Bleacher Specifications (Advertised as Attachment K)
- 3. DSA 103 Bleachers (04-121019)
- 4. DSA 103 Kitchen & Weight Rm (04-120895)
- 5. DVBE Proof of Publication
- 6. RFI & Substitution Request Log 22.07.19

Additional Information:

- 1. This is not a PLA or PSA project.
- 2. Bid location = 924 E Main St., El Cajon, CA 92021
- 3. C-43 licensed contractor may bid CN-2987 package
- 4. Bleacher Plans/Specifications are applicable to ALL Bid Packages
- 5. RFI numbers that are not shown are Pending RFIs that will be issued in future addenda

THIS ENDS ADDENDUM NO.1

Dena Johnson, Senior Project Manager - GUHSD

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GHS NEW PRESS BOX & BLEACHER **GROSSMONT HIGH SCHOOL**

1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL DISTRICT

TVDICAL ADDEV/IATIONC

	TYPIC	AL /	ABBREVIA	TIC	ONS		GENERAL NOTES
@ &	AT AND	FOF FOM	FACE OF FINISH FACE OF MASONRY	PLAS PLWD	PLASTIC PLYWOOD	1.	ALL WORK SHALL CONFORM TO 2019 TITLE 24, CALIFORNIA CODE OF REGUSECTION 4-333.
< ACPL ACT	ANGLE ACOUSTIC PLASTER ACOUSTIC TILE	FOS FRPF FS FURN	FACE OF STUD FIREPROOF/FIREPROOFING FINISHED SURFACE FURNISH/FURNITURE	PSG PTD PTN	PAINT SEMI-GLOSS PAINTED PARTITION	2.	FABRICATION AND INSTALLATION OF DEFERRED SUBMITTAL ITEMS SHALL NO CONTRACTOR'S DRAWINGS, SPECIFICATIONS, AND ENGINEERING CALCULAT SYSTEMS TO BE INSTALLED HAVE BEEN ACCEPTED AND SIGNED BY THE ARCI
AFF BB	ABOVE FINISHED FLOOR BULLETIN BOARD	GA GALV	GAUGE GALVANIZED	R RB RD	RADIUS/RISER RUBBER BASE ROOF DRAIN	3.	ENGINEER AND APPROVED BY THE DSA. LIST DEFERRED SUBMITTAL ITEMS I CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MA
BD BLKG BOS	BOARD BLOCKING BOTTOM OF STRUCTURE	GB GC GL GLU-LA	GRAB BAR GENERAL CONTRACTOR GLASS M: GLUE LAMINATED	REF REINF REQD RO	REFERENCE REINFORCED REQUIRED ROUGH OPENING	4	CONSTRUCTION CHANGED DOCUMENT (CCD) APPROVED BY THE DIVISION O AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
CAB CEM CF CJ CL	CABINET CEMENT CUBIC FEET CONTROL JOINT CENTERLINE	GPL GWB GWW H	GYPSUM PLASTER GYPSUM WALLBOARD WATER RESISTANT GWB HIGH	RQMT RSLB RT RWL	REQUIREMENT RESILIENT BASE RUBBER TREAD RAIN WATER LEADER	4.	A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWN THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUT ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR. THE INSPECTOR OF RECORD SHALL BE ESPECIALLY QUALIFIED IN MECHANIC WORK AND SHALL BE DSA APPROVED AND CONFORM TO CLASS 1 CLASSIFIC PROVIDED IN THE INTERPRETATION OF REGULATIONS (IR) A-7, DATED 07-1
CLF CLG CLR CMU	CHAIN LINK FNECE CEILING CLEAR CONCRETE MASONRY UNIT	HDW HORIZ HR HSS	HARDWARE HORIZONTAL HOUR HOLLOW STRUCTURAL	SB SC SHT	SPLASH BLOCK SOLID CORE SHEET	5.	A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTR CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
COL CONC CONT CPL	CONCRETE CONCRETE CONTINUOUS CEMENT PLASTER	HT ID	STEEL HEIGHT INSIDE DIAMETER	SHTG SIM SM SRF	SHEATHING SIMILAR SHEET METAL SEAMLESS RESILIENT FLOORING	6.	THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TIT EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONS DESCONSIONS WITH THE CONTRACT POCUMENTS WITH
CPT CSWK CT DET	CARPET		INSULATION INTERIOR JOIST HANGER JOIST	SS STD STL	SERVICE SINK/ STAINLESS STEEL STANDARD STEEL		DISCOVERED, WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHE WORK WILL NOT COMPLY WITH TITLE 24 CCR, A CONSTRUCTION CHANGE DO SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH (SECTION 4-317 (c), PART 1, TITLE 24, CCR).
DF DIM DL	DRINKING FOUNTAIN DIMENSION DOOR LOUVER	JT LAM	JOINT	STN STR SUSP	STAIN STRUCTURAL/STRUCTURE SUSPENDED	7.	GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREM ENVIROMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL
DN DP DR DRF DS	DOWN DEMOUNTABLE PARTITION DOOR DOOR FRAME DOWN SPOUT	LT LVR MACH MAX	LIGHT LOUVER MACHINE MAXIMUM	T TB TC TEL	TILE / TEMPERED GLASS TACK BOARD TOP OF CONCRETE CURB TELEPHONE	8.	CONTRACTOR OPERATIONS SHALL NOT BLOCK, HINDER, IMPEDE OR OTHERV REQUIRED EXITS AT ANY TIME. CONTRACTOR SHALL MAINTAIN UNOBSTRUC EXTINGUISHERS, FIRE HYDRANTS, TEMPORARY FIRE PROTECTION FACILITIES OTHER ACCESS ROUTES FOR FIRE-FIGHTING EQUIPMENT AND OR PERSONNE
DSA	DIVISION OF STATE ARCHITECT DRAWINGS	MAX MECH MFR MH	MAXIMUM MECHANICAL MANUFACTURER MANHOLE	TEMP TJ TOC TOP	TEMPERATURE TOOLED JOINT TOP OF CANOPY TOP OF PARAPET	9.	THE CONTRACTOR SHALL COMPLY WITH CALIFORNIA FIRE CODE, CHAPTER 3 DURING CONSTRUCTION.
(E) EA EJ ELEC	EXISTING EACH EXPANSION JOINT ELECTRIC	MIN ML MO MS MTD	MINIMUM METAL LATHE MASONRY OPENING METAL STUD MOUNTED	TOR TOS TOW TW TYP	TOP OF ROOF TOP OF STRUCTURE TOP OF WALL TOP OF WALK TYPICAL	10.	THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, ME TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTEND ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THI AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY
ELEV ENCL EP EQ	ELEVATION ENCLOSURE EPOXY EQUAL	MTL NIC NO	METAL NOT IN CONTRACT NUMBER	UC UNO	UNDER CUT/ UNDER COUNTER UNLESS NOTED	11.	CONTRACTOR WILL BE REQUIRED TO PROVIDE AND INSTALL ALL EQUIPMENT SHOWN IN THESE DOCUMENTS AND AS SPECIFIED. IT SHALL BE THE CONTRA TO VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO BID AND TO IN NECESSARY TO COMPLETE THE PROJECT.
EQUIP EW EWC EXP EXT	EQUIPMENT EACH WAY ELECTRIC WATER COOLER EXPANSION/EXPOSED EXTERIOR	NTS O OC OD OFCI	NOT TO SCALE ROUND ON CENTER OUTSIDE DIAMETER OWNER FURNISHED/	UOS VC VCT	OTHERWISE UNDERSIDE OF STRUCTURE VINYL COATED VINYL COMPOSITION TILE	12.	CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LOCATIONS OF EXISTING JOB SITE PRIOR TO THE START OF ANY WORK. NOTIFY THE ARCHITECT IMME DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION CONDITIONS ARE INDICATED AS A RESULT OF INFORMATION SHOWN ON AV ANY DAMAGE TO EXISTING CONDITIONS IS THE SOLE RESPONSIBILITY OF T
FC FD FEC	FINISH CEILING FLOOR DRAIN FIRE EXTINGUISER	OFOI	CONTRACTOR INSTALLED OWNER FURNISHED/ OWNER INSTALLED	VERT VIF VSF	VERTICAL VERIFIED IN FIELD VINYL SHEET FLOORING	13.	THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ADEQUACY AND SAF DESIGN/ERECTION OF BRACING, SHORING, TEMPORARY SUPPORTS AND SCA
FF FFE	CABINET FINISHED FLOOR / FACTORY FINISH FURNITURE, FIXTURES & EQUIPMENT	OH OPNG OPP	OPPOSITE HAND/ OVERHEAD OPENING OPPOSITE	VT VTR VWC W/	VINYL TILE VENT THROUGH ROOF VINYL WALL COVERING WITH	14.	THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF REQUIRE DISCIPLINES (ARCHITECTURAL, STRUCTURAL, PLUMBING, MECHANICAL, AND BETWEEN DRAWING AND SPECIFICATION IN ORDER TO ENSURE THAT ALL IT RELATIONSHIP TO ONE ANOTHER OR SHOWN IN MULTIPLE LOCATIONS ARE I
FG FHC FIN FLR	FINISHED GRADE FIRE HOSE CABINET FINISH FLOOR	P PA PFIN PL	PAINT PLANTING AREA PRE FINISHED PLATE/PROPERTY LINE	WD WI WIN W/O	WOOD WOODWORK INSTITUTE WINDOW WITHOUT		CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT REGARDING ANY ERRORS, OMISSIONS OR INCONSISTENCIES AND SHALL NOT PROCEED WITH CLARIFICATION HAS BEEN ISSUED BY THE ARCHITECT.
				WWF	WELD WIRE FABRIC	15.	THE EXISTENCE OR LOCATION OF ANY UNDERGROUND UTILITIES, PIPES, OR THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. TO TH KNOWLEDGE, EXISTING UTILITIES ARE AS SHOWN ON THESE PLANS. THE CO ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION AND SIZE OF A UTILITIES AND SHALL BE RESPONSIBLE FOR DAMAGE TO ANY PUBLIC OR PRI OR NOT SHOWN HEREON.
						16.	UNDER NO CIRCUMSTANCE SHALL WORKING DIMENSIONS BE SCALED FROM DETAILS ON THE DRAWINGS.
						17.	ALL STANDARDS, MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE ORDINANCES, REGULATIONS, AND LAWS.
							WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF FEDERAL, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SH
							ITEMS MARKED "TYP." OR "TYPICAL" SHALL APPLY IN ALL CASES UNLESS SPE OTHERWISE.
							IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM CONSTRUCTION THE ARCHITECT OF RECORD SHALL HAVE THE RIGHT TO MAKE FINAL JUDGM SUBMITTAL DRAWING REVISIONS IN ORDER TO ENSURE COMPLIANCE WITH
						22.	STANDARDS, APPLICABLE CODES, AND ARCHITECTURAL INTENT. FIRE PROTECTION DURING ALL DEMOLITION / ALL CONSTRUCTION SHALL BE CURRENT CODE CHAPTER 33 CBC AND CHAPTER 33 CFC.

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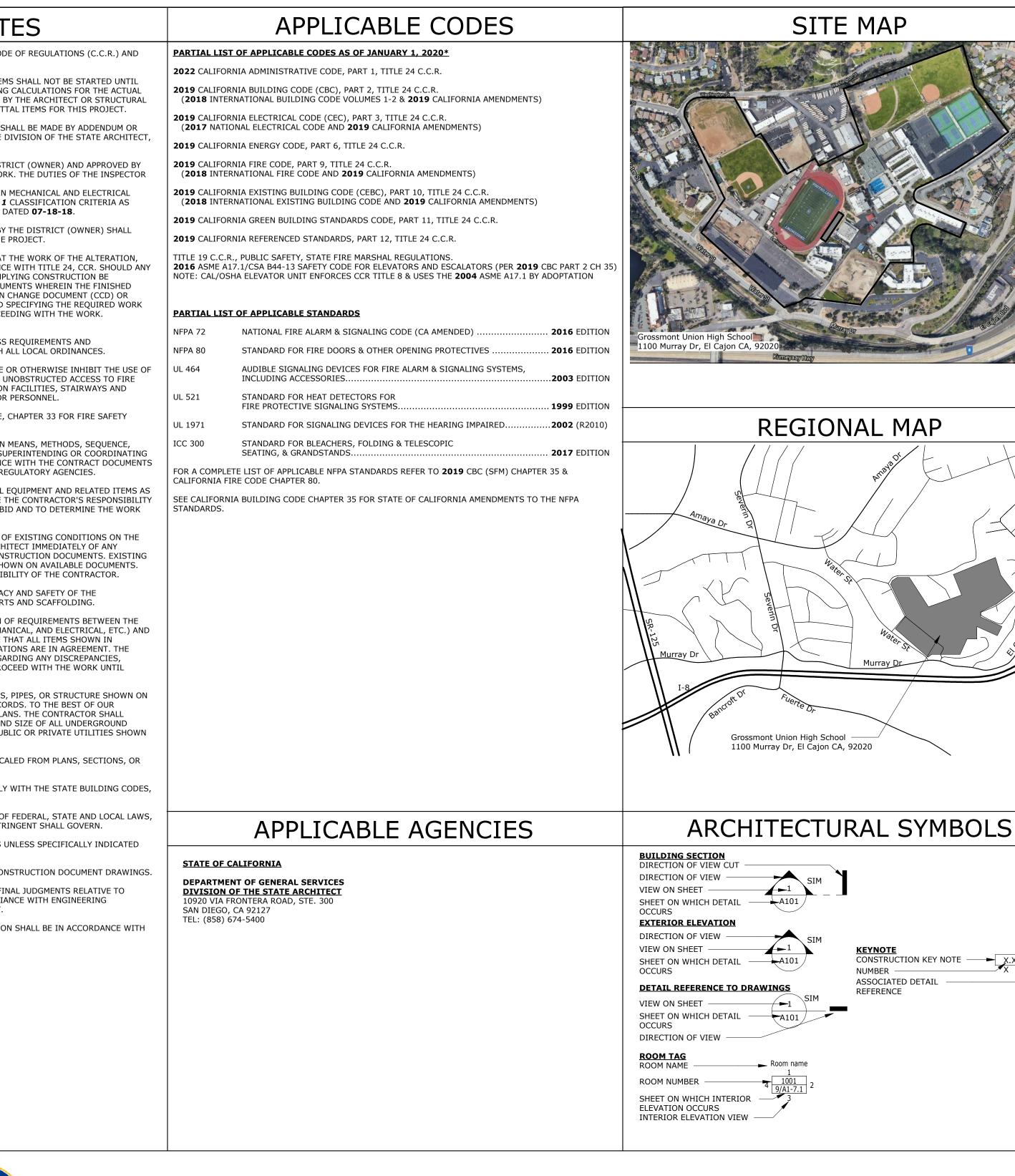
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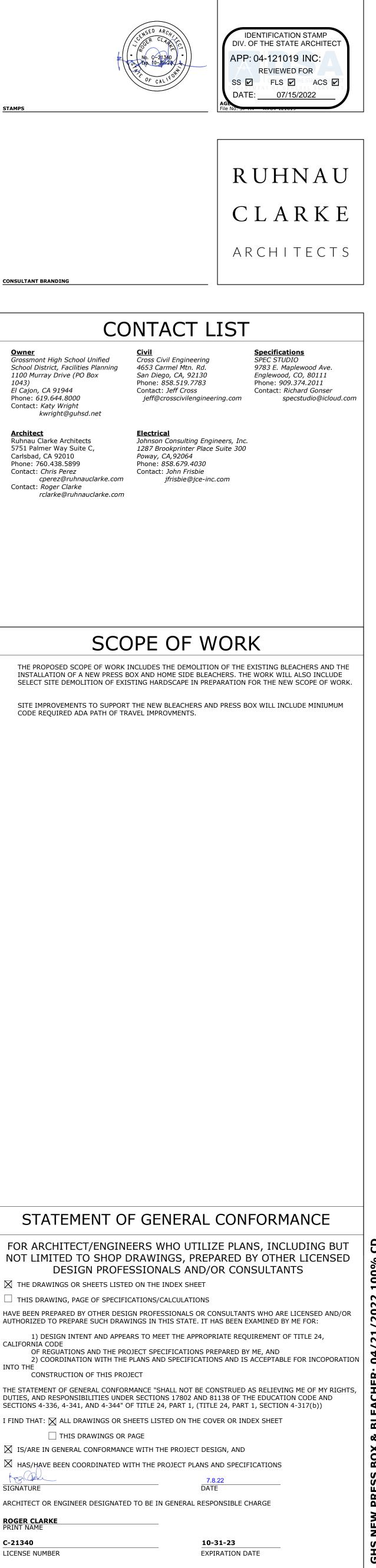




RUHNAU CLARKE ARCHITECTS

3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899

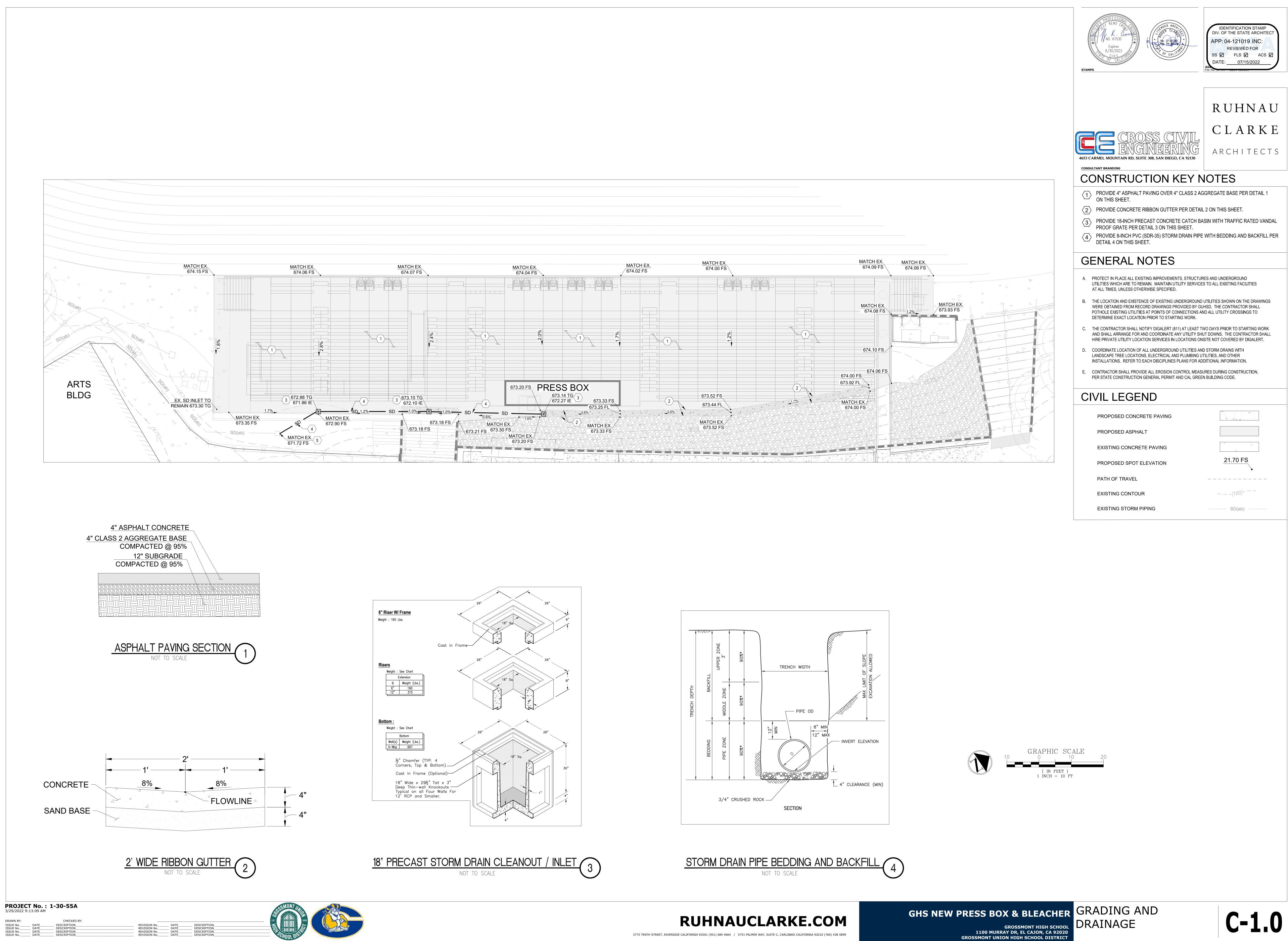


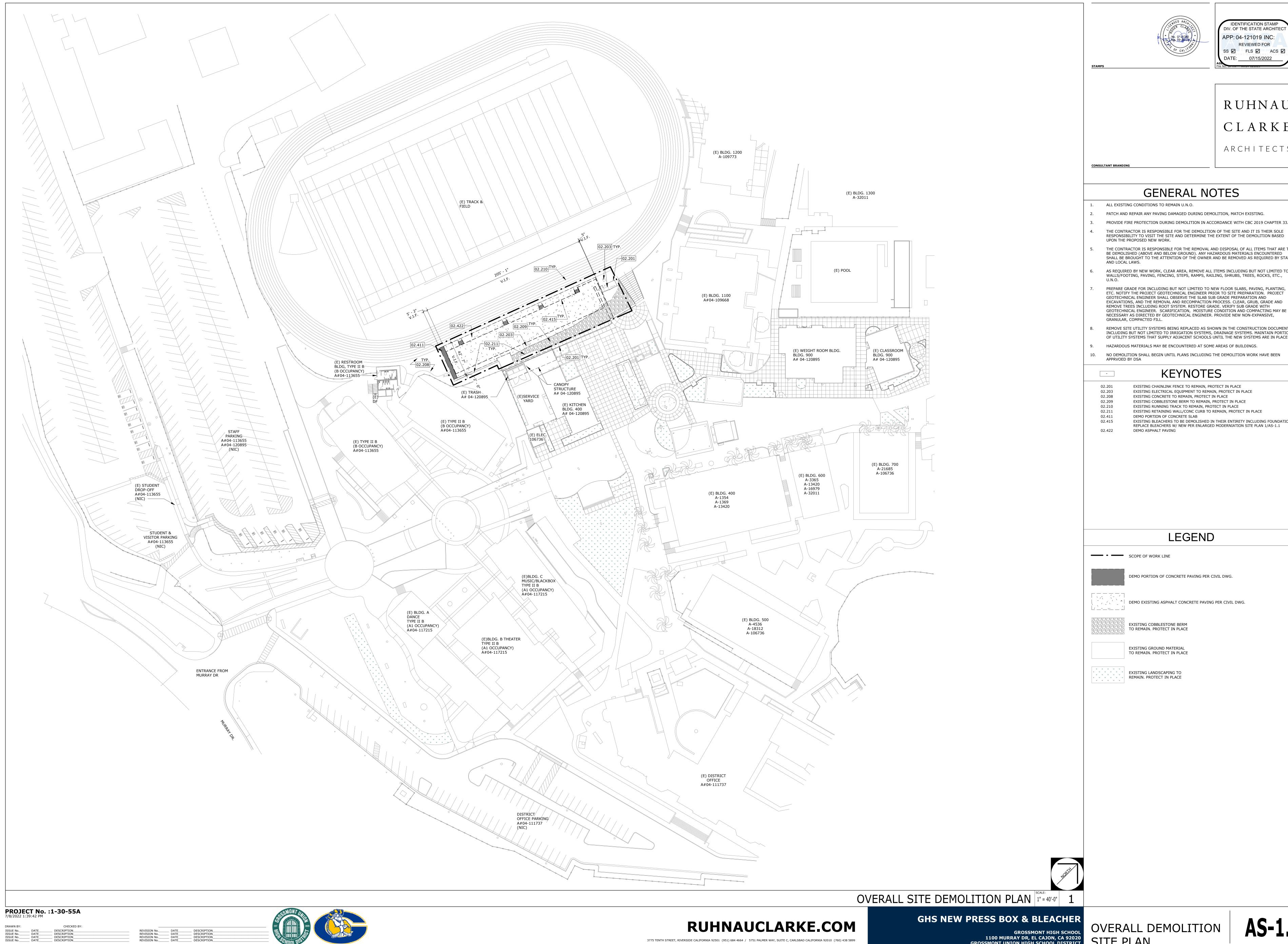


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SHEET INDEX GENERAL G-1 TITLE SHEET & SHEET INDEX SHEET COUNT: 1 C-1.0 GRADING & DRAINAGE SHEET COUNT: 1 ARCHITECTURE SITE AS-1.0 OVERALL DEMOLITION SITE PLAN AS-1.1 EGRESS SITE PLAN & CODE ANALYSIS AS-1.2 ENLARGED MOD. SITE PLAN AS-2.0 (E) RESTROOM PLANS, INT. ELEV. & DETAILS SHEET COUNT: 4 ARCHITECTURE SITE DETAILS ASD-1.0 SITE DETAILS SHEET COUNT: 1 ELECTRICAL E1.0 ELECTRICAL SYMBOLS, ABBREVIATIONS & NOTES OVERALL SITE PLAN SITE ELECTRCIAL DETAILS PRESSBOX FLOOR PLAN - POWER POWER DETAILS COMMUNICATIONS LEGEND & NOTES PRESSBOX FLOOR PLAN - COMMUNICATIONS COMMUNICATIONS DETAILS COMMUNICATIONS DETAILS COMMUNICATIONS DETAILS AUDIO - VISUAL SYSTEM DETAILS E4.6 STADIUM SOUND SYSTEM DIAGRAM F4.7 SOUND SYSTEM POWER DIAGRAM E5.1 PRESSBOX FLOOR PLAN - FIRE ALARM E5.2 FIRE ALARM SCHEDULES AND RISER E5.3 FIRE ALARM DETAILS AND CALCULATIONS E7.1 ONE- LINE DIAGRAM E7.2 ONE-LINE DETAILS ELECTRICAL DETAILS E8.1 E9.1 PANEL SCHEDULES SHEET COUNT: 20 **BLEACHER & PRESS BOX** COVER PAGE B1 GENERAL NOTES B2 FOOTING LAYOUT B3 B3.1 ENLARGED EXIT FOOTING LAYOUT B4 FOOTING DETAILS FOOTING DETAILS B4.1 UNDERSTRUCTURE LAYOUT ELEVATION VIEWS SECTION VIEW SECTION VIEW SECTION VIEW SITE LINES B10 SEATING LAYOUT B11 B12 FXITS B13 EXITS B14 SEAT BRACKET LAYOUT B15 PRESS BOX LAYOUT B16 PRESS BOX FRAMING PLAN B17 ROOF HATCH DETAILS B18 PRESS BOX DETAILS PRESS BOX DETAILS PRESS BOX CEILING DETAILS B20 PLANK DETAILS B21 EXIT DETAILS B23 EXIT DETAILS EXIT DETAILS B24 B25 GRANDSTAND DETAILS B26 GRANDSTAND DETAILS SHEET COUNT: 28 TOTAL SHEET COUNT: 55 CALIFORNIA CODE INTO THE CONSTRUCTION OF THIS PROJECT **KEYNOTE** A101 NUMBER ASSOCIATED DETAIL THIS DRAWINGS OR PAGE REFERENCE FRACK SIGNATURE ROGER CLARKE C-21340 LICENSE NUMBER GHS NEW PRESS BOX & BLEACHER **RUHNAUCLARKE.COM TITLE SHEET & SHEET GROSSMONT HIGH SCHOOL** 1100 MURRAY DR, EL CAJON, CA 92020 INDEX 3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501 (951) 684 4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 92010 (760) 438 5899 GROSSMONT UNION HIGH SCHOOL DISTRICT





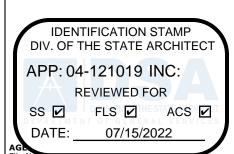


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GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL DISTRICT

OVERALL DEMOLITION SITE PLAN







GENERAL NOTES

2. PATCH AND REPAIR ANY PAVING DAMAGED DURING DEMOLITION, MATCH EXISTING.

PROVIDE FIRE PROTECTION DURING DEMOLITION IN ACCORDANCE WITH CBC 2019 CHAPTER 33.

THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND DISPOSAL OF ALL ITEMS THAT ARE TO BE DEMOLISHED (ABOVE AND BELOW GROUND). ANY HAZARDOUS MATERIALS ENCOUNTERED SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND BE REMOVED AS REQUIRED BY STATE

AS REQUIRED BY NEW WORK, CLEAR AREA, REMOVE ALL ITEMS INCLUDING BUT NOT LIMITED TO WALLS/FOOTING, PAVING, FENCING, STEPS, RAMPS, RAILING, SHRUBS, TREES, ROCKS, ETC.,

PREPARE GRADE FOR INCLUDING BUT NOT LIMITED TO NEW FLOOR SLABS, PAVING, PLANTING, ETC. NOTIFY THE PROJECT GEOTECHNICAL ENGINEER PRIOR TO SITE PREPARATION. PROJECT GEOTECHNICAL ENGINEER SHALL OBSERVE THE SLAB SUB GRADE PREPARATION AND EXCAVATIONS, AND THE REMOVAL AND RECOMPACTION PROCESS. CLEAR, GRUB, GRADE AND REMOVE TREES INCLUDING ROOT SYSTEM. RESTORE GRADE. VERIFY SUB GRADE WITH GEOTECHNICAL ENGINEER. SCARIFICATION, MOISTURE CONDITION AND COMPACTING MAY BE NECESSARY AS DIRECTED BY GEOTECHNICAL ENGINEER. PROVIDE NEW NON-EXPANSIVE,

REMOVE SITE UTILITY SYSTEMS BEING REPLACED AS SHOWN IN THE CONSTRUCTION DOCUMENTS, INCLUDING BUT NOT LIMITED TO IRRIGATION SYSTEMS, DRAINAGE SYSTEMS. MAINTAIN PORTIONS OF UTILITY SYSTEMS THAT SUPPLY ADJACENT SCHOOLS UNTIL THE NEW SYSTEMS ARE IN PLACE.

KEYNOTES

EXISTING CHAINLINK FENCE TO REMAIN, PROTECT IN PLACE EXISTING ELECTRICAL EQUIPMENT TO REMAIN, PROTECT IN PLACE EXISTING CONCRETE TO REMAIN, PROTECT IN PLACE EXISTING COBBLESTONE BERM TO REMAIN, PROTECT IN PLACE EXISTING RUNNING TRACK TO REMAIN, PROTECT IN PLACE EXISTING RETAINING WALL/CONC CURB TO REMAIN, PROTECT IN PLACE EXISTING BLEACHERS TO BE DEMOLISHED IN THEIR ENTIRETY INCLUDING FOUNDATION. REPLACE BLEACHERS W/ NEW PER ENLARGED MODERNIATION SITE PLAN 1/AS-1.1

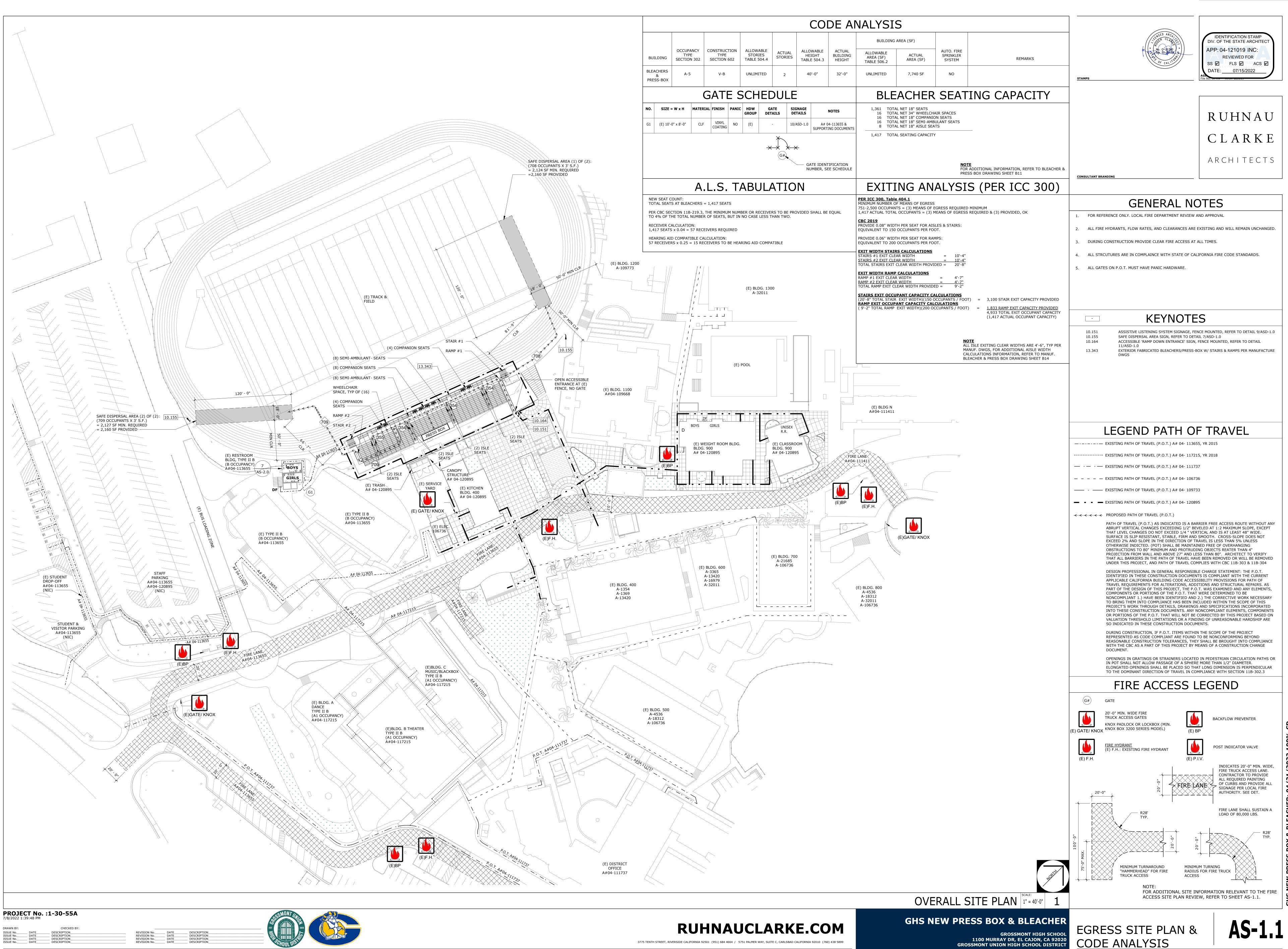
LEGEND

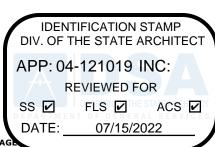
DEMO PORTION OF CONCRETE PAVING PER CIVIL DWG.

DEMO EXISTING ASPHALT CONCRETE PAVING PER CIVIL DWG.







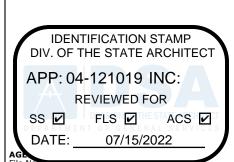














GENERAL NOTES

2. THE CONTRACTOR IS RESPONSIBLE FOR THE DEMOLITION OF THE SITE AND IT IS THEIR SOLE RESPONSIBILITY TO VISIT THE SITE AND DETERMINE THE EXTENT OF THE DEMOLITION BASED UPON

DEMOLISHED (ABOVE AND BELOW GROUND). ANY HAZARDOUS MATERIALS ENCOUNTERED SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND BE REMOVED AS REQUIRED BY STATE AND LOCAL

4. REFER TO SPECIFICATION 01 74 19 FOR CONSTRUCTION WASTE MANAGEMENT REQUIREMENTS.

KEYNOTES

EXISTING CHAINLINK FENCE TO REMAIN, PROTECT IN PLACE EXISTING CONCRETE TO REMAIN, PROTECT IN PLACE EXISTING RUNNING TRACK TO REMAIN, PROTECT IN PLACE EXISTING RETAINING WALL/CONC CURB TO REMAIN, PROTECT IN PLACE EXTERIOR FABRICATED BLEACHERS/PRESS-BOX W/ STAIRS & RAMPS PER MANUFACTURE

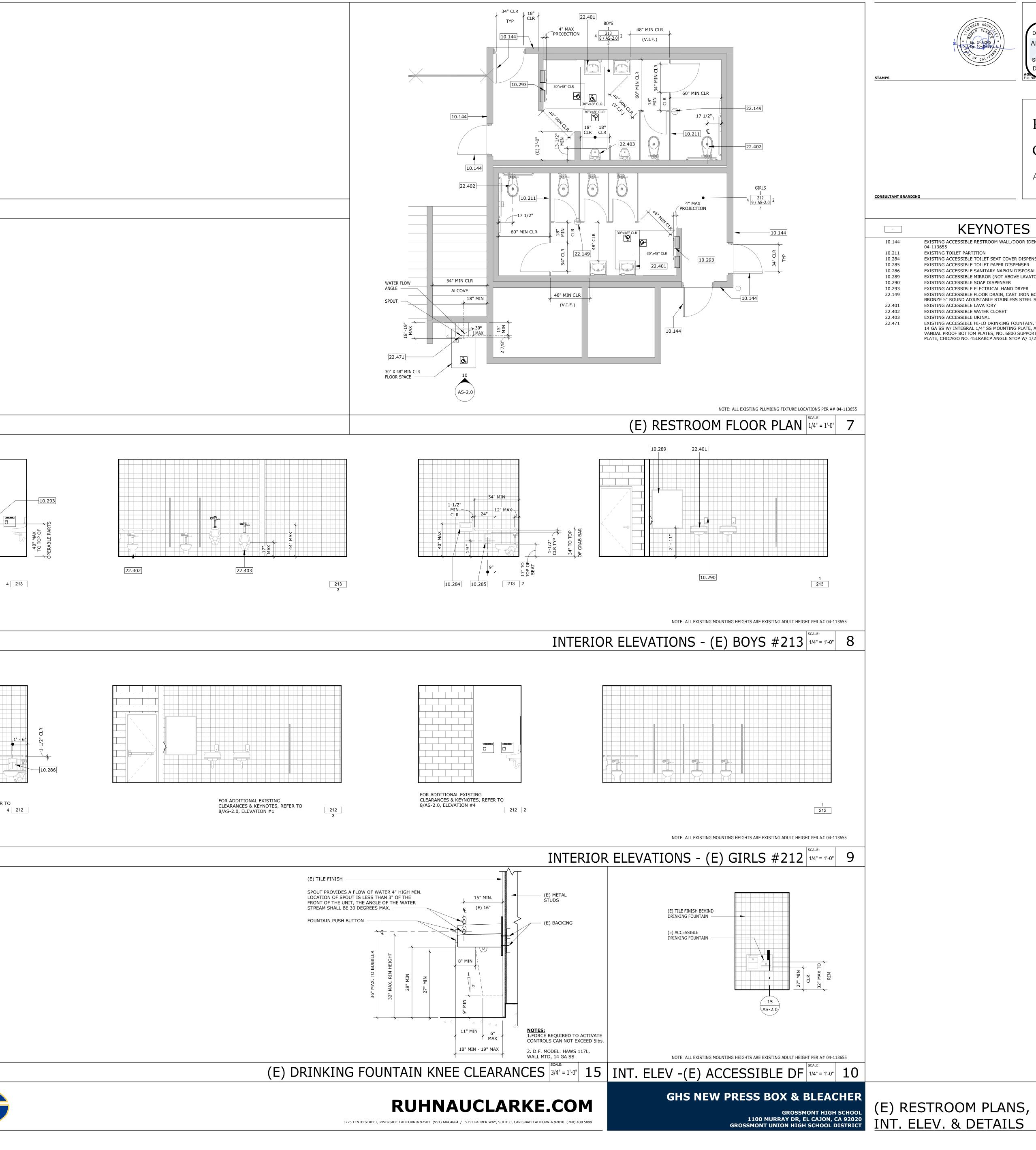
LEGEND

NEW ASPHALT PAVING PER CIVIL DWGS





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						FOR ADDITIONAL CLEARANCES & K 8/AS-2.0, ELEVAT	EXISTING EYNOTES, REFER T TON #2
					13-1/2"		









KEYNOTES

EXISTING ACCESSIBLE RESTROOM WALL/DOOR IDENTIFICATION SIGNAGE PER A#

EXISTING ACCESSIBLE TOILET SEAT COVER DISPENSER EXISTING ACCESSIBLE TOILET PAPER DISPENSER

EXISTING ACCESSIBLE SANITARY NAPKIN DISPOSAL

EXISTING ACCESSIBLE MIRROR (NOT ABOVE LAVATORY/COUNTERTOP) EXISTING ACCESSIBLE SOAP DISPENSER

EXISTING ACCESSIBLE ELECTRICAL HAND DRYER

EXISTING ACCESSIBLE FLOOR DRAIN, CAST IRON BODY W/ FLASHING COLLAR & NICKEL BRONZE 5" ROUND ADJUSTABLE STAINLESS STEEL STRAINER, MAX. 1/2" OPENINGS EXISTING ACCESSIBLE LAVATORY EXISTING ACCESSIBLE WATER CLOSET

EXISTING ACCESSIBLE URINAL

EXISTING ACCESSIBLE HI-LO DRINKING FOUNTAIN, WALL MOUNTED, HAWS NO. 1117L, 14 GA SS W/ INTEGRAL 1/4" SS MOUNTING PLATE, ADA APPROVED, COMPLETE W/ VANDAL PROOF BOTTOM PLATES, NO. 6800 SUPPORT CARRIER, AND NO. 6717 MOUNTING PLATE, CHICAGO NO. 45LKABCP ANGLE STOP W/ 1/2" FEMALE INLET & OUTLET.

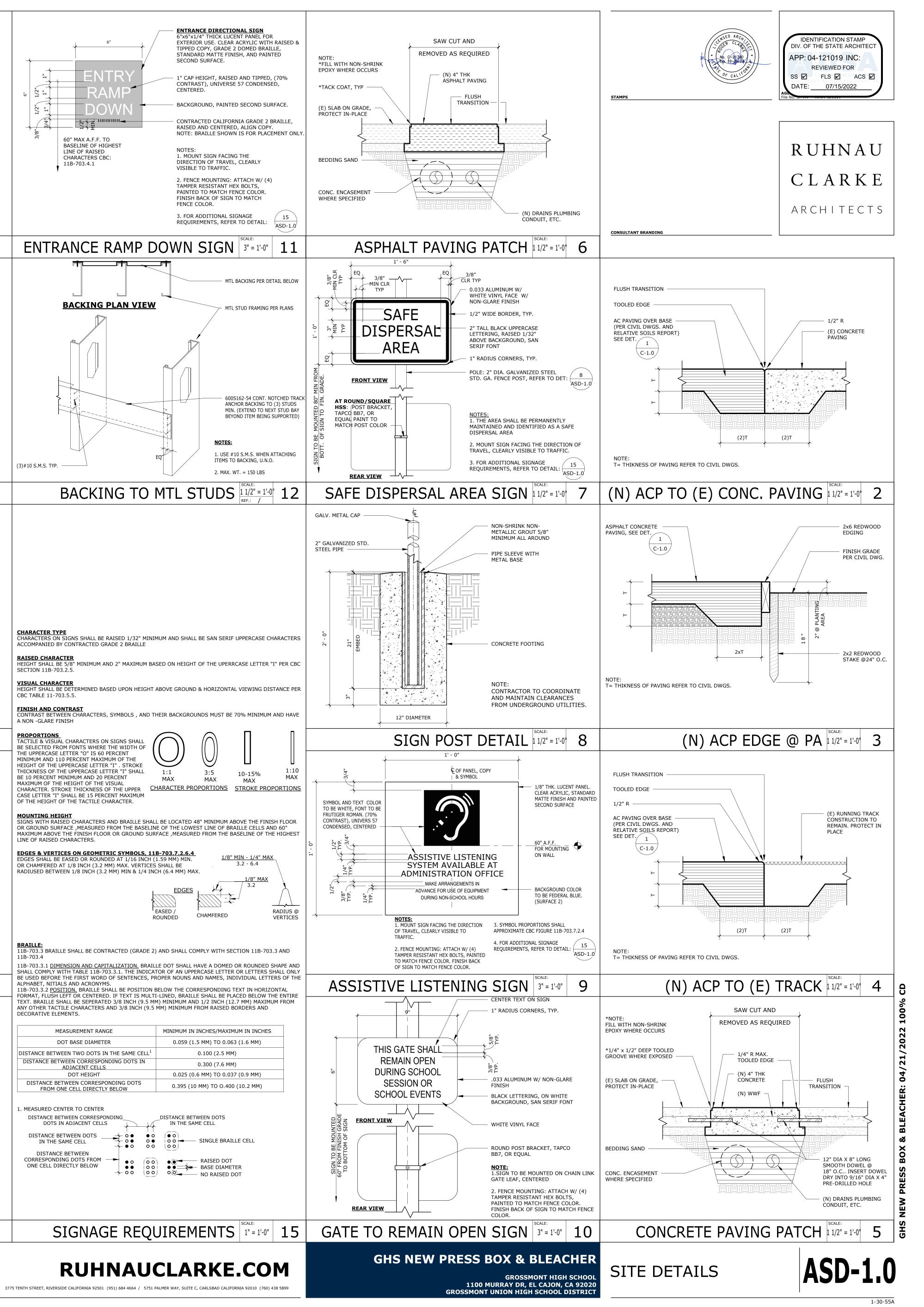




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	ENTRANCE RAMP DOV
	(3)#10 S.M.S. TYP.
	BACKING TO MT
	<u>CHARACTER TYPE</u> CHARACTERS ON SIGNS SHALL BE RAISED 1/32" MINIMUM AN ACCOMPANIED BY CONTRACTED GRADE 2 BRAILLE
	RAISED CHARACTER HEIGHT SHALL BE 5/8" MINIMUM AND 2" MAXIMUM BASED ON SECTION 11B-703.2.5. VISUAL CHARACTER HEIGHT SHALL BE DETERMINED BASED UPON HEIGHT ABOVE OF CBC TABLE 11-703.5.5. FINISH AND CONTRAST CONTRAST BETWEEN CHARACTERS, SYMBOLS , AND THEIR BAA A NON -GLARE FINISH PROPORTIONS
	TACTILE & VISUAL CHARACTERS ON SIGNS SHALL BE SELECTED FROM FONTS WHERE THE WIDTH OF THE UPPERCASE LETTER "O" IS 60 PERCENT MINIMUM AND 110 PERCENT MAXIMUM OF THE HEIGHT OF THE UPPERCASE LETTER "I" . STROKE THICKNESS OF THE UPPERCASE LETTER "I" . STROKE THICKNESS OF THE UPPERCASE LETTER "I" SHALL BE 10 PERCENT MINIMUM AND 20 PERCENT MAXIMUM OF THE HEIGHT OF THE VISUAL CHARACTER. STROKE THICKNESS OF THE UPPER CASE LETTER "I" SHALL BE 15 PERCENT MAXIMUM OF THE HEIGHT OF THE TACTILE CHARACTER.1:1MOUNTING HEIGHT SIGNS WITH RAISED CHARACTERS AND BRAILLE SHALL BE LOD OR GROUND SURFACE ,MEASURED FROM THE BASELINE OF THE
	MAXIMUM ABOVE THE FINISH FLOOR OR GROUND SURFACE ,M LINE OF RAISED CHARACTERS. EDGES & VERTICES ON GEOMETRIC SYMBOLS, 11B-703.7 EDGES SHALL BE EASED OR ROUNDED AT 1/16 INCH (1.59 MM OR CHAMFERED AT 1/8 INCH (3.2 MM) MAX. VERTICES SHALL RADIUSED BETWEEN 1/8 INCH (3.2 MM) MIN & 1/4 INCH (6.4 M EASED / EASED / ROUNDER
	BRAILLE: 11B-703.3 BRAILLE SHALL BE CONTRACTED (GRADE 2) AND SI 11B-703.4 11B-703.3.1 <u>DIMENSION AND CAPITALIZATION.</u> BRAILLE DOT SHALL COMPLY WITH TABLE 11B-703.3.1. THE INDICATOR OF BE USED BEFORE THE FIRST WORD OF SENTENCES, PROPER N ALPHABET, NITIALS AND ACRONYMS. 11B-703.3.2 <u>POSITION.</u> BRAILLE SHALL BE POSITION BELOW T FORMAT, FLUSH LEFT OR CENTERED. IF TEXT IS MULTI-LINED, TEXT. BRAILLE SHALL BE SEPERATED 3/8 INCH (9.5 MM) MINI ANY OTHER TACTILE CHARACTERS AND 3/8 INCH (9.5 MM) MINI DECORATIVE ELEMENTS.
	MEASUREMENT RANGEMINIDOT BASE DIAMETER0DISTANCE BETWEEN TWO DOTS IN THE SAME CELL10DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS0DOT HEIGHT0DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW01. MEASURED CENTER TO CENTER
	DISTANCE BETWEEN CORRESPONDING DOTS IN ADJACENT CELLS DISTANCE BETWEEN DOTS IN THE SAME CELL DISTANCE BETWEEN CORRESPONDING DOTS FROM ONE CELL DIRECTLY BELOW ONE CELL DIRECTLY BELOW ONE CELL DIRECTLY BELOW
	SIGNAGE REQUIR



ABBREVIATION	3	ELECTRICAL	SYMBOL LEGEND
A	AMPERE (AMPS)	DISTRIBUT	ION EQUIPMENT
AC	ALTERNATING CURRENT		
AF	AMPS-FRAME (RATING)	1	
AIC	AMP INTERRUPTING CURRENT		POWER TRANSFORMER, R
AM	AMMETER		
NS I	AMP SWITCH (FUSED SWITCH RATING)		
ις Τ	AMPS-TRIP (RATING)	(A)	AMMETER
WG	AMERICAN WIRE GAUGE		
C	BARE COPPER	(\vee)	VOLTMETER
LDG	BUILDING	\mathbf{O}	
	CONDUIT	\frown	
B			CIRCUIT BREAKER
	CIRCUIT BREAKER	200AF	200AMP FRAME
0	CONDUIT ONLY	200AT	200AMP TRIP
ŗ	CURRENT TRANSFORMER	3P	- 3 POLE
J 	COPPER	10,000	AIC 10,000 AMPS INTE
= <i>O</i> I	CONTRACTOR FURNISHED OWNER INSTALLED	,	
-CI	CONTRACTOR FURNISHED CONTRACTOR INSTALLED		
PDT	DOUBLE POLE DOUBLE THROW		FUSED SWITCH
PST	DOUBLE POLE SINGLE THROW	200AS	200AMP SWITCH
NG	DRAWING	200AF	
<	EXISTING	3P	- 3 POLE
A	FULL LOAD AMPS	<u> </u>	3 T OLE
VR .	FULL VOLTAGE REVERSING		
/NR	FULL VOLTAGE NON-REVERSING	(M)	UTILITY COMPANY METER
FI	GROUND FAULT INTERRUPTER	\bigcirc	
RD/GND	GROUND		
D	HIGH INTENSITY DISCHARGE		
	HAND-OFF-AUTOMATIC		
DA D			
	HORSEPOWER		
25	HIGH PRESSURE SODIUM		
<u> </u>	HERTZ		
N	KILOWATT		
	LONG CONTINUOUS LOAD		
Κ Α	LOCKED ROTOR AMPS		
G	LIGHTING		
50	MOTOR CONTROL CENTER		
CM (KCM)	THOUSAND CIRCULAR MILS		
CH	MECHANICAL		
5	NORMALLY CLOSED		
-	NON-FUSED		
0	NORMALLY OPEN/NUMBER		
FCI	OWNER FURNISHED CONTRACTOR INSTALLED		
PFOI	OWNER FURNISHED OWNER INSTALLED		
	POLE		
+			
00	POINT OF CONNECTION		
RS	PVC COATED RIGID STEEL (CONDUIT)		
Г	POTENTIAL TRANSFORMER		
VC	POLYVINYL CHLORIDE DUCT		
WBD	SWITCHBOARD		
ΥP	TYPICAL		
5	UNDERGROUND		
- DN	UNLESS OTHERWISE NOTED		
	VOLT		
4	VOLTAMPERES		
, 1	VOLTMETER		
-			
-	WIRF/WATTS		

WIRE/WATTS

WATERTIGHT

WEATHERPROOF (NEMA TYPE 3R)

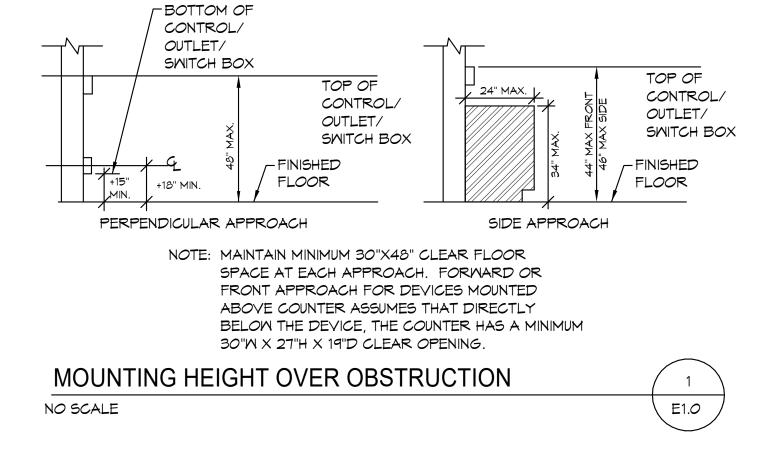
EXPLOSION PROOF (RATED FOR AREA HAZARD)

N

MP

MT

XP



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RATING AS NOTED

ITERRUPTING CURRENT

POWER C	ONTINUED
	DUPLEX RECEPTACLE, FLOOR MOUNTED
€	DUPLEX RECEPTACLE, WALL MOUNTED, +18" A.F.F. (U.O.N.)
HORZ.	RECEPTACLE, WALL MOUNTED HORIZONTALLY, +18" A.F.F. (U.O.N
HORZ.	FOURPLEX RECEPTACLE, WALL MOUNTED, +18" A.F.F. (U.O.N.)
₩ Ø	RECEPTACLE MOUNTED +6" ABOVE COUNTER BACKSPLASH SEE ARCHITECTURAL PLANS FOR REQUIRED MOUNTING HEIGHT
Ø Ø	PRIOR TO ROUGH-IN.
Φ^{LCD}	PROVIDE (2) DUPLEX RECEPTACLE CEILING MOUNTED LOCATE , PROJECTOR. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH
	DUPLEX GROUND FAULT INTERRUPTING RECEPTACLE +18" A.F.F.
⊖ _{wp} ⊖ _{wp/l}	DUPLEX RECEPTACLE IN WEATHERPROOF ENCLOSURE +18" A.F.F DUPLEX RECEPTACLE IN WEATHERPROOF "LOCKING" ENCLOSUR (SEE TYPICAL DETAILS E3 SERIES SHEETS AND SPECIFICATIONS
	DUPLEX COMPUTER RECEPTACLE (BLUE) ISOLATED GROUND, SUPPRESSION, WALL MOUNTED +18" A.F.F. (U.O.N.)
A DH	SINGLE RECEPTACLE 30 AMP, 250V, 4W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
вЮ⊣	SINGLE RECEPTACLE 50 AMP, 250V, 4W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
c € ⊣	SINGLE RECEPTACLE 50 AMP, 250V, 3W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
E	SINGLE RECEPTACLE 30 AMP, 125V, 3W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
F	SINGLE RECEPTACLE 30 AMP, 250V, 3W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
GDH	SINGLE RECEPTACLE 30 AMP, 250V, 5W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
н ())⊣	SINGLE RECEPTACLE 30 AMP, 480V, 5W, GROUNDING, WALL MOUNTED +18" A.F.F. (U.O.N.). FIELD VERIFY EXACT OUTLE WITH EQUIPMENT PRIOR TO ROUGH-IN.
FP	DUPLEX RECEPTACLE, WALL MOUNTED ADJACENT TO FLAT PAN SIGNAL PLAN FOR EXACT LOCATION.
\bigcirc	JUNCTION BOX, FLOOR MOUNTED
HC C	JUNCTION BOX, CEILING OR WALL MOUNTED
£H	HAND DRYER CONNECTION, SEE ARCHITECTURAL FOR MOUNTING
<u>Г</u> т 5 м	FUSED DISCONNECT SWITCH, WHERE SHOWN NF = NON-FUSED. MANUAL MOTOR STARTER +48" A.F.F. OR ON EQUIPMENT (U.O.N.)
(1)	MOTOR CONNECTION, NUMERAL INDICATES HORSEPOWER.
$\left< \frac{AC}{1} \right>$	MECHANICAL EQUIPMENT TAG (SEE MECHANICAL DRAWINGS FOR
	CONDUIT AND WIRE, CONCEALED IN CEILING OR WALL
	CONDUIT AND WIRE, CONCEALED IN OR UNDER FINISHED FLOOR OR UNDER FINISHED GRADE.
L	FLEXIBLE CONDUIT CONNECTION
	BRANCH CIRCUIT HOMERUN TO PANEL. SLASHES INDICATE NUMB CONDUCTORS. EQUIPMENT GROUND WIRE NOT INDICATED U.O.N. #12 CONDUCTORS ARE MINIMUM, NO HASH MARKS = MIN (2) #12
E	3/4" CONDUIT STUBBED FROM DEVICE TO ABOVE ACCESSIBLE CEILING
#8	BRANCH CIRCUIT HOMERUN, NUMBER INDICATES INCREASED CONDUCTOR SIZE, CONDUCTORS SHALL REMAIN AS INDICATED FOR SIZE THROUGHOUT THE ENTIRE CIRCUIT.
	PANELBOARD, SURFACE MOUNTED.
	PANELBOARD, RECESSED
	STEP-DOWN TRANSFORMER DISTRIBUTION SWITCHBOARD
	SURFACE MOUNTED RACEWAY
	SINGLE SECTION SERIES, NON METALLIC (WHITE) SURFACE MOUNTED RACEWAY
2	TWO SECTION SERIES, NON METALLIC (WHITE) SURFACE MOUNTED RACEWAY
SR 3	THREE SECTION SERIES, NON METALLIC (WHITE)

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.N.)

E ADJACENT TO SH-IN.

. (U.O.N.)

F.F. (U.O.N.)

URE +18" A.F.F. (U.O.N.) NS FOR REQUIRED TYPE).

SURGE

LET CONFIGURATION

LET CONFIGURATION

LET CONFIGURATION

LET CONFIGURATION

ET CONFIGURATION

LET CONFIGURATION

LET CONFIGURATION

ANEL OUTLET, SEE

NG HEIGHT.

OR DESCRIPTION)

IBER OF

GENERAL PROJECT NOTES:

- 1. UNLESS WHERE OTHERWISE NOTED, ALL WORK INDICATED ON THESE DRAWINGS SHALL BE CONSIDERED NEW WORK.
- 2. UNLESS WHERE OTHERWISE NOTED, ALL DIMENSIONS ARE TO BE CENTERLINE OF THE DEVICE.
- 3. "GENERAL NOTES" SHOWN ON AN INDIVIDUAL DRAWING APPLY TO ALL WORK SHOWN ON THAT SHEET. "KEY NOTES" ONLY APPLY TO SPECIFIC ITEMS WHERE ANNOTATED AT SPECIFIC LOCATIONS. SOME KEY NOTES MAY NOT APPLY TO ANY SPECIFIC ITEMS.
- 4. FOR TWO STORY BUILDING CONSTRUCTION, NO CONDUITS SHALL BE ROUTED HORIZONTALLY WITHIN THE FLOOR SLAB OF THE SECOND FLOOR.
- 5. UNLESS SPECIFICALLY SHOWN ON THESE PLANS, NO STRUCTURAL MEMBER SHALL BE CUT, NEITHER DRILLED NOR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE DIVISION OF THE STATE ARCHITECT.

GENERAL DEMOLITION NOTES:

- 1. ALL ELECTRICAL EQUIPMENT, EXPOSED RACEWAY AND CONDUIT, OUTLET BOXES AND RINGS, AND DEVICES ARE TO BE REMOVED, EXCEPT WHERE SHOWN TO REMAIN. EXISTING WIRING, WHETHER EXPOSED, IN CONDUIT OR RACEWAY IS TO BE REMOVED TO THE GREATEST EXTENT POSSIBLE.
- 2. THE ELECTRICAL CONTRACTOR IS TO DIRECT THE REMOVAL OF THE ABOVE LISTED WORK.

MEP COMPONENT ANCHORAGE NOTE:

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA- APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

- ALL PERMANENT EQUIPMENT AND COMPONENTS. 2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
- 3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

- A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR
- ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT. B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE
- SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26. THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS. MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP MD PP E - OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

PRE-APPROVED (OPM#) # 0052-13

GHS NEW PRESS BOX & BLEACHER

GROSSMONT HIGH SCHOOL

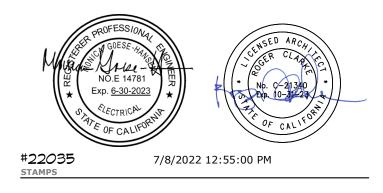
NOTES

1100 MURRAY DR, EL CAJON, CA 92020

GROSSMONT UNION HIGH SCHOOL

FIRE RATED ASSEMBLIES NOTE:

1. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT DESCRIPTION AND DETAIL OF ALL FIRE RATED ASSEMBLIES.





Communications Data Networking

12875 Brookprinter Place, Suite 300 P 858.679.4030 | F 858.513.0559















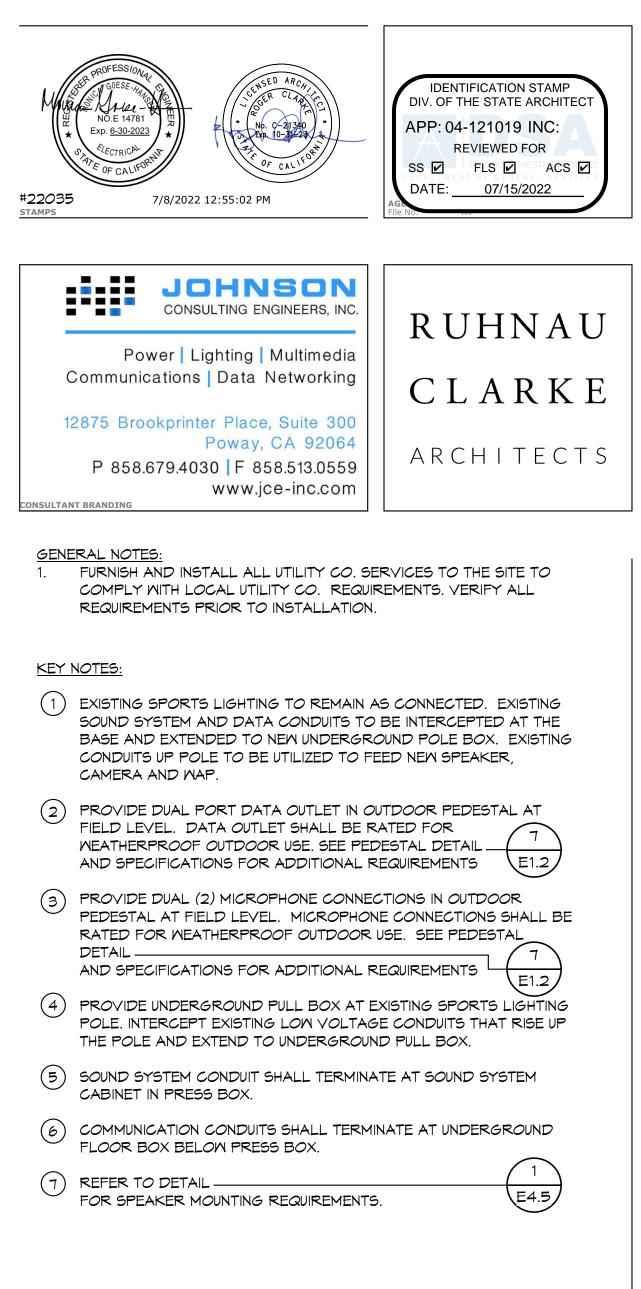


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OVERALL SITE PLAN



(E) BLDG.

(E) BLDG. 110(A#04-109668

GYMNASIUM

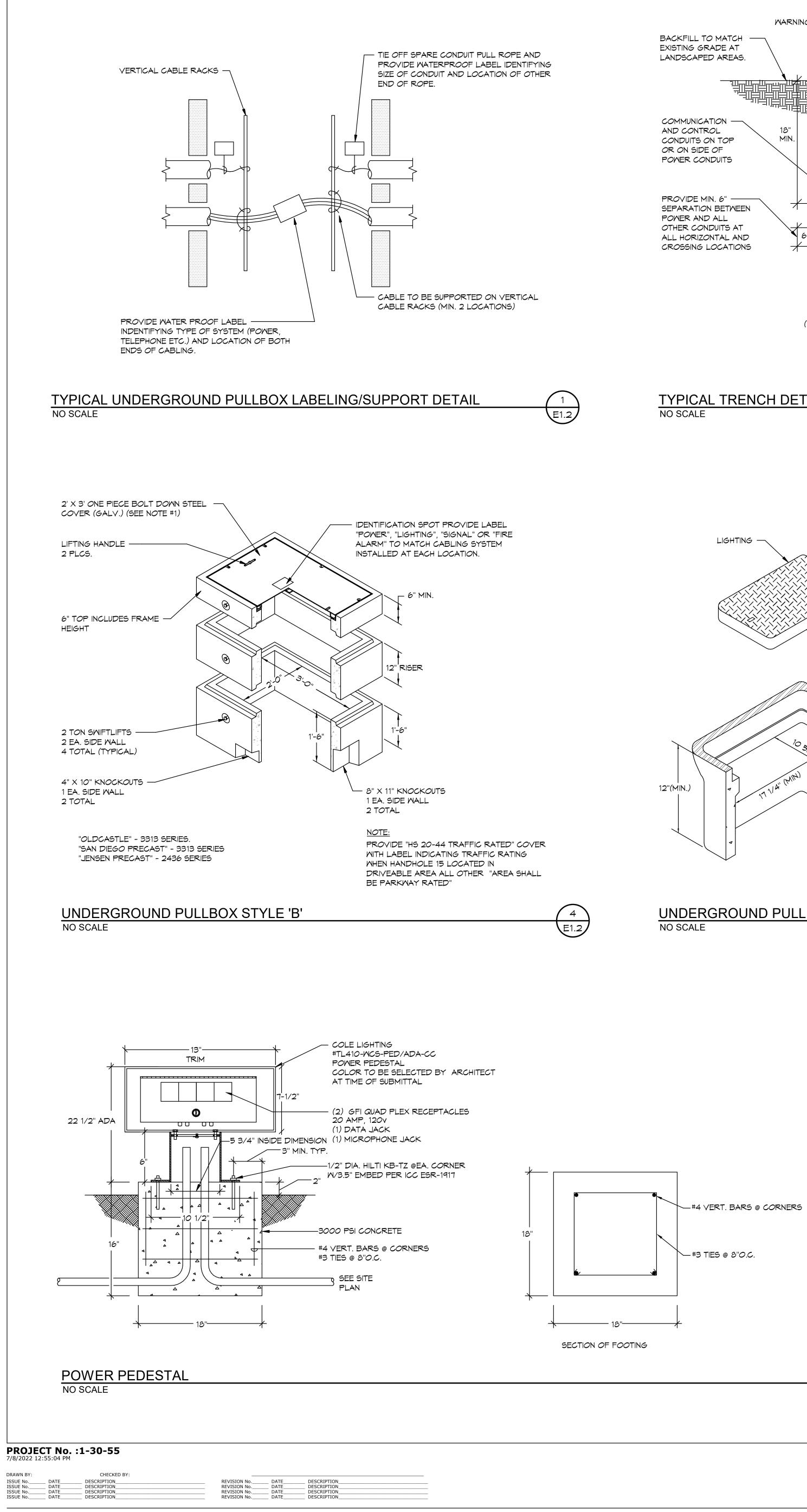
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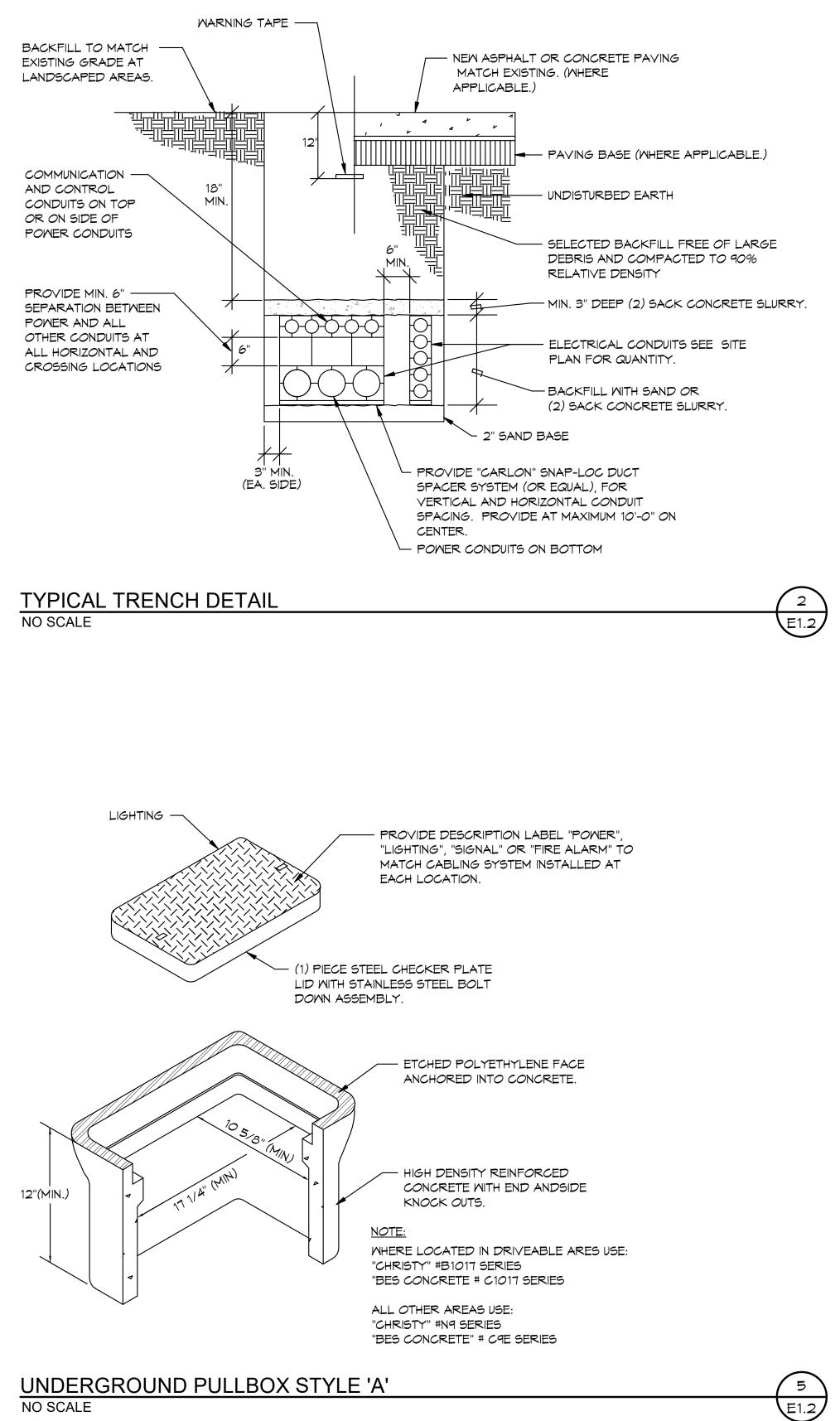
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GHS NEW PRESS BOX & BLEACHER OVERALL SITE PLAN **GROSSMONT HIGH SCHOOL** 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL

1-30-55

E1.1

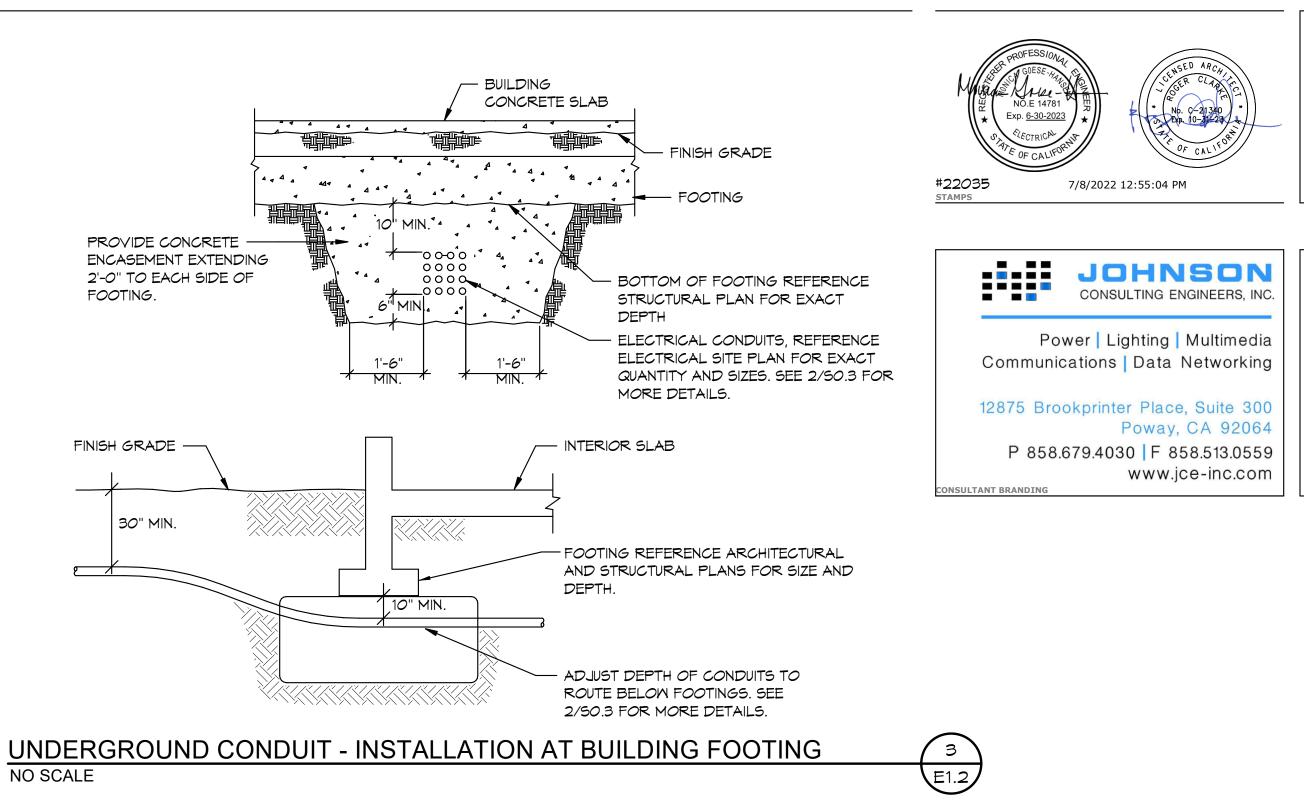


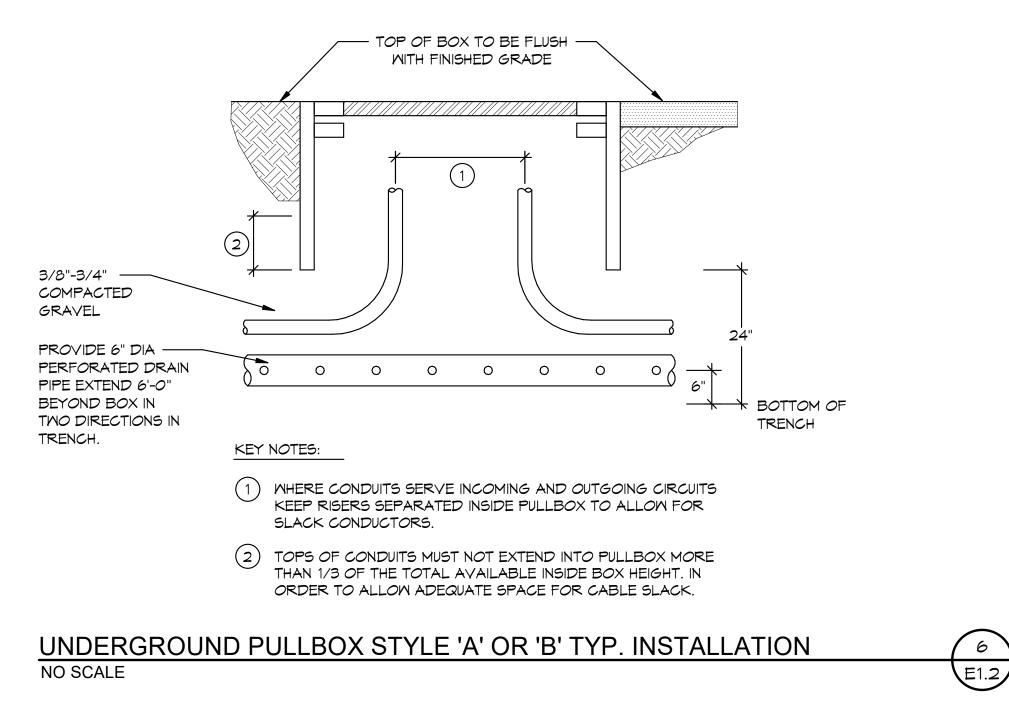


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E1.2

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SITE ELECTRICAL DETAILS









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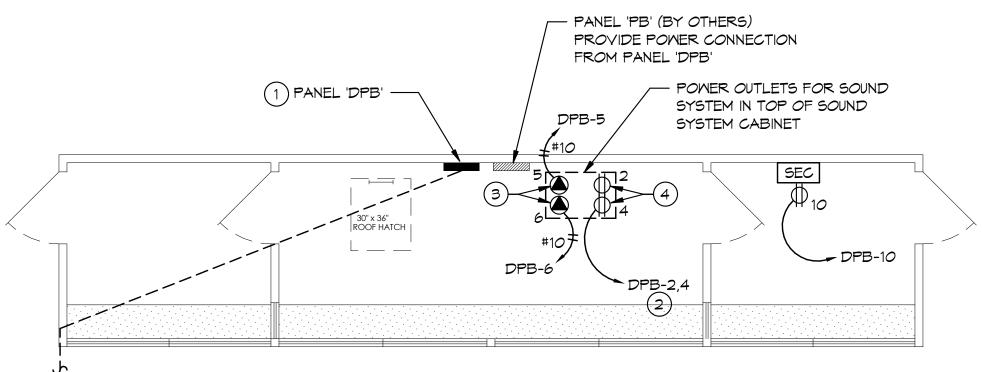
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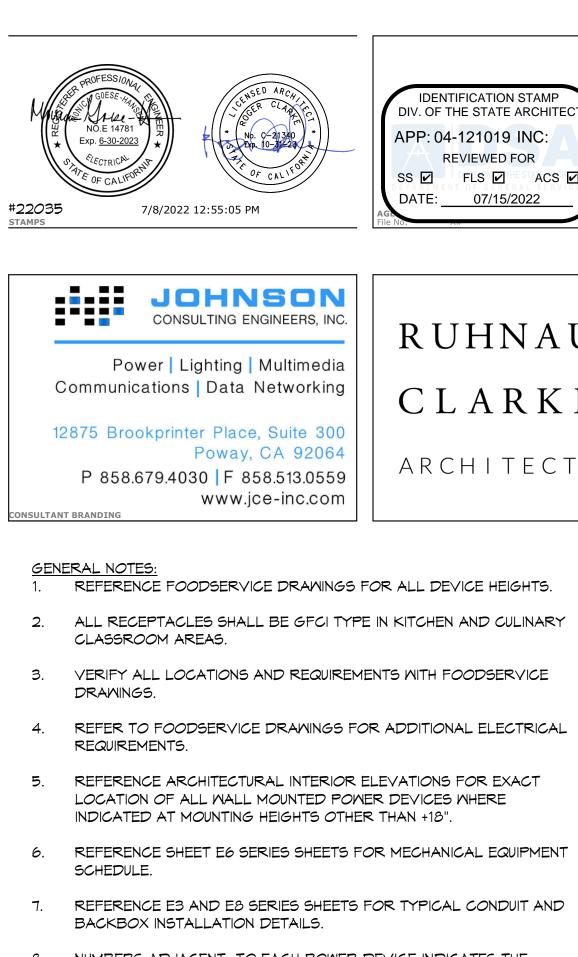
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SEE E1.1 FOR CONTINUATION



- NUMBER OF CIRCUITS TO BE GROUPED TOGETHER.
- CIRCUIT (U.O.N.).

<u>KEY NOTES:</u>

- 2 #12 (HOT), 1 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
- OO CONTRACTOR. SEE DETAIL -----

SEE DETAIL -----

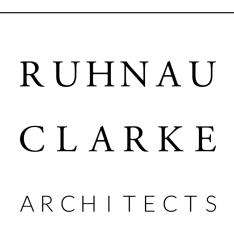


ENLARGED PRESSBOX FLOOR PLAN - POWER

GHS NEW PRESS BOX & BLEACHER PRESSBOX FLOOR GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL

PLAN - POWER





IDENTIFICATION STAMP DIV. OF THE STATE ARCHITEC

REVIEWED FOR SS 🗹 FLS 🗹 ACS 🗹

APP: 04-121019 INC:

DATE: 07/15/2022

8. NUMBERS ADJACENT TO EACH POWER DEVICE INDICATES THE CIRCUIT NUMBER TO WHICH THE DEVICE IS TO BE CONNECTED.

9. CIRCUIT HOMERUNS ARE INDICATED TO SHOW THE LOCATION AND

10. PROVIDE MINIMUM 3/4" CONDUIT AND #12 CIRCUIT CONDUCTORS AS REQUIRED TO CONNECT EACH POWER DEVICE TO THEIR INDICATED

1 FIELD VERIFY EXACT POINT OF CONNECTION AND PROVIDE FITTINGS AND J-BOX AS REQUIRED.

3 PROVIDE 30A/120V CIRCUIT FOR AMPLIFIER RECEPTACLE. DIVISION 26 CONTRACTOR SHALL HARDWIRE CIRCUIT TO POWER SEQUENCER POD IN SOUND CABINET. COORDINATE WITH 27 20 00 CONTRACTOR. SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS (4) PROVIDE 20A/120V CIRCUIT FOR SOUND SYSTEM RECEPTACLE. DIVISION 26 CONTRACTOR SHALL MOUNT DUPLEX RECEPTACLES IN

BACKCAN OF SOUND CABINET. COORDINATE LOCATIONS WITH 27 20 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS E4.7



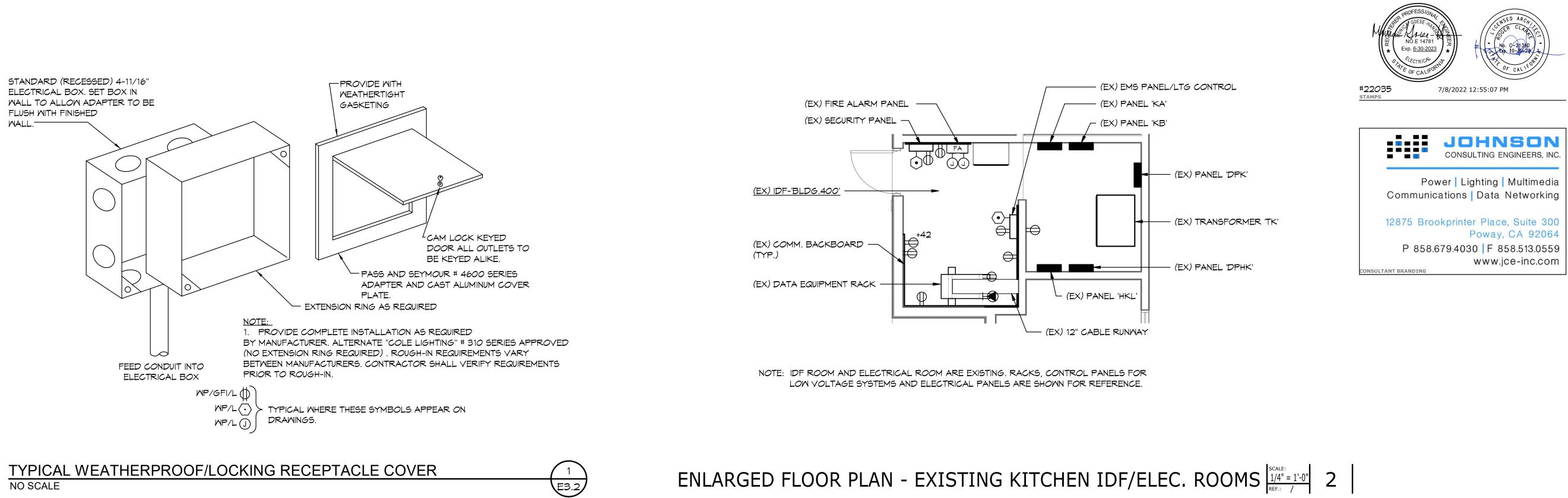
STANDARD (RECESSED) 4-11/16" ELECTRICAL BOX. SET BOX IN WALL TO ALLOW ADAPTER TO BE FLUSH WITH FINISHED MALL.-

NO SCALE

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ENLARGED FLOOR PLAN - EXISTING KITCHEN IDF/ELEC. ROOMS $\begin{vmatrix} scale: \\ 1/4'' = 1'-0'' \\ REF.: / 2 \end{vmatrix}$













	BACKBOX AND RING LEGEND	
TYPE	DESCRIPTION	SYMBO
'B1'	4 11/16" square 2 1/8" deep box with single gang ring.	
'B2'	4 11/16" square 2 1/8" deep box with dual gang ring.	
'B3'	4" square 1 1/2" deep box with single gang ring.	<u> </u>
'B4'	Single gang box, 2 1/8" deep.	() ^{2F}
'B5'	4-11/16" Square 3" deep box with dual gang ring.	<u> </u>
] (•) ^{3F}
'C1'	Provided by 27 10 00 contractor.	
'C3'	Provided by 27 20 00 contractor.	4F
'C5'	Provided by 28 13 00 contractor.	
'C6'	Provided by 28 23 00 contractor.	
'C7'	Provided by xx xx contractor.	
		\$

	TECHNOLOGY	SYMBOL L	EGEND	
SYMBOL	DESCRIPTION	BACKBOX & RING	FACE PLATE	CONDUIT / RACEWAY
Ŷ	Single port data outlet, +18" A.F.F. (U.O.N.)	Туре 'В1'	Type 'AR'	Type '1-S'
€ ^{2₽}	Dual port data outlet, +18" A.F.F. (U.O.N.)	Туре 'В1'	Type 'AR'	Туре '1-5'
€ ^{3P}	Triple port data outlet, +18" A.F.F. (U.O.N.)	Туре 'В1'	Type 'AR'	Туре '1-5'
€ ^{4₽}	Quad port data outlet, +18" A.F.F. (U.O.N.)	Туре 'В1'	Type 'AR'	Туре '1-5'
Ý	Same device as required on legend, mounted +6" above backsplash (U.O.N.)	Same as required for device indicated on legend.	Same as required for device indicated on legend.	Same as required for device indicated on legend.
<u>ب</u>	Same device as required on legend, except surface mounted box.	Same as required for device indicated on legend.	Same as required for device indicated on legend.	Same as required for device indicated on legend.
	Dual port data outlet at wireless access point location mounted in accessible ceiling (U.O.N.)	Type 'C1' See 1 Detail E4.4	Type 'C1' See 1 Detail E4.4	Not required in accessible ceiling.
	Dual port data outlet for exterior WAP Location @ height per floor plans. See detail for additional requirements.	Type 'B1' See 3 Detail E4.4	Type 'C1' See Detail 3 E4.4	Type '1-5' Not required in accessible ceiling.
	Audio-Visual Control Panel outlet with single port data outlet @+48" A.F.F. (U.O.N.) Refer to Drawing Details.	Type 'C3' Custom backbox by 272000	Туре 'СЗ'	Туре '1-5'

	FACEPLATE LEGEND
TYPE	DESCRIPTION
'AR'	As required to accommodate the number of ports designated.
'BP'	Blank faceplate.
'BP/WP'	Blank faceplate – weather-proof with gasket.

'C1'	Provided by 27 10 00 contractor.
'C3'	Provided by 27 20 00 contractor.
'C5'	Provided by 28 13 00 contractor.
'C6'	Provided by 28 23 00 contractor.
'C7'	Provided by xx xx xx contractor.

	CONDUIT / RACEWAY LEGEND			
TYPE	DESCRIPTION			
'3/4-5'	3/4" conduit stubbed from box into accessible ceiling space, unless detailed otherwise on drawings.			
'1-5'	1" conduit stubbed from box into accessible ceiling space, unless detailed otherwise on drawings.			
'11/4-5'	1 1/4" conduit stubbed from box into accessible ceiling space, unless detailed otherwise on drawings.			

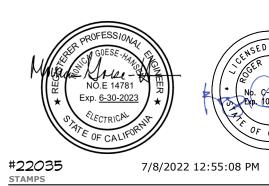
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SYMBOL	DESCRIPTION	BACKBOX & RING	FACE PLATE	CONDUIT / RACEWAY
S _A	IP-based Intercom Speaker recessed in ceiling. A=Page Zone	Туре 'С1'	Туре 'С1' (З)	Туре '3/4-5'
B 1 ⊥	IP-based Intercom Horn surface mounted on exterior wall @ +8'-0" AFF (U.O.N.) B=Page Zone	Туре 'С1'	Type 'C1'	Туре '3/4-5'
A SP MG	IP-based Clock/Speaker combination recessed in wall +8'-0" A.F.F (U.O.N.) (MG indicates wireguard) A=Page Zone	Type 'C1' installed by electrical contractor. See Detail 5 E4.4 3	Type 'C1'	Type '3/4-5'
	Sound system speaker surface mounted, height per plans (U.O.N.). ('A' equals speaker type, see specifications for complete description)	Type 'B1'	Туре 'СЗ'	Type '1-S'
€A	Sound system speaker ceiling mounted, ('A' equals speaker type, see specifications for complete description)	Туре 'СЗ'	Туре 'СЗ'	Туре '1-5'
Y	Volume control for sound system speaker mounted at +48" A.F.F. (U.O.N.) Minimum Height per detail 1/E1.0	Type 'B1'	Туре 'СЗ'	Type '3/4-5'
₽ ₹ 2 H	Microphone outlet wall mounted at +18" A.F.F.(U.O.N.). Number indicates quantity of outlets. 'WP' indicates weatherproof enclosure.	Type 'B1'	Туре 'СЗ'	Type '1-S'
KA	Security keypad wall mounted at +48" A.F.F (U.O.N.) Height per detail 1/E1.0 A=Letter Equals Zone	Type 'B2'	Туре 'С5'	Туре '3/4-5'
	Security motion sensor ceiling mounted. A=Letter Equals Zone	Туре 'ВЗ'	Туре 'С5'	Туре '3/4-5'
₩_A	Security motion sensor wall mounted at 6" below ceiling, or +10'-0" A.F.F. (U.O.N. whichever is lower. A=Letter Equals Zone	Туре 'ВЗ'	Туре 'С5'	Туре '3/4-5'
۵ _A	Security door contact. A=Letter Equals Zone	Туре 'ВЗ'	Туре 'С5'	Туре '3/4-5'
(N) H	Wall mounted exterior security camera with dual port data outlet. Height per floor plans.	Type 'B1'	Type 'BP/WP' by 271000 contractor	Туре '1-5'
© 2	Ceiling mounted interior security camera with dual port data outlet. Height per floor plans.	Type 'B1' Not required on accessible ceiling	Туре 'С1'	Type '1-S'
© © ②	Wall mounted security camera with dual port data outlet. Height as shown on floor plans.	Type 'B1'	Туре 'С1'	Туре '1-5'
DH DH	J-Box for Future Low-Voltage Devices @+18" AFF (U.O.N.)	Type 'B1'	Blank Plate Color to Match	Type '1-S'
[]	Conduit sleeve through wall, above accessible ceiling.	Not required.	Not required.	(1) 3"C. for open low voltage wiring.
<u> 2"C. </u>]	Conduit sleeve through wall, above accessible ceiling.	Not required.	Not required.	(1) Conduit for open low voltage wiring, size as indicated.
<u>[(2) 2"C.]</u>	Conduit sleeve through wall, above accessible ceiling.	Not required.	Not required.	Multiple Conduits for open low voltage wiring, size and quantity as indicated.
E	Conduit stubbed above accessible ceiling.	Not required.	Not required.	Conduit for open low voltage wiring. Refer to legend for size.
1 1/2"C.	Conduit stubbed above accessible ceiling.	Not required.	Not required.	(1) conduit for open low voltage wiring. size as indicated.
(2) 1"C.	Conduit stubbed above accessible ceiling.	Not required.	Not required.	Conduit for open low voltage wiring. size and quantity as indicated.

COMMUNICATION / SECURITY SYMBOL LEGEND



JOHNSON CONSULTING ENGINEERS, INC.

Power Lighting Multimedia Communications | Data Networking

12875 Brookprinter Place, Suite 300 Poway, CA 92064 P 858.679.4030 | F 858.513.0559 www.jce-inc.com

GENERAL NOTES:

- CONTRACTOR.
- REQUIREMENTS.
- COMMUNICATIONS ROOMS.

- REQUIREMENTS.
- BID.
- SECTION RESPONSIBLE FOR THIS WORK.

- MINIMUM 24" RADIUS ELBOWS.
- THE DRAWINGS.

KEY NOTES:

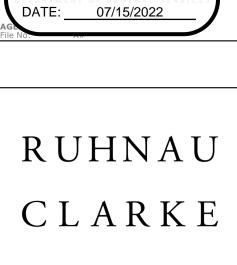
- AND INSTALLED BY 271000 CONTRACTOR.
- ADDITIONAL REQUIREMENTS.

COMMUNICATION **LEGEND & NOTES**

GHS NEW PRESS BOX & BLEACHER GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL







ARCHITECTS

IDENTIFICATION STAMP DIV. OF THE STATE ARCHITEC

REVIEWED FOR SS 🗹 FLS 🗹 ACS 🗹

APP: 04-121019 INC:

1. ALL CONDUITS WHICH ARE REQUIRED AS A PART OF SYSTEMS SPECIFIED FOR COMMUNICATIONS, TELEPHONE, INTERCOM, CLOCK FIRE ALARM, SECURITY, SOUND SYSTEMS, DATA NETWORKING, OR AUDIO-VISUAL SYSTEMS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL

2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT REQUIREMENTS WITH EACH SYSTEM SUPPLIER PRIOR TO BID TO DETERMINE SPECIAL CONDUIT SYSTEM

3. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT SLEEVES FOR ALL OPEN CABLE INSTALLATIONS THROUGH RATED WALLS, BLOCK WALLS AND WHERE SHOWN ON THE DRAWINGS. PROVIDE CONDUIT FROM EACH BUILDING MAIN TERMINATION CABINET OR BACKBOARD TO THE NEAREST ACCESSIBLE CEILING FOR ACCESS INTO ALL ELECTRICAL OR

4. ALL CONDUIT, BOXES, AND RINGS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.

5. ALL BLANK PLATES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. (UNLESS OTHERWISE NOTED)

6. ALL CONDUITS SHALL BE FURNISHED WITH PULL STRINGS BY ELECTRICAL CONTRACTOR. COMMUNICATION CONTRACTOR TO PROVIDE POLYARIMID PULL TAPE WITH NEW CABLING INTO ALL CONDUITS BETWEEN BUILDINGS. SEE SPECIFICATIONS FOR

7. CONTRACTOR TO REVIEW ARCHITECTURAL CEILING PLANS TO DETERMINE LOCATIONS OF ACCESSIBLE CEILINGS PRIOR TO

8. (271000) NUMBERS INDICATE MATCHING SPECIFICATION

9. IN ADDITION TO THE ABOVE REQUIREMENTS, THE FOLLOWING REQUIREMENTS SHALL APPLY TO ALL DATA, VOICE, PAGING, AUDIO-VISUAL, SECURITY AND CLOCK CONDUITS:

10. FLEXIBLE METAL CONDUIT MAY BE USED ONLY WHERE REQUIRED AT BUILDING SEISMIC AND/OR EXPANSION JOINTS.

11. ALL UNDERGROUND CONDUITS SHALL BE PROVIDED WITH

12. NO LENGTH OF CONDUIT SHALL BE INSTALLED TO EXCEED 150 FEET BETWEEN PULL BOXES, OR POINTS OF CONNECTION, UNLESS WHERE SPECIFICALLY DETAILED ON THE DRAWINGS.

13. NO LENGTH OF CONDUIT SHALL BE INSTALLED TO EXCEED TWO 90 DEGREE BENDS BETWEEN PULL BOXES, OR POINTS OF CONNECTION, UNLESS WHERE SPECIFICALLY DETAILED ON

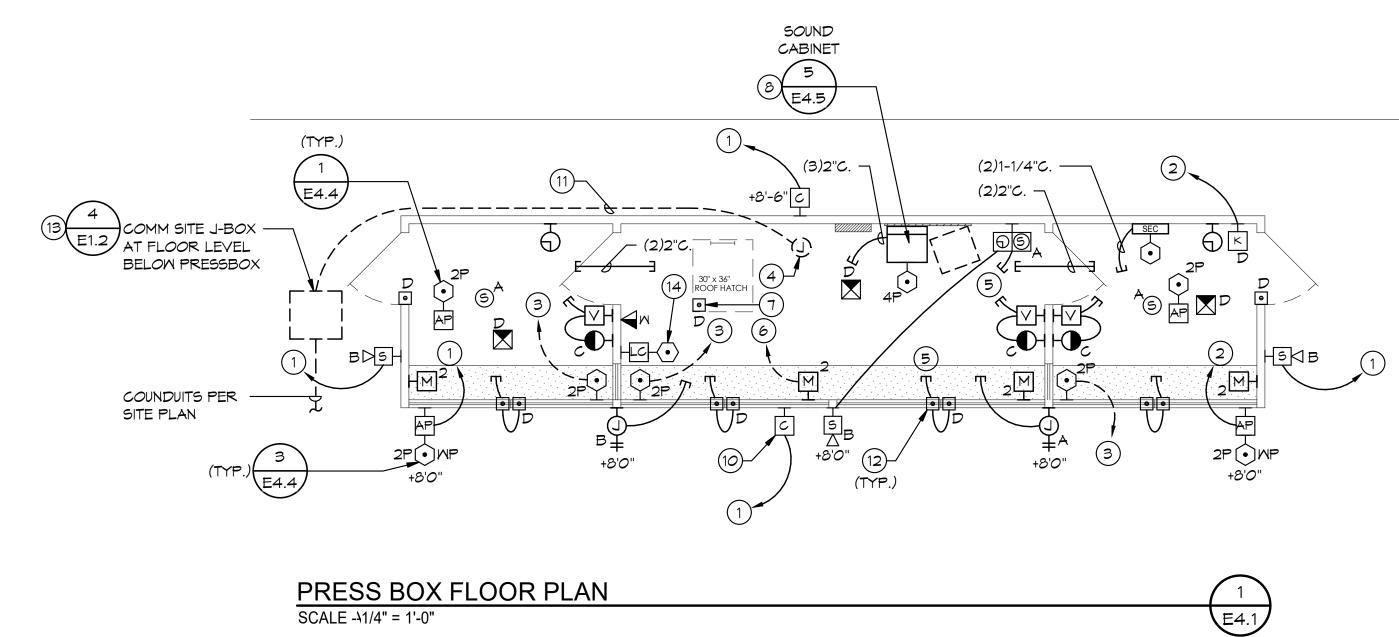
(1) VOICE/DATA CABLING AND FACEPLATE FOR SYMBOL FURNISHED

(2) SPEAKER, SPEAKER/CLOCK OR HORN BACKBOX AND DEVICE TO BE FURNISHED BY 271000 CONTRACTOR. BACKBOX TO BE INSTALLED BY THE DIVISION 26 CONTRACTOR.

(3) CAMERA LOCATIONS SHALL BE FURNISHED WITH (2) DATA CABLES TERMINATED ON SURFACE MOUNT JACK INSTALLED IN JUNCTION BOX. DATA CONNECTIONS FURNISHED AND INSTALLED BY 271000 CONTRACTOR. SEE SPECIFICATIONS FOR







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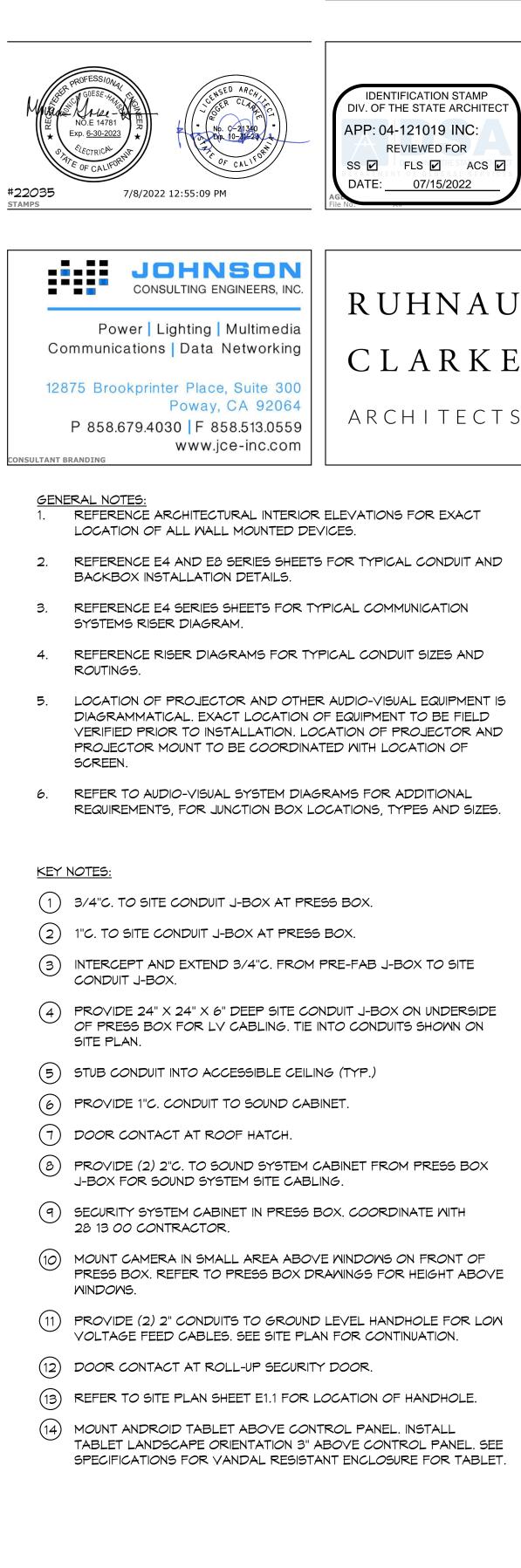
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PRESSBOX FLOOR PLAN - COMMUNICATIONS

GHS NEW PRESS BOX & BLEACHER GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL







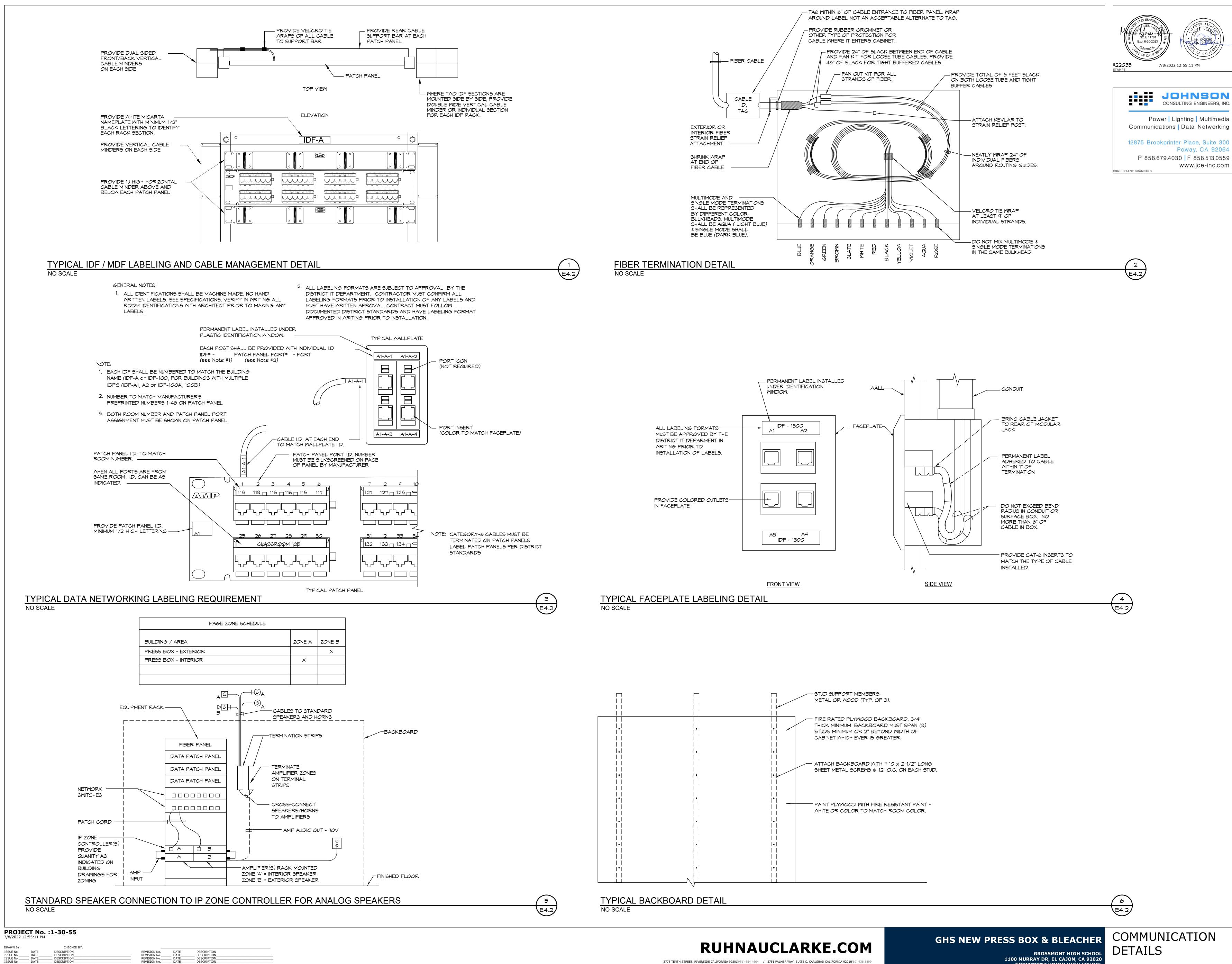
LOCATION OF PROJECTOR AND OTHER AUDIO-VISUAL EQUIPMENT IS DIAGRAMMATICAL. EXACT LOCATION OF EQUIPMENT TO BE FIELD VERIFIED PRIOR TO INSTALLATION. LOCATION OF PROJECTOR AND PROJECTOR MOUNT TO BE COORDINATED WITH LOCATION OF

REFER TO AUDIO-VISUAL SYSTEM DIAGRAMS FOR ADDITIONAL REQUIREMENTS, FOR JUNCTION BOX LOCATIONS, TYPES AND SIZES.

TABLET LANDSCAPE ORIENTATION 3" ABOVE CONTROL PANEL. SEE SPECIFICATIONS FOR VANDAL RESISTANT ENCLOSURE FOR TABLET.



E4.1



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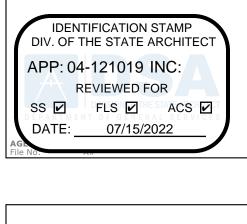
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1100 MURRAY DR, EL CAJON, CA 92020 **GROSSMONT UNION HIGH SCHOOL**





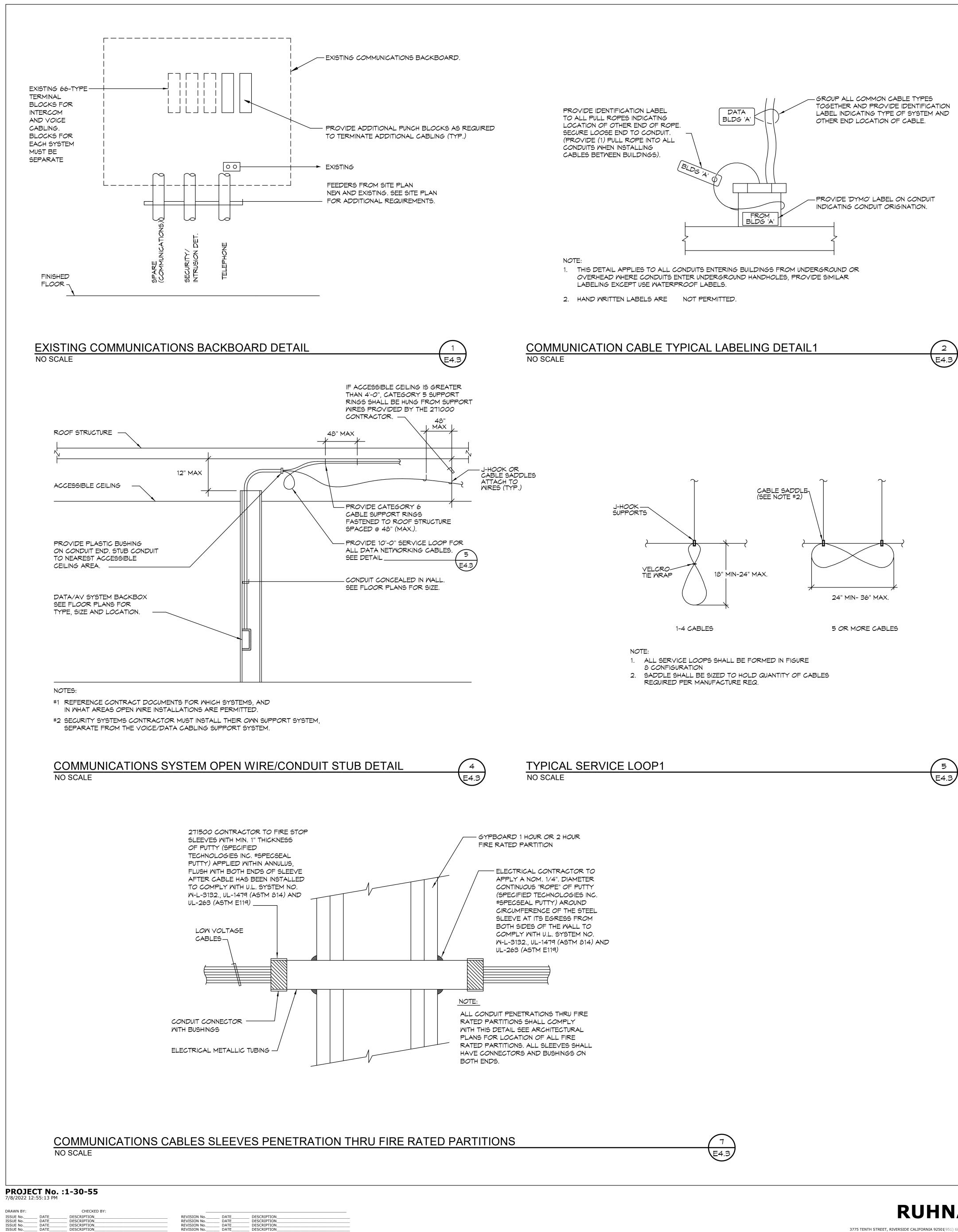


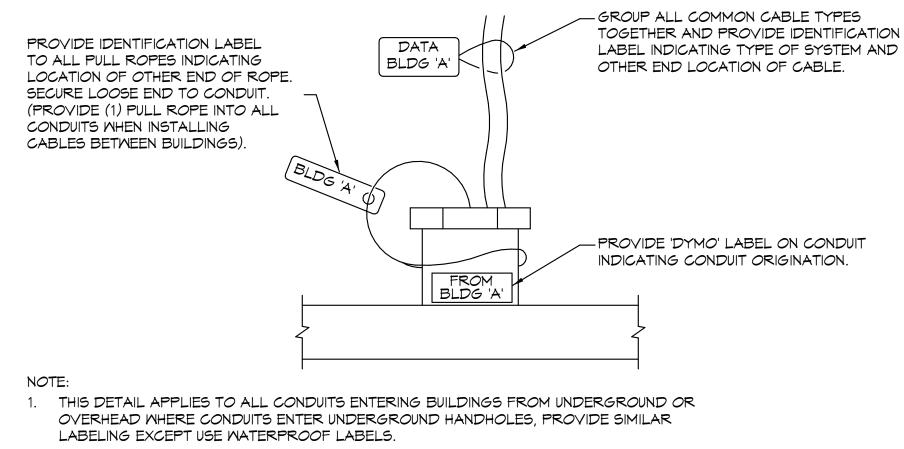




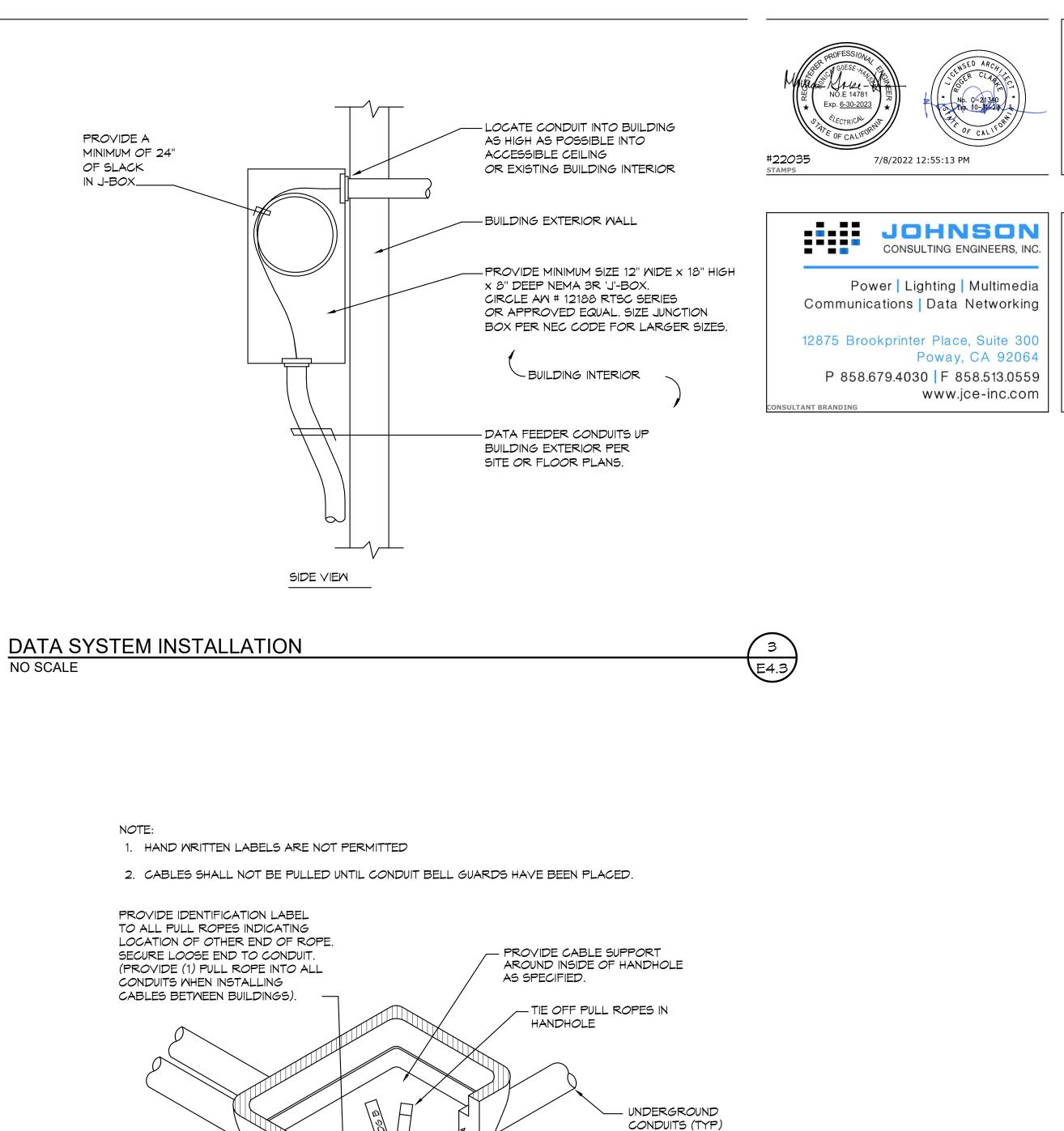








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GROUP ALL COMMON CABLE TYPES

OTHER END LOCATION OF CABLE.

TOGETHER AND PROVIDE IDENTIFICATION LABEL INDICATING TYPE OF SYSTEM AND

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CONDUIT

NO SCALE

BELL GUARDS

USE WATERPROOF LABELS

COMMUNICATIONS HANDHOLE LABELING DETAIL (TYP)

COMMUNICATION DETAILS

6

E4.3

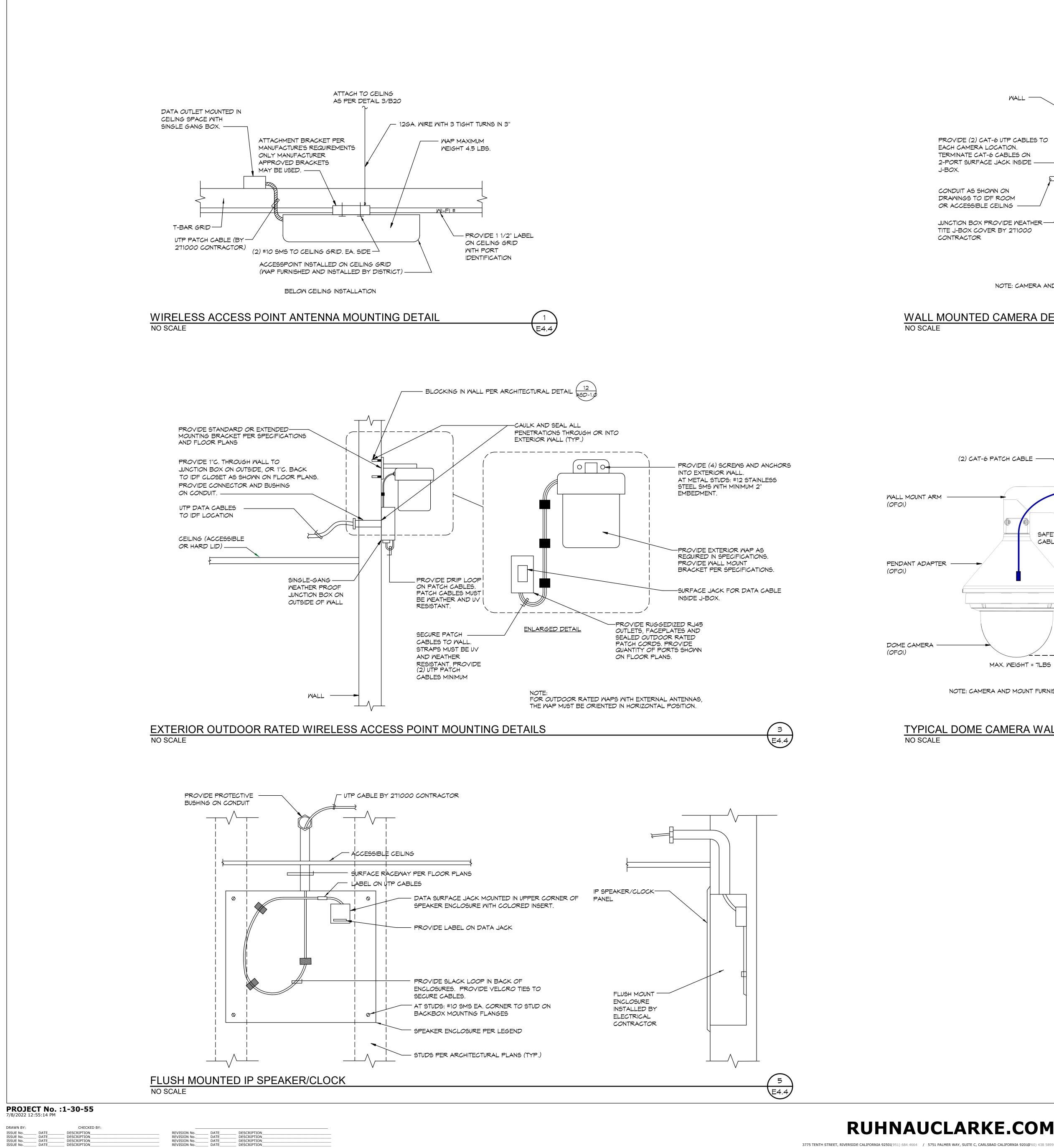




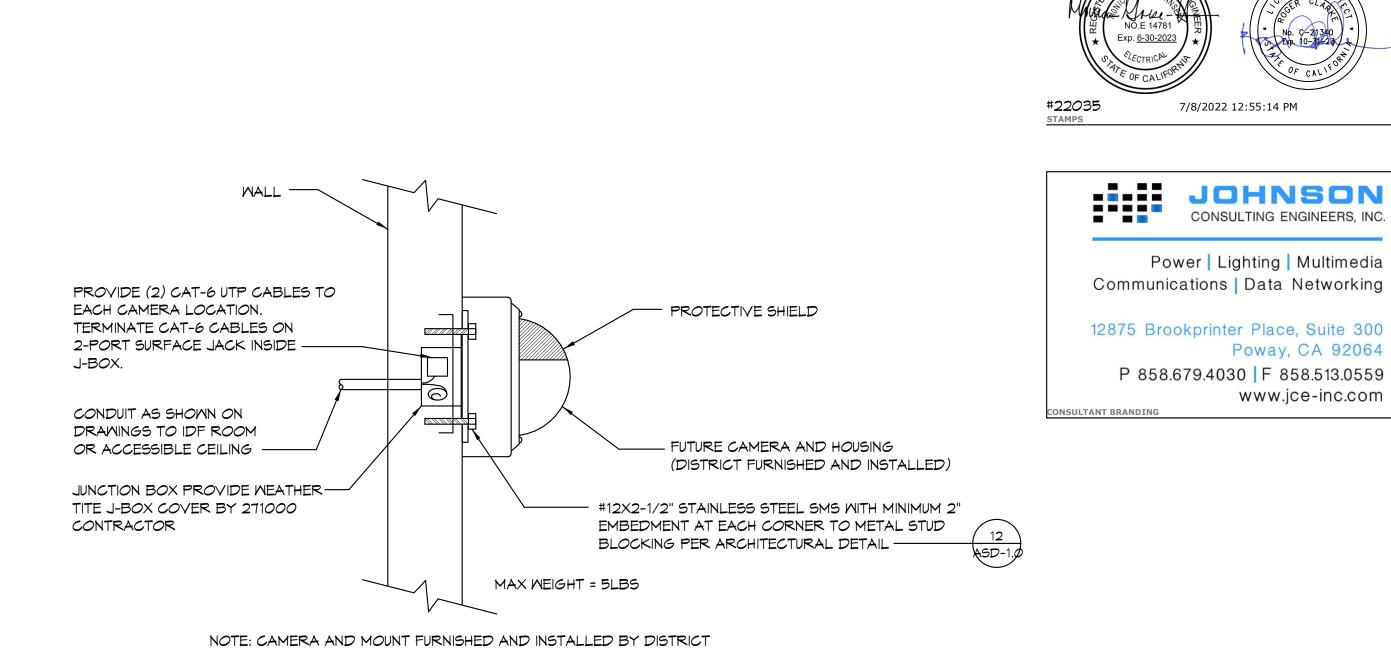








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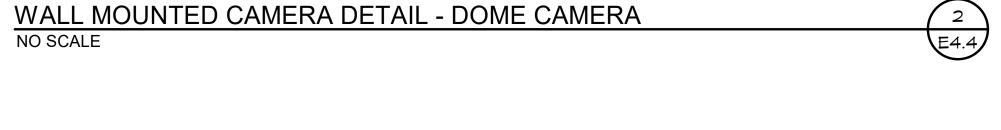
WALL MOUNT ARM (*O*F*O*I)

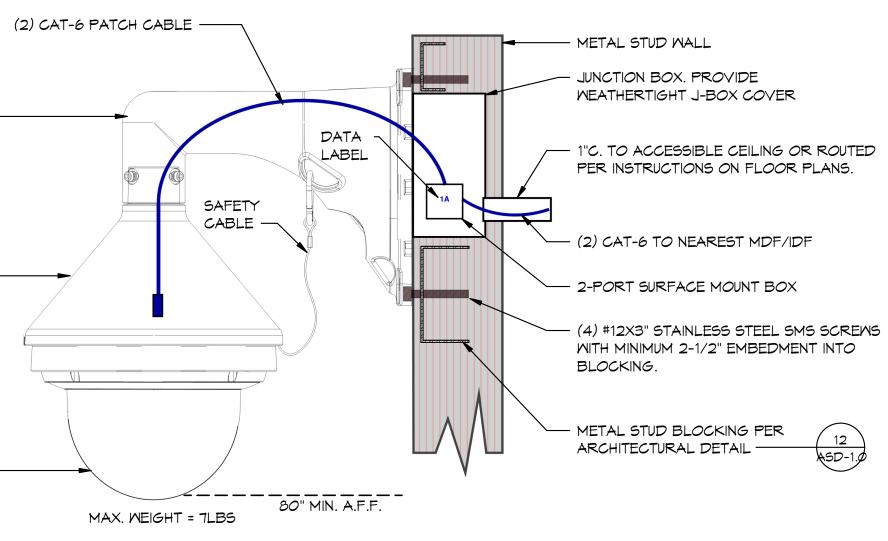
PENDANT ADAPTER

(OFOI)

DOME CAMERA -(OFOI)







NOTE: CAMERA AND MOUNT FURNISHED AND INSTALLED BY DISTRICT

TYPICAL DOME CAMERA WALL MOUNT



4

E4.4







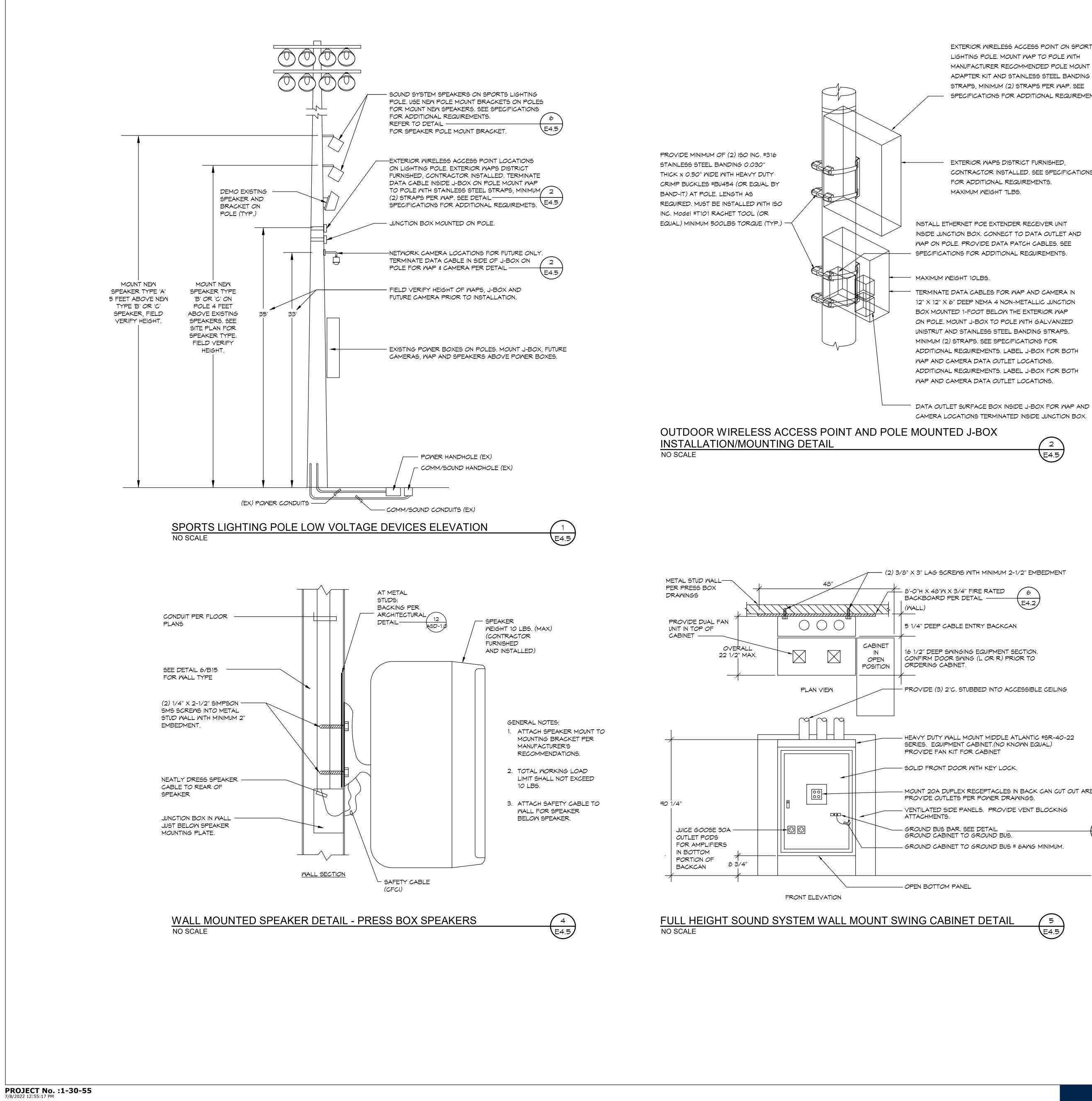












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AUDIO-VISUAL SYSTEM DETAILS

NO.E 1478

Exp. <u>6-30-2023</u>

#22035

- GROUNDING LUG OR

TERMINAL CONNECTION

 $\neg \neg$

- COMMUNITY SPEAKER

PER FLOOR PLANS

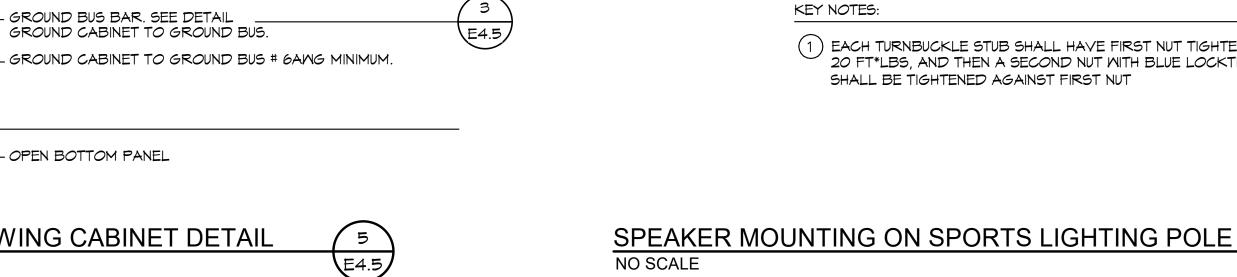
MAX WT = 130LBS.

20 FT*LBS, AND THEN A SECOND NUT WITH BLUE LOCKTITE

SHALL BE TIGHTENED AGAINST FIRST NUT

STAMPS





- MOUNT 20A DUPLEX RECEPTACLES IN BACK CAN CUT OUT AREA. PROVIDE OUTLETS PER POWER DRAWINGS. - VENTILATED SIDE PANELS. PROVIDE VENT BLOCKING 3

2

E4.5

PROVIDE FAN KIT FOR CABINET - SOLID FRONT DOOR WITH KEY LOCK.

HEAVY DUTY WALL MOUNT MIDDLE ATLANTIC #SR-40-22 SERIES. EQUIPMENT CABINET.(NO KNOWN EQUAL)

- PROVIDE (3) 2"C. STUBBED INTO ACCESSIBLE CEILING

6

\E4.2/

EXTERIOR WIRELESS ACCESS POINT ON SPORTS

LIGHTING POLE. MOUNT WAP TO POLE WITH

MANUFACTURER RECOMMENDED POLE MOUNT ADAPTER KIT AND STAINLESS STEEL BANDING

STRAPS, MINIMUM (2) STRAPS PER WAP. SEE

EXTERIOR WAPS DISTRICT FURNISHED,

FOR ADDITIONAL REQUIREMENTS.

MAXIMUM WEIGHT 7LBS.

CONTRACTOR INSTALLED. SEE SPECIFICATIONS

NOTE:

AUDIO/VISUAL

CONTRACTOR

(EX) GROUND BUS BAR ____

NO SCALE

ALL EQUIPMENT AND LABOR SHOWN TO BE

PROVIDE "CPI # 10622-010" GROUND BAR ASSEMBLY OR EQUAL.

AUDIO VISUAL CABINET GROUNDING DETAIL

EXISTING SPORTS

POLAR FOCUS POLE MOUNT -

#PM1-17-G @ HEIGHT SHOWN 1

SPEAKER BRACKET MODEL

IN DETAIL ------

LIGHTING POLE (TYP.) ----

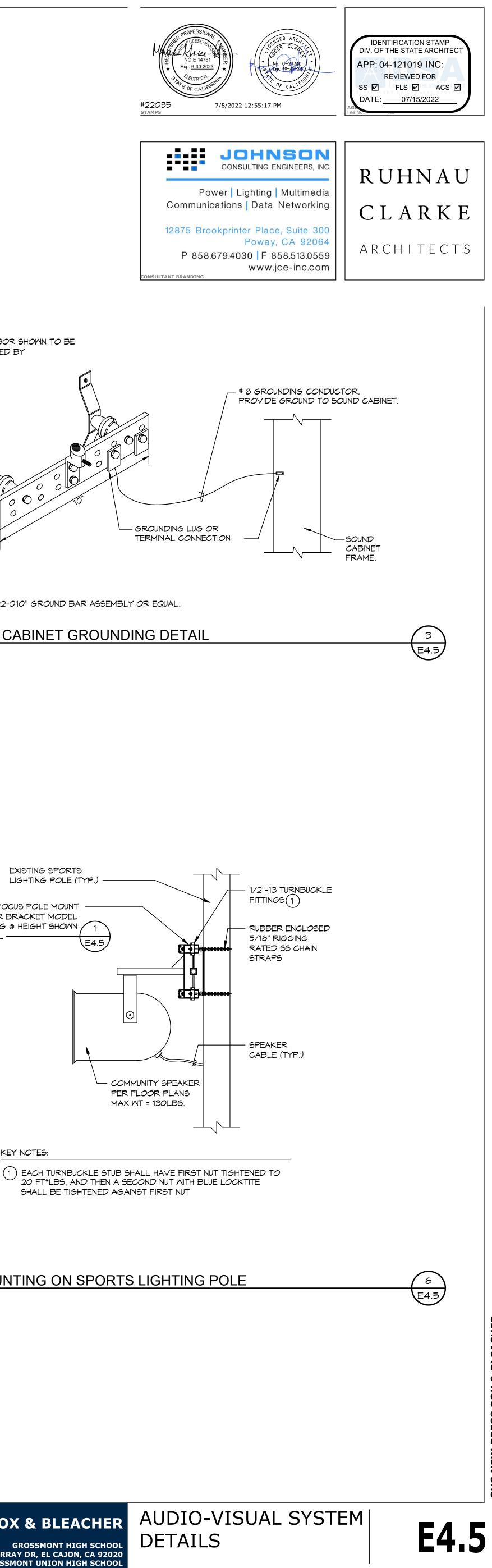
\E4.5/

FURNISHED AND INSTALLED BY

SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

16 1/2" DEEP SWINGING EQUIPMENT SECTION. CONFIRM DOOR SWING (L OR R) PRIOR TO

5 1/4" DEEP CABLE ENTRY BACKCAN



Contractor Field Furnished and Installed Items include:

All items furnished and installed by the 27 20 00 Contractor unless otherwise noted. Contractor shall include AV Patch cables, CAT-6 UTP Patch cables, AV Installation Cables, ETC. Contractor shall refer to specifications for additional materials and equipment requirements. Not all items required are shown on this diagram, listed materials are shown for reference only. Exact quantities of materials are to be confirmed by the Contractor prior to bid. Part numbers are to be confirmed by the Contractor prior to bid. Contractor shall refer to the specifications for additional requirements.

Note: Patch Cables shown on diagram with dashed lines

Detail Key Notes:

- Route antenna cable extensions from wireless microphone receivers to antennas mounted on the Exterior of the Press Box. Refer to the floor plans for antenna locations. Provide cables and connectors as required to allow coverage from Field and Stadium.
- Route antenna cable extension from ADA Transmitter to antenna mounted on the (2) Exterior of the Press Box. Refer to the floor plans for antenna location. Provide cables and connectors as required to allow coverage of the Field and Stadium.
- Terminate data cable for Sound System Cabinet location on surface mount box inside Cabinet. Coordinate with 271000 Contractor.
- Sequenced power outlet "Pods" for amplifiers furnished and installed by 272000 (4) Contractor. Power to be hard-wired by Division 26 Contractor. Coordinate location and power connection with Division 26 Contractor.
- 5 Provide quantity microphones and outlets where shown on the floor plans. All hard-wired microphone outlets shall be routed to the Main Mixer Unit hard-wired microphone outlets shall be routed to the Main Mixer Unit.
- Provide brackets for the Outdoor speakers on the Sports Lighting Poles. Refer to (6) the Sports Lighting Poles Elevation Detail for the heights and locations of the mounting bracket points on the poles. Refer to the specifications.
- Mount Indoor Wall Mount Speakers in the Press Box. Refer to the Wall Mounted (7) Speaker Detail for the mounting requirements. Refer to the specifications for additional requirements.
- 8 Not Used
- Provide Power Sequencer cable from the GQ-1520 controlling Sequencer in the 9 Sound Cabinet to the TLC Control Panel in the Press Box for remote start-up of Sound System. See specifications for requirements.
- 10 Provide Stage Box Expansion for Mixer for microphones in Sound System Cabinet.
- Provide extension of Bluetooth Antenna to top of the Sound System Cabinet. Mount Antenna on the top panel of the Cabinet enclosure.
- Provide Security Mount for Android tablet at Announcer's Table where shown on Provide Security Mount for Android tablet at Announcer's Table where shown
 the floor plans. Mount Tablet in Landscape orientation 3" above TLC Control Panel. See specifications for requirements.
- Mount TLC Control Panel below Android Tablet Enclosure on wall. Provide (13) custom backbox for TLC Control Panel. See floor plans for location. See specifications for additional requirements.
- (14) Not Used
- Connect Mixer directly to Data Outlet in Sound Cabinet. Mixer shall be identified (15) on the Network for Access to Authorized Users to control the Mixer using the Yamaha APP.
- Connect Second Amplifier to Main Amplifier for the BV Network Connection for Remote Programming.
- Contractor Furnished and Installed Exterior WAP for Sound System connections only. Mount WAP on front of Press Box where shown on Floor Plans. WAP shall be provided with High Gain Exterior Antennas for coverage of Football Field. WAP shall be used for remote control of Mixer and Sound System with Android Tablet. See specifications for additional requirements..

Network Switch w/PoE (Owner Furnished and Installed)

___ _____ _____

Data Patch Panel (Furnished and Installed by 271000 Contractor)

STADIUM SOUND SYSTEM DIAGRAM NO SCALE

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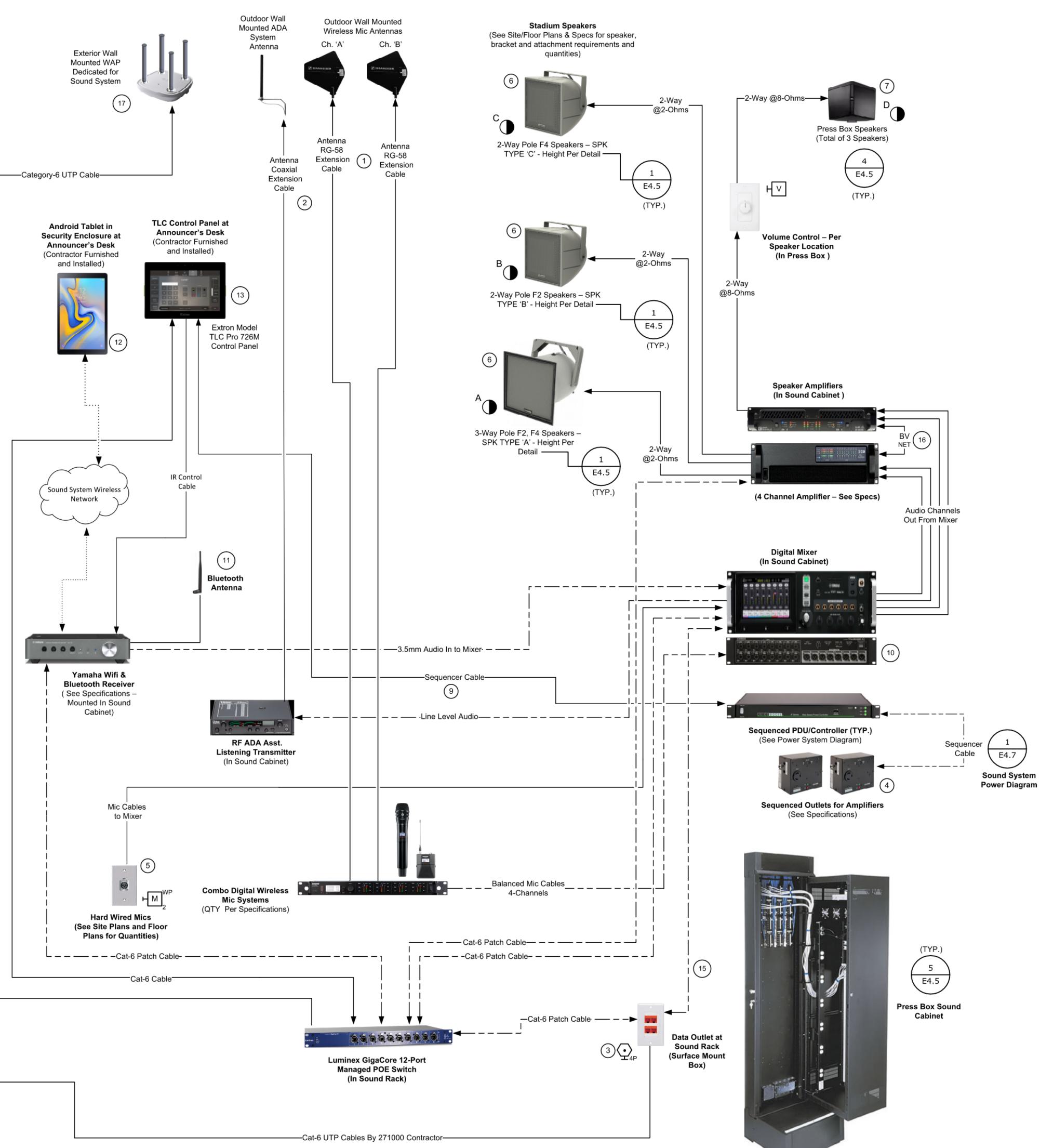
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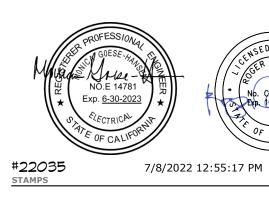
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Grossmont HS Stadium Sound System Diagram

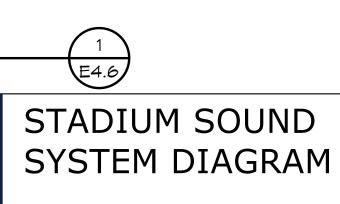
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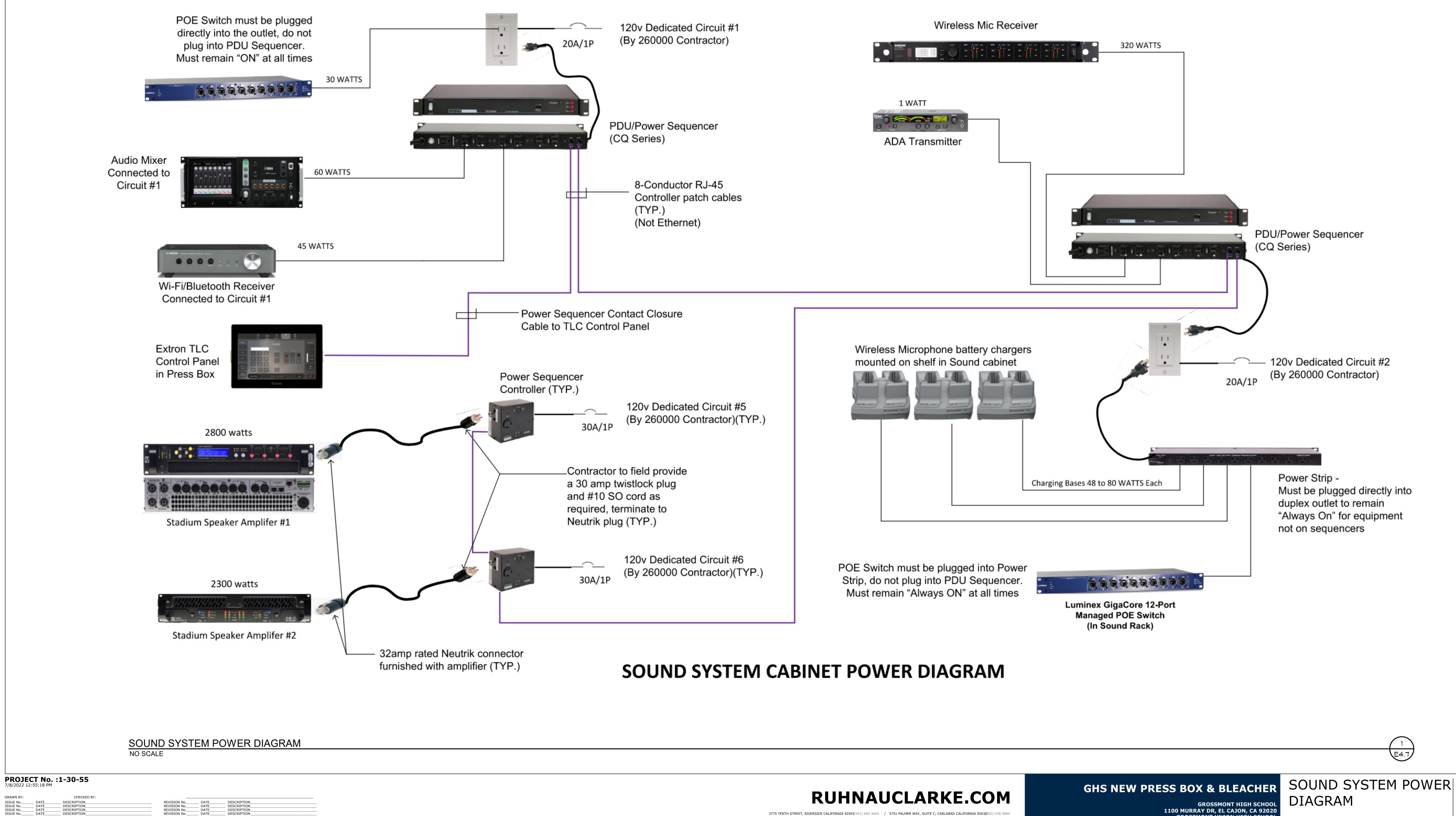






Contractor Field Furnished and Installed Items include:

All items furnished and installed by the 27 20 00 Contractor unless otherwise noted. Contractor shall refer to specifications for additional materials and equipment requirements. Not all items required are shown on this diagram, only major equipment devices are shown for reference.



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E4.7

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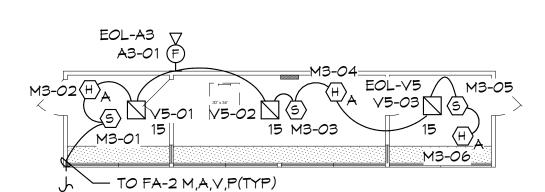
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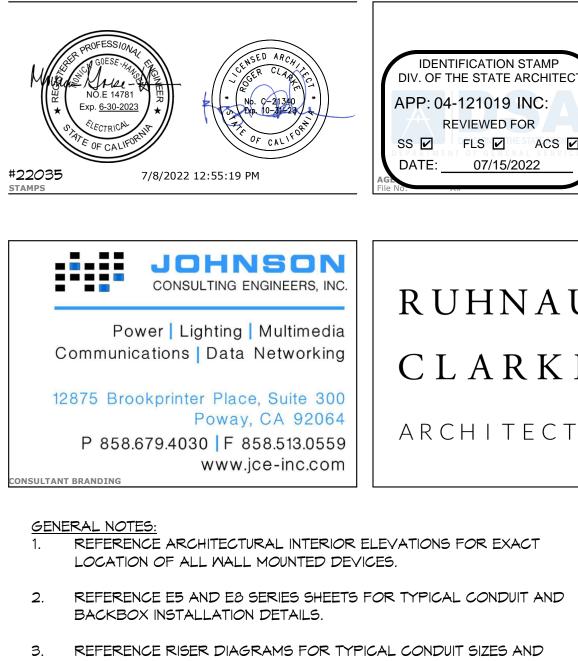
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	FIRE ALARM SYMBOLS LEGEND:
\square_{15}	CEILING MOUNTED FLASHING LIGHT STROBE (15 = STROBE CANDELA RATING) (VI = SIGNAL CIRCUIT IDENTIFICATION VISUAL)
AI,∨1 001 15	CEILING MOUNTED COMBINATION HORN/STROBE (15 = STROBE CANDELA RATING) (VI = SIGNAL CIRCUIT IDENTIFICATION VISUAL) A1=AUDIO TAP AT 1/4 WATT (U.O.N.)
AI H€⊂⊄	WALL MOUNTED WEATHERPROOF EXTERIOR SPEAKER MOUNTED +90" A.F.F. TO BOTTOM OF DEVICE (AI = SIGNAL CIRCUIT IDENTIFICATION AUDIO) TAP AT 2 WATT (U.O.N.)
S	CEILING MOUNTED SMOKE DETECTOR
$\langle H \rangle$	CEILING MOUNTED HEAT DETECTOR
FACP	MAIN FIRE ALARM CONTROL PANEL
FA	REMOTE FIRE ALARM POWER EXTENDER
TP	NETWORK TRANSPONDER
KHS	KITCHEN HOOD FIRE SUPPRESSION SYSTEM CONTROL PANEL
DSM	DUAL SYNC MODULE (SEE RISER DIAGRAM FOR LOCATION)
R	ADDRESSABLE RELAY MODULE
М	ADDRESSABLE MONITOR MODULE
EOL-A	END OF LINE RESISTOR AUDIO
EOL-V	END OF LINE RESISTOR VISUAL



4. REFERENCE MECHANICAL PLANS FOR EXACT LOCTION OF ALL DUCT DETECTORS AND SMOKE DAMPER LOCATIONS.

5. UNLESS OTHERWISE NOTED SOLID LINES BETWEEN DEVICES SHALL BE 1" E.M.T. ROUTED CONCEALED ABOVE CEILINGS OR IN WALLS. DASHED LINES INDICATE 1" P.V.C. UNDERGROUND CONDUIT. ALL WIRING TO BE PROVIDED PER MANUFACTURER SHOP DRAWINGS.

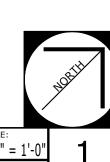
- INDICATED.
- SUBJECT TO CONTACT.

KEY NOTES:

- FOR CIRCUIT INFORMATION.
- (3) PROVIDE CONNECTION TO AIR CONDITIONING CONTROL CIRCUIT FOR AUTOMATIC SHUT OFF OF UNIT UPON SMOKE DETECTION, VL.

FIRE ALARM NOTE: THIS FIRE ALARM DESIGN IS A COMPLETE PLAN SUBMITTAL IN ACCORDANCE WITH 2019 CBC 907.1.

FULLY AUTOMATIC FIRE ALARM DESIGN: THIS PROJECT IS DESIGNED TO COMPLY WITH ALL REQUIREMENTS FOR A FULLY PROTECTED AUTOMATIC FIRE ALARM SYSTEM.



PRESSBOX FLOOR PLAN - FIRE ALARM

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GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL

GHS NEW PRESS BOX & BLEACHER PRESSBOX FLOOR PLAN - FIRE ALARM





INITIATION ZONE CIRCUIT IDENTIFICATIONS.

6. CONTRACTOR SHALL PROVIDE CEILING ACCESS PANEL AT ALL NON-LAYIN TYPE CEILINGS, WHERE HEAT DETECTOR ABOVE CEILING IS

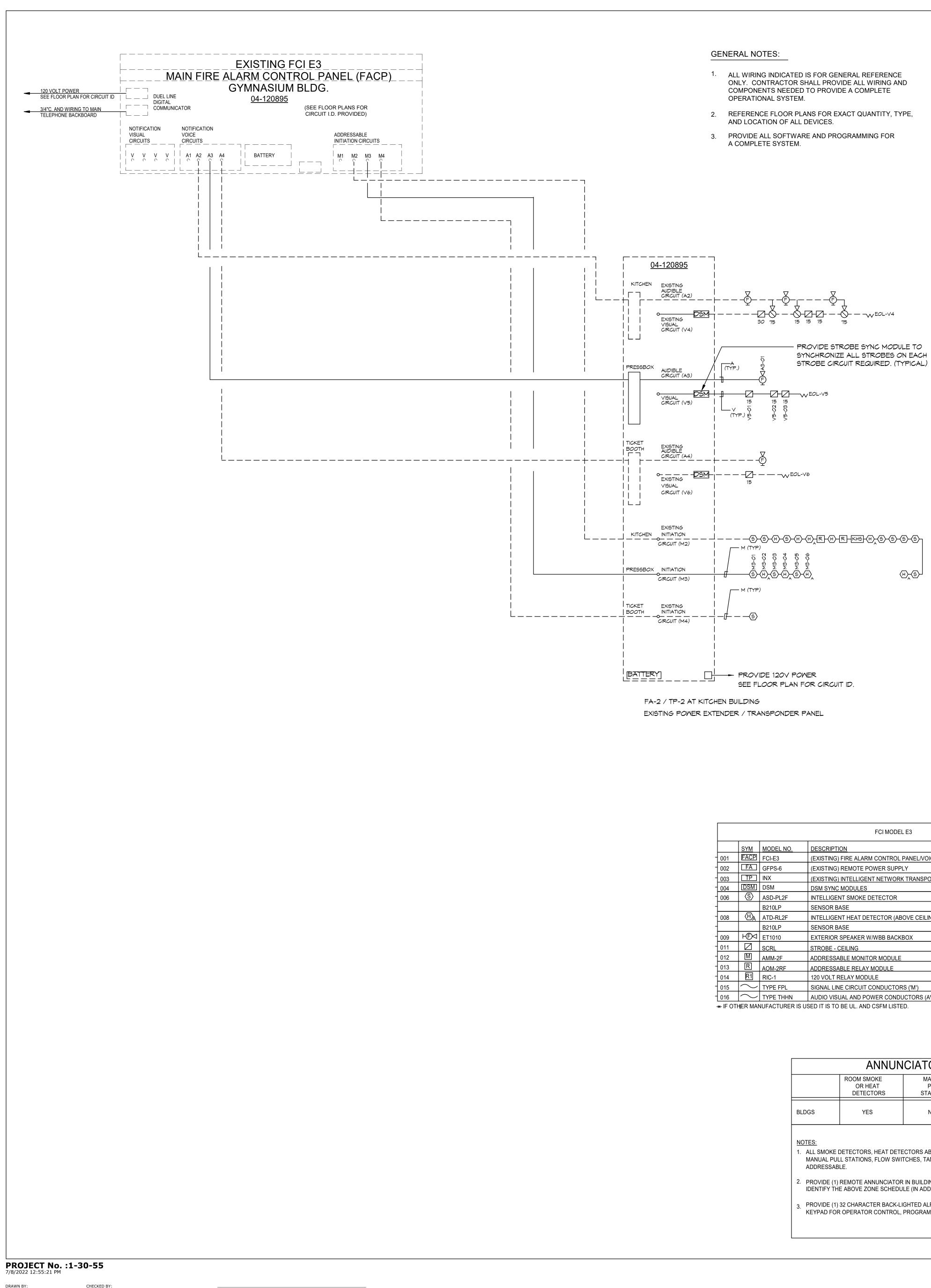
7. PROVIDE WIRE PROTECTIVE GUARD OVER ALL FIRE ALARM DEVICES LOCATED IN THE FOLLOWING AREAS: GYMNASIUM, LOCKER ROOMS, SHOP AREAS, AND ANY OTHER AREA WHERE DEVICES MAY BE

1 PROVIDE DEDICATED 120 VOLT CIRCUIT TO PANELS CONNECT TO "RED LOCK ON BREAKER". REFER TO POWER E3 SERIES SHEETS

2 PROVIDE CONNECTION TO "FACP", REFER TO SITE PLAN SHEET E1.1.

1-30-55

E5.1



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			FCI MODEL E3		
	<u>SYM</u>	MODEL NO.	DESCRIPTION	C.S.F.M. LISTING	MFG.
001	FACP	FCI-E3	(EXISTING) FIRE ALARM CONTROL PANEL/VOICE EVAC	7165-1703:0125	GAMEWELL F
002	FA	GFPS-6	(EXISTING) REMOTE POWER SUPPLY	7300-1703:0167	GAMEWELL F
003	TP	INX	(EXISTING) INTELLIGENT NETWORK TRANSPONDER	7165-1703:0125	GAMEWELL F
004	DSM	DSM	DSM SYNC MODULES	7300-0785:0132	COOPER WHEELOO
006	<u>(S)</u>	ASD-PL2F	INTELLIGENT SMOKE DETECTOR	7272-1703:0121	GAMEWELL F
		B210LP	SENSOR BASE	7300-1653:0109	SYSTEM SENSOR
800	(H) _A	ATD-RL2F	INTELLIGENT HEAT DETECTOR (ABOVE CEILING)	7270-1703:0115	GAMEWELL F
		B210LP	SENSOR BASE	7300-1653:0109	SYSTEM SENSOR
009	F€⊲	ET1010	EXTERIOR SPEAKER W/WBB BACKBOX	7320-0785:0105	COOPER WHEELOO
011		SCRL	STROBE - CEILING	7125-1653:0504	SYSTEM SENSOR
012	Μ	AMM-2F	ADDRESSABLE MONITOR MODULE	7300-1703:0102	GAMEWELL F
013	R	AOM-2RF	ADDRESSABLE RELAY MODULE	7300-1703:0102	GAMEWELL F
014	R1	RIC-1	120 VOLT RELAY MODULE	7300-1004:0101	SAE INC
015	\sim	TYPE FPL	SIGNAL LINE CIRCUIT CONDUCTORS ('M')	7161-0859:0101	WEST PENN
016	\sim	TYPE THHN	AUDIO VISUAL AND POWER CONDUCTORS (AV,P)	N/A	SOUTHWIRE

ANNUNCIATOR ZONE SCHEDULE

	ROOM SMOKE OR HEAT DETECTORS	MANUAL PULL STATIONS	SPRINKLER SYSTEM	INDIC
LDGS	YES	NO	N/A	

1. ALL SMOKE DETECTORS, HEAT DETECTORS ABOVE CEILING DETECTORS, DUCT DETECTORS MANUAL PULL STATIONS, FLOW SWITCHES, TAMPER SWITCHES SHALL BE INDIVIDUALLY

PROVIDE (1) REMOTE ANNUNCIATOR IN BUILDING 8 WHICH WILL PROVIDE LED LIGHT INDICATORS TO IDENTIFY THE ABOVE ZONE SCHEDULE (IN ADDITION TO ANNUNCIATOR NOTED IN NOTE # 3).

PROVIDE (1) 32 CHARACTER BACK-LIGHTED ALPHA-NUMERIC DISPLAY ANNUNCIATOR WITH KEYPAD FOR OPERATOR CONTROL, PROGRAMMING AND TESTING.

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FIRE ALARM MONITORING NOTE:

1. AUTOMATIC FIRE ALARM SYSTEMS SHALL TRANSMIT THE ALARM, SUPERVISORY AND TROUBLE SIGNALS TO AN APPROVED SUPERVISING STATION AS REQUIRED BY NFPA 72 AS AMENDED BY CFC SECTION 907. THE SUPERVISING STATION SHALL BE LISTED AS EITHER UUFX OR UUJS BY UNDERWRITERS LABORATORY OR SHALL MEET THE REQUIREMENTS OF FACTORY MUTUAL RESEARCH APPROVAL STANDARD 3011. SUPERVISION OF SYSTEM AND LEASED TELEPHONE LINES SHALL BE ARRANGED BY OWNER.

FIRE ALARM GENERAL REQUIREMENTS:

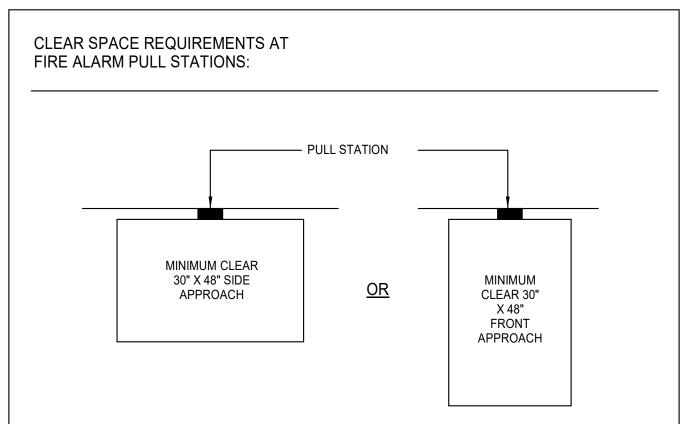
- 1. THE COMPLETE INSTALLATION SHALL BE REVIEWED AND APPROVED BY THE ABOVE LOCAL MANUFACTURERS REPRESENTATIVE. SEE SPECIFICATIONS (28 30 00), FOR ADDITIONAL CONTRACTOR QUALIFICATIONS AND REQUIREMENTS.
- 2. UNLESS OTHERWISE NOTED SOLID LINES BETWEEN DEVICES SHALL BE 3/4" E.M.T. ROUTED CONCEALED ABOVE CEILINGS OR IN WALLS. DASHED LINES INDICATE 3/4" P.V.C. UNDERGROUND CONDUIT. ALL WIRING TYPES AND QUANITITES SHOWN ARE FOR INFORMATION ONLY. THE CONTRACTOR SHALL PROVIDE ALL WIRING AS REQUIRED TO MAKE A FULLY OPERATIONAL SYSTEM. SHOP DRAWINGS AND OR AS-BUILT DOCUMENTS SHALL INDICATE ALL WIRING PROVIDED.
- ^{3.} THE AUDIBILITY OF FIRE ALARM WARNING DEVICES SHALL BE AUDIBLE THROUGH THE OCCUPANCY WITH A MINIMAL SOUND LEVEL 15 db'S OVER THE AMBIENT NOISE LEVEL. ADD ADDITIONAL DEVICES AS REQUIRED.
- 4. UPON COMPLETION OF THE INSTALLATION OF THE FIRE ALARM SYSTEM, A REACCEPTANCE TEST OF THE ENTIRE SYSTEM SHALL BE PERFORMED IN THE PRESENCE OF THE ENFORCING AGENCY AND IN ACCORDANCE WITH SPECIFICATIONS (28 30 00). THE CONTRACTOR SHALL FURNISH db METERS AND ALL OTHER EQUIPMENT TO PERFORM THESE TESTS.
- 5. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED PARTITIONS SHALL PREVENT THE PASSAGE OF HEAT, SMOKE AND FIRE GASES. ALL PENETRATIONS SHALL COMPLY WITH U.L. ASSEMBLY WL-1169. REFER TO THROUGH-PENETRATION FIRESTOP DETAIL ON THE DETAIL SHEET.
- 6. ALL OPERATING HARDWARE AT INITIATING DEVICES SHALL NOT REQUIRE TIGHT GRASPING. PINCHING OR TWISTING OF THE WRIST, AND THE FORCE REQUIRED TO OPERATE SHALL BE LESS THAN 5 POUNDS.

APPLICABLE CODES SEE SHEET T-1 FOR APPLICABLE CODES

APPLICABLE STANDARDS

SEE SHEET T-1 FOR APPLICABLE STANDARDS

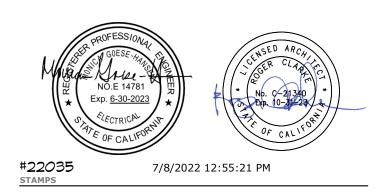
WIRING SCHEDULE									
CONDUCTOR TYPE	WIRE COLOR	CIRCUIT TYPE							
(1) 1 PR #14 TWISTED SHIELDED	RED/BLACK/SHIELD	SIGNAL LINE CIRCUIT							
(2) #12 THHN (UON ON CALCS)	BLUE/WHITE	NOTIFICATION APP. CIRCUIT (NAC)							
(2) #12 THHN (UON ON CALCS)	GREEN/BLUE	NOTIFICATION APP. CIRCUIT (NAC)							
(2) #12 THHN	RED/BLACK	POWER							
	CONDUCTOR TYPE (1) 1 PR #14 TWISTED SHIELDED (2) #12 THHN (UON ON CALCS) (2) #12 THHN (UON ON CALCS)	CONDUCTOR TYPEWIRE COLOR(1) 1 PR #14 TWISTED SHIELDEDRED/BLACK/SHIELD(2) #12 THHN (UON ON CALCS)BLUE/WHITE(2) #12 THHN (UON ON CALCS)GREEN/BLUE							



MAXIMUM NUMBER OF CONDUCTORS IN TRADE SIZES OF CONDUIT OR TUBING MINIMUM CONDUIT SIZE FOR THIS PROJECT IS

3/4"															
CONDU (IN	IT TRA	DE SIZ	E	1/2	3/4	1		1 ^{1/4}	1 1/2	2	2 1/2	3	3 1/2	4	5
TYPE LETT	TERS	COND SIZE AWG,	UCTOR kcmil												
THWN		14 12	2	13 10	24 18	39 29		69 51	94 70	154 114	164				
THHN		1(8)	6 3	11 5	18 9		32 16	44 22	73 36	104 51	160 79	106	136	
			·	AREA—SQUARE INCHES											
				PERCENT REDUCTION PER NUMBER OF 18AWG TWISTED SHIELD PAIRS							S				
TRADE SIZE	DIA	ERNAL METER HES	100% INCHES	OVEF CON 40%	ID. I	1	2	2	3	4	5	6	7		8
1/2	.62	2	.30	.12		38%	66	6%	99%	Х	Х	Х	X		Х
3/4	.824	4	.53	.21		19%	38	3%	57%	76%	95%	Х	X		Х
1	1.04	9	.86	.34		12%	24	4%	36%	48%	60%	72%	84%	6	96%
1 1/4	1.38	80	1.50	.60		7%	14	4%	21%	28%	35%	42%	49%	6	56%
1 1/2	1.61	0	2.04	.82		5%	1(0%	15%	20%	25%	30%	35%	6	40%
2	2.06	67	3.36	1.34		3%	6	%	9%	12%	15%	18%	21%	6	24%

FIRE ALARM SEQUENCE OF OPERATION									
ACTION	MANUAL PULL STATION	SMOKE/HEAT DETECTOR	AC POWER FAILURE						
SOUND ALARM TROUGHOUT BLDG.	YES	YES	NO						
ACTIVATE RELAY FOR MONITORING	YES	YES	YES						
ANNUNCIATE AT PANEL AND ANNUNCIATOR	YES	YES	YES						
SOUND TROUBLE BUZZER	ON WIRING FAULT	ON WIRING FAULT	YES						
SOUND SPRINKLER BELL	NO	NO	NO						
REPORT TO MONITORING STATION	YES	YES	YES						
INITIATE SHUTDOWN OF HVAC UNITS	YES	YES	NO						
SOUND SUPERVISING BUZZER	N/A	N/A	N/A						



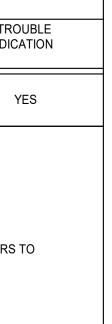
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Power Lighting Multimedia Communications | Data Networking

12875 Brookprinter Place, Suite 300

ILTANT BRANDT

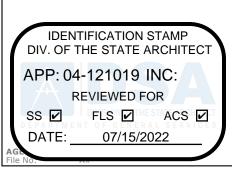
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GHS NEW PRESS BOX & BLEACHER GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 **GROSSMONT UNION HIGH SCHOOL**











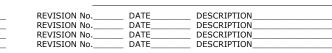


Provide Battery & Minimum Battery Amp Hour Required

	ş	Standby A	mperage	Alarm A	mperad	le	
Type of Device	T		1 3			-	
Or Equipment	Qty	Current	Total	Quantity		Current	Total
ontrol Panel Devices :							
aster Control Assembly	1	0.0810	0.0810	1		0.1500	0.1500
ommunication Module	1	0.2000	0.2000	1		0.2500	0.2500
pice Gateway	1	0.0003	0.0003	1		0.0003	0.0003
ditional SLC Modules	1	0.0004	0.0004	1		0.0070	0.0070
MP Card AM-50	4	0.0490	0.1960	4		2.3000	9.2000
ommunicator Transmitter	1	0.0180	0.0180	1		0.0180	0.0180
gnal Line Circuit Devices:							
noke Detector	41	0.0003	0.0135	41		0.0070	0.2870
eat Detector	9	0.0002	0.0018	9		0.0000	0.0000
elay Module	13	0.0003	0.0039	2		0.0003	0.0006
onitor Module	1	0.0004	0.0004	1		0.0070	0.0070
emote Annunciator	0	0.0300	0.0000	0		0.0650	0.0000
eam Detector (REC. & TRANS)	0	0.0040	0.0000	0		0.0150	0.0000
tender Panel (NAC)	2	0.0880	0.1760	2		0.1950	0.3900
noke/CO Detector	0	0.0005	0.000	0		0.035	0.000
Total	Standby /	Amperage	0.691	Total Ala	arm An	nperage	10.310
Standby Time Required							
4 Hours x Total Standby Am	perage =	:		24 x 0.691	=	16.592	Amp Hours
Alarm Time Required			_				
25(15 Min.)x Total Alarm A	mperage	=	•	0.25 x 10.310	=	2.577	Amp Hours
				Total Required	=	19.169	Amp Hours

PROJECT No. :1-30-55 7/8/2022 12:55:22 PM

DRAWN BY:		CHECKED BY:
ISSUE No	DATE	DESCRIPTION
ISSUE No.	DATE	DESCRIPTION
ISSUE No.	DATE	DESCRIPTION
ISSUE No	DATE	DESCRIPTION



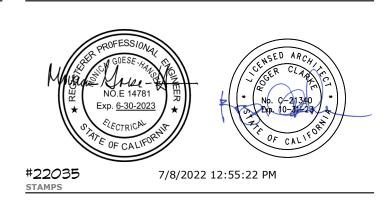
Main Fire Alarm Control Panel FACP FCI E3 Battery Calculations Building 'GYM' (EX) (FACP)

x120% = 23.003274

= 30 Amp Hours

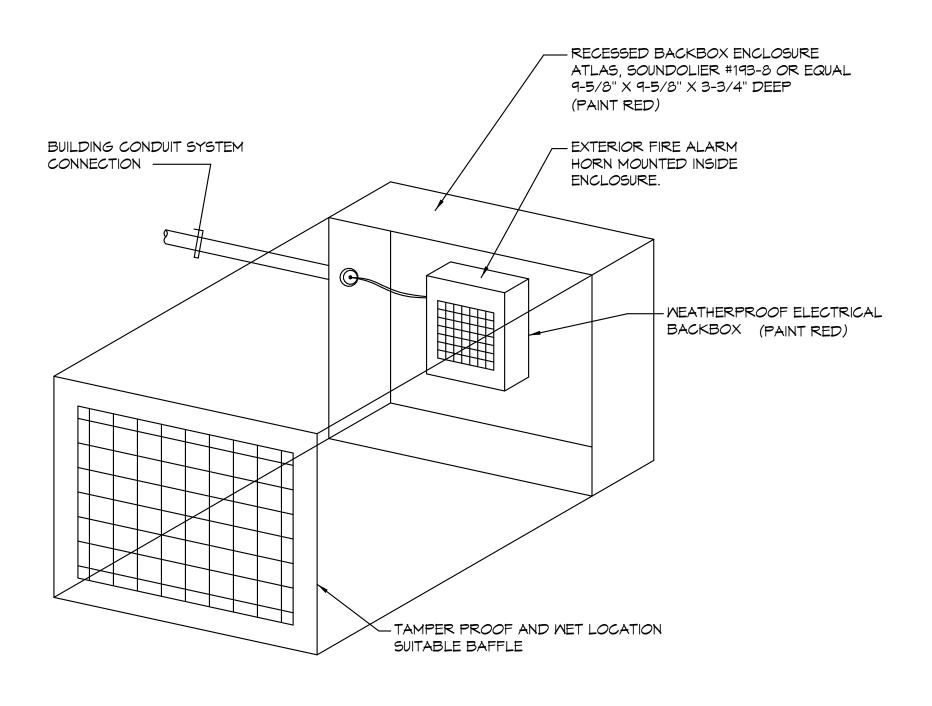
Su	ıppleme	entary Noti	Remote	X)(FA Extend Applianc	er Panel	Battery	Calculations	5	
	Sta	ndby Amper	age		Alarm Am	perage			
Type of Device Or Equipment	Qty	Current	Total	1	Quantity		Current		Total
Exteior Speaker @ 2 watt tap	5	Current	Total	1	Quantity 5		0.02857	1	0.143
Dual Sync Module	3	0.000	0.000	-	3		0.02857		0.143
15cd Wall Speaker/Strobe	0	0.000	0.000	1	0		0.030		0.000
30cd Wall Speaker/Strobe	0			-	0		0.030		0.000
75cd Wall Speaker/Strobe	0			1	0		0.115		0.000
110cd Wall Speaker/Strobe	0			1	0		0.200		0.000
Tiocd Wall Speakel/Strobe	0			1	0		0.000		0.000
	0			1	0		0.000		0.000
15cd (Ceiling) Speaker/Strobe	1			1	1		0.000		0.000
30cd (Ceiling) Speaker/Strobe	0			1	0		0.058		0.000
75cd (Ceiling) Speaker/Strobe	2			1	2		0.155		0.310
95cd (Ceiling) Speaker/Strobe	0			1	0		0.258		0.000
	Ő			1	Ő		0.000		0.000
	Ő			1	Ő		0.000		0.000
	Ő			1	Ő		0.000		0.000
15cd Wall Strobe	0			1	0		0.057		0.000
30cd Wall Strobe	0			1	0		0.085		0.000
75cd Wall Strobe	0			1	0		0.135		0.000
110cd Wall Strobe	0			1	0		0.182		0.000
135cd Wall Strobe	0			1	0		0.205		0.000
185cd Wall Strobe	0			1	0		0.253		0.000
15cd (Ceiling) Strobe	6			1	6		0.040		0.240
30cd (Ceiling) Strobe	1				1		0.058		0.058
75cd (Ceiling) Strobe	0				0		0.155		0.000
95cd (Ceiling) Strobe	0				0		0.258		0.000
0	0				0		0.000		0.000
Speaker only @ 1/4 watt tap	0				0		0.00357		0.000
Speaker only @ 2 watt tap	0				0		0.02857		0.000
Total S	tandby /	Amperage	0.000			Total A	Alarm Ampe	rage	0.896
Standby Time Required 24 Hours x Total Standby Ampe Alarm Time Required	rage =			24 x	0.000	=	0.000	Amp Hou	urs
.25(15 Min.) x Total Alarm Am	perage =			.25x	0.896	=	0.224	Amp Hou	urs
				Total F	Required	=	0.224	Amp Hou	urs
	м	inimum B	attery An	np Hour	Required	=	5	Amp Hou	urs

Fire Alarm Vol Calculation Formula:						Circular M	ils Usina	#10 wire =1038	0			
ourodiation i official.							Vils Using #12 wire = 6530					
Total Current x Feet x 21	.6		(Voltage	Drop))		-	#14 wire = 411				
Circular Mills			_```					#18 wire = 162				
							5					
Voltage Drop / 24 Volts	x 100 P	ercent = P	Percentage	Voltag	ge Drop							
(EX)(FA-2)	_											
							11			11		
	(EX)	Circuit			Circuit	: V3/A3	(EX	Circuit	: V6/A4	11	Circuit	
Device		s x Current	Total	Devi	ices x Current	Total	- ·	ices x Current	Total	Devic	Circuit es x Current	Total
Туре	Device	s x ourrent	Current	Dev	ices x current	Current	Dev	ices x current	Current	Devic	es x ourrent	Curren
1369	+		Current	1┣──		Current	┥┣──		ounent	1┣──		Carrel
Exteior Speaker @ 2 watt tap	3	0.02857	0.086	1	0.02857	0.029	1	0.02857	0.029	0	0.02857	0.000
Dual Sync Module	1	0.035	0.035	1	0.035	0.035	1	0.035	0.035	0	0.035	0.000
15cd Wall Speaker/Strobe	0	0.030	0.000	O	0.030	0.000	O	0.030	0.000	0	0.030	0.000
30cd Wall Speaker/Strobe	0	0.040	0.000	0	0.040	0.000	0	0.040	0.000	0	0.040	0.000
75cd Wall Speaker/Strobe	0	0.115	0.000	0	0.115	0.000	0	0.115	0.000	0	0.115	0.000
110cd Wall Speaker/Strobe	0	0.200	0.000	0	0.200	0.000	0	0.200	0.000	0	0.200	0.000
	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
15cd (Ceiling) Speaker/Strobe	1	0.040	0.040	0	0.040	0.000	0	0.040	0.000	0	0.040	0.000
30cd (Ceiling) Speaker/Strobe	0	0.058	0.000	0	0.058	0.000	0	0.058	0.000	0	0.058	0.000
75cd (Ceiling) Speaker/Strobe	2	0.155	0.310	0	0.155	0.000	0	0.155	0.000	0	0.155	0.000
95cd (Ceiling) Speaker/Strobe	0	0.258	0.000	0	0.258	0.000	0	0.258	0.000	0	0.258	0.000
	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
AR- JUNI II OL- L	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
15cd Wall Strobe	0	0.057	0.000	0	0.057	0.000	0	0.057	0.000	0	0.057	0.000
30cd Wall Strobe 75cd Wall Strobe	0	0.085	0.000	0	0.085	0.000	0	0.085	0.000	0	0.085	0.000
110cd Wall Strobe	0	0.135	0.000	0	0.135	0.000	0	0.135	0.000	0	0.135	0.000
135cd Wall Strobe	0	0.205	0.000	0	0.205	0.000	0	0.205	0.000	0	0.102	0.000
185cd Wall Strobe	0	0.253	0.000	õ	0.253	0.000	0	0.253	0.000	ō	0.253	0.000
15cd (Ceiling) Strobe	2	0.040	0.080	3	0.040	0.120	1	0.040	0.040	0	0.040	0.000
30cd (Ceiling) Strobe	1	0.058	0.058	0	0.058	0.000	0	0.058	0.000	0	0.058	0.000
75cd (Ceiling) Strobe	0	0.155	0.000	0	0.155	0.000	0	0.155	0.000	0	0.155	0.000
95cd (Ceiling) Strobe	0	0.258	0.000	0	0.258	0.000	0	0.258	0.000	0	0.258	0.000
0	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000
Speaker only @ 1/4 watt tap	0	0.00357	0.000	0	0.00357	0.000	0	0.00357	0.000	0	0.00357	0.000
Speaker only @ 2 watt tap	0	0.02857	0.000	0	0.02857	0.000	0	0.02857	0.000	0	0.02857	0.000
		Total	0.609		Total	0.184		Total	0.104		Total	0.000
Circuit Length:	20	00			300			200)	
Circular mils:	41	÷			4110			4110			110	
Volts dropped:		64			0.29			0.11		0.00		





TANT BRANDIN



EXTERIOR FIRE ALARM SPEAKER ASSEMBLY





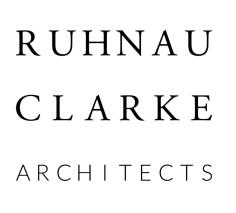
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FIRE ALARM DETAILS



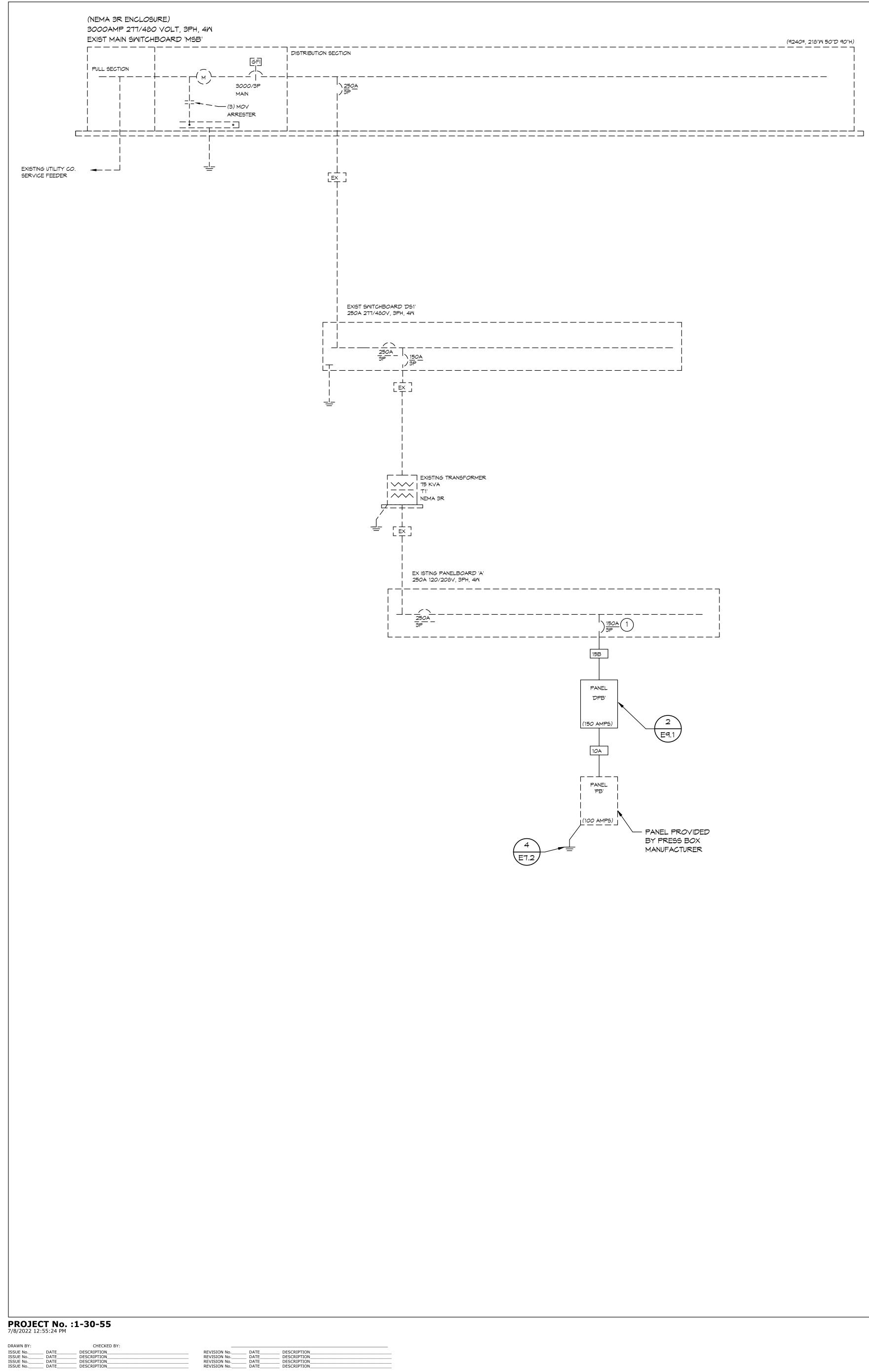












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GENERAL NOTES: 1. A FAULT CURRENT AND TIME CURRENT STUDY MUST BE PROVIDED AS DESCRIBED IN THE SPECIFICATIONS PRIOR TO FINAL APPROVAL OF THE POWER EQUIPMENT. REFERENCE DETAIL 2. E7.2 FOR ALL EQUIPMENT FAULT CURRENT RATINGS. UNLESS WHERE OTHERWISE NOTED. ALL WORK INDICATED ON THESE DRAWINGS SHALL BE CONSIDERED NEW WORK.

4. ALL ELECTRICAL GEAR AND EQUIPMENT SHOWN ON ONE-LINE DIAGRAM SHALL BE NEMA 3R UNLESS OTHERWISE NOTED.

KEY NOTES:

REMOVE (3) 20A/1P SPARE CIRCUIT BREAKERS AND REPLACE WITH NEW 150A/3P CIRCUIT BREAKER. BREAKER TO MATCH EXISTING MANUFACTURER. PROVIDE ALL MOUNTING HARDWARE AS REQUIRED

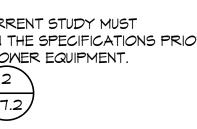
600V FEEDER SCHEDULE LEGEND

2 CO	2	INDICATES QUANTITY OF CON
	4	INDICATES SIZE OF CONDUITS
	CO	INDICATES "CONDUIT ONLY"

600V FEEDER SCHEDULE GENERAL NOTES:

- ^{1.} ALL CONDUCTOR SHALL BE PROVIDED WITH TYPE THWN-2 INSULATION. REFERENCE SPECIFICATION SECTION 26 05 19 (16120) FOR ADDITIONAL REQUIREMENTS.
- 2. PROVIDE 60 DEGREE COPPER/ALUMINUM RATED TERMINATION FOR ALL OR LARGER CONDUCTORS.
- AN ALL EQUIPMENT, BREAKER OF DISCONNECTS TO MATCH FEEDER CONFIGURATIONS INDICATED.
- 4. WHERE MULTIPLE CONDUIT QUANTITIES ARE INDICATED, CONDUCTOR QUANTITIES AND SIZES SHOWN IN SCHEDULE SHALL BE PROVIDED IN EACH CONDUIT.

3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501(951) 684 4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 9201(0760) 438 5899



#22035 7/8/2022 12:55:24 PM STAMPS

JOHNSON CONSULTING ENGINEERS, INC.

Power Lighting Multimedia Communications Data Networking

12875 Brookprinter Place, Suite 300

600Volt Feeder Schedule

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					600	Volt Feeder Sch	edu	le	
I.D.		Туре	Ampacity	Со	nduit	Copper Conductors	Co	onduit	Alumir
2A			00	(1)	3/4"	2 # 12 1# 12 Cmd		NA	
2A 2B			20 20	(1)	3/4"	3 # 12, 1# 12 Gnd 4 # 12, 1# 12 Gnd		NA	
20			20	(')					
3A			30	(1)	3/4"	3 # 10, 1# 10 Gnd		NA	
3B			30	(1)	3/4"	4 # 10, 1# 10 Gnd		NA	
4A			40	(1)	1"	3 # 8, 1# 10 Gnd		NA	
4B			40	(1)	1"	4 # 8, 1# 10 Gnd		NA	
5A			50	(1)	1"	3 # 6, 1# 10 Gnd		NA	
5B			50	(1)	1"	4 # 6, 1# 10 Gnd		NA	
6A			60	(1)	1 1/4"	3 # 4, 1# 8 Gnd		NA	
6B			60	(1)		4 # 4, 1# 8 Gnd		NA	
7A			70	(1)	1 1/4"	3 # 4, 1# 8 Gnd		NA	
7B			70	(1)		4 # 4, 1# 8 Gnd		NA	+
8A 8B			80 80	(1)		3 # 3, 1# 8 Gnd 4 # 3, 1# 8 Gnd		NA NA	
00			00	(1)					
9A			90	(1)	1 1/2"	3 # 2, 1# 8 Gnd		NA	
9B			90	(1)	1 1/2"	4 # 2, 1# 8 Gnd		NA	
10A			100	(1)	1 1/2"	3 # 1, 1# 6 Gnd		NA	
10B			100	(1)	1 1/2"	4 # 1, 1# 6 Gnd		NA	
12A			125	(1)	2"	3 # 1, 1# 6 Gnd	(1)	2"	3 # 2/0,
12B			125	(1)	2"	4 # 1, 1# 6 Gnd	(1)	2"	4 # 2/0,
15A			150	(1)	2"	3 # 1/0, 1# 6 Gnd	(1)	2"	3 # 3/0,
15B			150	(1)	2"	4 # 1/0, 1# 6 Gnd	(1)	2"	4 # 3/0
17A			175	(1)	2"	3 # 2/0, 1# 6 Gnd	(1)	2"	3
17B			175	(1)	2"	4 # 2/0, 1# 6 Gnd	(1)	2"	4 # 4/0,
20.4				(1)	3"	2 # 2/0 1# 4 Cmd		3"	3 #
20A 20B			200 200	(1)	3"	3 # 3/0, 1# 4 Gnd 4 # 3/0, 1# 4 Gnd	(1)	3"	4 # 50
			200		I				
22A			225	(1)	3"	3 # 4/0, 1# 4 Gnd	(1)	3"	3 # 300,
22B			225	(1)	3"	4 # 4/0, 1# 4 Gnd	(1)	3"	4 # 300,
25A			250	(1)	3"	3 # 250, 1# 4 Gnd	(1)	3"	3 # 550,
25B			250	(1)	3"	4 # 250, 1# 4 Gnd	(1)	3"	4 <u>3</u> 8
30A			300	(1)	3"	3 # 350, 1# 4 Gnd	(1)	3"	3
30B			300	(1)	3"	4 # 350, 1# 4 Gnd	(1)	3"	4
35A			350	(2)	2"	3 # 2/0, 1# 2 Gnd	(2)	2"	3,
35B			350	(2)	2"	4 # 2/0, 1# 2 Gnd	(2)	2"	4 # 4/0,
40A			400	(2)	3"	3 # 3/0, 1# 2 Gnd	(2)	3"	3
40B			400	(2)	3"	4 # 3/0, 1# 2 Gnd	(2)	3"	4 # 250
45A			450	(2)	3"	3 # 4/0, 1# 2 Gnd	(2)	3"	3 #
45B			450	(2)	3"	4 # 4/0, 1# 2 Gnd	(2)	3"	4
50A			500	(2)	2-1/2"	3 # 250, 1# 2 Gnd	(2)	3"	3 # 350,
50A			500 500	(2)	2-1/2"	4 # 250, 1# 2 Gnd	(2)	3"	4 # 350,
60A 60B			600 600	(2)	3" 3"	3 # 350, 1# 1 Gnd 4 # 350, 1# 1 Gnd	(2)	3"	3 # 500, 4 # 500,
			600						
70A			700	(3)	3"	3 # 4/0, 1# 1/0 Gnd	(3)	3"	3 # 300,
70B			700	(3)	3"	4 # 4/0, 1# 1/0 Gnd	(3)	3"	4 # 300,
80A			800	(3)	3"	3 # 300, 1# 1/0 Gnd	(3)	3"	3 # 500,
80B			800	(3)	3"	4 # 300, 1# 1/0 Gnd	(3)	3"	4 # 500,
100B			1000	(4)	3"	4 # 250, 1# 2/0 Gnd	(4)	3"	4 # 400,
(
120B			1200	(4)	4"	4 # 350, 1# 3/0 Gnd	(4)	4"	4 # 500,
160B			1600	(5)	4"	4 # 400, 1# 4/0 Gnd	(5)	4"	4 # 600,
2005			0000		A 11	1 # EOO 1# 050 O		411	4 4 000
200B			2000	(6)	4"	4 # 500, 1# 250 Gnd	(6)	4"	4 # 600,
250B			2500	(7)	4"	4 # 500, 1# 350 Gnd	(7)	4"	4 # 750,
3000			2000	(0)	4"		(0)	4"	A # ====
300B			3000	(8)	4	4 # 500, 1# 350 Gnd	(8)	4	4 # 1
350B			3500	(12)	4"	4 # 350, 1# 400 Gnd	(12)	4"	4 # 50
400B			4000	(12)	4"	4 # 400, 1# 400 Gnd	(12)	4"	4 # 600,
			4000	(14)			(14)	-+	ייע, א די די די די די די די די די די די
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NUANTITY OF CONDUITS REQUIRED = (2) DIZE OF CONDUITS REQUIRED = 4"

FEEDERS SIZED WITH #2 OR SMALLER CONDUCTORS. PROVIDE 75 DEGREE COPPER/ALUMINUM RATED TERMINATIONS FOR ALL FEEDERS SIZED WITH #1

3. CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING LUG CONFIGURATION

RUHNAUCLARKE.COM

GHS NEW PRESS BOX & BLEACHER GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL

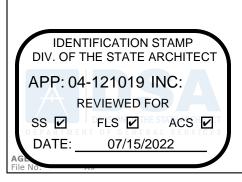
ONE-LINE DIAGRAM



Poway, CA 92064

P 858.679.4030 | F 858.513.0559 www.jce-inc.com

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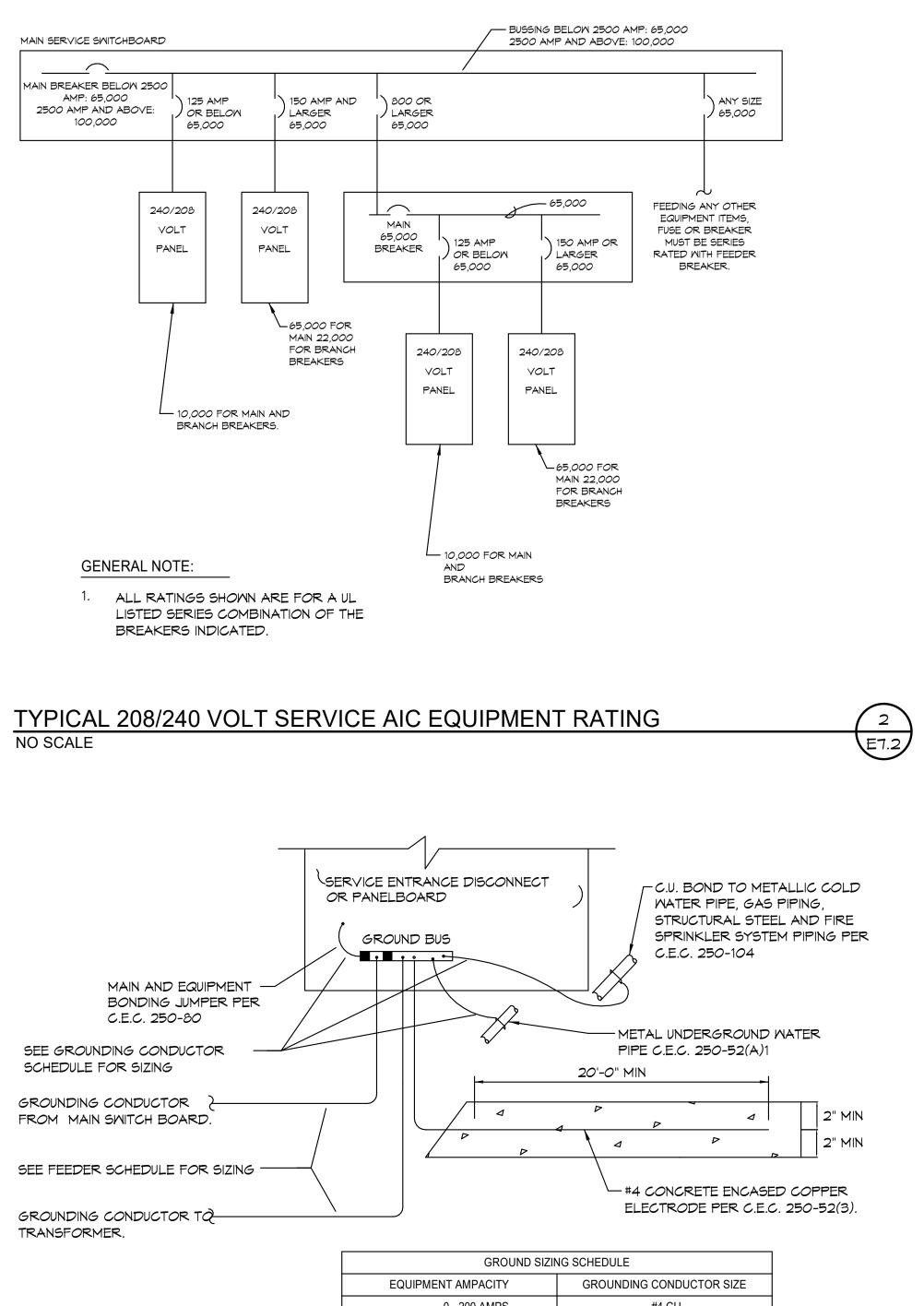


		METER AND	<u>TYPICAL</u>	
NO RA	TYPICAL U.G.P.S. RTICAL BUS. AMPERE I LESS THAN SWITCHE TING AND SHALL EXT L HEIGHT OF EACH S	BOARD END THE	DISTRIBUTION SECTION	THAN
SWITCHBOA NO SCALE	RD BUS CO	NFIGURATION E	DETAIL	1 E7.2
	PANEL BON EQUIPMENT GROUNDING CONDUCTO G SERVICE E RATED ELE PANEL GROUNDING BUSHING A LOCKNUT V JUMPER.	S ROUND BUS NTRANCE CTRICAL	EQUIPMENT GROUT CONDUCTOR. RIGID CONDUIT WI GROUND CONDUC ATTACH CONDUIT BUILDING WITH 2 STRAPS TEE CONDULET FO SEPARATE CONDU	TH TOR. TO HOLE DR JCTOR
MOD LINE RIDGE GROUN #6 BAF WIRE MODULE BONDING GENERAL NOTE:	E FRAM BONI BEAM LUG	AL BUILDING ME WITH DING	BONDED TO META BUILDING FRAME	- GROUND CLAMP LISTED FOR TWO CONDUCTORS - GROUND ROD BOX WITH COVER. - 5/8" X 10'-0" LONG COPPER CLAD STEEL GROUND ROD OR OTHER ELECTRODE AS SPECIFIED IN C.E.C. 250-52(5). MIN EMBEDMENT 8'-0" PER CEC 250-53(G)
 SIZE OF CONDUC BOND SEPARAT (C.E.C. 250-104) (C.E.C. 250-104) 	E CONDUCTORS FRO (C)). IN ADDITION TO (A)). PF METAL FRAME BUIL	THE DETAIL ABOVE BOND	TRICAL PANEL (250-52(5)) A THE ELECTRICAL GROUND TO	ND TO METAL BUILDING FRAME O METAL WATER PIPE IF AVAILABLE. TOGETHER (BOLTING ONLY IS NOT
4. CHECK RESISTA GROUND RODS	NCE TO GROUND. IF AS NEEDED, SEPARA	RESISTANCE EXCEEDS 25 TED BY AT LEAST 6'-0" UI	NTIL RESISTANCE IS 25 OHM C	S, AS REQUIRED TO ADDITIONAL DR LESS (CEC 250.56).
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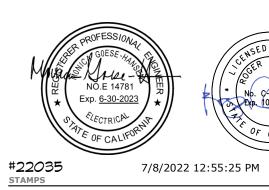


EQUIPMENT AMPACITY	GROUNDING CONDUCTOR SIZE
0 - 200 AMPS	#4 CU.
201 - 400 AMPS	#1/0 CU.
401 - 800 AMPS	#2/0 CU.
801 - 1200 AMPS	#3/0 CU.
1201 - 2000 AMPS	#250 CU.
2001 - 4000 AMPS	#350 CU.

SERVICE ENTRANCE GROUNDING AND BONDING DETAIL NO SCALE

5

E7.2





JLTANT BRANDING







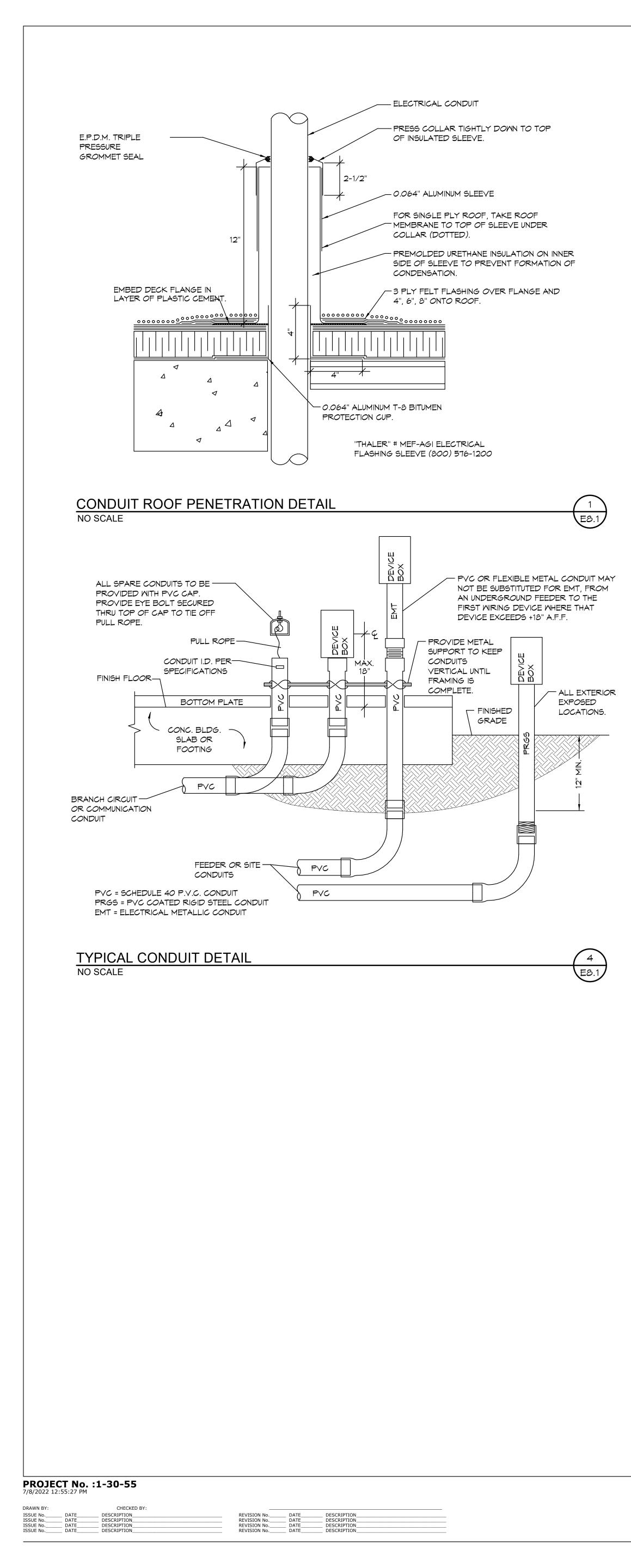


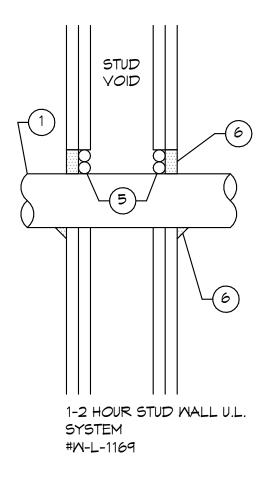












KEY NOTES: (1)

NO SCALE

- MAXIMUM 4" EMT CONDUIT.
- (2) COMPRESSED MINERAL WOOL MIN. 2" THICK (RECESSED TO ALLOW FOR SEALANT).
- 3 APPLY #FS900 MIN. 1" DEEP AND FLUSH WITH FINISHED SURFACE.
- (4) 'U' SHAPED STEEL WIRE FOR SUPPORT.
- 5 BACKER ROD COMPRESSED INTO ANNULUS (LEAVE ROOM FOR SEALANT)
- 6 APPLY #FS1900 INTO ANNULAR SPACE MIN. 5/8" DEEP. ADD 3/8" BEAD AT POINT OF CONTACT.

CONDUIT PENETRATION THRU FIRE RATED PARTITIONS



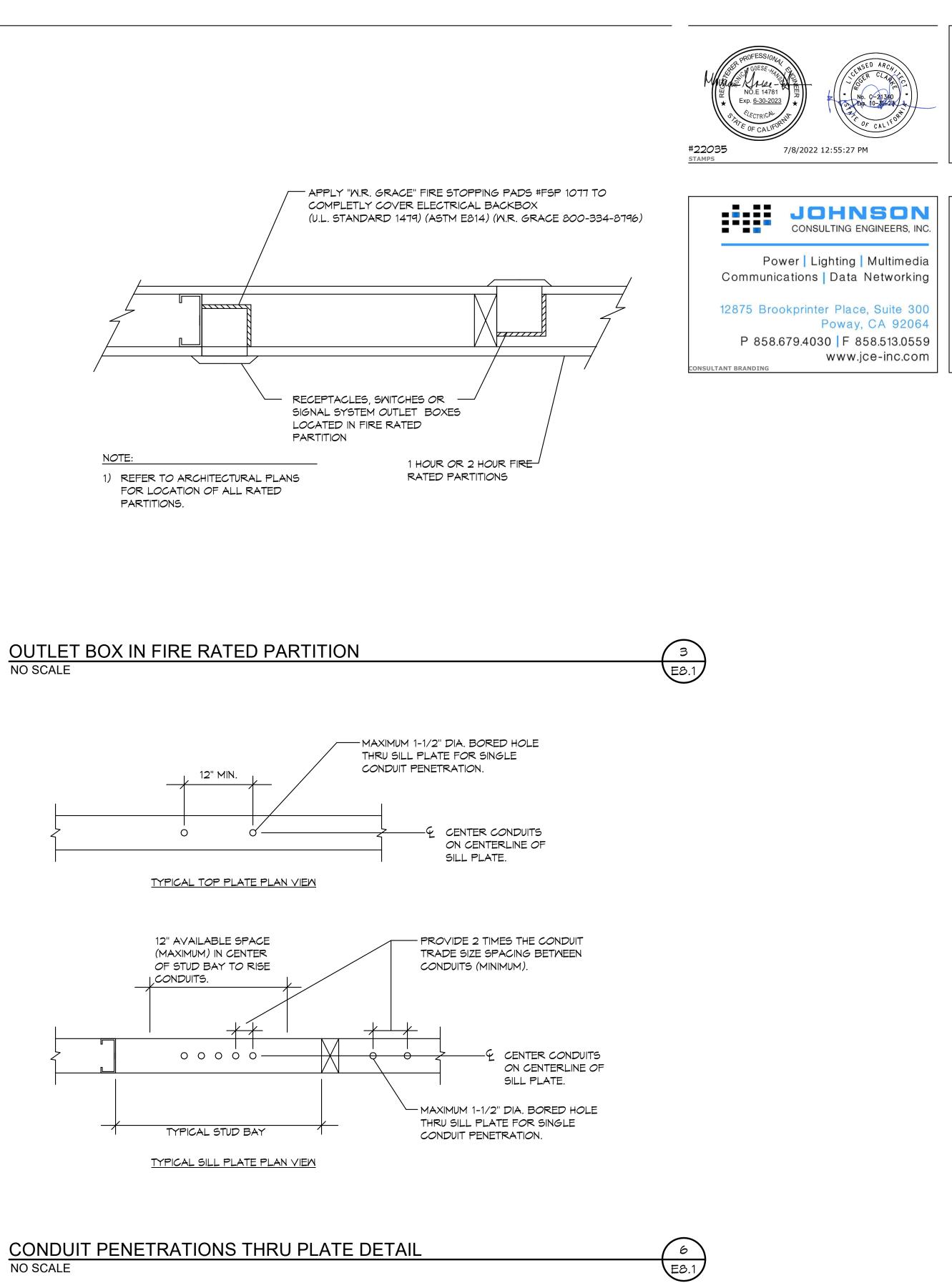
ALL CONDUIT PENETRATION THRU FIRE RATED PARTITIONS SHALL COMPLY WITH THESE DETAILS. SEE ARCHITECTURAL PLANS FOR LOCATION OF ALL RATED PARTITIONS.

> $\binom{2}{2}$ E8.1

2. FOR FIRE STOPPING MATERIALS CONTACT W.R. GRACE (800) 334-8796.



3775 TENTH STREET, RIVERSIDE CALIFORNIA 92501(951) 684 4664 / 5751 PALMER WAY, SUITE C, CARLSBAD CALIFORNIA 9201(960) 438 5899













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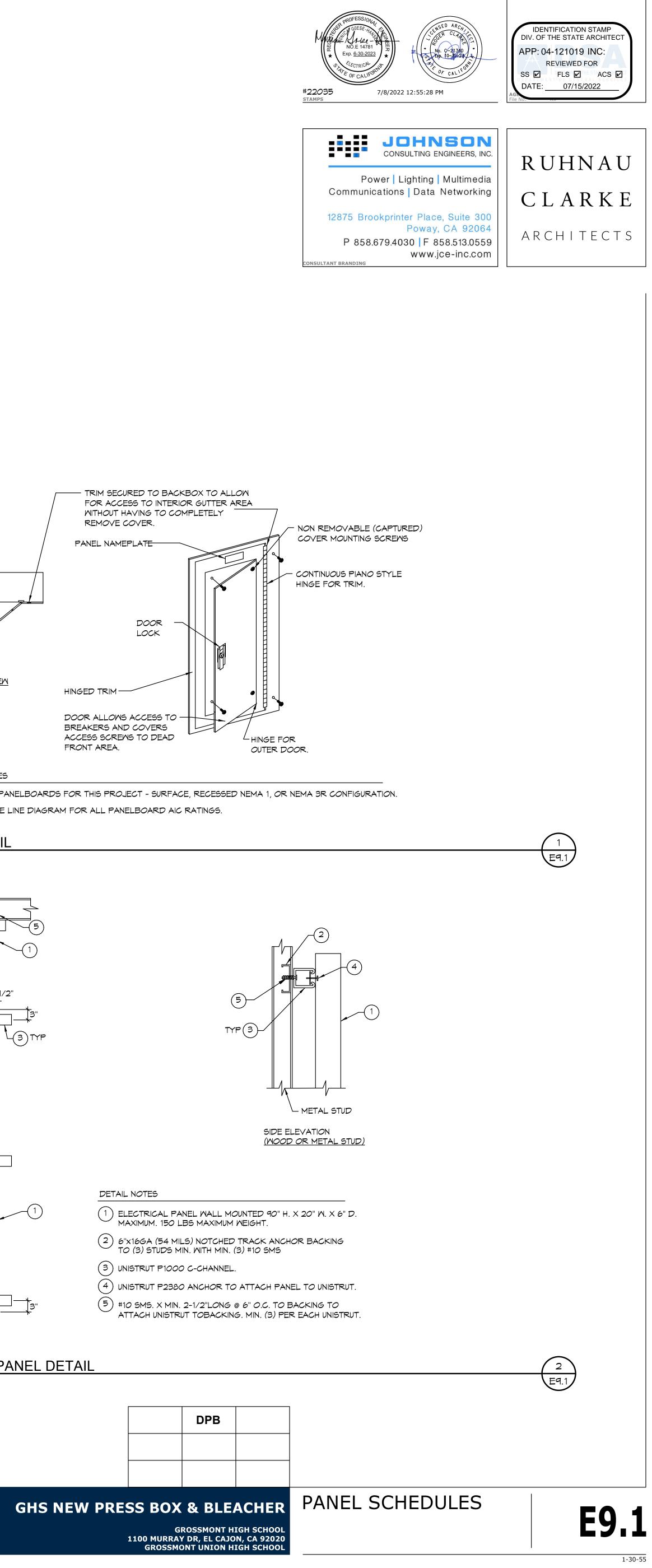
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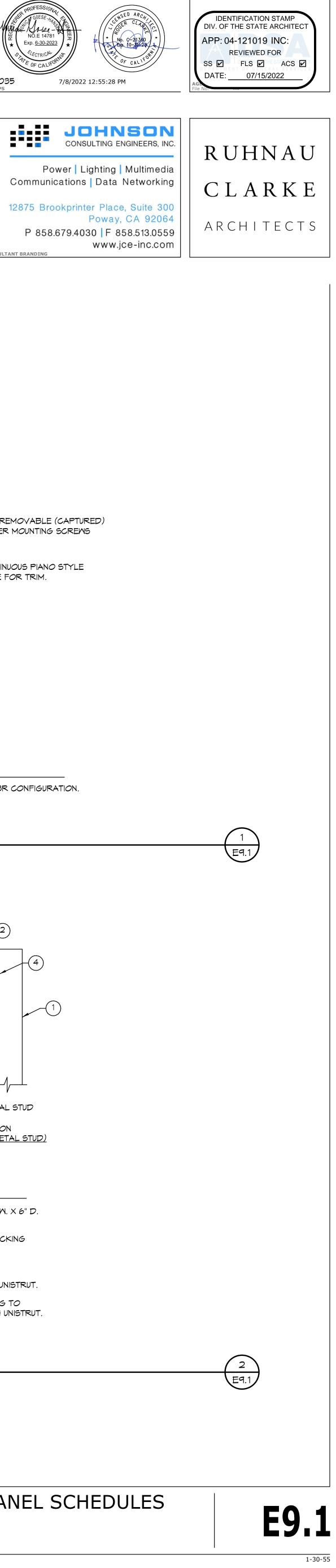
120/208 3PH, 4WIRE 200% Neutral Bus ITEGRAL)TVSS Protection REMOTE)TVSS Protection Service Entrance Rated Load Side Feed thru Lugs IRCUIT DESCRIPTION IEL 'PB' IND SYSTEM 30A re re re re	X	GENER/ BREAKE POLE	R REQUINO	RIBUTION UIREMENTS : PHASE A 7200 800 600		D FIRE ALARM PHASE C 2600		PMEN	X S FOR ALI T SERVE POLE	NEMA TYPE 1 NEMA TYPE 3R NEMA TYPE 4X L EMERGENCY LIC D FROM THIS PAN CIRCUIT DESC SOUND SYSTEM 2 SOUND SYSTEM 2	NEL RIPTION 20A	LCL	NH X X
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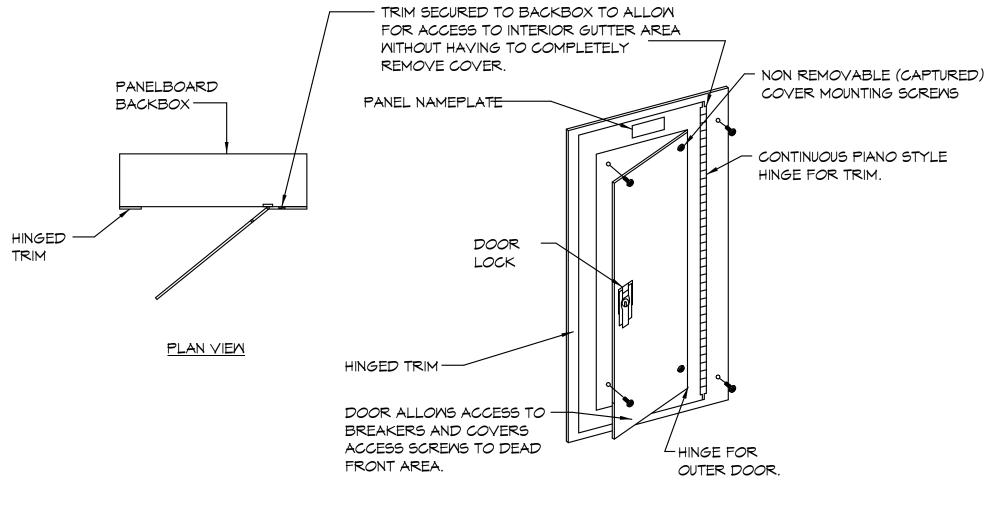
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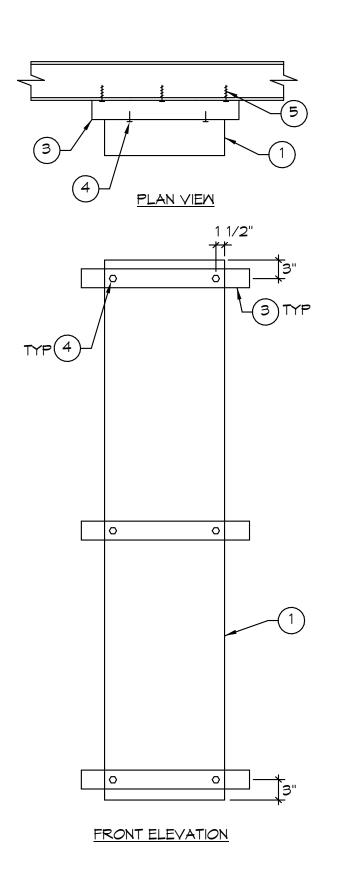


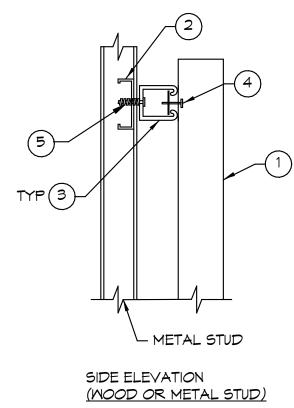


DETAIL GENERAL NOTES

1. PROVIDE FOR ALL PANELBOARDS FOR THIS PROJECT - SURFACE, RECESSED NEMA 1, OR NEMA 3R CONFIGURATION. 2. SEE REFERENCE ONE LINE DIAGRAM FOR ALL PANELBOARD AIC RATINGS.

TYPICAL PANELBOARD DOOR/TRIM DETAIL NO SCALE



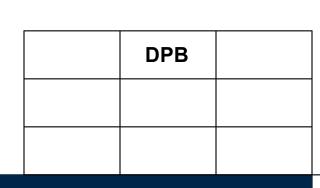


DETAIL NOTES

1 ELECTRICAL PANEL WALL MOUNTED 90" H. X 20" W. X 6" D. MAXIMUM. 150 LBS MAXIMUM WEIGHT.

- $^{(2)}$ 6"x16GA (54 MILS) NOTCHED TRACK ANCHOR BACKING TO (3) STUDS MIN. WITH MIN. (3) #10 SMS
- (3) UNISTRUT P1000 C-CHANNEL.
- (4) UNISTRUT P2380 ANCHOR TO ATTACH PANEL TO UNISTRUT.
- (5) #10 SMS. X MIN. 2-1/2"LONG @ 6" O.C. TO BACKING TO
- ATTACH UNISTRUT TOBACKING. MIN. (3) PER EACH UNISTRUT.

SURFACE WALL MOUNTED ELECTRICAL PANEL DETAIL



GROSSMONT HIGH SCHOOL 1100 MURRAY DR, EL CAJON, CA 92020 GROSSMONT UNION HIGH SCHOOL

GROSSMON **GROSSM** LA ME

SHEET TITLE	SHE NUM
COVER PAGE GENERAL NOTES <i>HOME</i>	B1 B2
FOOTING LAYOUT ENLARGED EXIT FOOTING LAYOUTS PIER DETAILS PIER DETAILS UNDERSTRUCTURE LAYOUT ELEVATION VIEWS SECTION VIEWS SECTION VIEWS SECTION VIEWS SIGHT LINES SEATING LAYOUT EXITS EXITS SEAT BRACKET LAYOUT	B3 B3.1 B4 B4.1 B5 B6 B7 B8 B7 B8 B9 B10 B11 B12 B13 B13 B14



SHEET TITLE	SHEET NUMBER	
PRESS BOX LAYOUT PRESS BOX FRAMING PLAN PRESS BOX ROOF HATCH PRESS BOX DETAILS PRESS BOX DETAILS PRESS BOX CEILING DETAILS	B15 B16 B17 B18 B19 B20	
PLANK DETAILS EXIT DETAILS EXIT DETAILS EXIT DETAILS GRANDSTAND DETAILS GRANDSTAND DETAILS	B21 B22 B23 B24 B25 B26	



GENERAL REQUIREMENTS:

- CONFLICTS: NOTES AND DETAILS ON THE DRAWINGS TAKE PRECEDENCE OVER THE GENERAL NOTES AND TYPICAL DETAILS IN CASE OF CONFLICT.
- CODES: ALL MATERIALS AND WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, 2019 CALIFORNIA BUILDING CODE (CBC).
- SIMILAR WORK: WHERE CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE THE SAME AS FOR SIMILAR WORK SHOWN ON THE DRAWINGS.
- EXCAVATIONS: OWNER TO LOCATE AND PROTECT UNDERGROUND OR CONCEALED CONDUIT, PLUMBING OR OTHER UTILITIES WHERE NEW WORK IS BEING PERFORMED.

DESIGN CRITERIA

DEAD LOADS:

BLEACHERS (INCLUDES GIRDERS).... .. 10 PSF LIVE LOADS: LIVE LOAD... . 100 PSF . 120 PLF SEATS..... FOOTBOARDS.. . 100 PSF 10 PLF SWAY (PERPENDICULAR). SWAY (PARALLEL) 24 PLF **GUARDRAILS AND HANDRAILS*..** . 50 PLF * OR A 200 POUND CONCENTRATED LOAD APPLIED TO RAIL AT ANY POINT IN ANY DIRECTION. PRESS BOX:

dead loads	
FLOOR	15 PSF
ROOF	15 PSF
LIVE LOADS	
FLOOR/ROOF	100 PSF

3. LATERAL LOADS:

A) SEISMIC - SHORT PERIOD SPECTRAL RESPONSE. Ss = 0.777 g **ONE - SECOND PERIOD** SPECTRAL RESPONSE. S1 = 0.284 g SITE CLASSIFICATION ... SITE COEFFICIENT... Fa = 1.200 F∨ = 1.500 SITE COEFFICIENT... ADJUSTED SPECTRAL RESPONSE .. Sms = 0.932 g ADJUSTED SPECTRAL RESPONSE .. Sм1 = 0.426 g DESIGN SPECTRAL RESPONSE $S_{DS} = 0.622 \text{ g} (2/3 \text{ Sms})$ DESIGN SPECTRAL RESPONSE $S_{D1} = 0.284 \text{ g} (2/3 \text{ Sm1})$ RISK CATEGORY: III I = 1.25 SEISMIC DESIGN CATEGORY

LATERAL SYSTEMS:

- BOTH DIRECTIONS: CH. 15 ALL OTHER SELF-SUPPORTING STRUCTURES R = 1.25
- Rho = 1 Cs = 0.622
- V = pCsW = 0.622W (1.0E strength)

A) WIND:

- ULTIMATE DESIGN WIND SPEED, Vult = 103mph RISK CATEGORY = III
- WIND EXPOSURE = C
- 4. APPLICABLE INTERNAL PRESSURE COEFFICIENT (GCpi)=0.55

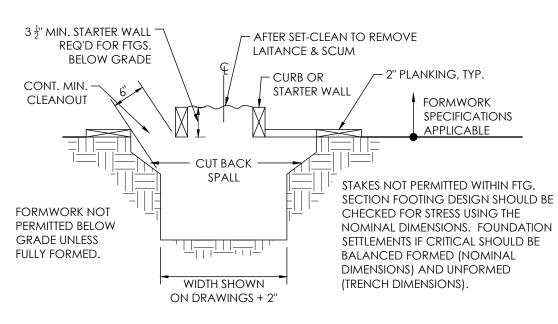
FOUNDATION:

1. GEOTECHNICAL INVESTIGATION: LEIGHTON CONSULTING INC. DATED: 01/10/22 REPORT DATA: PROJECT NO. 12429.018

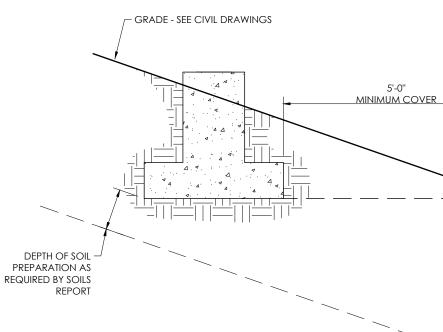
2. SOIL PRESSURES:

SOIL BEARING	<u>4000</u> ps
COEFFICIENT OF FRICTION	0.3
PASSIVE PRESSURE	300 pc

- DOCUMENTS. SOILS WORK SHALL BE OBSERVED AND TESTED BY THE GEOTECHNICAL ENGINEER.
- 4. GEOTECHNICAL ENGINEER: SHALL OBSERVE FOOTINGS BEFORE PLACEMENT OF REINFORCING OR CONCRETE. FOOTING OBSERVATION AND COMPACTION REPORTS SHALL BE SENT TO THE ARCHITECT AND DSA.
- 5. SOIL PREPARATION: AS INDICATED IN THE GEOTECHNICAL INVESTIGATION REPORT AND AS SPECIFIED IN THE PROJECT SPECIFICATIONS. COORDINATE WITH GEOTECHNICAL ENGINEERS.
- 6. MANDATORY MINIMUM FORMWORK (unless fully formed).



- A. STARTER WALL REQUIRED FOR ALL MASONRY OR CONCRETE WALLS. B. FOUNDATION CONCRETE MAY BE PLACED DIRECTLY INTO NEAT EXCAVATIONS PROVIDED THE FOUNDATION TRENCH WALLS ARE STABLE AS DETERMINED BY THE ARCHITECT (STRUCTURAL ENGINEER) SUBJECT TO THE APPROVAL OF THE DIVISION OF THE STATE ARCHITECT. IN SUCH CASE THE MINIMUM FORMWORK SHOWN ON THE DRAWINGS IS MANDATORY TO INSURE CLEAN EXCAVATIONS IMMEDIATELY PRIOR TO AND DURING THE PLACING OF CONCRETE.
- 7. FOUNDATIONS GEOTECHNICAL / GRADING REQUIREMENTS:



CONCRETE WEDGE ANCHORS:

- 1. ANCHOR DIAMETER REFERS TO THE THREAD SIZE FOR THE WEDGE ANCHOR.
- 2. APPLY PROOF TEST LOADS TO WEDGE ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT & INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH & APPLY LOAD.
- 3. REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING BY THE FIXTURE(S).
- 4. TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
- 5. THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:

HYDRAULIC RAM METHOD: THE ANCHOR SHOULD HAVE NO OBSERVABLE MOVEMENT AT THE APPLICABLE TEST LOAD. FOR

WEDGE ANCHORS, A PRACTICAL WAY TO DETERMINE OBSERVABLE MOVEMENT IS THAT THE WASHER UNDER THE NUT BECOMES LOOSE.

TORQUE WRENCH METHOD: WEDGE TYPE:

THE APPLICABLE TEST TORQUE MUST BE REACHED WITHIN THE FOLLOWING LIMITS:

- ONE-HALF (1/2) TURN OF THE NUT: ONE-QUARTER (1/4) TURN OF THE NUT FOR
- THE 3/8 IN. SLEEVE ANCHOR ONLY.
- 6. TESTING SHOULD OCCUR 24 HOURS MINIMUM AFTER INSTALLATION OF THE SUBJECT ANCHORS.
- 7. TESTING VALUES:

HA	HILTI SS KB TZ: RD ROCK TEST	2 ICC-ESR-426 VALUES CON	
ANCHOR DIA. (IN.)	MINIMUM EMBEDMENT (NOMINAL)	tension test load (LBS.)	torqui (ftlbs.
3/8	3"	2,990	30
1/2	3 3/4"	4,433	40
5/8	4 1/2"	6,053	60
3/4	5 1/2"	7,831	125

CONCRETE NOTES:

- 1. MAXIMUM SIZE AGGREGATE SHALL BE AS FOLLOWS:
 - 1 1/2''Ø AGGREGATE FOR CONCRETE SHALL CONFORM TO ASTM C33. GRADING OF AGGREGATE SHALL CONFORM TO TITLE 24, PART 2 CHAPTER 19-A. CBC.
- 2. MINIMUM COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE 3,000 PSI. SLUMP = 5" MAX. W/C RATIO IS 0.50 MAX.
- 3. SOIL REMOVAL AND RECOMPACTION: PER GEOTECHNICAL INVESTIGATION AND THE CONTRACT 3. ALL REINFORCING SHALL BE ASTM A615 GRADE 40 FOR #3, GRADE 60 FOR #4 AND LARGER. REINF. TO BE WELDED SHALL BE ASTM A706.
 - 4. ALL DIMENSIONS SHOWN FOR LOCATION OF REINFORCING STEEL ARE TO FACE OF BAR AND DENOTE CLEAR COVERAGE. UNLESS SPECIFICALLY NOTED, CONCRETE COVERAGE SHALL BE AS FOLLOWS:
 - 3" FOR CONCRETE DEPOSITED DIRECTLY AGAINST GROUND (EXCEPT SLABS) 2" FOR CONCRETE EXPOSED TO GROUND OR WEATHER BUT PLACED IN FORMS. PLACE REINF. AT MID-THICKNESS FOR SLABS ON GROUND.
 - 5. CONCRETE SHALL NOT BE DROPPED THROUGH REINF. STEEL (AS IN WALL) SO TO CAUSE SEGREGATION OF AGGREGATES. IN SUCH CASES, HOPPERS AND VERTICAL CHUTES OR TRUNKS SHALL BE USED. CHUTES OR TRUNKS SHALL BE OF VARIABLE LENGTHS SO THAT FREE UNCONFINED FALL OF CONCRETE SHALL NOT EXCEED FIVE (5) FEET AND SUFFICIENT NUMBER SHALL BE USED TO INSURE THE CONCRETE BEING LEVEL AT ALL TIMES.
 - 6. HORIZONTAL CONSTRUCTION JOINTS SHALL HAVE ENTIRE SURFACE REMOVED TO EXPOSED CLEAN AGGREGATE SOLIDLY EMBEDDED.
 - 7. ALL STEEL COLUMN BASE PLATES AND STEEL BEAMS BEARING ON CONCRETE SHALL BEAR UPON 1" DRYPACK AND LEVELING NUTS EXCEPT AS NOTED OTHERWISE.
 - 8. WHERE STEEL MEMBERS BEAR IN CONCRETE, GAPS BETWEEN BASE PLATE AND CONCRETE SHOULD BE DRY-PACKED WITH GROUT AFTER STEEL IS IN PLACE. GROUT SHALL BE PER CONCRETE CONTRACTOR AND SHALL BE 5 KSI MINIMUM.
 - 9. PROVIDE MINIMUM LAP SPLICES FOR CONTINUOUS REINFORCEMENT PER THE SCHEDULE PROVIDED BELOW. PROVIDE MINIMUM DEVELOPMENT FOR HOOKED BARS PER THE SCHEDULE BELOW.

TYPICAL LAP SPLICES AND

DEVELOPMENT U.N.O. PER PLAN







Bar

#3

#4

#5

#6

#7

#8

2"

6"

NOTE: All bar bend diameters and end lengths must conform to the CRSI

Manual of Standard Practice.

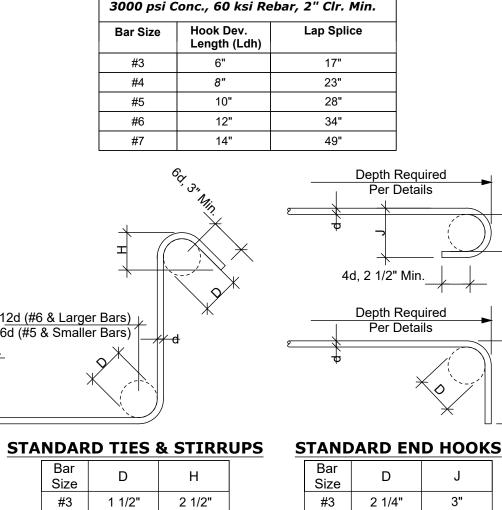
- 3"

6"

2 1/2" 3 3/4"

4 1/2" 4 1/2"

5 1/4" 5 1/4"



Bar Size	D	J
#3	2 1/4"	3"
#4	3"	4"
#5	3 3/4"	5"
#6	4 1/2"	6"
#7	5 1/4"	7"
#8	6"	8"
#9	9 1/2"	11 3/4"
#10	10 3/4"	13 1/4"

CONCRETE - EPOXY ANCHORED THREADED RODS

- 1. MATERIALS: (ICC ESR 3187) HILTI HIT-HY200 EPOXY ADHESIVE
- CONCRETE (MIN).... THREADED RODS NUTS.....
- 2. INSTALLATION:
- A. CARBIDE-TIPPED DRILL BITS ANSI B212.15-1994.
- B. HOLES DRILLED WITH HOLLOW BIT, NO CLEANING OR BRUSHING REQUIRED.

F'c = 3,000 PSI STONE AGGREGATE

ASTM A-153 TYPICAL

ASTM A-563 HEX, GRADE A

C. INSTALLATION AND ALLOWABLE LOADING:

HILTI HIT-HY200 HARD ROCK TEST VALUES CONCRETE					
ROD DIAM. (IN.)	BIT DIAM. (IN.)	MIN. EMBED. (IN.)	MIN EDGE DIST. (IN.)	TENSION TEST LOAD (LBS.)	
3/8	7/16	3-3/8	5-1/4	2,700	
1/2	9/16	4-1/2	6-3/8	4,800	
5/8	3/4	5-5/8	7-1/2	7,200	
3/4	7/8	6-3/4	10-1/8	10,050	
7/8	1	7-7/8	11-5/8	10,070	
1	1-1/8	9	13-1/2	13,000	
1-1/4	1-3/8	11-1/4	14-1/2	17,300	

3. CAPACITY LOADS ARE STRENGTH DESIGN LOADS.

- 4. DO NOT INSTALL IN CONCRETE THAT IS LESS THAN 7 DAYS OLD.
- 5. MINIMUM MEMBER THICKNESS TO RECEIVE ROD SHALL BE NO LESS THAN 1.5 TIMES THE ANCHOR EMBEDMENT DEPTH.
- 6. ANCHORS SHALL BE INSTALLED IN HAMMER DRILLED HOLES

STRUCTURAL STEEL:

- 1. CODES: AISC SPECIFICATION FOR STRUCTURAL STEEL FOR BUILDINGS; MANUAL OF STEEL CONSTRUCTION (15TH EDITION); STRUCTURAL WELDING CODE AWS D1.1 AND AWS D1.4. PIPES SHALL BE IDENTIFIED WITH MILL IDENTIFICATION IN ACCORDANCE WITH ASTM A-53 AND TUBE SHAPES IN ACCORDANCE WITH ASTM A-500.
- 2. IDENTIFICATION: ROLLED STRUCTURAL STEEL SHAPES SHALL BE IDENTIFIED WITH MILL IDENTIFICATION MARKS IN CONFORMANCE WITH ASTM A6.
- 3. MATERIALS:

STRUCTURAL SHAPES	
WIDE FLANGE	ASTM A992/A572, Fy = Gr. 50 (Fy = 50 ksi Min.), UNO
CHANNELS AND ANGLES	ASTM A529, Fy = Gr. 50 (Fy = 50 ksi Min.), UNO
SWAYRODS	ASTM A529, Fy = Gr. 50 (Fy = 50 ksi Min.), UNO
HSS SHAPES (TUBE COLUMNS)	ASTM A-500 GRADE B - 46 KSI
PLATES ¹ / ₂ THICK OR LESS	ASTM A36 Gr. 36 (Fy = 36 ksi Min.), UNO
PLATES GREATER THAN $\frac{1}{2}$ " THICK	ASTM A572 Gr. 50 (Fy = 50 ksi Min.), UNO
BOLTS	ASTM A-307, A325N TYPICAL U.N.O (HOT DIP
	GALVANIZED)
NUTS	HEAVY HEX (HOT DIP GALVANIZED)
NON-SHRINK GROUT	ASTM C-1107 5,000 PSI (NON-METALLIC)
ANCHOR BOLTS	ASTM F1554 Gr. 55 (Fy=55 ksi Min.)
	(HOT DIP GALVANIZED)

- WELDING: ALL WELDING SHALL BE IN CONFORMANCE WITH AWS D1.1. WELDS ARE ALL AROUND WITH TYPE ER70S-6 WIRE MIG U.N.O.
- 5. ALL STEEL SHALL BE HOT DIP GALVANIZED TO CURRENT A.S.T.M. A-123.
- 6. ALL FIELD CONNECTIONS ARE NON-SLIP CRITICAL U.N.O. ALL CONNECTIONS ARE DESIGNED TO UTILIZE A307 BOLTS, IT IS ACCEPTABLE TO USE A325N BOLTS IN LIEU OF THE A307 BOLTS. THE INSTALLATION OF THESE BOLTS ARE TO BE TIGHTENED A SNUG TIGHT CONDITION AS SPECIFIED BY AISC.
- 7. SWAYROD THREADS SHALL BE PINGED WITH A HAMMER TO ELIMINATE REMOVAL OF NUT, AFTER FINAL TIGHTENING.



IDENTIFICATION STAMP DIV. OF THE STATE ARCHITEC APP: 04-121019 INC: **REVIEWED FOR** SS 🗹 FLS 🗹 ACS 🗹 DATE: 07/15/2022

DRAWING AND ALL INFORMATION THEREIN IS

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OPERTY OF THE SOUTHERN BLEACHER COMPA

PIED. THIS DRAWING IS LOANED SUBJECT TURN UPON DEMAND AND, IS NOT TO B SED DIRECTLY OR INDIRECTLY IN ANY WAY ETRIMENTAL TO OUR INTERESTS.

COLD FORMED MEMBERS (PRESS BOX)

MATERIALS:

STEEL PROPERTIES					
TUBE	4" SQUARE X 11 GA. TUBE	A500 GRADE A/B	Fy = 39ksi, MIN.		
DIAGONAL ANGLE	L2 X 2 X 3/16"	A572 / A529	Fy = 50ksi, MIN.		
BELLY PAN ANGLE	L2 X 2 X 1/8"	A572 / A529	Fy = 50ksi, MIN.		
CEES	4 X 2 1/2 X 14 GA.	A1011 / A653	Fy = 33ksi, MIN.		
FLAT STRAP	4" X 14 GA.	A1011 / A653	Fy = 33ksi, MIN.		
ROOF PLATE	11GA. OR 1/8"	A1011 / A653 / A786	Fy = 27ksi, MIN.		

1. CODES AND FABRICATION: STEEL STUD MANUFACTURER'S ASSOCIATION ICC ESR 3064P OR APPROVED EQUAL.

2. COLD FORMED SHAPES SHALL BE LIMITED TO A THICKNESS OF 11 GAGE OR THINNER. ALUMINUM:

- 1. MATERIALS: ALUMINUMALLOY 6061-T6 OR 6005-T5 (Fy = 35 KSI) SHAPES... PLANKING......ALLOY 6063-T6 (Fy = 25 KSI)
- 2. DISSIMILAR MATERIALS: WHERE ALUMINUM SURFACES ARE IN CONTACT WITH STEEL, THE STEEL SHALL BE GALVANIZED.
- 3. MILL FINISHED ALUMINUM WILL BECOME DISCOLORED DUE TO OXIDATION WHICH IS A NATURAL PHENOMENON & SHOULD BE EXPECTED.
- 4. ANODIZED ALUMINUM HANDRAIL IS 1 1/4" PIPE SIZE.

5. ALUMINUM TO CONFORM TO 2015 ALUMINUM DESIGN MANUAL. SPECIAL INSPECTION/INSPECTOR REQUIREMENTS **REQUIREMENTS FOR SPECIAL INSPECTION:**

- 1. PROJECT INSPECTOR: IN ACCORDANCE WITH TITLE 24, PART I, SECTIONS 4-333 AND 4-342.
- 2. CERTIFIED SPECIAL INSPECTOR: EMPLOYED BY THE DISTRICT AND APPROVED BY THE ARCHITECT, STRUCTURAL ENGINEER AND DSA.
- 3. REPORTS: PREPARED BY THE SPECIAL INSPECTOR AND SIGNED BY A CIVIL ENGINEER. SUBMITTED TO THE DSA, THE ARCHITECT, AND ENGINEER. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION; THEN, IF NOT CORRECTED, TO THE ARCHITECT, ENGINEER AND THE DSA (CBC 1704A.2.4).
- 4. THE SPECIAL INSPECTION IS TO BE CONTINUOUS DURING THE PERFORMANCE OF THE WORK UNLESS OTHERWISE SPECIFIED.

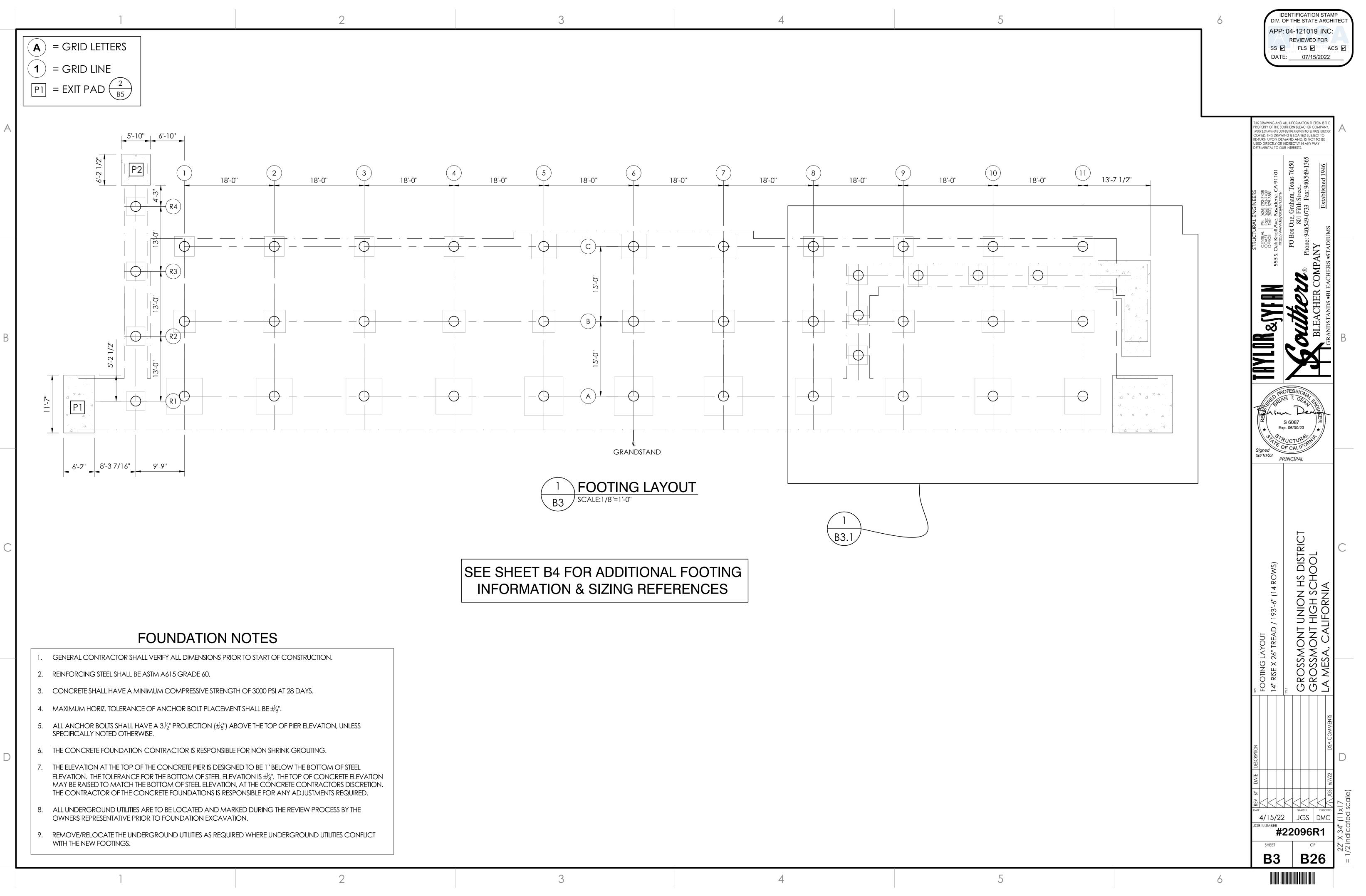
SUMMARY OF STRUCTURAL CONTINUOUS AND PERIODIC SPECIAL INSPECTION:

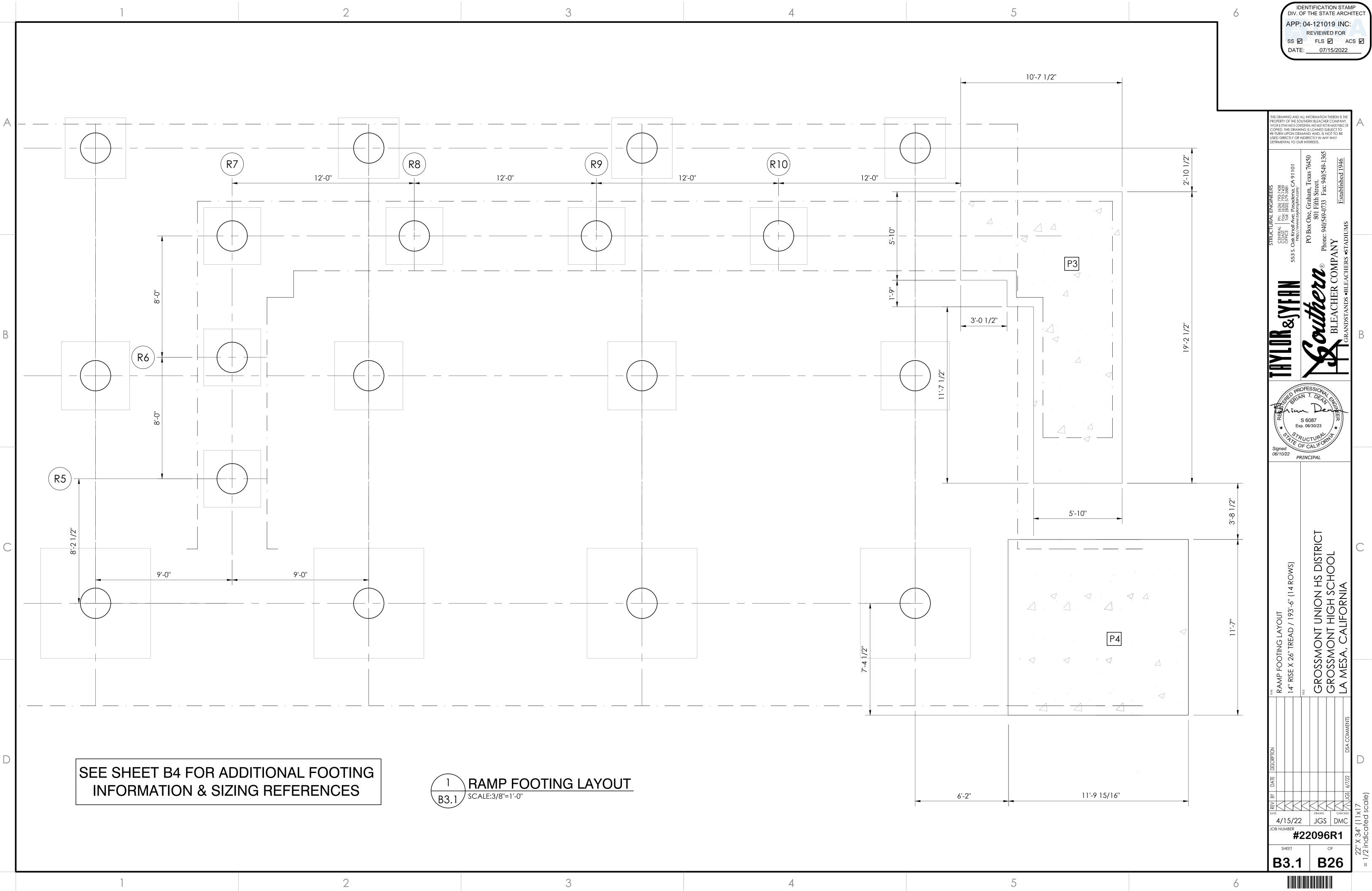
REFER TO DSA-103 FORM FOR SPECIAL INSPECTION REQUIREMENTS AND EXEMPTIONS

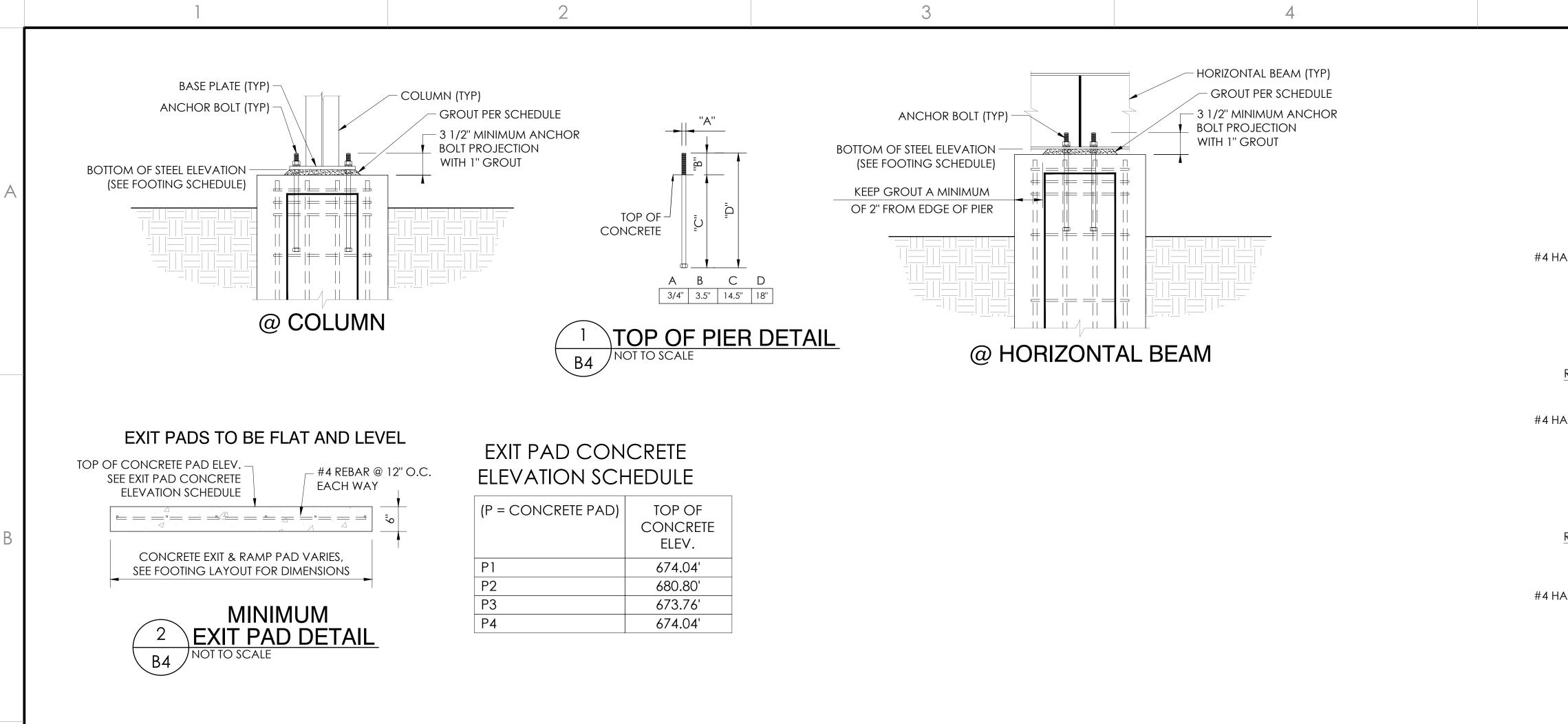


- 1. CONCRETE BATCH PLANT INSPECTION FOR BLEACHER FOUNDATIONS, SUBJECT TO THE
- REQUIREMENTS AND LIMITATIONS OF CBC 1705A.3.3.2.
- 2. EPOXY SHEAR DOWELS IN SITE FLATWORK AND/OR OTHER NON-STRUCTURAL CONCRETE. 3. TESTING OF REINFORCING BARS, SUBJECT TO THE REQUIREMENTS AND LIMITATIONS OF CBC
- SECTION 1910A.2. 4. WELDING OF HANDRAILS, GUARDRAILS, AND MODULAR OR RELOCATABLE RAMPS ASSOCIATED WITH WALKING SURFACES LESS THAN 30" ABOVE ADJACENT GRADE. THIS DOES NOT INCLUDE POST CONNECTIONS, AS NOTED IN CBC 1705A.2.1. FILLET WELDS SHALL NOT BE GROUND FLUSH.









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FOOTING SCHEDULE T.O.P. = TOP OF PIERB.O.S. = BOTTOM OF STEEL

FOOTING # (R = RAMP PIER) (A/B/C = GRIDLINE)	T.O.P. ELEV.	B.O.S. ELEV.	GROUT	"H"	"D"	"H2"	"W"	FOOTING REINFORCEMENT
A1-A4, A8	676.84'	676.93'	1"	15"	18"	39" MAX.	7'-3'' X 7'-3''	(7) #6 EACH WAY BOTTOM, & #5 @ 18" E.W. TOP
A5-A7	676.84'	676.93'	1"	15"	18"	39" MAX.	7'-9'' X 7'-9''	(8) #6 EACH WAY BOTTOM, & #5 @ 18" E.W. TOP
A9-A11	676.84'	676.94'	1 1/8"	15"	18"	39" MAX.	7'-3'' X 7'-3''	(7) #6 EACH WAY BOTTOM, & #5 @ 18" E.W. TOP
В	674.12'	674.20'	1"	15"	18"	27" MAX.	4'-6'' X 4'-6''	(5) #6 EACH WAY BOTTOM
C1, & C2	674.92'	675.00'	1"	15"	18"	27" MAX.	4'-0'' X 4'-0''	(4) #6 EACH WAY BOTTOM
C3, C4, & C8-C11	674.92'	675.00'	1"	15"	18"	27" MAX.	4'-0'' X 4'-0''	(4) #6 EACH WAY BOTTOM
C5-C7	674.92'	675.00'	1"	15"	18"	27" MAX.	5'-0'' X 5'-0''	(5) #6 EACH WAY BOTTOM
R1	678.16'	678.25'	1"	15"	18"	51" MAX.	4'-3'' X 4'-3''	(4) #6 EACH WAY BOTTOM
R2	674.57'	674.65'	1"	15"	18"	27" MAX.	4'-3'' X 4'-3''	(4) #6 EACH WAY BOTTOM
R3	674.65'	674.73'	1"	15"	18"	27" MAX.	4'-3'' X 4'-3''	(4) #6 EACH WAY BOTTOM
R4	679.77'	679.85'	1"	15"	18"	39" MAX.	3'-9'' X 3'-9''	(4) #6 EACH WAY BOTTOM
R5	677.87'	677.95'	1"	15"	18"	51" MAX.	4'-3'' X 4'-3''	(4) #6 EACH WAY BOTTOM
R6	677.23'	677.31'	1"	15"	18"	51" MAX.	4'-3'' X 4'-3''	(4) #6 EACH WAY BOTTOM
R7	676.92'	677.00'	1"	15"	18"	51" MAX.	4'-3'' X 4'-3''	(4) #6 EACH WAY BOTTOM
R8	676.28'	676.36'	1"	15"	18"	51" MAX.	3'-9'' X 3'-9''	(4) #6 EACH WAY BOTTOM
R9	675.42'	675.50'	1"	15"	18"	51" MAX.	3'-9'' X 3'-9''	(4) #6 EACH WAY BOTTOM
R10	674.87'	674.96'	1"	15"	18"	51" MAX.	3'-9'' X 3'-9''	(4) #6 EACH WAY BOTTOM

2

3

(3) #4 TIES IN TOP 5" & 9" O.C. IN REMAINDER WITH THE FIRST TIE AT 2" FROM PIER TOP.

14" MIN. HOOK

#4 HAIRPINS

EACH SIDE (2

TOTAL), TYP.

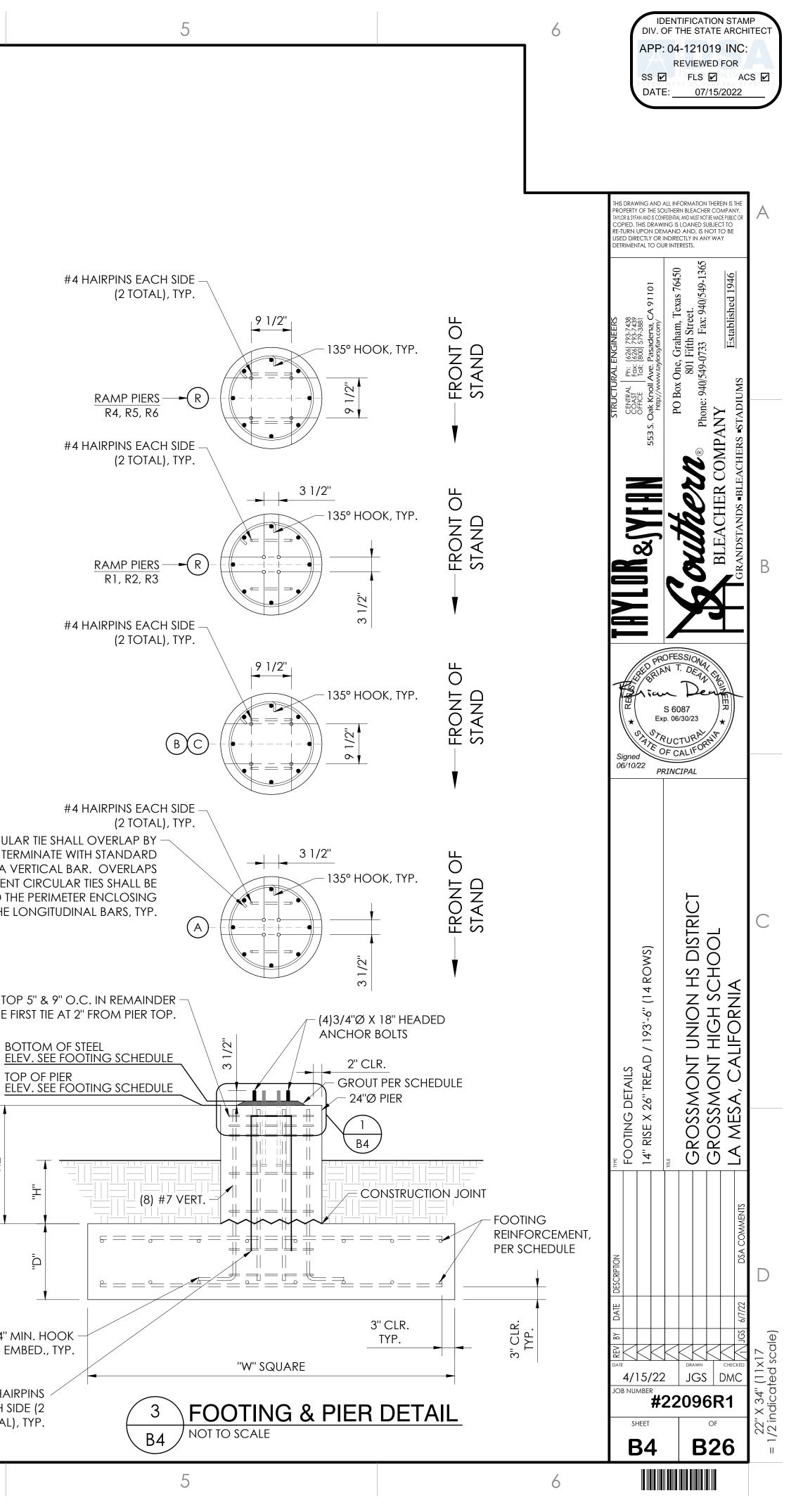
EMBED., TYP.

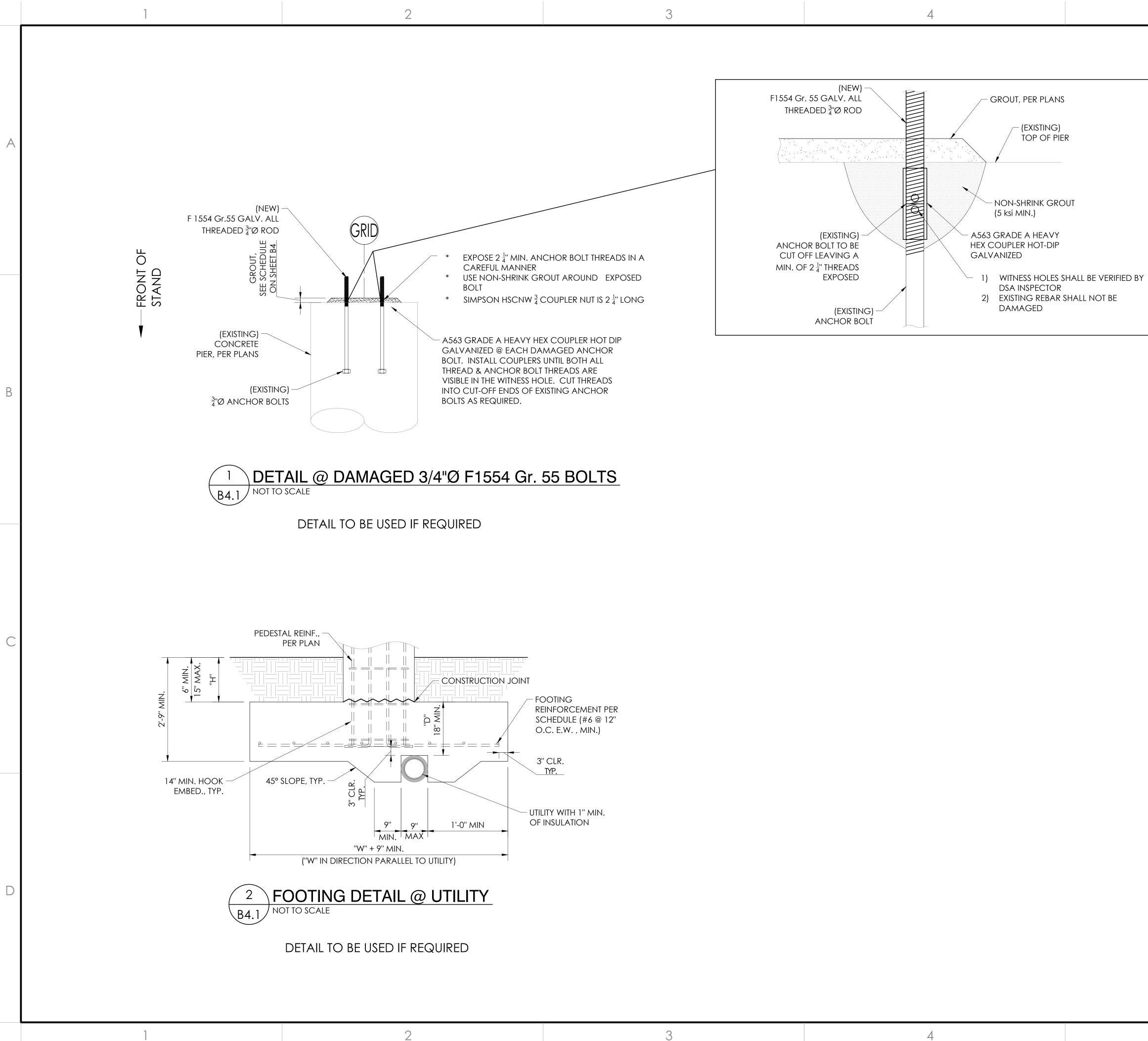
9 1/2"

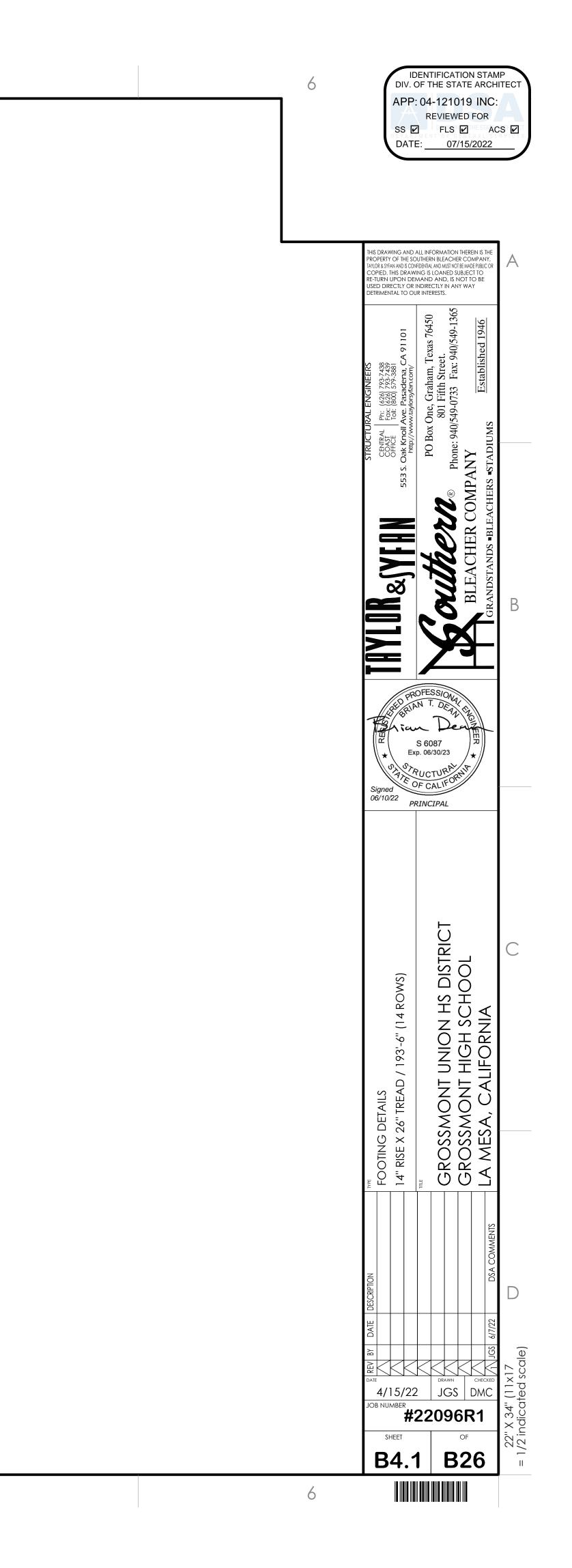
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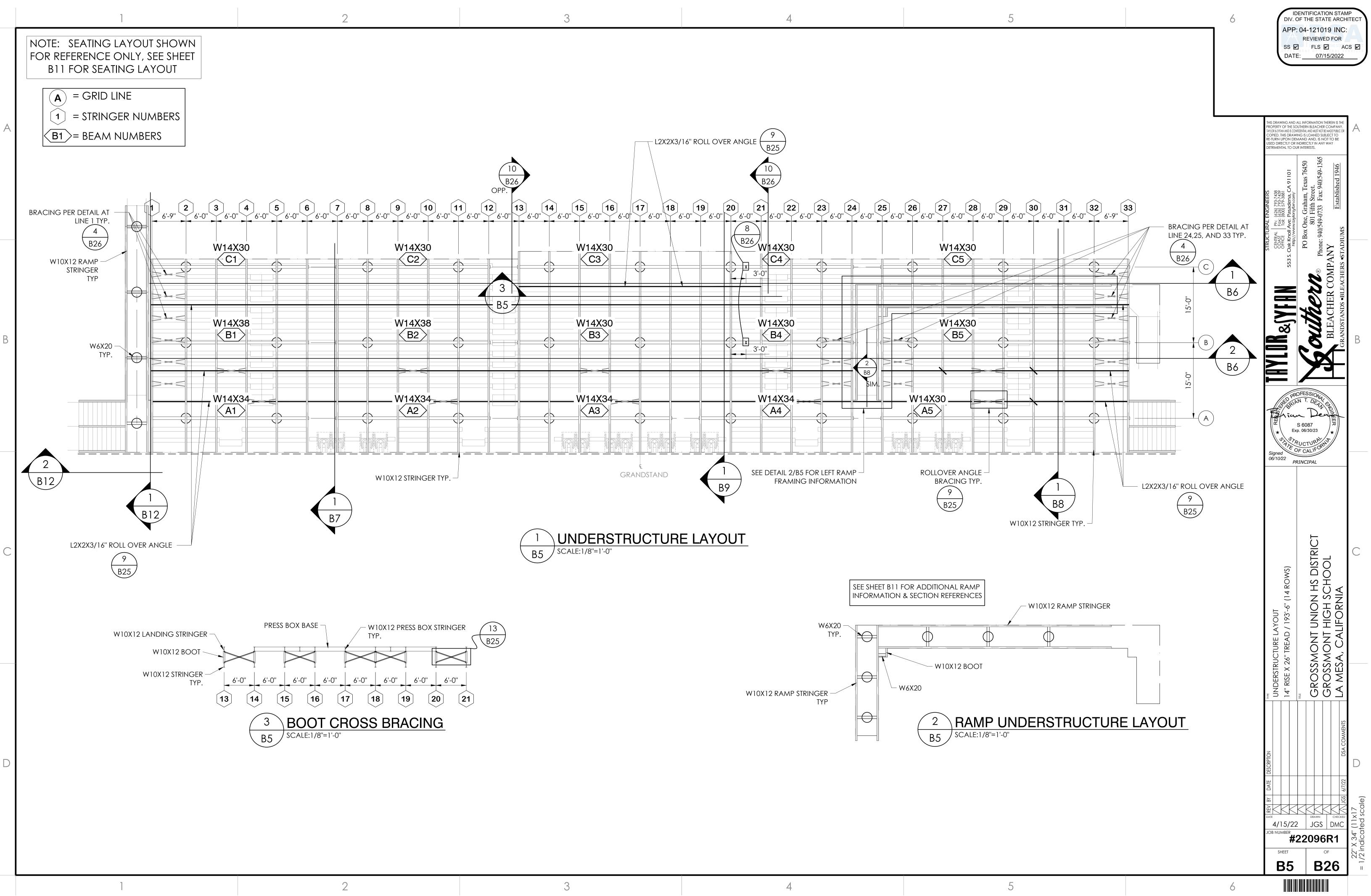
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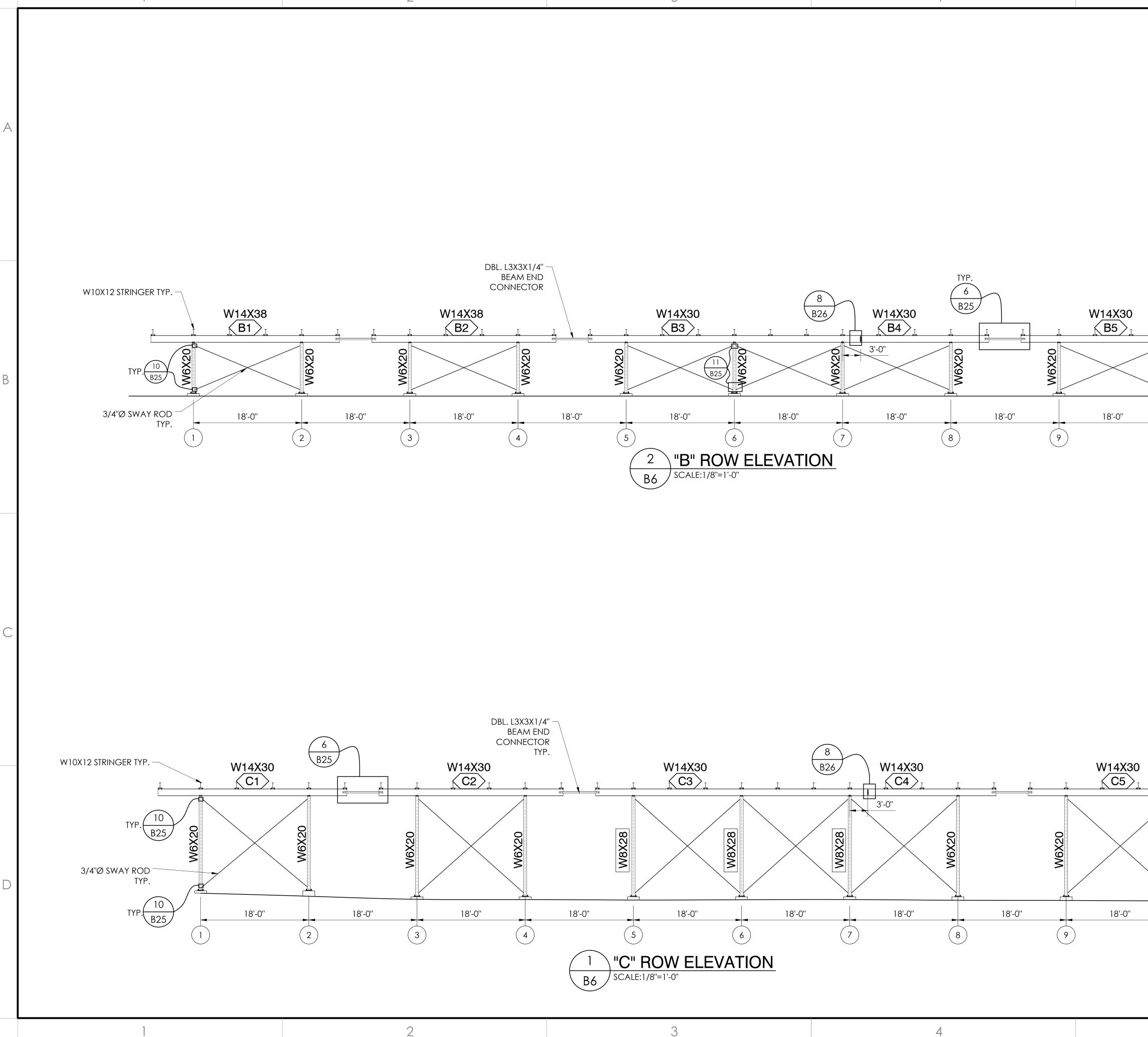
THE ENDS OF THE CIRCULAR TIE SHALL OVERLAP BY NOT LESS THAN 6" AND TERMINATE WITH STANDARD HOOKS THAT ENGAGE A VERTICAL BAR. OVERLAPS AT ENDS OF ADJACENT CIRCULAR TIES SHALL BE STAGGERED AROUND THE PERIMETER ENCLOSING THE LONGITUDINAL BARS, TYP.







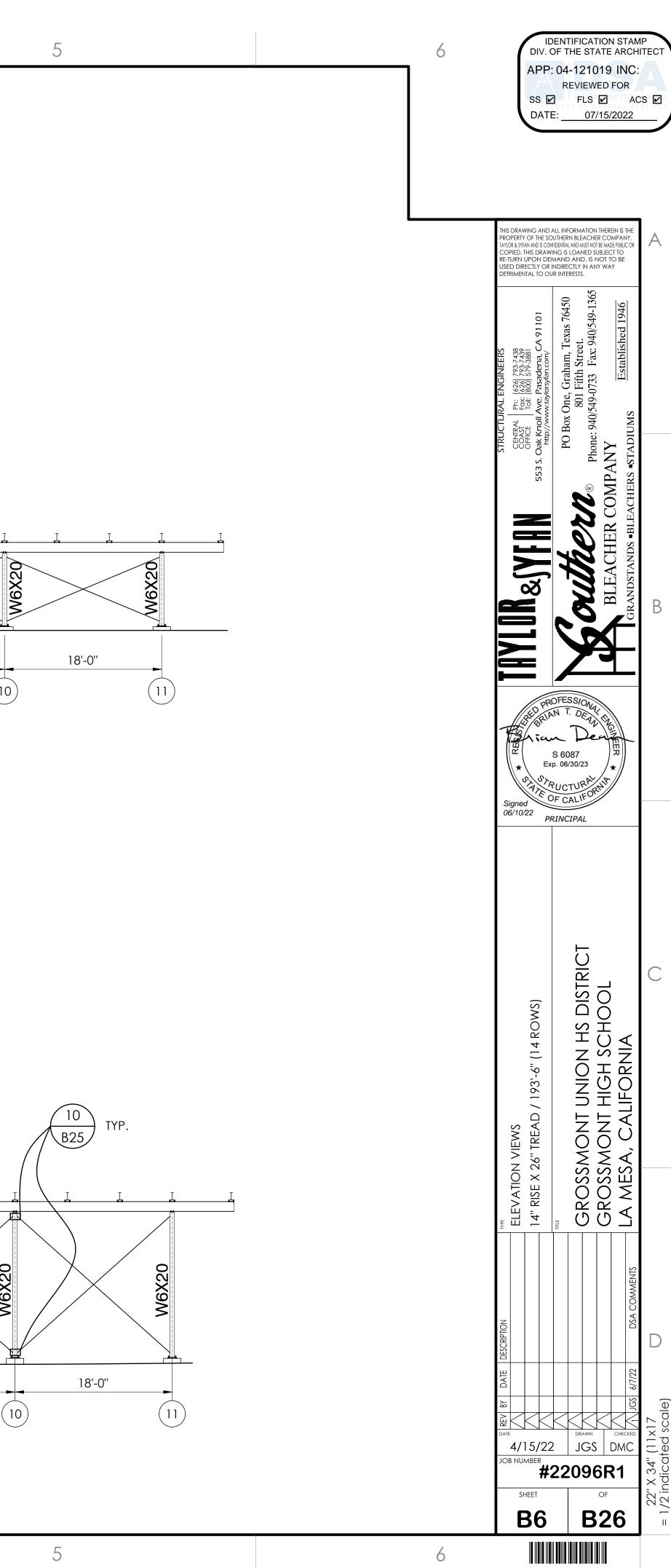




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W6X20

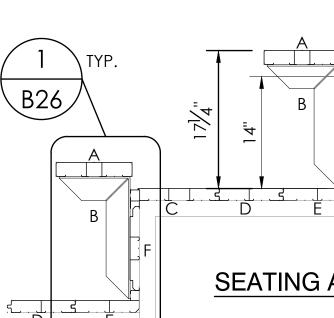
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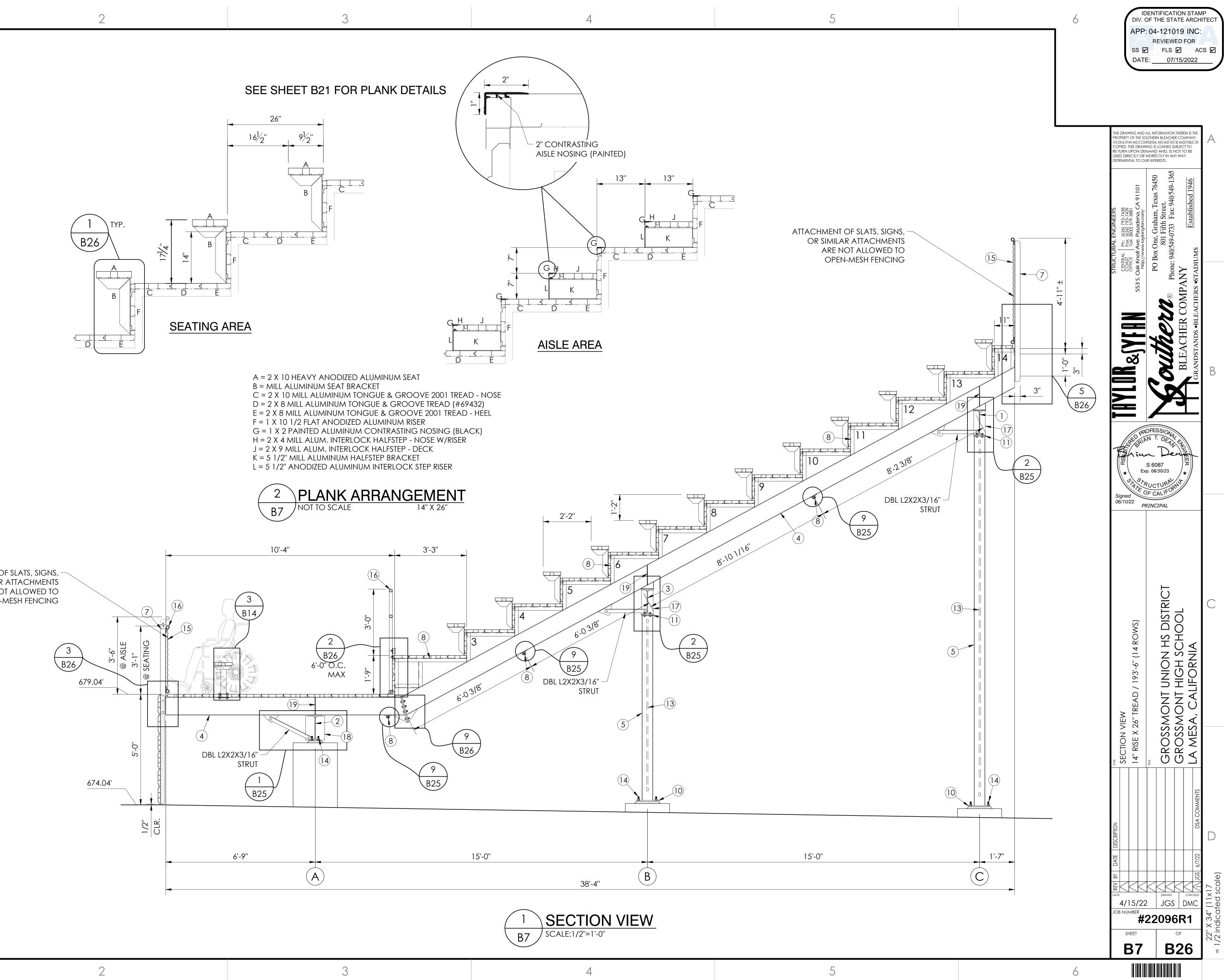
 2 W 14 X 34 (50 ksi) 3 W 14 X 38 (50 ksi) 4 W 10 X 12 (50 ksi) 5 W 6 X 20 (50 ksi) 6 W 8 X 28 (50 ksi) 7 L 3 X 3 X 1/4 (50 ksi) 8 L 2 X 2 X 3/16 (50 ksi) 9 L 2 X 1 1/2 X 3/16 (50 ksi) 10 12 X 12 X 5/8 PLATE 		
 11 6 X 8 X 3/8 PLATE 12 8 X 8 X 3/8 PLATE 13 3/4 X REQ'D LENGTH SWAY ROD (50 ksi) 14 3/4 X 18 ANCHOR BOLT W/2 HEX HEAD NUTS & F 15 9 GAUGE GALV. STEEL CHAINLINK FENCE 16 ANODIZED ALUMINUM RAIL (SEE NOTES) 17 3 X 3/8 GUSSET PLATE (A36) 18 5 X 3/8 GUSSET PLATE (A36) 19 2 X 1/4 GUSSET PLATE (A36) EA. SIDE 	FLAT WASHER	A B B C B C C C C C C C C C C C C C C C
	Attachment of slats, sign or similar attachmen are not allowed open-mesh fencin	NTS TO NG 7
		3 9-E 679.04' 3 826 679.04' 9 8 9 8 9 1 9 1 1 1 1 1 1 1 1 1 1 1 1 1

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ITEM DESCRIPTION

(1) W 14 X 30 (50 ksi)







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- 1		

ITEM DESCRIPTION

1 W 14 X 30 (50 ksi)

(2) W 14 X 34 (50 ksi)

3 W 14 X 38 (50 ksi)

(4) W 10 X 12 (50 ksi)

(5) W 6 X 20 (50 ksi)

(6) W 8 X 28 (50 ksi)

(7) L 3 X 3 X 1/4 (50 ksi)

(8) L 2 X 2 X 3/16 (50 ksi)

(9) L 2 X 1 1/2 X 3/16 (50 ksi)

(10) 12 X 12 X 5/8 PLATE

(11) 6 X 8 X 3/8 PLATE

(12) 8 X 8 X 3/8 PLATE

(13) 3/4 X REQ'D LENGTH SWAY ROD (50 ksi)

(14) 3/4 X 18 ANCHOR BOLT W/2 HEX HEAD NUTS & FLAT WASHER

(15) 9 GAUGE GALV. STEEL CHAINLINK FENCE

(16) ANODIZED ALUMINUM RAIL (SEE NOTES)

(17) 3 X 3/8 GUSSET PLATE (A36)

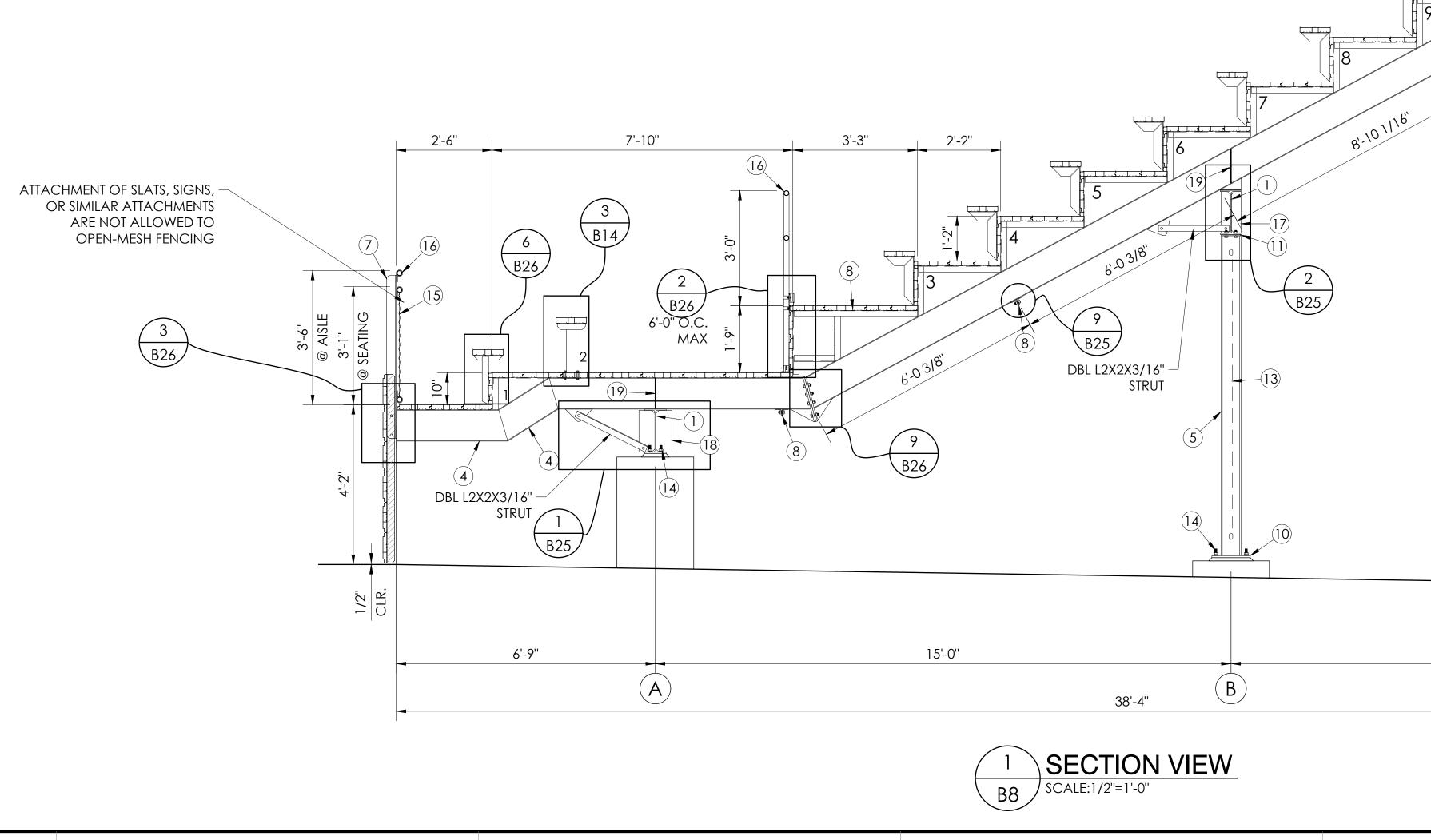
(18) 5 X 3/8 GUSSET PLATE (A36)

(19) 2 X 1/4 GUSSET PLATE (A36) EA. SIDE

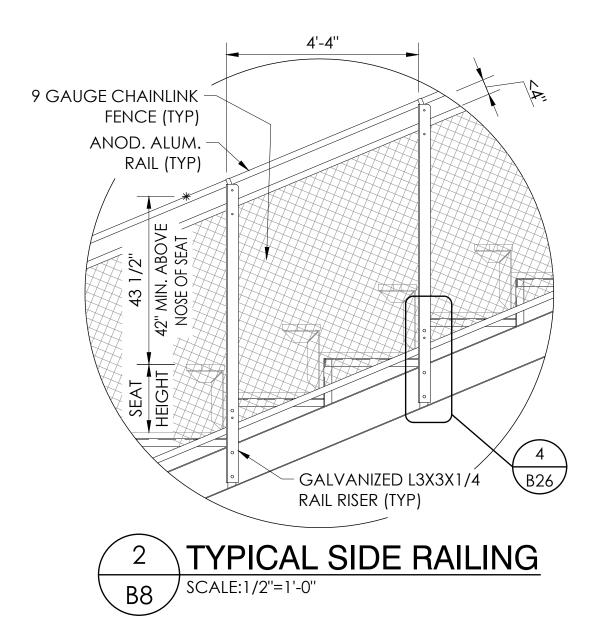
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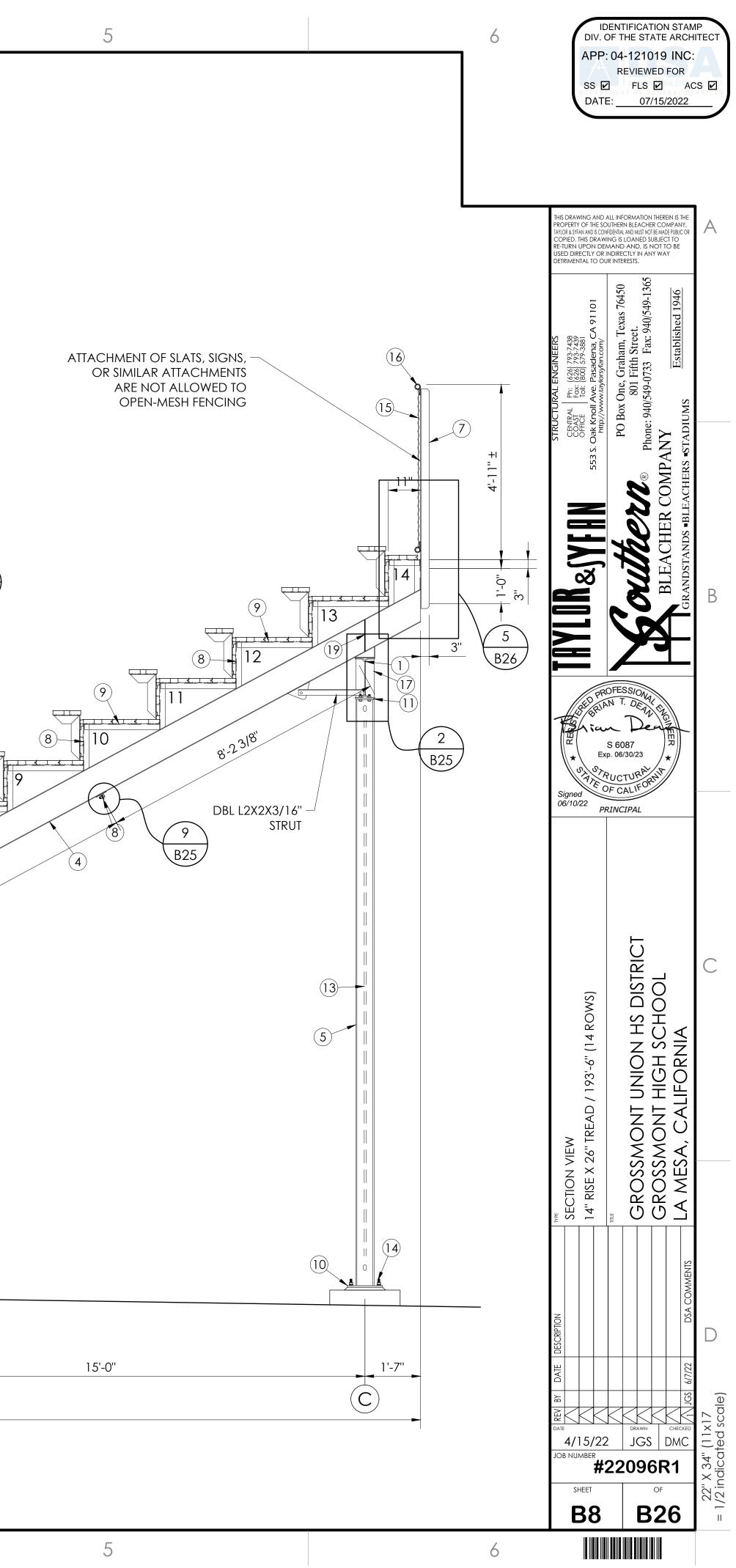


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ITEM DESCRIPTION

(1) W 14 X 30 (50 ksi)

(2) W 14 X 34 (50 ksi)

(3) W 14 X 38 (50 ksi)

(4) W 10 X 12 (50 ksi)

5 W 6 X 20 (50 ksi)

(6) W 8 X 28 (50 ksi)

(7) L 3 X 3 X 1/4 (50 ksi)

(8) L 2 X 2 X 3/16 (50 ksi)

(9) L 2 X 1 1/2 X 3/16 (50 ksi)

(10) 12 X 12 X 5/8 PLATE

(11) 6 X 8 X 3/8 PLATE

(12) 8 X 8 X 3/8 PLATE

(13) 3/4 X REQ'D LENGTH SWAY ROD (50 ksi)

(14) 3/4 X 18 ANCHOR BOLT W/2 HEX HEAD NUTS & FLAT WASHER

(15) 9 GAUGE GALV. STEEL CHAINLINK FENCE

(16) ANODIZED ALUMINUM RAIL (SEE NOTES)

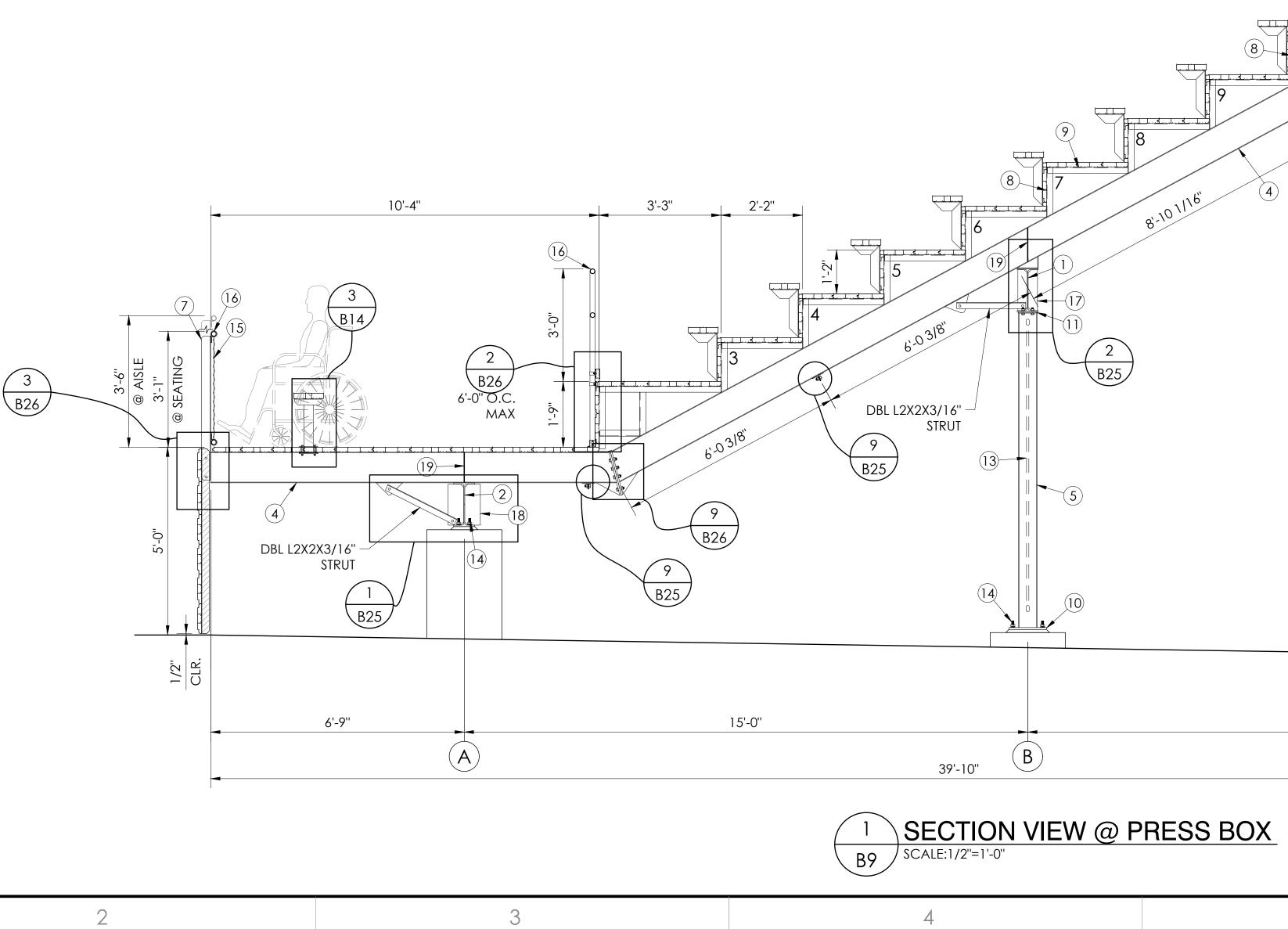
(17) 3 X 3/8 GUSSET PLATE (A36)

(18) 5 X 3/8 GUSSET PLATE (A36)

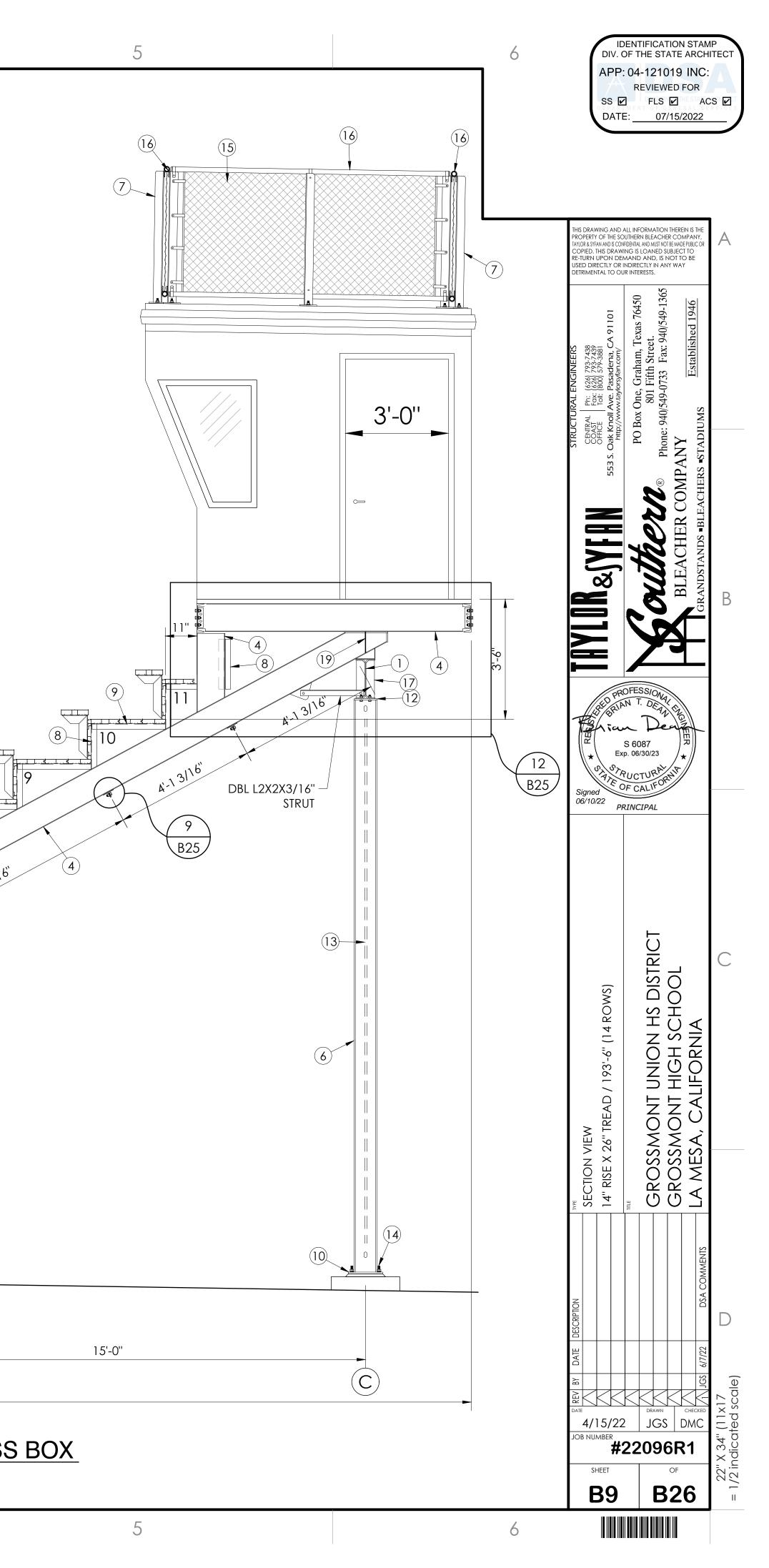
(19) 2 X 1/4 GUSSET PLATE (A36) EA. SIDE

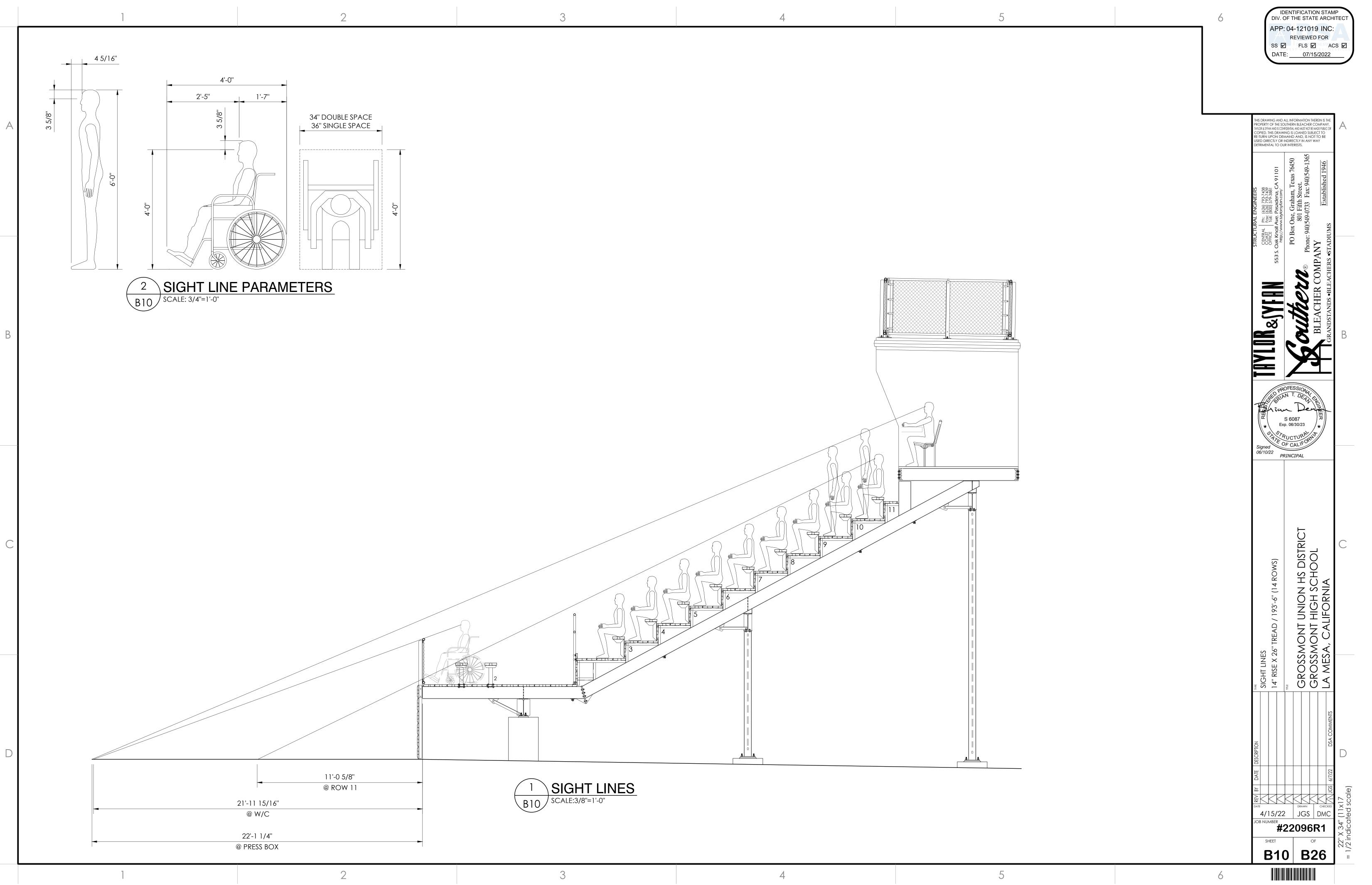
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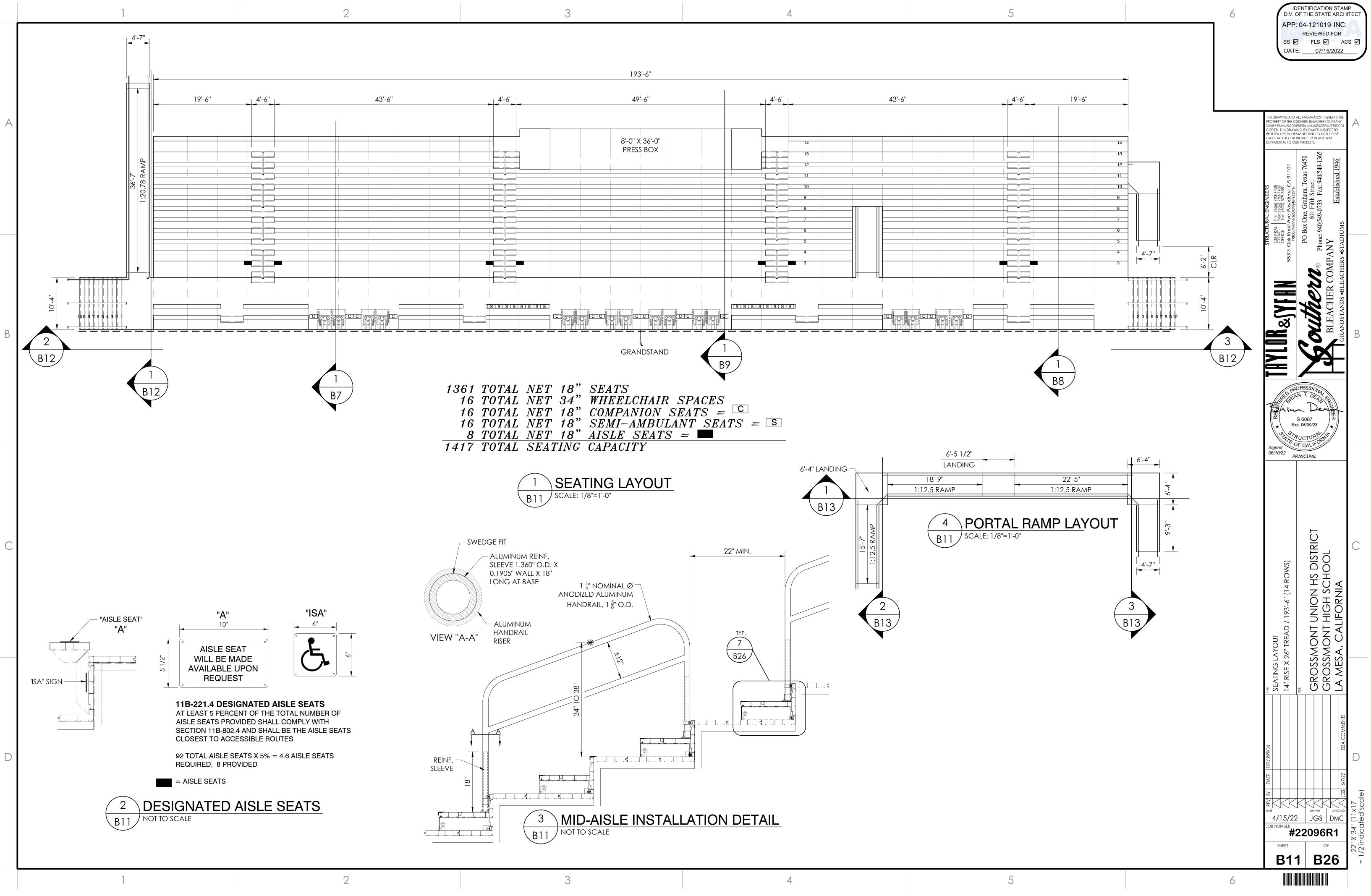
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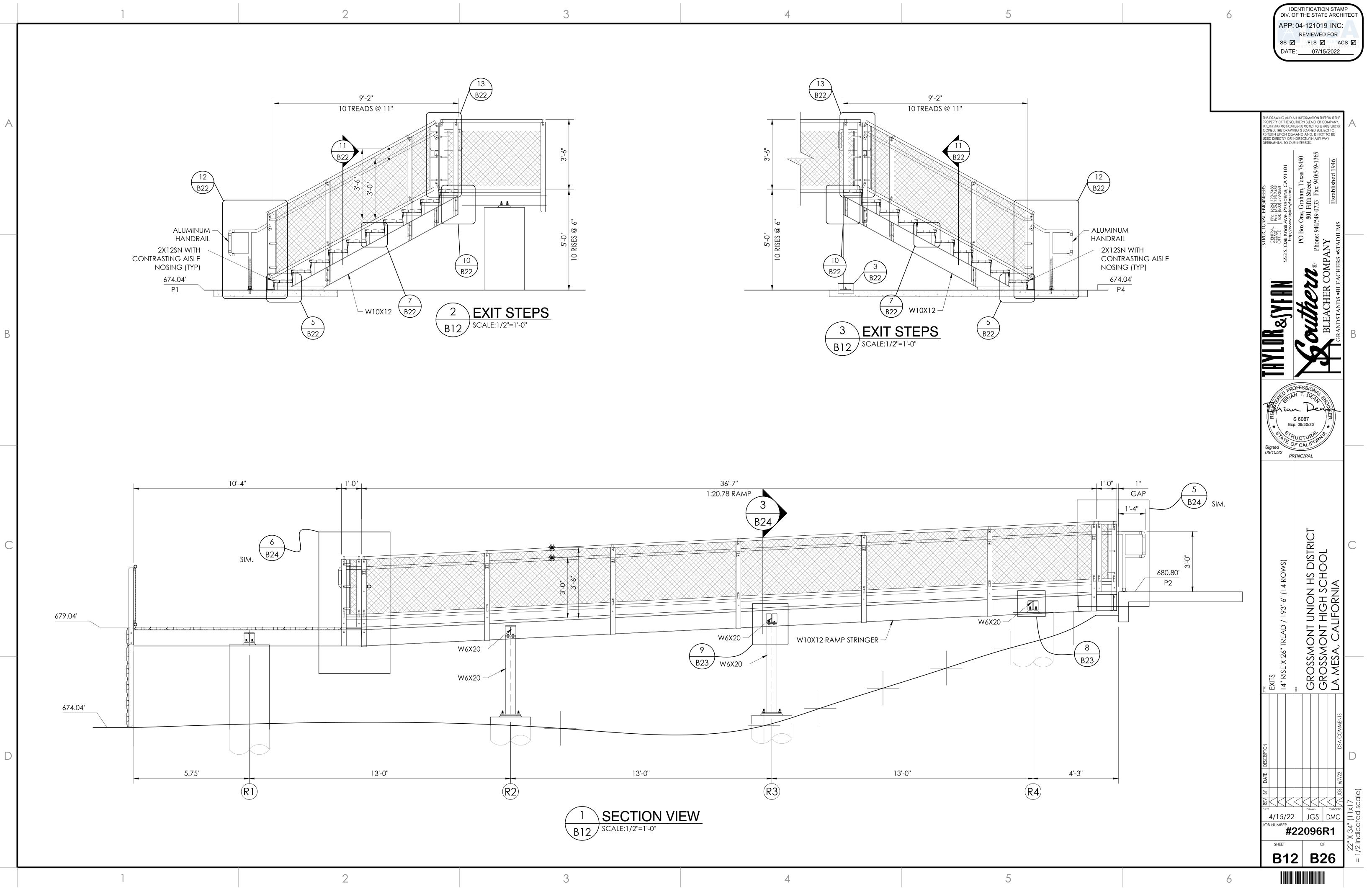


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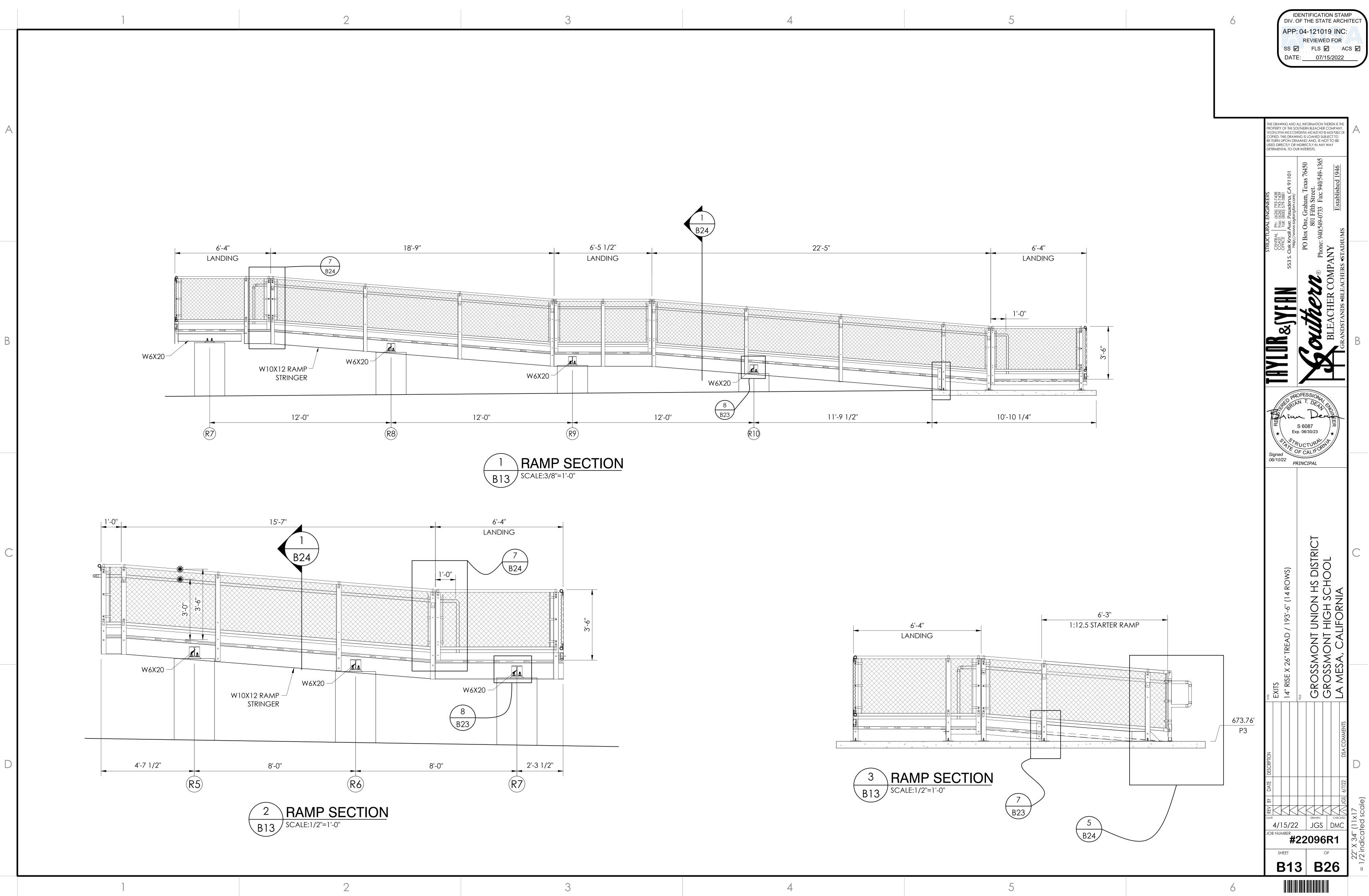










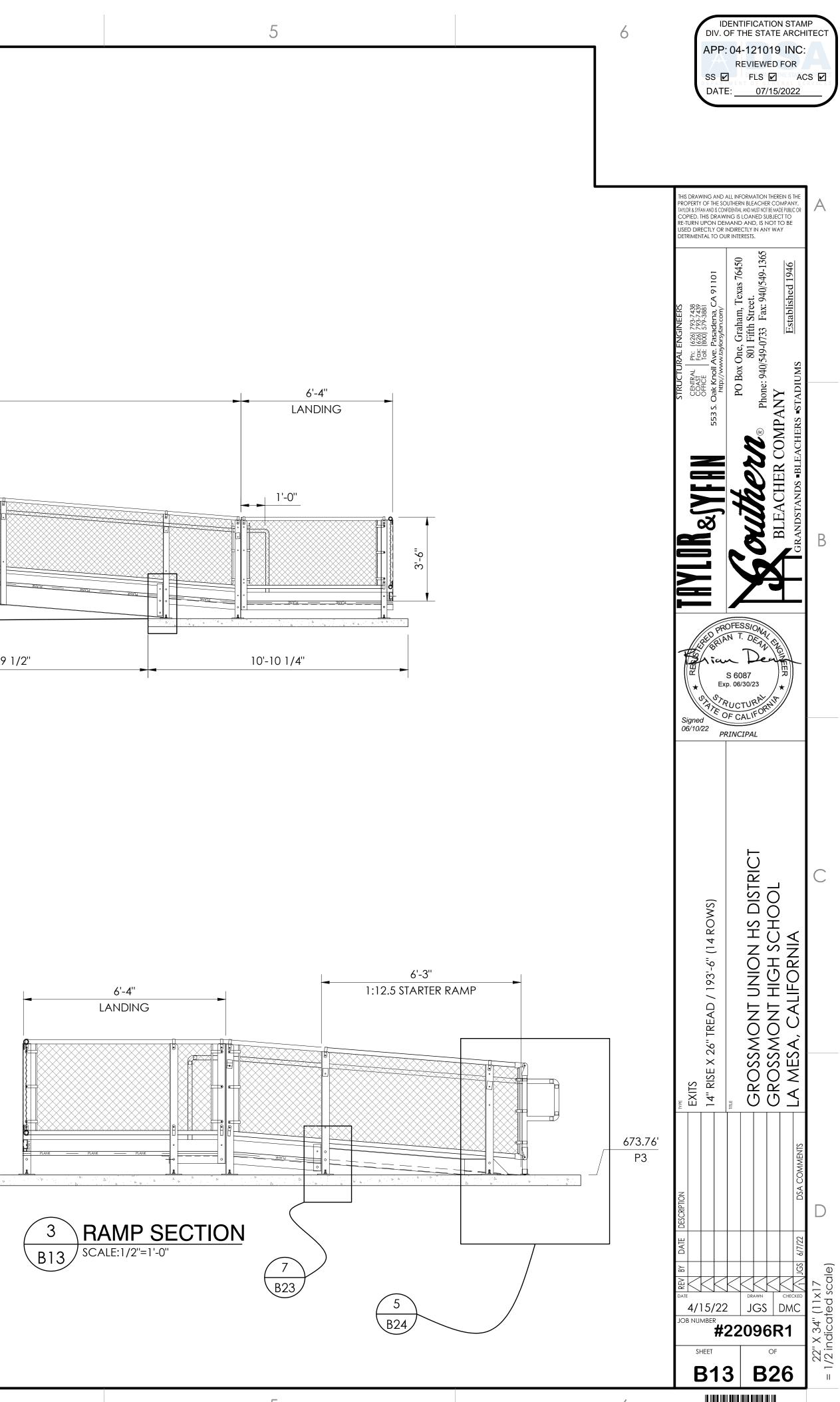


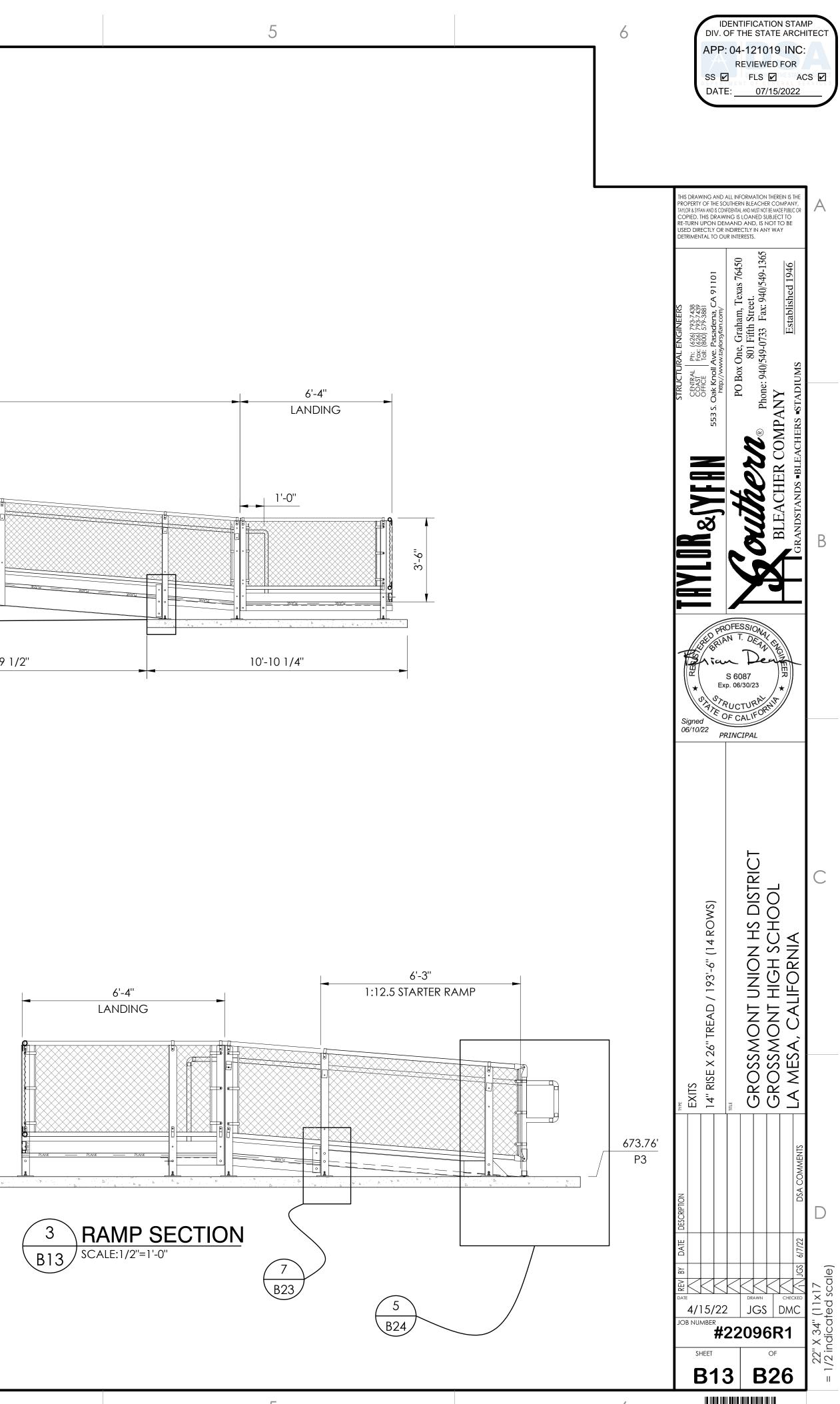


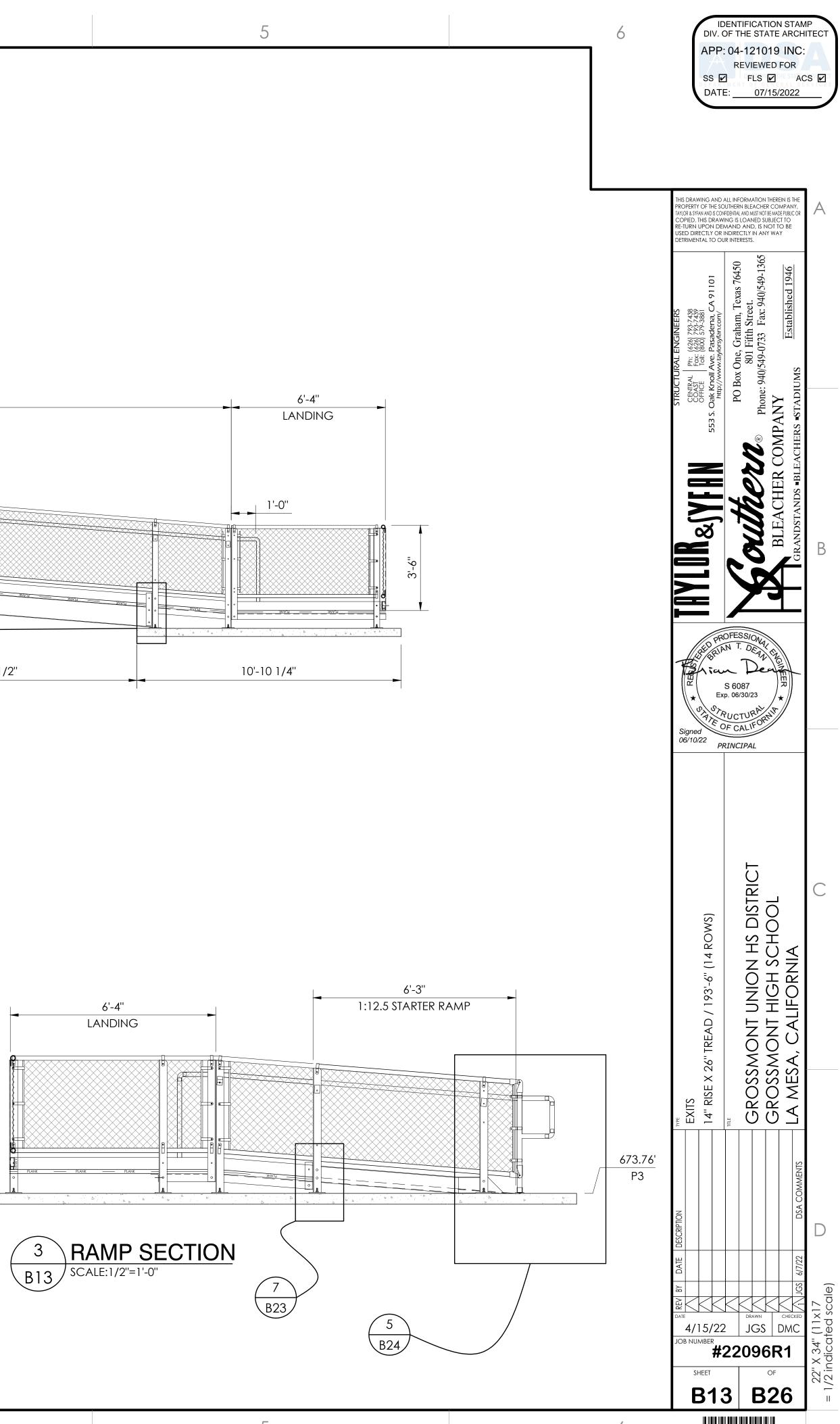


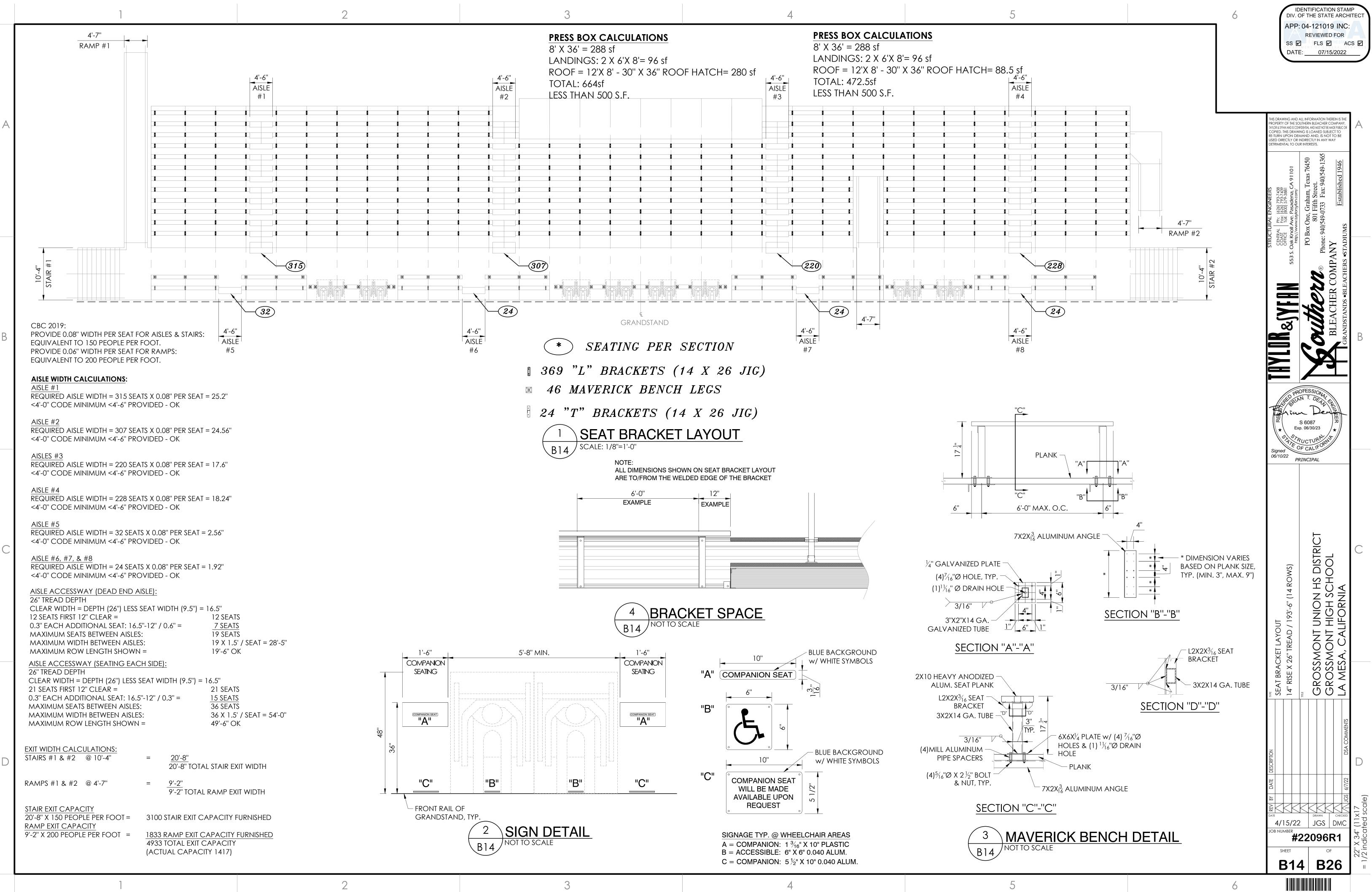


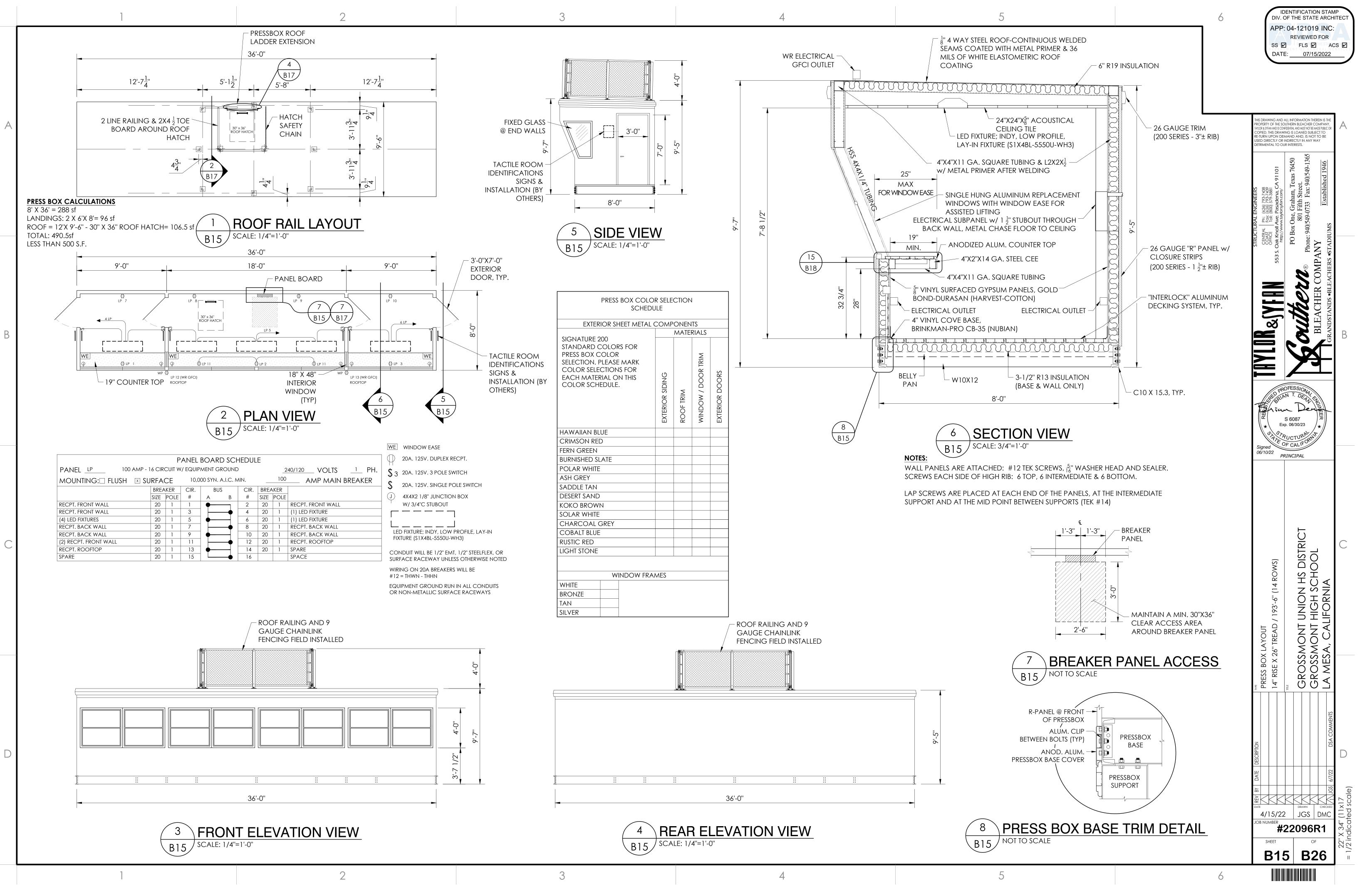


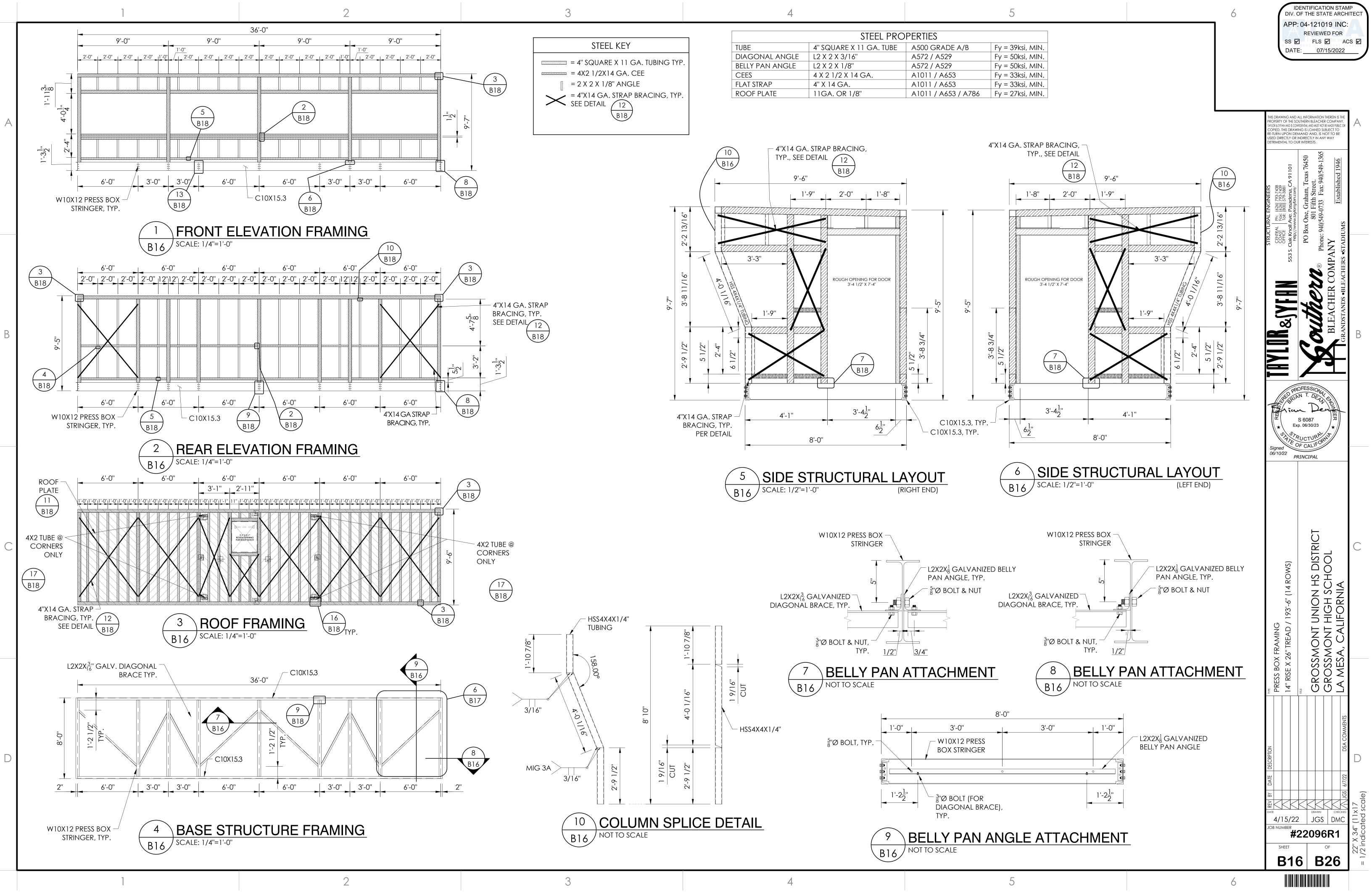




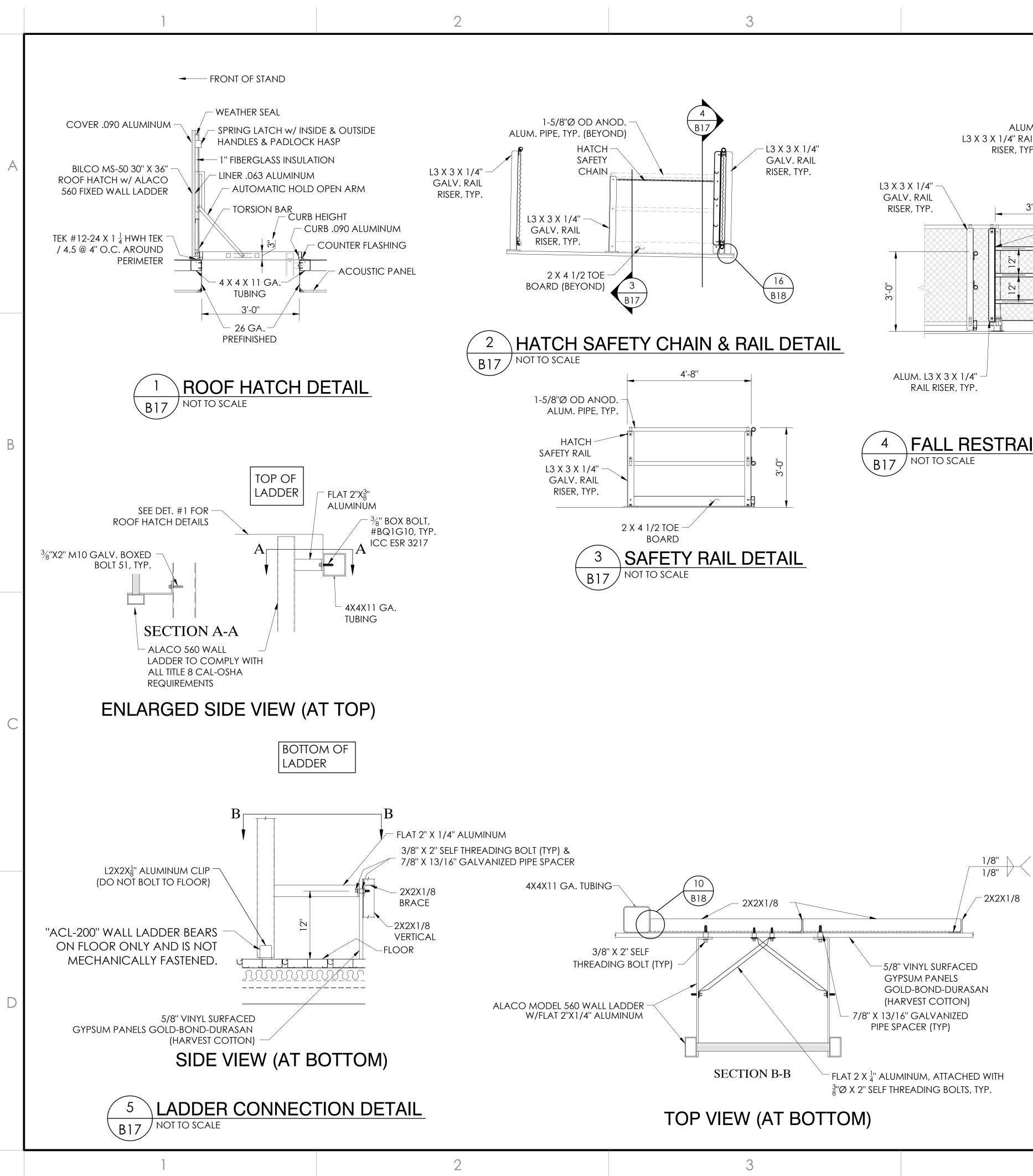


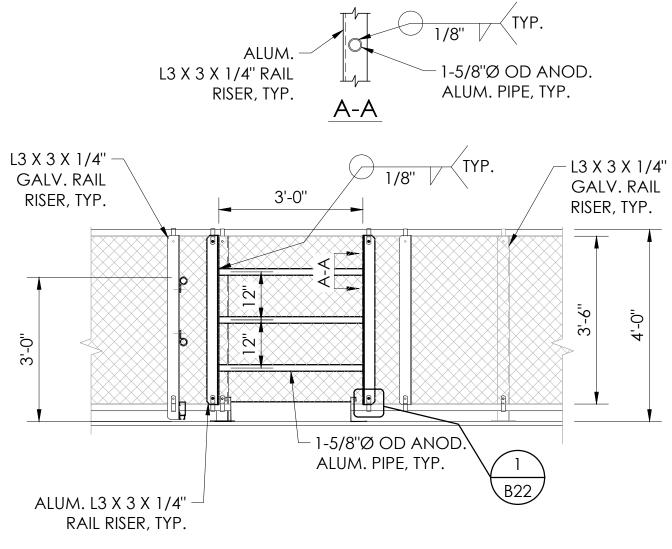












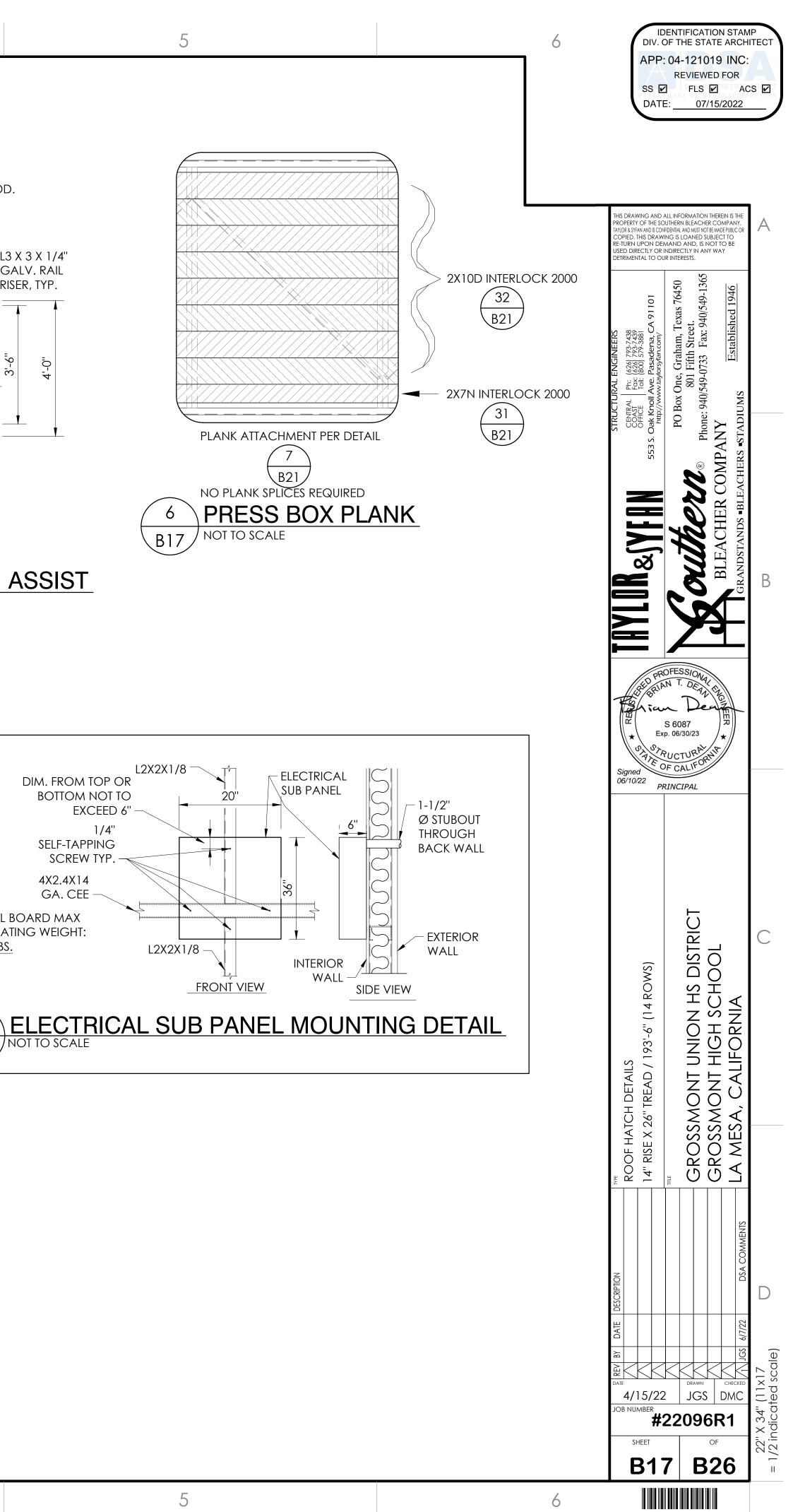
FALL RESTRAINT / ROOF HATCH ASSIST

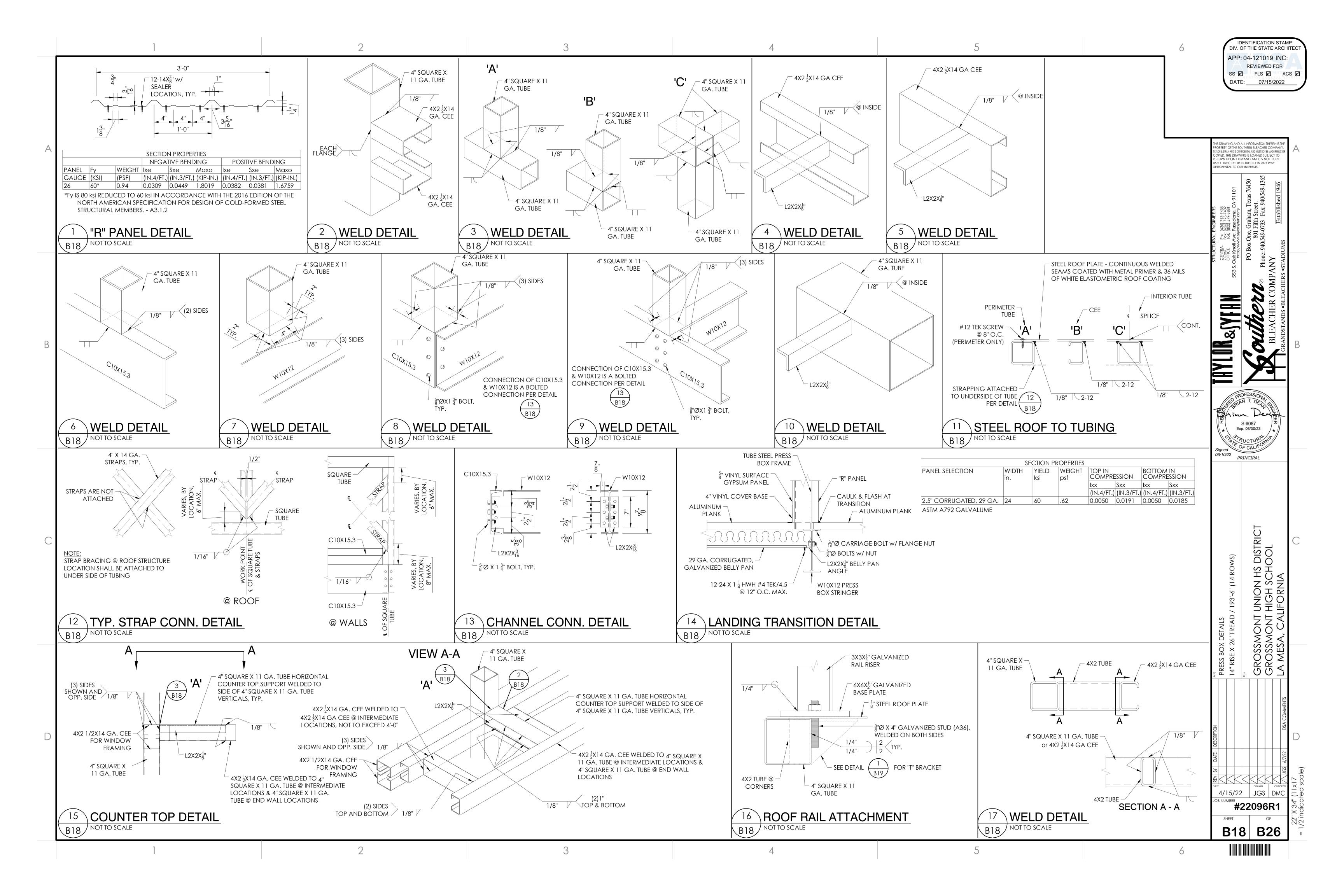
DIM. FROM TOP OR BOTTOM NOT TO EXCEED 6" 1/4" Self-tapping SCREW TYP. 4X2.4X14

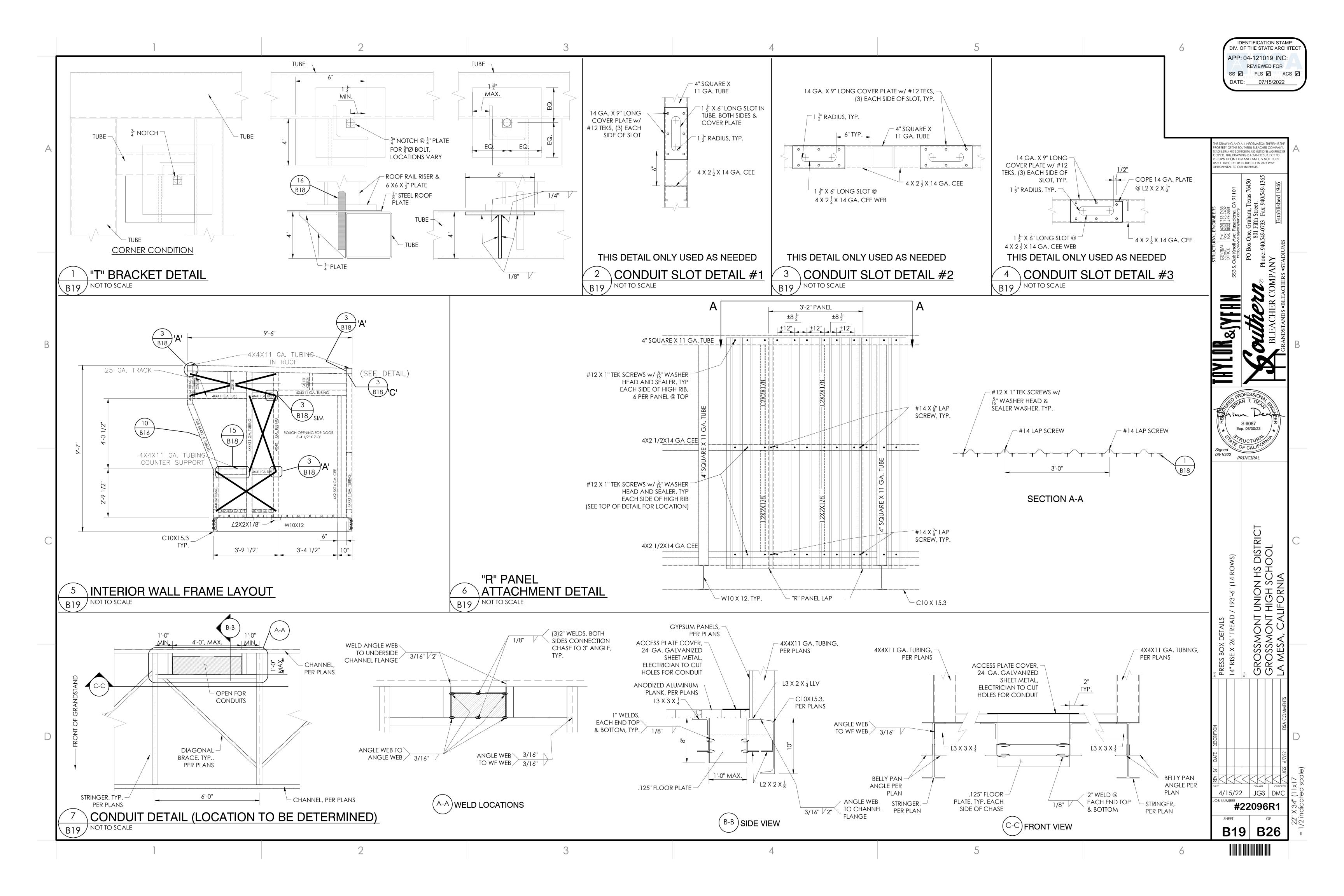
GA. CEE

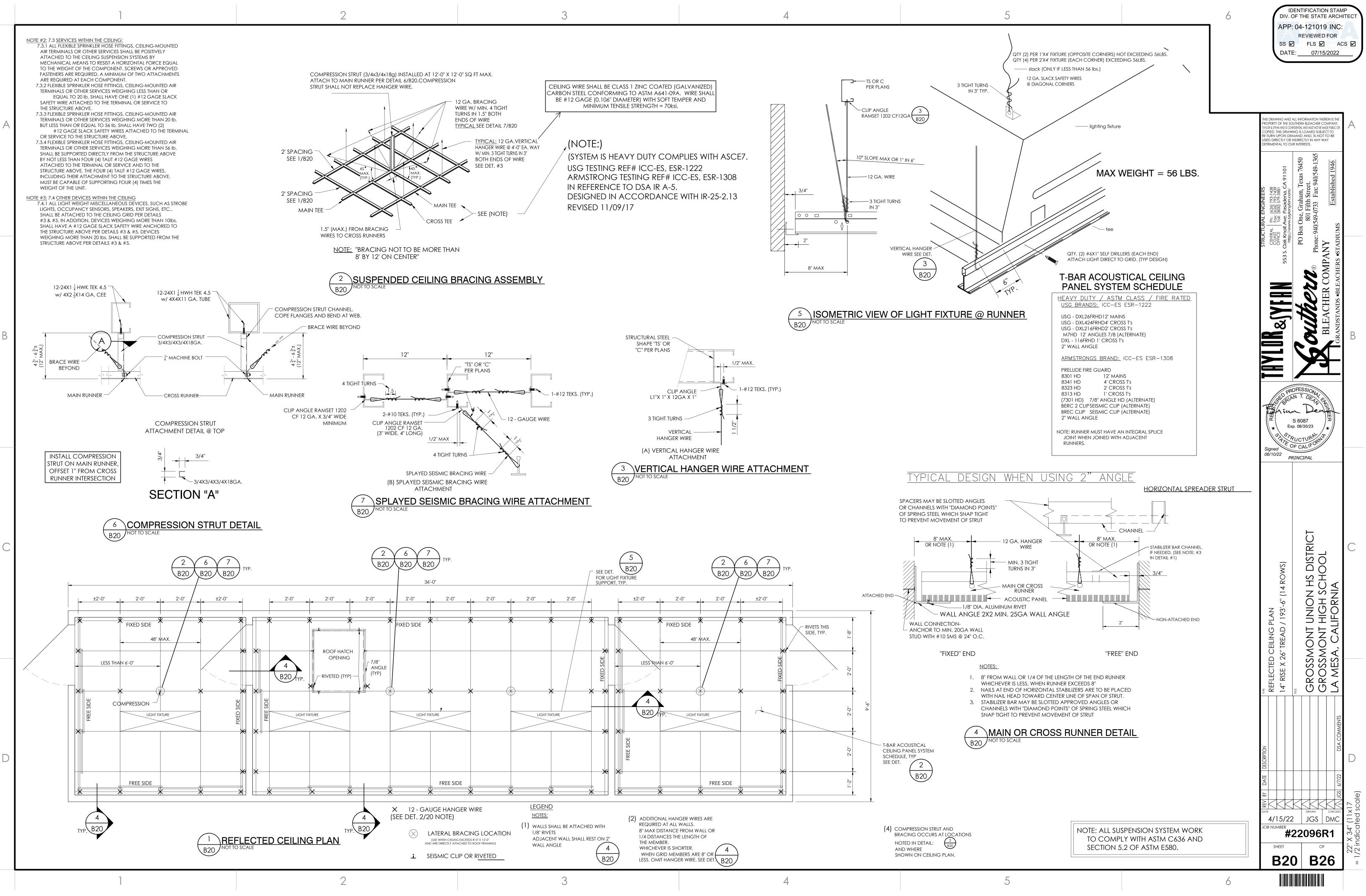
PANEL BOARD MAX **OPERATING WEIGHT:** 100 LBS.

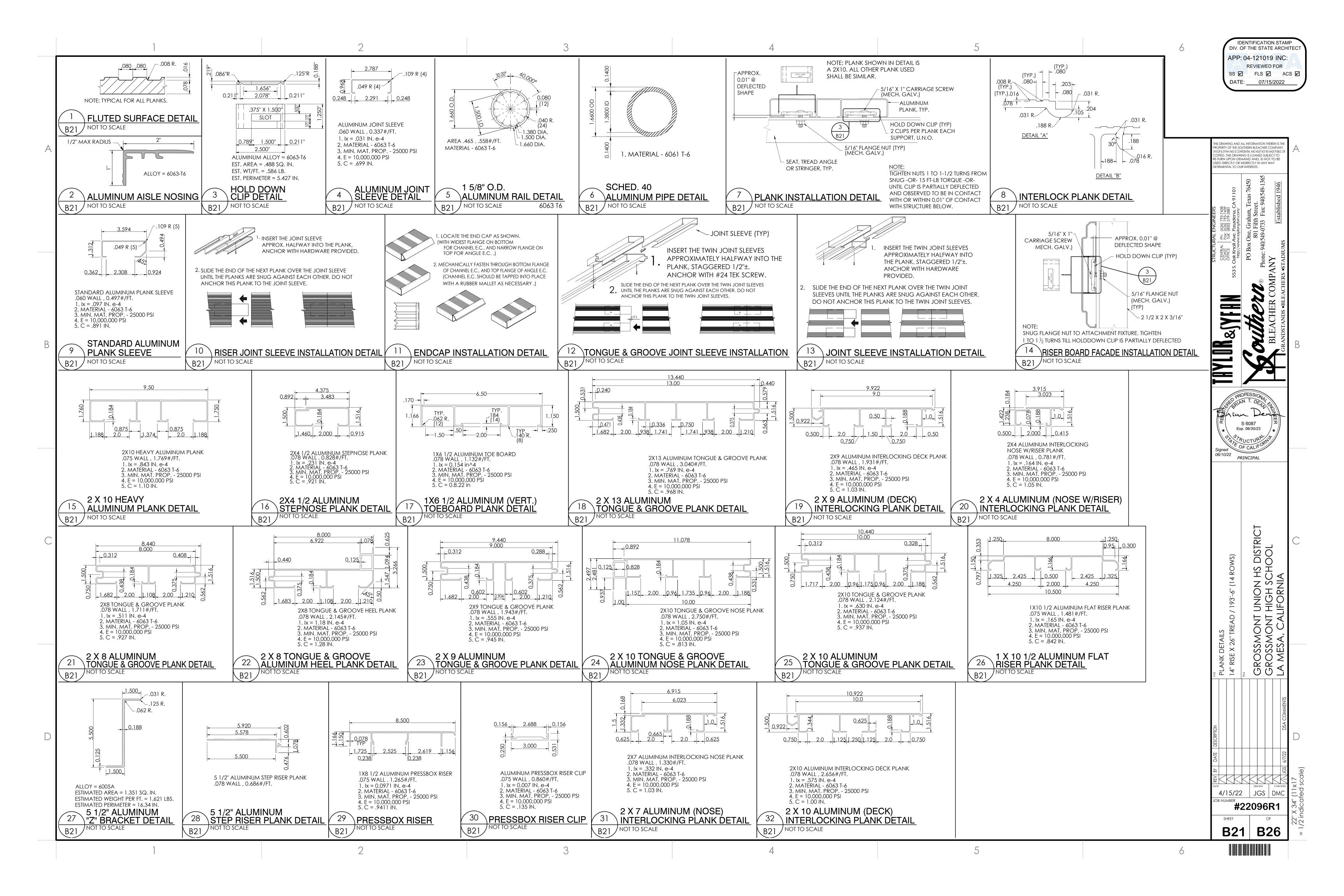


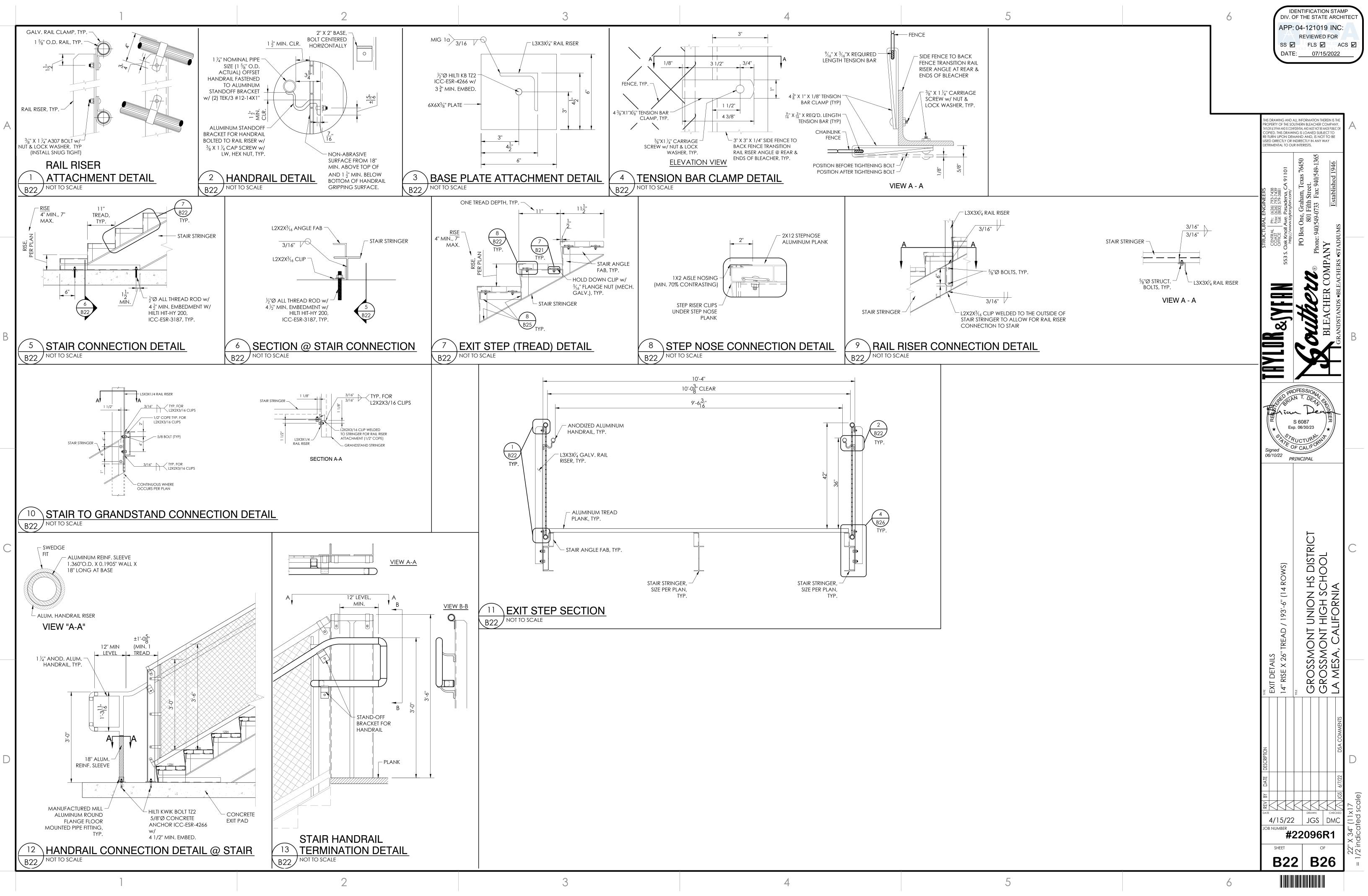


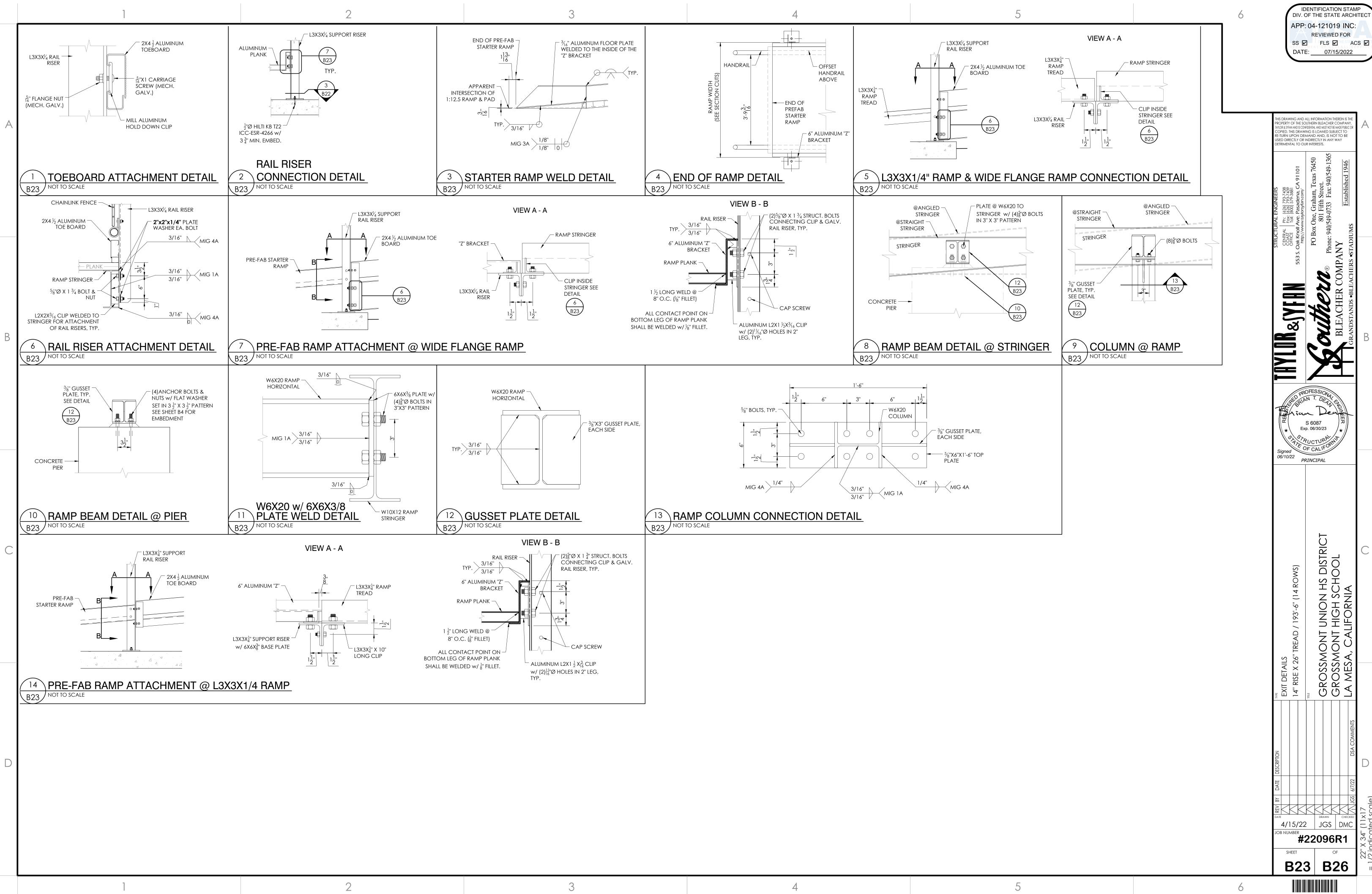


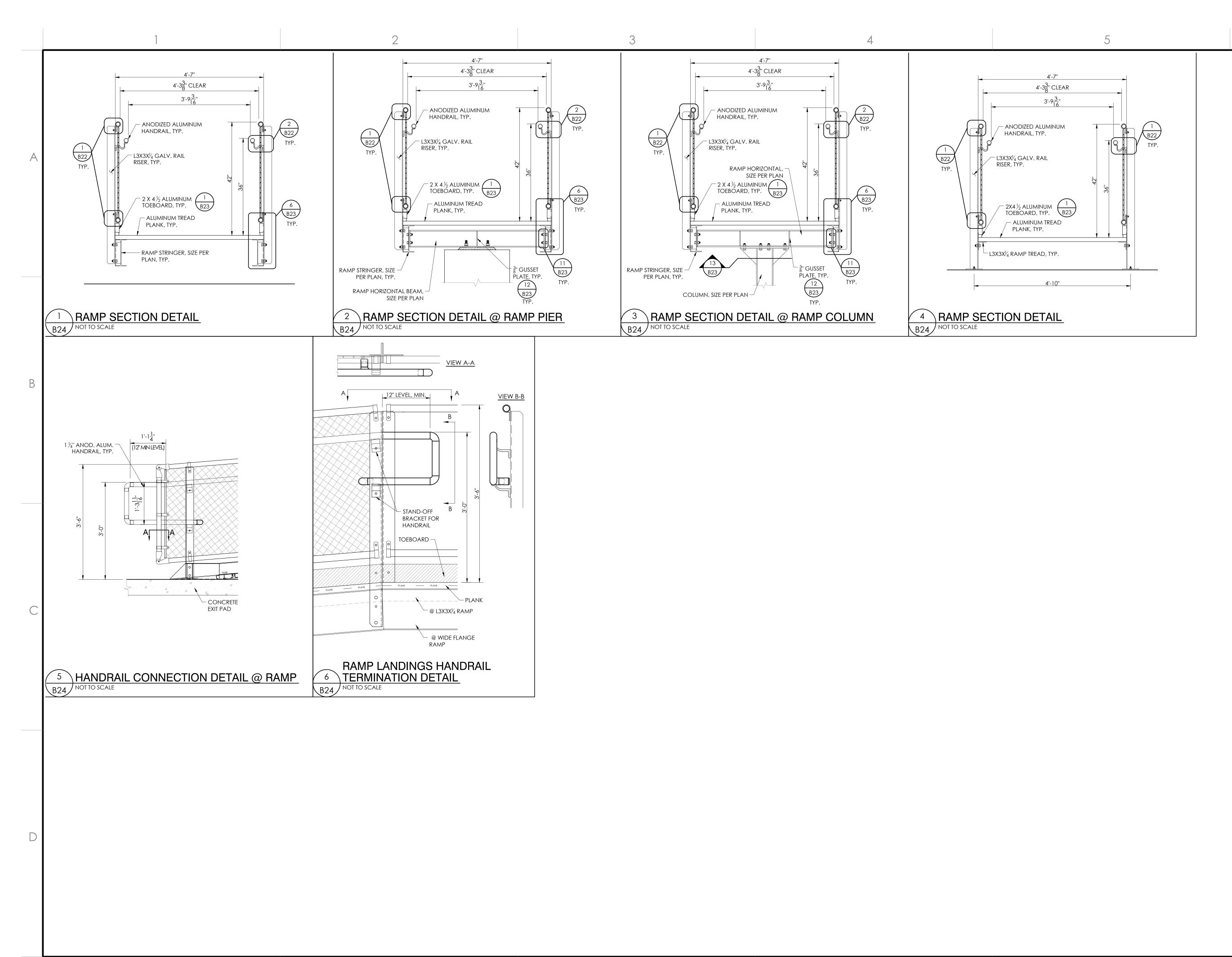


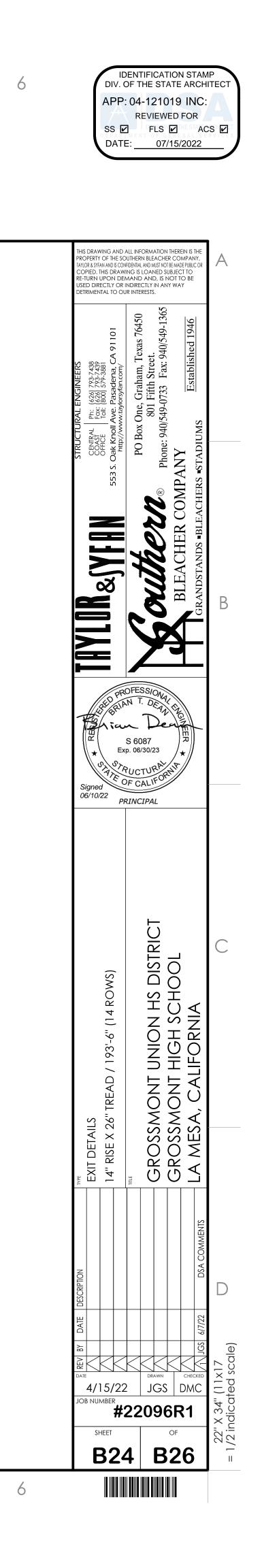


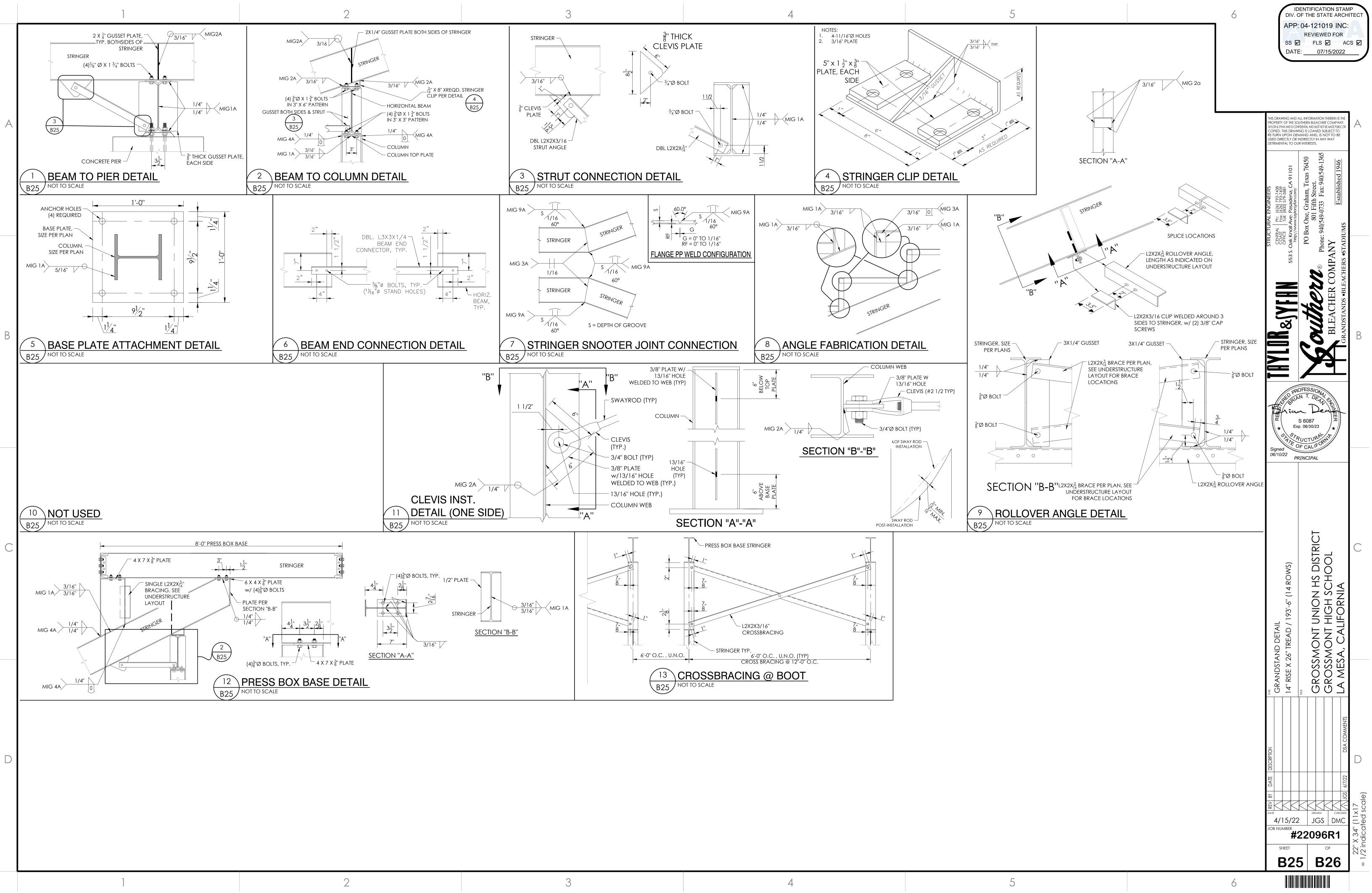


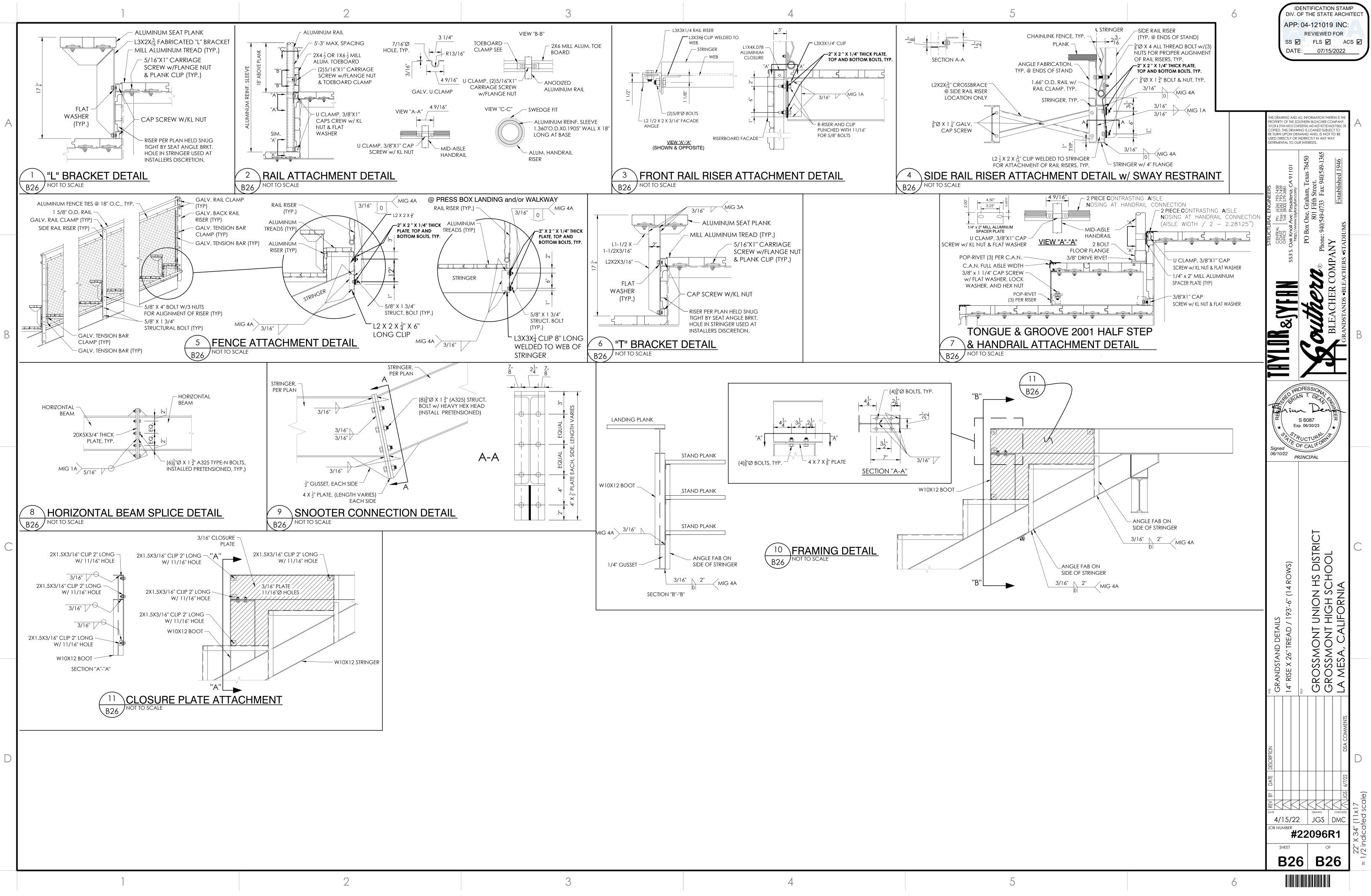












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PROJECT MANUAL

GROSSMONT HIGH SCHOOL NEW PRESS BOX & BLEACHERS

GROSSMONT UNION HIGH SCHOOL DISTRICT

EL CAJON, CA

CONSTRUCTION DOCUMENTS

VOLUME 1 OF 1 Divisions 00 - 32

DSA Application #04 - 121019 File #37-H4

1.30.55A

July 2022

SECTION 00 01 01 PROJECT TITLE PAGE

FOR

GROSSMONT HS PRESS BOX & BLEACHER

PROJECT NUMBER: 1-30-55A

GROSSMONT UNION HIGH SCHOOL DISTRICT

1100 MURRAY DRIVE, EL CAJON, CA 91944

WWW.GUHSD.NET

PROJECT LOCATION

GROSSMONT HIGH SCHOOL

1100 MURRAY DRIVE

EL CAJON, CALIFORNIA 91944

PREPARED BY:

ARCHITECT

RUHNAU CLARKE ARCHITECTS

3775 Tenth Street, Riverside CA 92501 - 5751 Palmer Way, Suite C, Carlsbad, CA 92010

951.684.4664 - 760.438.5899

www.ruhnauclarke.com

Grossmont Union High School District Grossmont HS Press Box & Bleacher RCA Project No. 1-30-55A NOTICE: This Project Manual, is an unpublished instrument of service of the authors. It is prepared for use only on this Project and in conjunction with the authors' interpretations, observations, decisions and administration, as described in the Conditions of the Contract. Desired results without these services cannot be assured. Use in whole or in part, without the authors' services and expressed written consent may violate Act 17 U.S.C. par. 301 (1991).

SECTION 00 01 02 PROJECT INFORMATION

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. Project Name: Grossmont HS Press Box & Bleacher, located at:

Project Number: 1-30-55A.

Grossmont High School.

1100 Murray Drive.

El Cajon, California91944.

B. The Owner, hereinafter referred to as District: Grossmont Union High School District

Grossmont Union High School District

1100 Murray Drive, El Cajon, CA 91944

www.guhsd.net

619.644.8154

1.02 NOTICE TO PROSPECTIVE BIDDERS

A. These documents constitute an Invitation to Bid to and request for qualifications from General Contractors for the construction of the project described below.

1.03 PROJECT DESCRIPTION

- A. Summary Project Description: Removal and replacement of existing 192 sq. ft. press-box, and associated path of travel upgrades.
- B. Contract Scope: Construction, demolition, and renovation.
- C. Contract Terms: Lump sum (fixed price, stipulated sum).

1.04 PROJECT CONSULTANTS

A. The Architect, hereinafter referred to as Architect: Ruhnau Clarke Architects

3775 Tenth Street, Riverside CA 92501 - 5751 Palmer Way, Suite C, Carlsbad, CA 92010 www.ruhnauclarke.com 951.684.4664 - 760.438.5899

1.05 PROCUREMENT TIMETABLE

- A. Last Request for Substitution Due: 14 days prior to due date of bids.
- B. Last Request for Information Due: 14 days prior to due date of bids.
- C. Contract Time: To be stated in bid documents.
- D. The District reserves the right to change the schedule or terminate the entire procurement process at any time.

1.06 PROCUREMENT DOCUMENTS

- A. Availability of Documents: Complete sets of procurement documents may be obtained:
 - 1. From District at the Project Manager's address listed above.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

	TIFICATION S THE STATE A	
APP: 04	4-121019 I	NC:
Í /⁺∖ F		OR
ss 🗹	FLS 🗹	ACS 🗹
DATE:	07/15/20	

SECTION 00 01 07 SEALS PAGE

ARCHITECT OF RECORD (AOR)

RUHNAU CLARKE ARCHITECTS

3775 Tenth Street, Riverside CA 92501 - 5751 Palmer Way, Suite C, Carlsbad, CA 92010 Roger Clarke, Architect of Record C-21340 signed 7/7/2022

ELECTRICAL ENGINEER OF RECORD (EEOR)

JOHNSON CONSULTING ENGINEERS, INC.

12875 Brookprinter Place, #300, Poway CA 92064 Monica Goese-Hansen E-14781 signed 7/7/2022



CIVIL ENGINEER OF RECORD (CEOR)

CROSS CIVIL ENGINEERING

4653 Carmel Mountain Rd. Suite 308, San Diego CA 92130 Jeff Reno Cross C-67530 signed 7/7/2022



END OF SEALS PAGE

SECTION 00 01 10 TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

DIVISION 00 -- PROCUREMENT AND CONTRACTING REQUIREMENTS

- 00 01 01 Project Title Page
- 00 01 02 Project Information
- 00 01 07 Seals Page
- 00 01 10 Table of Contents
- 00 40 25 Request for Information
- 00 43 25 Substitution Request Form During Procurement
- 00 63 25 Substitution Request Form During Construction

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

- 01 10 00 Summary
- 01 20 00 Price and Payment Procedures
- 01 25 00 Substitution Procedures
- 01 30 00 Administrative Requirements
 - 01 30 00.01 Request for Interpretation
 - 01 30 00_02 Submittal Transmittal
- 01 35 53 Security Procedures
- 01 40 00 Quality Requirements
- 01 41 00 Regulatory Requirements
- 01 42 19 Reference Standards
- 01 45 33 Code-Required Special Inspections
- 01 50 00 Temporary Facilities and Controls
- 01 58 13 Temporary Project Signage
- 01 60 00 Product Requirements
- 01 61 16 Volatile Organic Compound (VOC) Content Restrictions

01 61 16.01 - Accessory Material VOC Content Certification Form

- 01 70 00 Execution and Closeout Requirements
- 01 71 23 Field Engineering
- 01 74 19 Construction Waste Management and Disposal
- 01 78 00 Closeout Submittals

Grossmont Union High School District Grossmont HS Press Box & Bleacher RCA Project No. 1-30-55A 01 78 00.01 - Warranty Form Letter

01 79 00 - Demonstration and Training

DIVISION 02 -- EXISTING CONDITIONS

02 41 00 - Demolition

DIVISION 05 -- METALS

05 50 00 - Metal Fabrications

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION

07 92 00 - Joint Sealants

DIVISION 10 -- SPECIALTIES

10 14 00 - Signage

10 14 53 - Traffic, Parking and Site Signage

DIVISION 13 -- SPECIAL CONSTRUCTION

13 34 16 - Grandstands and Bleachers

DIVISION 26 -- ELECTRICAL

26 01 00 - Electrical General Provisions

- 26 05 19 Power Conductors
- 26 05 26 Grounding
- 26 05 33 Conduit and Fittings
- 26 05 34 Outlet and Junction Boxes
- 26 05 43 Underground Pull Boxes and Manholes
- 26 24 16 Panelboards
- 26 27 26 Switches and Receptacles
- 26 28 16 Disconnects

DIVISION 27 -- COMMUNICATIONS

- 27 01 00 Communications General Provisions
- 27 10 00 Voice / Data /IP Intercom-Clock Infrastructure
- 27 20 00 Sound System

DIVISION 28 -- ELECTRONIC SAFETY AND SECURITY

28 01 00 - Electronic Safety and Security General Provisions

28 13 00 - Security System

28 30 01 - Fire Alarm Voice Evacuation System

DIVISION 31 -- EARTHWORK

31 10 00 - Site Clearing

Grossmont Union High School District Grossmont HS Press Box & Bleacher RCA Project No. 1-30-55A

- 31 22 00 Grading
- 31 23 16 Excavation
- 31 23 23 Fill
- 31 63 29 Drilled Concrete Piers and Shafts

DIVISION 32 -- EXTERIOR IMPROVEMENTS

- 32 11 23 Aggregate Base Courses
- 32 12 16 Asphalt Paving
- 32 13 13 Site Concrete

END OF SECTION

SECTION 00 40 25 **REQUEST FOR INFORMATION**

FI NUMBER:	DATE:	
ROJECT NAME: GROS	SMONT HS PRESS BOX & BLEACHE	R PROJECT NO.: 1-30-55A
TO:	RUHNAU CLARKE ARCHITECTS	
. Constru	ction Manager	
Attention:		
Contractor:		
Address		
 Request By:		Date:
BRIEF SUMMARY	OF RFI:	
Specification	Section Ti	Detail No tle
	Paragraph	۱
DETAILS OF THIS	RFI:	
	·····	
 Attachments:		
RESPONSE WILL E	E INCLUDED IN AN ADDENDUM	
Grossmont Union High S Grossmont HS Press Bo		Request for Informatio

RCA Project No. 1-30-55A

END OF RFI

SECTION 00 43 25 SUBSTITUTION REQUEST FORM - DURING PROCUREMENT

SUBSTITUTION REQUEST NO. _____

DATE: _____

PROJECT NAME: GROSSMONT HS PRESS BOX & BLEACHER

PROJECT NUMBER: 1-30-55A

TO: RUHNAU CLARKE ARCHITECTS

Construction Manager

From: _____

.

We hereby submit for your consideration the following product comparisons of the specified product and the proposed substitution. The undersigned fully understands that failure to answer any item below may be cause for rejection of request for substitution.

Request for substitution shall only be made during bidding (not later than 7 days prior to bid opening for inclusion by Addendum) except under conditions beyond control of Contractor.

	Project Manual Section Title	Number	Page	Paragraph
	Drawing No		Detai	l No
	Proposed Substitution:			
	Manufacturer:		Те	l:
A.	Is the point-by-point comparative data attached? — REQUIRED BY A/E			
В.	Reason request for substitution is being submitt	ed:		
DI	FFERENCES BETWEEN PROPOSED SUBSTITUTION	AND SPECIFIED I	PRODUCT	
C.	Does proposed substitution affect in any way th & Life Safety portions of the project? No Yes		ty, Access (Compliance, or Fir
	Explain			

D. Does proposed substitution affect dimensions, gages, weights, etc. on Drawing? No__Yes__ Explain _____

Grossmont Union High School District	Substitution Request Form - During
Grossmont HS Press Box & Bleacher	Procurement
RCA Project No. 1-30-55A	00 43 25 - 1

E.	Does proposed substitution require changes in Drawings or design and installation changes?
	NoYes

(If yes, cost of these changes is the responsibility of the Contractor.)

- F. Does proposed substitution affect product cost, delivery time, or construction schedule? No__Yes___ Explain _____
- G. Does proposed substitution comply with specified ICC Number, UL Rating, ASTM Numbers? No___ Yes___ Explain _____
- H. Does proposed substitution affect other trades and systems such as wiring, piping, ductwork, structure, etc.? No ____ Yes ____ (Explain which and how) _____
- I. Does proposed substitution product guarantee differ from that of the specified product? No___ Yes___ Explain _____

Attach a listing of 3 similar projects (one in service for at least 3 years) using the proposed substitution.

Substantiating Data: Attach product data/brochures and Vendor qualifications for both specified and substitute product. Provide samples for both specified and substitute products, if applicable.

Certification: Undersigned has examined Construction Documents, is familiar with specified product, understands indicated application of product, and understands design intent of the Architect caused by the requested substitution.

Submitted by: _____

.(Type Name) Signature

Date

Signature must be made by person having legal authority to bind his firm to the above terms.

END OF SECTION

SECTION 00 63 25 SUBSTITUTION REQUEST FORM - DURING CONSTRUCTION

SUBSTITUTION REQUEST NO.

DATE: _____

PROJECT NAME: GROSSMONT HS PRESS BOX & BLEACHER

PROJECT NUMBER: 1-30-55A

TO:

RUHNAU CLARKE ARCHITECTS

Construction Manager

From: _____

.

We hereby submit for your consideration the following product comparisons of the specified product and the proposed substitution. The undersigned fully understands that failure to answer any item below may be cause for rejection of request for substitution.

This request for substitution form shall only be used after the end of the bidding period except under conditions beyond control of Contractor.

Specified Product:			
Project Manual Section Title	_ Number	Page	Paragraph
Drawing No		Detai	No
Proposed Substitution:			
Manufacturer:		Tel	:
Reason request for substitution is being submitted:			
Does proposed substitution affect in any way the Str	uctural Safet	ty, Access C	Compliance, or Fire
& Life Safety portions of the project? No Yes			

-	•
Exp	ain

Α.

Β.

- C. Does proposed substitution affect dimensions, gages, weights, etc. on Drawing? No__ Yes__ Explain
- D. Does proposed substitution require changes in Drawings or design and installation changes?

(If yes, cost of Architect and Engineer document changes are the responsibility of the Contractor.)

Grossmont Union High School DistrictSubstitution Request Form - DuringGrossmont HS Press Box & BleacherConstructionRCA Project No. 1-30-55A00 63 25 - 1

E.	Does	proposed	substitution affect product cost, delivery time, or construction schedule	?
	No	Yes	xplain	

- F. Does proposed substitution comply with specified ICC Number, UL Rating, ASTM Numbers? No___ Yes___ Explain _____
- G. Does proposed substitution affect other trades and systems such as wiring, piping, ductwork, structure, etc.? No _____ Yes _____ (Explain which and how) ______

	n their work been in	•		_	
Does proposed subs NoYesExpla					uct?
If the substitution re	equest is accepted, i	it will result	: in:		
No cost impact	t Improve	Schedule _	Credit of \$		
Attach a listing of 3 substitution.	projects (one in serv	vice for at l	east 3 years) usir	g the proposed	
Substantiating Data specified and substi- if applicable.					
Certification: Under product, understand Architect caused by	ds indicated applicat	tion of proc		•	
Submitted by:					
			_		
.(Type Name)	Signature	Date	5		
	-		-	s firm to the abov	e teri
Signature must be n	nade by person havi		-	s firm to the abov	e teri
Signature must be n Architect's Commen	nade by person havi	ing legal au	thority to bind hi		
Signature must be n Architect's Commen Accepted,	nade by person havi nts:	ing legal au	thority to bind hi		
Signature must be n Architect's Commen Accepted,	nade by person havi nts:	ing legal au	thority to bind hi not accepted,		
Signature must be n Architect's Commen Accepted, Reviewed by:	nade by person havi nts:	ing legal au	thority to bind hi not accepted,		
Signature must be n Architect's Commen Accepted, Reviewed by: Architect	nade by person havi nts: accepted as no Date	ing legal au	thority to bind hi not accepted,		

Grossmont Union High School District Grossmont HS Press Box & Bleacher RCA Project No. 1-30-55A

SECTION 01 10 00 SUMMARY

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Grossmont HS Press Box & Bleacher
- B. District's Name: Grossmont Union High School District.
- C. Architect's Name: Ruhnau Clarke Architects.
- D. The Project consists of the construction of a new press box in combination with a new bleacher structure located at Grossmont High School.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: Multiple prime contracts each based on a Stipulated Price as described in Owner-Contractor Agreement.
- B. The Work: The Work is construction and related services for a , CBC, Occupancy Type Assembly Group A-2 and Educational Group E, Construction Type V-B, , totaling approximately TBD square feet.

1.03 CONTRACT DOCUMENTS

- A. Contract Requirements:
 - 1. Conditions of the Contract and other Contract documents have been included in the Project Manual, as indicated in the Table of Contents.
 - a. Such documents are not Specifications.
 - 2. Specifications are found in technical sections of the Project Manual.
- B. Contract Drawings: The Drawings provided with and identified in the Project Manual are the Drawings referenced in the Agreement.
 - 1. The location, extent and configuration of the required construction and improvements are shown and noted on Drawings.
 - a. The Drawings are referenced in the Agreement.
 - b. An index of Drawings is included in the set of Drawings.
 - Drawings are arranged into series according to design discipline. Such organization and all references to trades, subcontractor, specialty contractor or supplier shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of the Work to be performed by any trade.
 - 3. Where the terms "as shown", "as indicated", "as noted", "as detailed", "as scheduled", or terms of like meaning, are used in the Drawings or Specifications, it shall be understood that reference is being made to the Drawings referenced in the Agreement.
 - 4. Where reference to the word "plans" is made anywhere in Drawings, Specifications and related Contract Documents, it shall be understood to mean the Drawings referenced in the Agreement.

- C. Contract Specifications: The Specifications provided in the Project Manual are the Specifications referenced in the Agreement.
 - 1. Specifications are organized by Divisions and Sections in accordance with the recommended practices of the Construction Specifications Institute.
 - a. Such organization shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.
 - 2. Specifications are included in the Project Manual, which may also include other Bidding and Contract Documents.
 - a. Contents of the Project Manual are listed in Document 00 01 10 Table of Contents, in the Project Manual.

1.04 WORK BY OWNER

- A. Concurrent Work Under Separate Contracts:
 - 1. Work Under Separate Contracts: District will award separate contracts for products and installation for interior improvements and other work as may be indicated on Drawings as NIC (Not in Contract).
 - 2. Relationship to Work Under the Contract:
 - a. Work under the Contract shall include all provisions necessary to make such concurrent work under separate contracts complete in every respect and fully functional, including field finishing.
 - b. Provide necessary backing, supports, piping, conduit, conductors and other such provisions from point of service to point of connection, as shown on Drawings and specified herein.
 - 3. Related Contract Documents:
 - a. District will make available, in a timely manner, drawings and specifications of work under separate contracts for coordination and further description of that work.
 - b. Such drawings and other data required for the coordination of the work of separate contracts with the Work of this Contract may be included with the Contract Documents.
 - c. If so, they are provided for convenience only and are not to be considered Contract Documents produced by Architect or Architect's consultants.
 - 4. Permits, Notices and Fees:
 - a. Permits, Notices and Fees: Notices required by and approvals required of authorities having jurisdiction for work under separate contracts and related fees will be solely the responsibility of District.
- B. Items noted NIC (Not in Contract) will be supplied and installed by District before Substantial Completion.
- C. District will supply the following for installation by Contractor:
 - 1. Owner-Furnished Products: District may furnish, for installation by Contractor, products which are identified on the Drawings and in the Specifications as OFCI (Owner-Furnished/Contractor-Installed).
 - 2. Relationship to Work Under the Contract:

Grossmont Union High School DistrictSummaryGrossmont HS Press Box & Bleacher01 10 00 - 2RCA Project No. 1-30-55A01 10 00 - 2

- a. Work under the Contract shall include all provisions necessary to fully incorporate such products into the Work, including, as necessary.
 - 1) Fasteners.
 - 2) Backing,.
 - 3) Supports.
 - 4) Piping.
 - 5) Conduit.
 - 6) Conductors.
 - 7) Other such provisions from point of service to point of connection.
 - 8) Field finishing, as shown on Drawings and specified herein.
- b. See Section 01 30 00 Administrative Requirements for additional requirements.

1.05 PERMITS, LICENSES AND FEES

- A. Permits:
 - 1. For Work included in the Contract, Contractor shall obtain all permits from authorities having jurisdiction and from serving utility companies and agencies.
 - 2. District will reimburse Contractor for amount charged for such permits, without mark-up.
 - 3. For Work performed under design/build basis, plan check and permit fees shall be included in the Contract Sum.
- B. Licenses:
 - 1. Contractor shall obtain and pay all licenses associated with construction activities, such as business licenses, contractors' licenses and vehicle and equipment licenses.
 - 2. All costs for licenses shall be included in the Contract Sum.
- C. Assessments:
 - 1. District will pay all assessments and utility service connection fees. Costs of assessments shall not be included in the Contract Sum.
- D. Test and Inspection Fees:
 - 1. Contractor shall pay all fees charged by authorities having jurisdiction and from serving utility companies and agencies, for tests and inspections conducted by those authorities, companies and agencies.
 - 2. District will reimburse Contractor for actual amount of such fees, without mark-up.
 - 3. Refer to Section 01 40 00 Quality Requirements for additional information on tests and inspections and responsibility for payment of fees.

1.06 OWNER OCCUPANCY

- A. District intends to continue to occupy adjacent portions of the existing site during the entire construction period.
- B. District intends to occupy the Project upon Substantial Completion.
- C. Cooperate with District to minimize conflict and to facilitate District's operations.
- D. Schedule the Work to accommodate District occupancy.

Grossmont Union High School District	Summary 01 10 00 - 3
Grossmont HS Press Box & Bleacher	
RCA Project No. 1-30-55A	01 10 00 - 3

1.07 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and premises to allow:
 - 1. District occupancy.
 - 2. Work by Others.
 - 3. Work by District.
 - 4. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by District:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Site Access:
 - a. Limit access to site to indicated routes and access points as indicated.
 - b. If routes and access points are not indicated, access shall be as approved by District.
 - c. Do not restrict access to adjacent properties and do not restrict access for those performing work under separate contracts for the District.
 - 3. Do not obstruct roadways, sidewalks, or other public ways without permit.
 - 4. Construction Limit:
 - a. Limit construction activities to areas indicated on Drawings as Project Area or, if not indicated, to areas within the parcel as described in the legal description on the Drawings.
 - b. Refer also to Section 01 50 00 Temporary Construction Facilities and Controls for additional requirements.
- D. Existing building spaces may not be used for storage.
- E. Time Restrictions:
 - 1. Limit conduct of especially noisy, malodorous, and dusty exterior work to local ordinances.
- F. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the site is unoccupied.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to District and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.

1.08 CONSTRUCTION WASTE MANAGEMENT

- A. Construction and waste management, complying with Section 01 74 19 Construction Waste Management and Disposal, is a requirement for this project.
- B. The Contractor, Prime Contractors, and subcontractors all have obligations in meeting the requirements of this specification.

Grossmont Union High School District	Summary
Grossmont HS Press Box & Bleacher	01 10 00 - 4
RCA Project No. 1-30-55A	01 10 00 - 4

1.09 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS

A. Unless otherwise noted, all provisions of the sections listed in Division 01 apply to all contracts. Specific items of work listed under individual contract descriptions constitute exceptions.

END OF SECTION

SECTION 01 20 00 PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals: Project record documents.

1.03 SCHEDULE OF VALUES

- A. Use Schedule of Values Form:
 - 1. Form provided by District.
- B. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.
 - 1. Submit schedule in a spreadsheet calculated format, such as Excel, based upon the attached Schedule of Values augmented by the Table of Contents of this Project Manual.
- C. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the major specification section. Identify site mobilization, bonds and insurance, and record drawings.
- D. Where work is separated into phases requiring separately phased payments, provide separate schedule for each phase.
- E. Where work involves multiple sites and/or "A" number, provide separate schedules for each site and/or "A" number.
- F. Where scope of work involves multiples buildings/structures, provide separate schedule for each building.
- G. Include in each line item, the amount of Allowances specified in this section.
- H. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
- I. Revise schedule to list approved Change Orders, with each Application For Payment.
 - 1. List each authorized Change Order as an extension on the continuation sheet, listing the Change Order number and dollar value as for an original portion of Work.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

Grossmont Union High School District
Grossmont HS Press Box & Bleacher
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- 1. Substantiating information will normally be required only for those portions of Work whose completion state cannot be readily determined by observation of the completed Work.
- B. Use Form Form as provided by District.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
 - 1. Item Number.
 - 2. Description of work.
 - 3. Scheduled Values.
 - 4. Previous Applications.
 - 5. Work in Place and Stored Materials under this Application.
 - 6. Authorized Change Orders.
 - 7. Total Completed and Stored to Date of Application.
 - 8. Balance to Finish.
 - 9. Retainage.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
 - 1. No Change Orders shall be included with Application for Payment until approved in writing by District and Architect. Also approved by DSA when appropriate.
- I. Submit one electronic and three hard-copies of each Application for Payment.
- J. Include the following with the application:
 - 1. Transmittal letter as specified for submittals in Section 01 30 00.
 - 2. Construction progress schedule, revised and current as specified in Section 01 30 00.
 - 3. Current construction photographs specified in Section 01 30 00.
 - 4. Partial release of liens from major subcontractors and vendors.
 - a. Provide with each Application for Payment lien releases from all subcontractors, workers and materials suppliers employed for the Project covering their portion of Work to date for which payment application is made. Lien release forms will be provided by District and shall be completed in accordance with directions provided.
 - 5. Project record documents as specified in Section 01 78 00, for review by District which will be returned to the Contractor.
 - 6. Affidavits attesting to off-site stored products.
- K. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show

application number and date, and line item by number and description.

1.05 ADDENDA

- A. Addenda are changes issued prior to the signing of the Contract for Construction. These Addenda shall be signed by the Architect and approved by the Division of the State Architect.
- B. These documents may or may not have approved by the DSA prior to the close of Bid.
 - 1. If not approved by DSA prior to close of the bidding period, the contract price shall include the Addenda.
 - 2. No work shall proceed regarding any Addendum until approved by DSA.
 - 3. Revisions to Addenda, when approved by DSA, shall be incorporated by an additional addendum or Change Order as indicated below and as provided for in the Contract for Construction and General Conditions.

1.06 MODIFICATION PROCEDURES

- A. Construction Changes, General:
 - 1. The following describe administrative procedures to be followed in compliance with provisions of the Conditions of the Contract for Architect's Supplemental Instructions, Construction Change Directives, Construction Change Documents, and Contract Change Orders.
 - 2. The Architect will prepare and issue: Architect's Supplemental Instructions, a Construction Change Directive or a Request for Proposal to be presented to the Contractor for action.
- B. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to Contract Documents.
- C. Contract Change Order Forms: Form as directed by District.
- D. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.
 - 1. Architect's Supplemental Instructions:
 - a. Minor changes in the Work, not involving an adjustment in either the Contract Sum or Contract Time, as authorized by the Conditions of the Contract, will be presented by the Architect using the Architect's Bulletin form.
 - b. Should the Architect's Supplemental Instructions result in disputed costs and time adjustments, such dispute shall be resolved in accordance with the provisions of the Conditions of the Contract.
- E. DSA Construction Change Document approval for substitutions and changes to structural, accessibility, or fire-life-safety portions of approved Drawings and Specifications is required from DSA prior to fabrication and installation. DSA IR A-6; CAC Section 4-215, & 4-233(c).
 - 1. The approved Construction Change Document shall be signed by:
 - a. Architect of Record.
 - b. When applicable:
 - 1) Structural Engineer of Record.

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- 2) Mechanical Engineer of Record.
- 3) Electrical Engineer of Record.
- 4) Civil Engineer of Record.
- 5) Delegated Professional Engineer.
- c. Division of the State Architect for final approval.
- F. For other required changes, not involving structural, accessibility, or fire-life-safety portions of approved Drawings and Specifications, Architect will issue a document signed by District instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 - 2. Promptly execute the change.
 - 3. Construction Change Directive approval is required from DSA prior to installation.
 - 4. Construction Change Directives: In accordance with provisions of the Conditions of the Contract, the District may direct the Contractor to proceed with a change in the Work prior to formal preparation, review and agreement of a Contract Change Order, in order to not delay construction.
 - a. The Architect will prepare and issue a change document containing a Construction Change Directive which, when signed by the District and the Architect, shall instruct the Contractor to proceed with a change in the Work, for subsequent inclusion in a Contract Change Order.
 - b. Should the Construction Change Directive result in disputed costs and time adjustments, such dispute shall be resolved in accordance with the provisions of the Conditions of the Contract.
 - c. Construction Change Directives shall follow procedures specified below for Contract Change Orders except that Contractor shall immediately proceed with the change upon receipt of the signed Change Directive.
- G. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 14 days.
 - 1. Such Request for Proposal may include an estimate of additions or deductions in Contract Time and Contract Sum for executing the change and may include stipulations regarding overtime work and the period of time the requested response from the Contractor shall be considered valid.
- H. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.

- 1. After review of the request and with the District's approval, the Architect will prepare a change document containing a Request for Proposal, as described above.
- 2. Issuance of such a request by the Architect shall not indicate authorization of the Contractor to proceed with the proposed change.
- 3. Changes will be approved only by an approved Construction Change Directive and Contract Change Order.
- I. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
 - 1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
 - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
 - 3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.
 - 4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.
- J. Substantiation of Costs: Provide full information required for evaluation.
 - 1. On request, provide the following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.
 - 2. Support each claim for additional costs with additional information:
 - a. Origin and date of claim.
 - b. Dates and times work was performed, and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
 - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
 - a. Cost and Time Resolution: If amounts for changes in Contract Sum and Contract Time cannot be agreed upon by District and Contractor, amounts shall be resolved in accordance with provisions of the Conditions of the Contract for resolution of disputes and the following:
 - 1) Contractor shall keep accurate records of time, both labor and calendar days, and cost of materials and equipment.
 - 2) Contractor shall prepare and submit an itemized account and supporting data after completion of changed Work, within the time limits indicated in the

Conditions of the Contract.

- 3) Contractor shall provide full information as required and requested, for District and Architect to evaluate and substantiate proposed costs and time for the change in the Work.
- 4) When District and Contractor determine mutually acceptable amounts for changes in Contract Sum and Contract Time, a Contract Change Order shall be executed for these amounts.
- 5) District shall have the right to audit Contractor's invoices and bid quotations to substantiate costs for Contract Change Orders.
- K. Construction Changes Based on Stipulated Sum or Time: Based on the Contractor's response to a Request for Proposal or Construction Change Directive, the District and Architect will review the response.
 - 1. The District and Contractor shall negotiate a mutually acceptable adjustment in Contract Sum and Contract Time, as appropriate, prior to performance of the changed Work.
 - 2. A Contract Change Order for the stipulated amounts shall be prepared based on the stipulated sum and change in time.
- L. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
 - 1. When agreement is reached on changes, if any, in the Contract Time and the Contract Sum, the Contractor shall prepare a Contract Change Order using a form as directed by the District, with supplementary documents as necessary to describe the change and the associated costs and schedule impacts.
 - 2. Construction Change Document approval is required from DSA prior to fabrication and installation.
 - 3. Submit Contract Change Orders to District through the Architect.
 - 4. Contractor shall prepare and submit five original sets of documents for each Change Order. District, Architect and DSA shall sign the Change Order indicating acceptance and approval of the change.
 - a. Structural Engineer shall also sign the Change Order, when applicable.
 - 5. All Change Orders must be approved by DSA prior to fabrication and installation.
 - 6. Upon approval of the Change Order, Contractor shall promptly execute the change in the Work.
- M. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- N. Promptly revise progress schedules to reflect any change in Contract Time, revise subschedules to adjust times for other items of work affected by the change, and resubmit.
 - 1. Contractor shall submit revised schedules at the next Application for Payment following approval and acceptance of the Contract Change Order.
- O. Promptly enter changes in Project Record Documents.

1.07 APPLICATION FOR FINAL PAYMENT

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
 - 1. All closeout procedures specified in Section 01 70 00.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 25 00 SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

- A. Division 00 Procurement and Contracting Requirements: Restrictions on timing of substitution requests.
- B. Section 01 30 00 Administrative Requirements: Submittal procedures, coordination.
- C. Section 01 60 00 Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.
- D. Section 01 61 16 Volatile Organic Compound (VOC) Content Restrictions: Restrictions on emissions of indoor substitute products.

1.03 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
 - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
 - a. Unavailability.
 - b. Regulatory changes.
 - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
 - a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Requests by Contractor to deviate from specified requirements for products, materials, equipment, and methods, or to provide products other than those specified, shall be considered requests for substitutions except under the following conditions:
 - 1. Substitutions are requested during the bidding period, and accepted prior to execution of the Contract. Acceptance shall be in the form of written Addendum to the Bidding documents or revision to the Drawings or Specifications for use as Construction Contract Documents.

- 2. Changes in products, materials, equipment, and methods of construction are directed by the District or Architect.
- 3. Contractor options for provision of products and construction methods are specifically stated in the Contract Documents.
- 4. Change in products, materials, equipment, and methods of construction is required for compliance with Codes, ordinances, regulations, orders and standards of authorities having jurisdiction.
- B. Substitution Provisions: Refer to substitution provisions of the Conditions of the Contract, in addition to the requirements specified herein. Provisions for consideration and acceptance of substitutions shall be as follows:
 - 1. Documentation:
 - a. Substitutions will not be considered if they are indicated or implied on shop drawing, product data or sample submittals.
 - b. All requests for substitution shall be made by separate written request from Contractor.
 - 2. Cost and Time Considerations: Substitutions will not be considered unless a net reduction in Contract Sum or Contract Time results to the District's benefit, including redesign costs, life cycle costs, changes in related Work and overall performance of building systems.
 - 3. Design Revision:
 - a. Substitutions will not be considered if acceptance will require substantial revision of the Contract Documents or will substantially change the intent of the design, in the opinion of the Architect.
 - b. The intent of the design shall include functional performance and aesthetic qualities.
 - 4. Data: It shall be the responsibility of the Contractor to provide adequate data demonstrating the merits of the proposed substitution, including cost data and information regarding changes in related Work.
 - 5. Determination by Architect:
 - a. Architect will determine the acceptability of proposed substitutions and will notify Contractor, in writing within a reasonable time, of acceptance or rejection.
 - b. The determination by the Architect regarding functional performance and aesthetic quality shall be final.
 - 6. Non-Acceptance: If a proposed substitution is not accepted, provide the specified product.
 - a. If, in the opinion of the Architect, the substitution request is incomplete or has insufficient data to enable a full and thorough review of the intended substitution, the substitution may be summarily refused and determined to be unacceptable.
 - 7. Substitution Limitation: Only one request for substitution will be considered for each product.
- C. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:

- 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - a. Include a signed certification that the Contractor has:
 - Reviewed the proposed substitution and has determined that the substitution is equivalent or superior in every respect to product requirements indicated or product specified in the Contract Documents.
 - Certify the proposed substitution is suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.
- 2. Agrees to provide the same warranty for the substitution as for the specified product.
- 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
- 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to District.
- 5. Waives claims for additional costs or time extension that may subsequently become apparent.
 - a. Include a signed waiver by the Contractor for changes in the Contract Time or Contract Sum because of the following:
 - 1) Substitution failed to perform adequately.
 - 2) Substitution required changes in on other elements of the Work.
 - 3) Substitution caused problems in interfacing with other elements of the Work.
 - 4) Substitution was determined to be unacceptable by authorities having jurisdiction.
- 6. Agrees to reimburse District and Architect for review or redesign services associated with re-approval by authorities.
- D. A Substitution Request for specified installer constitutes a representation that the submitter:
 - 1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.
- E. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
 - 1. Note explicitly any non-compliant characteristics.
- F. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
 - 1. Forms indicated and included in the Project Manual are adequate for this purpose, and must be used.
 - 2. No specific form is required. Contractor's Substitution Request documentation must include the following:
 - a. Project Information:
 - 1) Official project name and number, and any additional required identifiers established in Contract Documents.

- 2) District's, Architect's, and Contractor's names.
- b. Substitution Request Information:
 - 1) Discrete and consecutive Substitution Request number, and descriptive subject/title.
 - 2) Indication of whether the substitution is for cause or convenience.
 - 3) Issue date.
 - 4) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
 - 5) Description of Substitution.
 - 6) Reason why the specified item cannot be provided.
 - 7) Differences between proposed substitution and specified item.
 - 8) Description of how proposed substitution affects other parts of work.
- c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
 - 1) Physical characteristics.
 - 2) In-service performance.
 - 3) Expected durability.
 - 4) Visual effect.
 - 5) Sustainable design features.
 - 6) Warranties.
 - 7) Other salient features and requirements.
 - 8) Include, as appropriate or requested, the following types of documentation:
 - (a) Product Data:
 - (b) Samples.
 - (c) Certificates, test, reports or similar qualification data.
 - (d) Drawings, when required to show impact on adjacent construction elements.
 - 9) Include a detailed description, in written or graphic form as appropriate, indicating all changes or modifications needed to other elements of the Work and to construction to be performed by the District and by others under separate Contract with District, that will be necessary if the proposed substitution is accepted.
- d. Impact of Substitution:
 - 1) Savings to District for accepting substitution.
 - (a) Include detailed cost data, including a proposal for the net change, if any, in the Contract Sum.
 - 2) Change to Contract Time due to accepting substitution.
 - (a) Indicate the substitution's effect on the Construction Schedule. Indicate the effect of the proposed substitution on overall Contract Time and, as applicable, on completion of portions of the Work for use by District or for

work under separate contract by District.

- G. Limit each request to a single proposed substitution item.
 - 1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

- A. Submittal Time Restrictions:
 - 1. District will consider requests for substitutions only if submitted at least 10 days prior to the date for receipt of bids.
- B. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period, and the documents required.
- C. Pursuant to Section 3400 of the Public Contract Code, requests for substitution will be considered only if received up to 7 days prior to the bid date. Subsequent requests will be considered only in the case of product unavailability, through no fault of the Contractor, or for reasons of cost reducing value analysis requested by the District.
- D. Submittal Form (before award of contract):
 - 1. Submit substitution requests by completing the form in Section 00 43 25; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

- A. Submittal Form (after award of contract):
 - 1. Submit substitution requests by completing the form in Section 00 63 25; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.
- B. After Contract award, requests will be considered for cause only; in the case of product unavailability, through no fault of the Contractor, or for reasons of cost reducing value analysis requested by the District.
 - 1. Substitutions will be considered when a product, through no fault of the Contractor, becomes unavailable or unsuitable due to regulatory change.
 - 2. Product Availability Waiver:
 - a. Substitutions will be considered after 35 day time limit only when a product becomes unavailable due to no fault of Contractor.
 - b. Failure to place orders for specified products sufficiently in advance of required date for incorporation into the Work will not be considered as a valid reason for which Contractor may request a substitution or deviation from requirements of the Drawings and Specifications.
 - 3. Waiver: At the discretion of the District, limitations on substitutions may be waived.
- C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

- D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the District through cost savings, time savings, greater energy conservation, or in other specific ways.
 - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
 - 3. Bear the costs engendered by proposed substitution of:
 - a. District's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
 - b. Other construction by District.
 - c. Other unanticipated project considerations.
- E. Substitutions will not be considered under one or more of the following circumstances:
 - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 - 2. Without a separate written request.
 - 3. When acceptance will require revisions to Contract Documents.

3.04 CONTRACT DOCUMENT REVISIONS:

- A. Should a Contractor-proposed substitution or alternative sequence or method of construction require revision of the Contract Drawings or Specifications;
 - 1. Including revisions for the purposes of determining feasibility, scope or cost, or revisions for the purpose of obtaining review and approval by authorities having jurisdiction.
 - 2. Revisions will be made by Architect or other consultant of District who is the responsible design professional, as approved in advance by District.
- B. Services of Architect or other consultant of the District, including time spent in researching and reporting on proposed substitutions or alternative sequence and method of construction, shall be paid by Contractor when such activities are considered additional services to the design services contracts of the Architect or other responsible design professional with the District.
- C. Costs of services by Architect or other responsible design professional of the District shall be paid on a time and materials basis, based on current hourly fee schedules, with reproduction, long distance telephone and shipping costs reimbursable at cost plus usual and customary mark-up for handling and billing.
- D. Such fees shall be paid whether or not the proposed substitution or alternative sequence or method of construction is ultimately accepted by District and a Change Order is executed.
- E. Such fees shall be paid from Contractor's portion of savings, if a net reduction in Contract Sum results. If fees exceed Contractor's portion of net reduction, Contractor shall pay all remaining fees unless otherwise agreed in advance by the District.
- F. Such fees owed shall be deducted from the amount owed Contractor on the Application for Payment next made following completion of revised Contract Drawings and Specifications or completion of research and other services. District will then pay Architect or other consultant of the

District.

- G. Certain substitutions require approval from DSA.
 - Substitutions affecting DSA-regulated items shall be considered as construction change documents (CCD's) and shall be approved by DSA prior to construction per DSA IR A-6 and Section 338(c) Part 1, Title 24 CCR. See Section 01 20 00 - Price and Payment Procedures.

3.05 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.
 - 1. Architect's decision following review of proposed substitution will be noted on the submitted form.

3.06 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 Closeout Submittals, for closeout submittals.
- B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

3.08 ATTACHMENTS

A. A facsimile of the Substitution Request Form (During Construction) required to be used on the Project is included after this section.

END OF SECTION

SECTION 01 30 00 ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General administrative requirements.
- B. Electronic document submittal service.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Contractor's daily reports.
- G. Progress photographs.
- H. Submittals for review, information, and project closeout.
- I. Number of copies of submittals.
- J. Requests for Interpretation or Information (RFI) procedures.
- K. Submittal procedures.

1.02 RELATED REQUIREMENTS

- A. Section 01 60 00 Product Requirements: General product requirements.
- B. Section 01 70 00 Execution and Closeout Requirements: Additional coordination requirements.
- C. Section 01 78 00 Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.
- D. Technical Product Sections: Procedures for specific submittals specified in those Sections to be made at Contract closeout.

1.03 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires responsive action by Construction Manager and Architect or other responsible design professional.
- B. Informational Submittals: Written information that does not require responsive action by Construction Manager and Architect or other responsible design professional.
- C. Unsolicited Submittals: Action or informational submittals not required by the Contract Documents or not requested by the reviewer. Unsolicited submittals may be returned with notation "not reviewed."
- D. Product Data: Standard published information ("catalog cuts") and specially prepared data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work.
- E. Request for Interpretation or Information (RFI): A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as an

RFI.

- F. Samples: Physical examples that demonstrate the materials, finishes, features, workmanship and other characteristics of a portion of the Work. Accepted samples shall serve as quality basis for evaluating the Work.
- G. Shop Drawings, Product Data and Samples: Instruments prepared and submitted by Contractor, for Contractor's benefit, to communicate to Architect the Contractor's understanding of the design intent, for review and comment by Architect on the conformance of the submitted information to the general intent of the design. Shop drawings, product data and samples are not Contract Documents.
- H. Shop Drawings: Drawings, diagrams, schedules and illustrations, with related notes, specially prepared for the Work of the Contract, to illustrate a portion of the Work.
- I. Other Submittals: Technical data, test reports, calculations, surveys, certifications, special warranties and guarantees, operation and maintenance data, extra stock and other submitted information and products shall not be considered as Contract Documents but shall be information from Contractor to Architect to illustrate a portion of the Work for confirmation of understanding of design intent.

1.04 PROJECT COORDINATOR

- A. Project Coordinator: Construction Manager.
- B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for material delivery access, traffic, and parking facilities.
 - 1. Comply with requirements of Section 01 70 00 Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- C. During construction, coordinate use of site and facilities through the Project Coordinator.
- D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 10 00 Summary.
- F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
- G. Make the following types of submittals to Architect through the Project Coordinator:
 - 1. Requests for Interpretation or Information.
 - 2. Requests for substitution.
 - 3. Shop drawings, product data, and samples.
 - 4. Test and inspection reports.
 - 5. Manufacturer's instructions and field reports.
 - 6. Applications for payment and change order requests.
 - 7. Progress schedules.
 - 8. Coordination drawings.

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- 9. Correction Punch List and Final Correction Punch List for Substantial Completion.
- 10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, and transmitted via an Internet-based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
 - 1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Interpretation or Information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
 - 2. Contractor and Architect are required to use this service.
 - 3. It is Contractor's responsibility to submit documents in allowable format.
 - 4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 - 5. Users of the service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.
 - 6. Unless specifically requested, paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 - 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
- B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.
- C. Submittal Service: The selected service is:
 - 1. Bluebeam Software Inc.; Bluebeam Revu Studio: www.bluebeam.com.
 - 2. Other Service acceptable to both District and Architect.
 - a. Direct email with PDF copies.
- D. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
 - 1. Representatives of District are scheduled and included in this training.
- E. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for District.

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3.02 PRECONSTRUCTION MEETING

- A. District will schedule a meeting after Notice of Award.
- B. Attendance Required:
 - 1. District.
 - 2. Architect.
 - 3. Contractor.
 - 4. Construction Manager.
- C. Agenda:
 - 1. Execution of District-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Submission of initial Submittal schedule.
 - 6. Designation of personnel representing the parties to Contract and Architect.
 - 7. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 8. Scheduling.
 - 9. Scheduling activities of a Geotechnical Engineer.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

3.03 SITE MOBILIZATION MEETING

- A. Project Coordinator will schedule meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required:
 - 1. Contractor.
 - 2. District.
 - 3. Architect.
 - 4. Construction Manager.
 - 5. Special consultants.
 - 6. Contractor's superintendent.
 - 7. Major subcontractors.
 - 8. Inspector of Record.
 - 9. DSA Field Representative.
- C. Agenda:
 - 1. Designation of Key Personnel: Contractor shall designate key personnel and provide a name and address list which includes the following:
 - a. Contractor: Project Manager and Superintendent.

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- b. Major subcontractors: Principal/Project Manager and Superintendent.
- c. Major materials suppliers: Contact person.
- 2. Distribute and discuss list of subcontractors and suppliers.
- 3. Project Communication Procedures: Review requirements and administrative requirements for written and oral communications.
 - a. Review requirements and administrative procedures Contractor may wish to institute for identification and reporting purposes.
- 4. Change Procedures: Review requirements and administrative procedures for Change Orders, Construction Change Directives, Architect's supplemental instructions and Contractor's Requests for Interpretation or Information.
- 5. Use of premises by District and Contractor.
 - a. Site access restrictions, if any, and requirements to avoid disruption of operations at adjoining facilities or operations.
 - b. Construction Facilities and Temporary Utilities: Designate storage and staging areas, construction office areas; review temporary utility provisions; present District's requirements for use of premises.
- 6. District's requirements.
- 7. Construction facilities and controls provided by District.
- 8. Temporary utilities provided by District.
- 9. Survey and building layout.
- 10. Security and housekeeping procedures.
- 11. Schedules.
 - a. Distribute and discuss initial construction schedule and critical work sequencing of major elements of Work;
 - b. Include coordination of District Furnished / Contractor Installed (OFCI) products;
 - c. Work under separate contracts by serving utility agencies;
 - d. Work under separate contracts by companies and District.
- 12. Review requirements for Contractor's coordination of Work; review sequence and schedule for work being performed for District under separate contracts.
- 13. Submittals Administration: Review administrative procedures for shop drawings, product data and samples submittals and review of preliminary Submittals Schedule.
- 14. Materials and Equipment:
 - a. Review substitution requirements;
 - b. Review schedule for major equipment purchases and deliveries;
 - c. Review materials and equipment to be provided by District (OFCI products).
- 15. Permits and Fees: Review Contract requirements and review schedule and process for obtaining permits and paying fees.
- 16. Application for payment procedures.
- 17. Procedures for testing.

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- a. Review tests and inspections to be performed by the following:
 - 1) Independent testing and inspection agency.
 - 2) Manufacturers and installers.
 - 3) Serving utilities and public agencies.
 - 4) Authorities having jurisdiction.
- 18. Procedures for maintaining record documents.
- 19. Requirements for start-up of equipment.
 - a. Operation and Maintenance Data:
 - 1) Format and content of operation and maintenance manuals; instruction of District's personnel.
- 20. Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

3.04 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the work at maximum bi-weekly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Meeting Time and Location: As mutually agreed by District, Architect, and Contractor, at onsite location.
- D. Special Meetings: As necessary, Construction Manager may convene special meetings to discuss specific construction issues in detail and to plan specific activities.
 - 1. See Section 01 70 00 Execution and Closeout Requirements.
- E. Attendance Required:
 - 1. Contractor.
 - 2. District.
 - 3. Architect.
 - 4. Construction Manager.
 - 5. Special consultants.
 - 6. Contractor's superintendent.
 - 7. Major subcontractors.
 - 8. Inspector of Record.
- F. Agenda:
 - 1. Review minutes of previous meetings.
 - a. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.

- b. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
- c. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.
- 2. Review of work progress.
- 3. Field observations, problems, and decisions.
- 4. Identification of problems that impede, or will impede, planned progress.
- 5. Review of submittals schedule and status of submittals.
- 6. Review of RFIs log and status of responses.
- 7. Review of off-site fabrication and delivery schedules.
- 8. Maintenance of progress schedule.
- 9. Corrective measures to regain projected schedules.
 - a. Develop corrective measures and procedures, including but not necessarily limited to additional personnel loading to regain planned schedule.
- 10. Planned progress during succeeding work period.
- 11. Coordination of projected progress.
- 12. Maintenance of quality and work standards.
- 13. Effect of proposed changes on progress schedule and coordination.
- 14. Other business relating to work.
- G. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, District, participants, and those affected by decisions made.

3.05 CONSTRUCTION PROGRESS SCHEDULE

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. Contractor's Review: All schedules shall be reviewed and approved by Contractor prior to submission for Architect's and District's review.
- C. Reviews by Architect and District will be to ascertain the general status of construction and shall not be interpreted to establish or approve the means, methods, techniques and sequences of construction.
- D. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- E. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
 - 1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- F. Within 10 days after joint review, submit complete schedule.
- G. Submit updated schedule with each Application for Payment.

3.06 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. In addition to transmitting electronically a copy to District and Architect, submit two printed copies at weekly intervals.
 - 1. Submit in format acceptable to District.
 - 2. Submit using required form, a sample of which is appended to this section.
- C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:
 - 1. Date.
 - 2. High and low temperatures, and general weather conditions.
 - 3. List of subcontractors at Project site.
 - 4. List of separate contractors at Project site.
 - 5. Approximate count of personnel at Project site.
 - a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
 - 6. Major equipment at Project site.
 - 7. Material deliveries.
 - 8. Safety, environmental, or industrial relations incidents.
 - 9. Meetings and significant decisions.
 - 10. Unusual events (submit a separate special report).
 - 11. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
 - 12. Meter readings and similar recordings.
 - 13. Emergency procedures.
 - 14. Directives and requests of Authority(s) Having Jurisdiction (AHJ).
 - 15. Change Orders received and implemented.
 - 16. Testing and/or inspections performed.
 - 17. List of verbal instruction given by District and/or Architect.
 - 18. Signature of Contractor's authorized representative.

3.07 PROGRESS PHOTOGRAPHS

- A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
- B. Maintain one set of all photographs at project site for reference; same copies as submitted, identified as such.
- C. Photography Type: Digital; electronic files.

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- D. Provide photographs of site and construction throughout progress of work produced by an experienced photographer, acceptable to Architect.
- E. In addition to periodic, recurring views, take photographs of each of the following events:
 - 1. Completion of site clearing.
 - 2. Excavations in progress.
 - 3. Foundations in progress and upon completion.
 - 4. Structural framing in progress and upon completion.
 - 5. Enclosure of building, upon completion.
 - 6. Final completion, minimum of ten (10) photos.
- F. Take photographs as evidence of existing project conditions as follows:
 - 1. Interior views: each elevation, floor and ceilings prior to demolition.
 - 2. Exterior views: each elevation, roof and areas adjacent to construction limits.
- G. Views:
 - 1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
 - 2. Consult with Architect for instructions on views required.
 - 3. Provide factual presentation.
 - 4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
 - 5. Point of View Sketch: Provide sketch identifying point of view of each photograph.
- H. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
 - 1. Delivery Medium: Via email.
 - 2. File Naming: Include project identification, date and time of view, and view identification.
 - 3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.
 - 4. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
 - 5. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.
 - 6. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

3.08 REQUESTS FOR INTERPRETATION OR INFORMATION (RFI)

- A. Definition: A request seeking one of the following:
 - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in the Contract Documents.

- 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 - 1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.
 - 2. Prepare in a format and with content acceptable to District.
 - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
 - 1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
 - a. Submit RFIs from subcontractors and material suppliers through, be reviewed by and be attached to an RFI prepared, signed and submitted by Contractor.
 - 1) RFIs from subcontractors and material suppliers are to be:
 - (a) Reviewed by Contractor.
 - (b) Corrected and rewritten to clarify as required by Contractor.
 - (c) Placed on the proper form, then signed, and submitted by Contractor.
 - (d) RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.
 - 2) RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.
 - b. Review all subcontractor- and supplier-initiated RFIs and take actions to resolve issues of coordination, sequencing and layout of the Work.
 - 1) RFIs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without response.
 - (a) Such issues are solely the Contractor's responsibility.
 - 2) Contractor is responsible for delays resulting from the necessity to resubmit an RFI due to insufficient or incorrect information presented in the RFI.
 - 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
 - a. Approval of submittals (use procedures specified elsewhere in this section).
 - b. Approval of substitutions (see Section 01 60 00 Product Requirements)

- c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
- d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
- 3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
- 4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
 - a. The District reserves the right to assess the Contractor for the costs (on time-andmaterials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
 - 1. Official Project name and number, and any additional required identifiers established in Contract Documents.
 - 2. District's, Architect's, and Contractor's names.
 - 3. Discrete and consecutive RFI number, and descriptive subject/title.
 - 4. Issue date, and requested reply date.
 - 5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
 - 6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
 - a. Inability to determine from the Contract Documents the exact material, process, or system to be installed;
 - b. Or when the elements of construction are required to occupy the same space (interference);
 - c. Or when an item of Work is described differently at more than one place in the Contract Documents.
 - 7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
 - a. In all cases, furnish all information required for the Architect to analyze and/or understand the circumstances causing the RFI and prepare a clarification or direction as to proceed for RFIs issued to request clarification of issues related to:
 - 1) Means, methods, techniques and sequences of construction, for example
 - 2) Pipe and duct routing, clearances;

- 3) Specific locations of Work shown diagrammatically;
- 4) Apparent interferences and similar items.
- 5) If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
 - 1. Indicate current status of every RFI. Update log promptly and on a regular basis.
 - 2. Note dates of when each request is made, and when a response is received.
 - 3. Highlight items requiring priority or expedited response.
 - 4. Highlight items for which a timely response has not been received to date.
 - 5. Identify and include improper or frivolous RFIs.
- H. Review Time: Architect will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
 - 1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to District.
 - 1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
 - 2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
 - 3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
 - 4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

3.09 SUBMITTAL SCHEDULE

- A. Submit to Architect for review a schedule for submittals in tabular format.
 - 1. Submit at the same time as the preliminary schedule.
 - a. Submit initial Submittals Schedule within 14 days of date of Notice of Award of construction.
 - b. After review and return by Architect, resubmit Submittals Schedule within 10 days and thereafter submit updated Submittals Schedules at each Construction Progress Meeting.

- c. Submit one copy each to Owner and Architect.
- 2. Coordinate with Contractor's construction schedule and schedule of values.
- 3. Format schedule to allow tracking of status of submittals throughout duration of construction.
 - a. Prepare schedules in Gantt format using software at Contractor's option, providing clear indication of sequencing and scheduling of Work, for determination of "critical path" of construction progress.
 - 1) Submittals shall be connected to the related construction element by a graphically indicated critical path on the same page.
 - 2) Present schedules using opaque reproductions on substantial paper, with sheet size a multiple of 8-1/2 by 11 inches and large enough to clearly read characters.
- 4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
- 5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
 - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.
 - b. Allow time for shipping and distribution to involved parties. Minimum 1 day, including those sent by electronic transmission.
- 6. Posting: Post one copy of most recent Submittals Schedule in Contractor's field office, readily available to District, Construction Manager, and Architect. Update bi-weekly with project schedule.
- 7. Archive: Preserve a minimum of two copies of all superseded schedules, with one copy available at field office for review by District or Architect.

3.10 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product data.
 - 2. Shop drawings.
 - 3. Samples for selection.
 - 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 Closeout Submittals.

3.11 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for District.

3.12 SUBMITTALS FOR COMMISSIONING

- A. The Commissioning Authority will receive a copy of the standard submittals for equipment to be commissioned.
- B. The Commissioning Authority may require additional documentation necessary for the commissioning process. The Contractor will receive a written request from the Commissioning Authority for specific equipment or system information.

3.13 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 Closeout Submittals:
 - 1. Project record documents.
 - 2. Operation and maintenance data.
 - a. Include operation and maintenance data submittals in Submittals Schedule specified above.
 - b. Provide space for review action stamps and, if required by governing authorities having jurisdiction, license seal of design Professional, if applicable.
 - 3. Warranties.
 - 4. Bonds.
 - 5. Other types as indicated.
- D. Submit for District's benefit during and after project completion.

3.14 NUMBER OF COPIES OF SUBMITTALS

- A. Electronic Documents: Submit one electronic copy in PDF format with renderable text; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.
- B. Small Size Sheets, Not Larger Than 11 by 17 inch: Submit one copy; the Contractor shall make his own copies from original returned by the Architect after making his own file copy.

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- C. Extra Copies at Project Closeout: See Section 01 78 00.
- D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
 - 1. After review, produce duplicates.
 - 2. Retained samples will not be returned to Contractor unless specifically so stated.
 - 3. Quantity:
 - a. Submit minimum of four (4) samples of each of color, texture and pattern.
 - b. Submit one item only of actual assembly or product.
 - c. Unless otherwise noted, full-size and complete samples will be returned and may be incorporated into field mock-ups and the Work.

3.15 SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Use a separate transmittal for each item.
 - 2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
 - 3. Transmit using approved form.
 - 4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - a. For example:
 - 1) 09 21 16-1 First submittal for Section 09 21 16 Gypsum Board Assemblies.
 - 2) 09 21 16-2 Second submittal for Section 09 21 16 Gypsum Board Assemblies.
 - b. Use same number for resubmittals as original submittal, followed by a letter indicating sequential resubmittal. For example:
 - 1) 09 21 16-2A Resubmission of second submittal for Section 09 21 16 Gypsum Board Assemblies.
 - 2) 09 21 16-2B Second resubmission of second submittal for Section 09 21 16 Gypsum Board Assemblies.
 - 6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
 - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
 - b. Field measurements have been determined and verified.
 - c. Conformance with requirements of Contract Drawings and Specifications is confirmed.

- d. Catalog numbers and similar data are correct.
- e. Work being performed by various subcontractors and trades is coordinated.
- f. Field construction criteria have been verified, including confirmation that information submitted has been coordinated with the work being performed by others for District and actual site conditions.
- g. All deviations from requirements of Drawings and Specifications have been identified and noted.
- 7. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Send submittals in electronic format via email to Architect.
 - b. Upload submittals in electronic form to Electronic Document Submittal Service website.
- 8. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
 - b. For sequential reviews involving Architect's consultants, District, or another affected party, allow an additional 7 days.
 - c. For sequential reviews involving approval from authorities having jurisdiction (AHJ), in addition to Architect's approval, allow an additional 30 days.
- 9. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - a. Changes in the Work shall not be authorized by submittals review actions.
 - b. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work.
 - c. Changes shall only be authorized by separate written Contract Change Order or Construction Change Directive, in accordance with the Conditions of the Contract and Section 01 20 00 Price and Payment Procedures.
- 10. Provide space for Contractor and Architect review stamps.
- 11. When revised for resubmission, identify all changes made since previous submission.
- 12. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
- 13. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
- 14. Submittals not requested will be recognized, but will be returned without comment,
- B. Product Data Procedures:
 - 1. Submit only information required by individual specification sections.
 - 2. Collect required information into a single submittal.
 - 3. Submit concurrently with related shop drawing submittal.
 - 4. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:

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- 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
- 2. Use of reproductions of Contract Documents in digital data form to create shop drawings is only permitted as defined in Division 01 and individual product sections.
- 3. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.
- 4. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
 - 1. Transmit related items together as single package.
 - 2. Samples will be reviewed for aesthetic, color, or finish selection.
 - 3. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
 - 4. Color Selection Samples: Architect will review and select colors for Project only after all colors are received, so that colors may be properly coordinated.
 - 5. Copies: Submit actual samples. Photographic or printed reproductions will not be accepted.
 - 6. Review of Field Samples: Review by Architect of field samples will be made for the following example products, as applicable, if not otherwise required and if requested by Contractor.
 - a. Concrete wall finishes and detailing (edges, corners and reveals).
 - b. Concrete paving colors and textures.
 - c. Gypsum board textures and finishes.
 - d. Field-applied paint colors and finishes.

3.16 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
 - 1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect's and consultants' actions on items submitted for review:
 - 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", "Reviewed", or language with same legal meaning.
 - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.

- 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
- c. "Approved as Noted, Resubmit for Record", "Reviewed as Noted, Resubmit for Record", or language with same legal meaning.
 - 1) Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
 - 2) Non-responsive resubmittals may be rejected.
- 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - 2) Non-responsive resubmittals may be rejected.
 - b. "Rejected".
 - 1) Submit item complying with requirements of Contract Documents.
- E. Architect's and consultants' actions on items submitted for information:
 - 1. Items for which no action was taken:
 - a. "Received" to notify the Contractor that the submittal has been received for record only.
 - 2. Items for which action was taken:
 - a. "Reviewed" no further action is required from Contractor.

END OF SECTION

SECTION 01 30 00.01 REQUEST FOR INTERPRETATION

RFI NUMBER:		D	ATE:		
PROJECT NAME	: GROSSMONT HS PRE	ESS BOX & B	LEACHER	PRC	DJECT NO.: 1-30-55A
TO:	RUHNAU CLARKE ARC	HITECTS			
3775	Tenth Street, Riverside	CA 92501 -	5751 Palme	r Way	Suite C, Carlsbad, CA 92010
Atten					
/	Address:				
BRIEF SUI	MMARY OF RFI:				
Drawi	ng No				Detail No
Specif	ication Section		Title		
	Page		iragraph		
DETAILS (OF THIS RFI:				
SUGGEST	ED SOLUTION:				
Respo	onse required by:	(min. 3	full days)	Sub	mitted By:
		0	anization.		
·		0	gamzation.		
RESPONS	E:				
 Attacl	nments:				
	onse By:				
 Orgar	ization:				
	on High School District				Request for Interpretation
	Press Box & Bleacher				01 30 00.01 - 1
RCA Project No.	1-30-55A				

Copies: ___File ___District ___Structural ___Mechanical ___Plumbing ___Electrical ___Civil ___Landscape __other consultants

END OF RFI

SUBMITTAL / SHOP DRAWING TRANSMITTAL

То:	Ruhnau Clarke Architects		Contractor's Submittal No.
Attn:	Construction Dept.		
Contractor:		Project Name:	
Street:		RCA's Project No.	
City, State:		Subcontractor:	

CONTRACTOR TO FILL OUT THE FOLLOWING COVERING ONE COMPLETE SECTION OF THE SPECIFICATIONS ONLY:

Specification Section #:		Section Title:		
	Initial Submittal	Scheduled Date of Submittal		
	1st Resubmittal	Scheduled Date of Submittal Return		
	Resubmittal	Date Sent		
	Submittal was a previously approved substitution.	Number of Copies		
	Approved Substitution Request Transmittal Form is enclosed.	Number of Samples		

CONTRACTOR COMPLETE EITHER (A) OR (B) FOLLOWING, CHECK ONE:		CONSTRUCTION MANAGERS CERTIFICATION
(A)	WE HAVE VERIFIED THAT THE MATERIAL OR EQUIPMENT CONTAINED IN THIS SUBMITTAL MEETS ALL THE REQUIREMENTS SPECIFIED OR SHOWN (NO EXCEPTIONS).	THIS IS TO CERTIFY THAT THE CONSTRUCTION MANAGER IS REASONABLY CERTAIN THAT THE MATERIAL SPECIFIED IN THIS SUBMITTAL MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, AND THE SUBMITTAL IS COMPLETE PER THE CONTRACT DOCUMENTS.
		SIGNATURE:
(B)	WE HAVE VERIFIED THAT THE MATERIAL OR EQUIPMENT CONTAINED IN THIS SUBMITTAL MEETS ALL THE REQUIREMENTS SPECIFIED OR SHOWN, EXCEPT FOR THE FOLLOWING DEVIATIONS (LIST DEVIATIONS ON AN ATTACHED SHEET OR INDICATE DEVIATIONS CLEARLY ON SHOP DRAWINGS OR SUBMITTALS).	CONTRACTORS CERTIFICATION
		THIS IS TO CERTIFY THAT THE CONTRACTOR IS REASONABLY CERTAIN THAT THE MATERIAL SPECIFIED IN THIS SUBMITTAL MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
		SIGNATURE:

ARCHITECT'S USE ONLY BELOW THIS LINE.

Action:			
No Exception Taken Make Corrections Noted	Rejected/Resubmit Revise and Resubmit		
Comments:	Date Received By RRC:		
	Date Sent to Consultant:		
	Structural		
	Mechanical		
	Electrical		
	 Other		
	Date Received From:		
	Consultant		
	No. of Copies Received		
	_		
Final Distribution: Contractor Inspector	District/P.M Architect		
Final Distribution Date:			

SECTION 01 35 50 REQUESTS FOR ELECTRONIC FILES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements to request electronic construction document files from Architect.
- B. Hold Harmless Agreement form.

1.02 RELATED SECTIONS

- A. Section 01 30 00 Administrative Requirements: Shop Drawings, Product Data and Samples.
- B. Section 01 70 00 Execution and Closeout Requirements.

1.03 REQUIREMENTS

- A. Electronic files have legal ramifications as information therein can be modified.
- B. In order to receive this electronic information, the following Hold Harmless Agreement form must be executed in its entirety, including signature by a company officer.
- C. Costs for processing and handling electronic files, however limited, will be \$250.00

PART 2 - PRODUCTS - (NOT APPLICABLE TO THIS SECTION.)

PART 3 - EXECUTION

3.01 ELECTRONIC FILE TRANSFER PROCEDURE

- A. Submit a check in the amount of \$250.00 along with a list of the requested sheet numbers and an acknowledged copy of this waiver to the office of the Architect, Ruhnau Clarke Architects, 3775 Tenth Street, Riverside CA 92501 5751 Palmer Way, Suite C, Carlsbad, CA 92010.
- B. In order to expedite the transfer, upon receipt of a PDF copy of this acknowledgement, the requested CAD/Revit/BIM files will be sent in the form of a compact disc, DVD, or thumb drive to the recipient, as requested, by UPS, similar delivery service, or other method of electronic transfer after payment is received.
- C. It is expressly understood that any transfer is done as a courtesy and can be revoked at any time by the Architect.

Agreement is on next page

HOLD HARMLESS AGREEMENT

ARCHITECT'S PROJECT: GROSSMONT HS PRESS BOX & BLEACHER

ARCHITECT'S PROJECT NUMBER: 1-30-55A

We, ______, understand that we may be receiving electronic media containing design information, not necessarily intended for construction. We agree to hold Ruhnau Clarke Architects harmless for any defects in this data. We agree that it shall be our responsibility to reconcile this electronic data with the paper plans, and that only the paper plans shall be regarded as legal documents for the referenced project.

Further, the Contractor acknowledges that the Architect's reports, drawings, specifications, field data, field notes, laboratory test data, calculations, estimates and other similar documents are instruments of professional service, not products. In accepting and utilizing any drawings or other data on any form of electronic media generated and provided by the Design Professionals, the Parties listed above covenant and agree that all such drawings and data are instruments of service of the Design Professionals, who shall be deemed the author of the drawings and data, and shall retain all common law, statutory law and other rights, including copyrights.

The Parties agree that in accepting and utilizing any drawings and other data, that the Design Professionals waive all responsibility for any subsequent use of these data, the accuracy of dimensions, and the interpretation of information contained herein.

The Parties further agree not to use these drawings and data, in whole or in part, for any purpose or project other than the project which is the subject of this Agreement. The Parties further agree to waive all claims against the Design Professionals resulting in any way from any unauthorized changes of the drawings and data or any other use other than for the project which is the subject of this Agreement.

The Contractor shall indemnify, defend and hold harmless the Design Professionals and its subconsultants and their officers, agents, employees from any claims, damages, losses, liabilities or expenses (including attorneys' fees) arising out of use of such documents without Consultant's prior written authorization.

Under no circumstances shall transfer of the drawings and other data be deemed a sale by the Design Professionals, and the Design Professionals make no warranties, either express or implied of the merchantability and fitness of the data for any particular purpose.

Acknowledged by:

Company Name		
Street Address	City, State, Zip Cod	de

Grossmont Union High School District Grossmont HS Press Box & Bleacher RCA Project No. 1-30-55A E-mail Address

END OF SECTION

SECTION 01 35 53 SECURITY PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Security measures including formal security program, entry control, personnel identification, and miscellaneous restrictions.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: use of premises and occupancy.
- B. Section 01 50 00 Temporary Facilities and Controls: Temporary lighting.
- C. Protect Work , existing premises and District's operations from theft, vandalism, and unauthorized entry.
- D. Initiate program in coordination with District's existing security system at project mobilization.
- E. Maintain program throughout construction period until District acceptance precludes the need for Contractor security.

1.03 ENTRY CONTROL

- A. Restrict entrance of persons and vehicles into Project site and existing facilities.
- B. Allow entrance only to authorized persons with proper identification.
- C. Maintain log of workers and visitors, make available to District on request.
- D. District will control entrance of persons and vehicles related to District's operations.
- E. Contractor shall control entrance of persons and vehicles related to District's operations.
- F. Coordinate access of District's personnel to site in coordination with District's security forces.

1.04 PERSONNEL IDENTIFICATION

- A. Shall be worn by Contractor's superintendent and all sub contractors
- B. Provide identification badge to each person authorized to enter premises.
- C. Badge To Include: Personal photograph, name, assigned number, expiration date and employer.
- D. Maintain a list of accredited persons, submit copy to District on request.
- E. Special badges shall be issued to construction personnel when term of construction exceeds six months.
- F. Require return of badges at expiration of their employment on the Work.

1.05 RESTRICTIONS

A. Do not allow cameras on site or photographs taken except by written approval of District.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 40 00 QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contractor Quality assurance submittals.
- B. Quality assurance.
- C. Testing and inspection agencies and services.
- D. Contractor's construction-related professional design services.
- E. Contractor's design-related professional design services.
- F. Control of installation.
- G. Tolerances.
- H. Manufacturers' field services.
- I. Defect Assessment.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 Administrative Requirements: Submittal procedures.
- B. Section 01 41 00 Regulatory Requirements: Compliance with applicable codes, ordinances and standards.
- C. Section 01 45 33 Code-Required Special Inspections: Testing laboratory services and inspections required by Division of the State Architect (DSA), during the course of construction.
- D. Section 01 60 00 Product Requirements: Requirements for material and product quality.
 - 1. Product options, substitutions, transportation and handling requirements, storage and protection requirements, and system completeness requirements.

1.03 REFERENCE STANDARDS

A. IAS AC89 - Accreditation Criteria for Testing Laboratories.

1.04 DEFINITIONS

A. Contractor's Quality Control Plan: Contractor's management plan for executing the Contract for Construction.

1.05 CONTRACTOR'S CONSTRUCTION-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
 - 1. Temporary sheeting, shoring, or supports.

- 2. Temporary scaffolding.
- 3. Temporary bracing.
- 4. Temporary falsework for support of spanning or arched structures.
- 5. Temporary stairs or steps required for construction access only.
- 6. Temporary hoist(s) and rigging.
- 7. Investigation of soil conditions to support construction equipment.

1.06 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

- A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.
- B. Base design on performance and/or design criteria indicated in individual specification sections.
- C. Scope of Contractor's Professional Design Services: Provide for the following items of work:
 - 1. Structural Design of Formwork: As described in Section 03 10 00 Concrete Forming and Accessories.
 - 2. Concrete Mix Design: As described in Section 03 30 00 Cast-in-Place Concrete. No specific designer qualifications are required.

1.07 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for District's information.
 - 1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
 - a. Full name.
 - b. Professional licensure information.
 - c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.
- C. Quality Control Submittals Schedule
 - 1. Schedule Format: Include quality control submittals on Submittals Schedule specified in accordance with General Conditions
 - 2. Schedule Content: List all tests, inspections and reports specified to be submitted, indicating submittal number, submittal type (field test, field inspection, fabrication inspection, etcetera), scheduled date of quality control activity and date report should be made.
- D. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for District's information.
 - 1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
 - 2. Include required product data and shop drawings.

Grossmont Union High School District Grossmont HS Press Box & Bleacher RCA Project No. 1-30-55A

- 3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
- 4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.
- E. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test/inspection.
 - h. Date of test/inspection.
 - i. Results of test/inspection.
 - j. Compliance with Contract Documents.
 - k. When requested by Architect, provide interpretation of results.
 - 2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for District's information.
- F. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
- G. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the District's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- H. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for District.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

- I. Erection Drawings: Submit drawings for Architect's benefit as contract administrator or for District.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or District.

1.08 QUALITY ASSURANCE

- A. Testing Agency Qualifications:
 - 1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Qualification Statement: Provide documentation showing testing laboratory is approved by Division of the State Architect.
 - 4. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
- B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in California.
- C. Contractor's Quality Control (CQC) Plan:
 - 1. Prior to start of work, submit a comprehensive plan describing how contract deliverables will be produced. Tailor CQC plan to specific requirements of the project. Include the following information:
 - a. Management Structure: Identify personnel responsible for quality. Include a chart showing lines of authority.
 - 1) Include qualifications (in resume form), duties, responsibilities of each person assigned to CQC function.
 - b. Management Approach: Define, describe, and include in the plan specific methodologies used in executing the work.
 - 1) Management and control of documents and records relating to quality.
 - 2) Communications.
 - 3) Coordination procedures.
 - 4) Resource management.
 - 5) Process control.
 - 6) Inspection and testing procedures and scheduling.
 - 7) Control of noncomplying work.
 - 8) Tracking deficiencies from identification, through acceptable corrective action, and verification.
 - 9) Control of testing and measuring equipment.

Grossmont Union High School District	Quality Requirements
Grossmont HS Press Box & Bleacher	01 40 00 - 4
RCA Project No. 1-30-55A	01 40 00 4

- 10) Project materials certification.
- 11) Managerial continuity and flexibility.
- c. District will not make a separate payment for providing and maintaining a Quality Control Plan. Include associated costs in Bid price.
- d. Acceptance of the plan is required prior to start of construction activities not including mobilization work. District's acceptance of the plan will be conditional and predicated on continuing satisfactory adherence to the plan. District reserves the right to require Contractor to make changes to the plan and operations, including removal of personnel, as necessary, to obtain specified quality of work results.
- D. Quality-Control Personnel Qualifications. Engage a person with requisite training and experience to implement and manage quality assurance (QA) and quality control (QC) for the project.

1.09 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

- A. Inspections, testing and approvals as required by authorities having jurisdiction. Refer to Section 01 41 00 - Regulatory Requirements and Section 01 45 33 - Code-Required Special Inspections.
- B. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.
- C. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

1.10 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. District will employ and pay for services of an independent testing agency approved by DSA to perform specified testing.
- B. As indicated in individual specification sections, District or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- D. Contractor Employed Agency:
 - 1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, ASTM D3740, and DSA.
 - 2. Laboratory Qualifications: Accredited by IAS according to IAS AC89.
 - 3. Laboratory: Authorized to operate in California.
 - 4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
 - 5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality

assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTRACTOR'S QUALITY ASSURANCE

- A. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.
- B. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.

3.02 CONTROL OF INSTALLATION

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- C. Comply with manufacturers' instructions, including each step in sequence.
- D. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
- E. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- F. Have work performed by persons qualified to produce required and specified quality.
- G. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- H. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.
- I. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.
- J. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the District.
- K. Verification of Quality: Work shall be subject to verification of quality by District, or Architect in accordance with provisions of the General Conditions of the Contract.
 - 1. Contractor shall cooperate by making Work available for inspection by District, Architect or their designated representatives.
 - 2. Such verification may include mill, plant, shop, or field inspection as required.

- 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
- 4. Provide all information and assistance as required, including that by and from subcontractors, installers, fabricators, materials suppliers and manufacturers, for verification of quality by District, or Architect.
- 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the General Conditions.

3.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 - 6. Perform additional tests and inspections required by Architect.
 - 7. Submit reports of all tests/inspections specified.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 - 3. Provide incidental labor and facilities:

- a. To provide access to Work to be tested/inspected.
- b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
- c. To facilitate tests/inspections.
- d. To provide storage and curing of test samples.
- 4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
- 5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- 6. Arrange with District's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- 7. Inspections and Tests by Authorities Having Jurisdiction:
 - a. Contractor shall cause all tests and inspections to be made for Work under this Contract, as required by Building Departments, Department of Public Works, Fire Department, Health Department and similar agencies having jurisdiction.
 - b. Excepted as specifically noted, scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.
- 8. Inspections and Tests by Serving Utilities:
 - a. Contractor shall cause all tests and inspections required by serving utilities to be made for Work under this Contract.
 - b. Scheduling, conducting and paying for such inspections shall be solely the Contractor's responsibility.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
 - 1. Observer subject to approval of Architect.
 - 2. Observer subject to approval of District.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 FIELD QUALITY CONTROL SUBMITTALS

A. Administration: Make all submittals to the Architect, unless otherwise directed.

B. Submittal Identification: Identify each submittal by Specification Section number followed by a number indicating sequential submittal for that Section. Coordinate submittal numbers with submittals specified in Section 01 30 00 - Administrative Requirements.

sequential resubmittal.		
03 30 00 - 1	First submittal for Section 03 30 00 - Cast in Place	
	Concrete.	
03 30 00 - 2	Second submittal for Section 03 30 00 - Cast in Place	
	Concrete.	
03 30 00 - 2A	Resubmittal of second submittal for Section 03 30 00 -	
	Cast in Place Concrete.	
03 30 00 - 2B	Second resubmittal of second submittal for Section 03 30	

1. Resubmittals shall use same number as original submittal, followed by a letter indicating sequential resubmittal.

- C. Project Identification: Title each submittal with Project name, submittal date and Architect's Project number.
- D. Copies: Provide PDF copies electronically transmitted or submit 6 copies, minimum, of reports of quality control reports on dry-process xerographic copies only.

00 - Cast in Place Concrete.

- E. Contractor's Review:
 - 1. Submittals shall be made in accordance with requirements specified herein and in individual Sections.
 - 2. Indicate clearly on each submittal the specified or referenced values for each quality control activity and the values obtained.
 - 3. Note clearly and sign each submittal certifying that reported quality control activity "Conforms" or "Does Not Conform".
- F. Changes and Deviations:
 - 1. Identify all deviations from requirements of Drawings and Specifications.
 - 2. Changes in the Work shall not be authorized by submittals review actions.
 - 3. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work.
 - 4. Changes shall only be authorized by separate written Change Order or Construction Change Directive, in accordance with the General Conditions and 01 20 00 - Price and Payment Procedures.
- G. Record Submittals: When record submittals are specified, submit three copies or sets only. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.
- H. Unsolicited Submittals: Unsolicited submittals will be returned unreviewed.

3.07 ARCHITECT'S REVIEW

- A. General:
 - 1. Submitted Report review by Architect and Architect's consultants shall be only for general conformance with the design concept and requirements based on the

information presented.

- 2. Neither Architect nor Architect's consultants shall verify submitted quality control data.
- B. Contract Requirements:
 - 1. Review by Architect and Architect's consultants shall not relieve the Contractor from compliance with requirements of the Drawings and Specifications.
 - 2. Changes shall only be authorized by separate written Change Order or Construction Change Directive, in accordance with the General Conditions and 01 20 00 Price and Payment Procedures.
- C. Observations by Architect and Architect's Consultants: Periodic and occasional observations of Work in progress will be made by Architect and Architect's consultants as deemed necessary to review progress of Work and general conformance with design intent.

3.08 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not conforming to specified requirements, at no change in Contract Sum or Contract Time.
- B. If, in the opinion of Architect, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or adjust payment.
- C. Architect's Acceptance and Rejection of Work: Architect reserves the right to reject all Work not in conformance to the requirements of the Drawings and Specifications.
- D. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the District, shall not relieve the Contractor of the obligation to correct such Work.
 - 1. Acceptance of structurally related non-conforming work shall be submitted to DSA for review and approval.
- E. Contract Adjustment for Non-conforming Work:
 - 1. Should Architect or District determine that it is not feasible or in District's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between District and Contractor.
 - 2. If equitable amount cannot be agreed upon, a Construction Change Directive will be issued and the amount in dispute resolved in accordance with applicable provisions of the General Conditions.
- F. Non-Responsibility for Non-Conforming Work: Architect and Architect's consultants disclaim any and all responsibility for Work produced not in conformance with the Drawings and Specifications.

END OF SECTION

SECTION 01 41 00 REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 AUTHORITY AND PRECEDENCE OF CODES, ORDINANCES AND STANDARDS

- A. Authority: All codes, ordinances and standards referenced in the Drawings and Specifications shall have the full force and effect as though printed in their entirety in the Specifications.
- B. Precedence:
 - 1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements take precedence.
 - 2. Where the Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings and Specifications take precedence so long as such increase is legal.
 - 3. Where no requirements are identified in the Drawings or Specifications, comply with all requirements of applicable codes, ordinances and standards of authorities having jurisdiction.
- C. Applicable Codes, Laws and Ordinances: Refer also to Section 01 10 00 Summary, regarding permits and licenses.
 - 1. Performance of the Work is be governed by all applicable laws, ordinances, rules and regulations of Federal, State and local governmental agencies and jurisdictions having authority over the Project, including accessibility requirements.
 - 2. Performance of the Work shall be accomplished in conformance with all rules and regulations of public utilities, utility districts and other agencies serving the development.
 - 3. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the execution date of the Agreement.
- D. Applicable Building Codes: References on the Drawings or in the Specifications to "code" or "building code" not otherwise identified shall mean the codes specified below, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.
- E. Performance of the Work shall meet or exceed the minimum regulatory requirements applicable to this project are summarized in this section, as adopted by Division of the State Architect:
 - 1. Part 1, Title 24 CCR 2019 California Administrative Code.
 - 2. Part 2, Title 24 CCR 2019 California Building Code (CBC); Volumes 1 and 2.
 - a. Based on ICC (IBC) ICC International Building Code, 2018.

- 3. Part 3, Title 24 CCR 2019 California Electrical Code (CEC, NFPA 70-NEC 2017).
- 4. Part 4, Title 24 CCR 2019 California Mechanical Code (CMC).
 - a. Based on IAPMO (UMC) Uniform Mechanical Code, 2018.
- 5. Part 5, Title 24 CCR 2019 California Plumbing Code (CPC).
 - a. Based on IAPMO (UPC) Uniform Plumbing Code, 2018.
- 6. Part 6, Title 24 CCR 2019 California Energy Code.
- 7. Part 9, Title 24 CCR 2019 California Fire Code (CFC).
 - a. Based on ICC (IFC) International Fire Code; 2018.
- 8. Part 10, Title 24 CCR 2019 California Existing Buildings Code.
 - a. Based on ICC (IEBC) ICC International Existing Buildings Code, 2018.
- 9. Part 11, Title 24 CCR 2019 California Green Building Standards Code (CalGreen).
- 10. Part 12, Title 24 CCR 2019 California Referenced Standards Code.
- F. Erosion and Sedimentation Control Regulations:
 - 1. California Codes and Regulations; Title 24, California Building Code, Parts 1 & 2.
 - 2. State of California State Water Resources Control Board Regulations.
 - 3. EPA (NPDES) National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.
- G. Maintain on site during construction, a copy of California Codes and Regulations; Title 24, California Building Code, Parts 1 through 5.

1.02 SUMMARY OF REFERENCE STANDARDS

- A. Regulatory requirements applicable to this project are the following:
- B. California Referenced Standards Code: Chapter 12-7-4 Fire Resistive Standards, for fire rated doors.
- C. National Fire Protection Association (NFPA): (Partial List of Applicable Standards)
 - 1. Reference CBC for applicable NFPA Standards 2019 CBC (SFM) Chapter 35.
 - 2. California Electrical Code:
 - a. NFPA 70 National Electrical Code.
 - 1) Use 2017 as modified in 2019 CBC Ch.35 Referenced Standards.
 - 3. NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2019.
- D. 28 CFR 35 Nondiscrimination on the Basis of Disability in State and Local Government Services; Final Rule; Department of Justice.
- E. 28 CFR 36 Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice.
- F. 36 CFR 1191 Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.
- G. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design.
- H. 29 CFR 1910 Occupational Safety and Health Standards.

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1.03 RELATED REQUIREMENTS

A. Section 01 40 00 - Quality Requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 42 19 REFERENCE STANDARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Requirements relating to referenced standards.

1.02 QUALITY ASSURANCE

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard of date of issue specified in the individual specification sections, except where a specific date is established by applicable code.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Date of Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by Contract Documents by mention or inference otherwise in any reference document.

PART 2 CALIFORNIA DEPARTMENT OF GENERAL SERVICES, DIVISION OF THE STATE ARCHITECT

2.01 INTERPRETATION OF REGULATIONS

- A. Document IR A-5 Acceptance of Products, Materials, and Evaluations Reports .
- B. Current listings are on the DGS website: http://www.dgs.ca.gov/dsa/Resources/IRManual.aspx.

PART 3 UNITED STATES GOVERNMENT AND RELATED AGENCIES DOCUMENTS

3.01 CFR -- CODE OF FEDERAL REGULATIONS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. 16 CFR 260.13 Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content.
- C. 16 CFR 1201 Safety Standard for Architectural Glazing Materials.
- D. 28 CFR 36 Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice.
- E. 29 CFR 1910 Occupational Safety and Health Standards.

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- F. 29 CFR 1910, Subpart D Walking-Working Surfaces, 1910.21-1910.30.
- G. 29 CFR 1910.23 Ladders.
- H. 29 CFR 1910.38 Emergency action plans.
- I. 29 CFR 1910.132-138 Personal Protective Equipment.
- J. 29 CFR 1910.134 Respiratory protection.
- K. 29 CFR 1926.62 Lead.
- L. 29 CFR 1926.1101 Asbestos.
- M. 36 CFR 1191 Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.
- N. 39 CFR 111 U.S. Postal Service Standard 4C.
- O. 40 CFR 59, Subpart D National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency.
- P. 40 CFR 60 Standards of Performance for New Stationary Sources.
- Q. 40 CFR 273 Standards For Universal Waste Management.
- R. 40 CFR 280 Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks.
- S. 40 CFR 761 Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution In Commerce, And Use Prohibitions.
- T. 47 CFR 15 Radio Frequency Devices.
- U. 47 CFR 68 Connection of Terminal Equipment to the Telephone Network.
- V. 49 CFR 37 Transportation Services for Individuals with Disabilities (ADA).
- W. 49 CFR 178 Specifications for Packaging.
- X. 49 CFR 192.285 Plastic Pipe: Qualifying Persons to Make Joints.

3.02 CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION

A. CPSC Pub. No. 325 - Public Playground Safety Handbook.

3.03 EPA -- ENVIRONMENTAL PROTECTION AGENCY

- A. EPA (NPDES) National Pollutant Discharge Elimination System (NPDES), Construction General Permit.
- B. EPA 600/4-90/010 Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
- C. EPA 600-4-790-20 Methods for Chemical Analysis of Water and Wastes.
- D. EPA 625/1-86/021 Design Manual: Municipal Wastewater Disinfection.
- E. EPA 625/R-96/010b Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.
- F. EPA 712-C-02-190 Health Effects Test Guidelines OPPTS 870.1100 Acute Oral Toxicity.

3.04 FDA -- FOOD AND DRUG ADMINISTRATION

A. FDA Food Code - Chapter 6 - Physical Facilities.

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3.05 FEMA -- U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY

- A. FEMA (MAPS) FEMA Map Service Center.
- B. FEMA 412 Installing Seismic Restraints for Mechanical Equipment.
- C. FEMA 413 Installing Seismic Restraints for Electrical Equipment.
- D. FEMA 414 Installing Seismic Restraints for Duct and Pipe.
- E. FEMA E-74 Reducing the Risks of Nonstructural Earthquake Damage.

3.06 FS -- FEDERAL SPECIFICATIONS AND STANDARDS (GENERAL SERVICES ADMINISTRATION)

- A. FED-STD-595C Colors Used in Government Procurement (Fan Deck)..
- B. FS L-F-001641 Floor Covering Translucent or Transparent Vinyl Surface with Backing; 1971, and Amendment 2, 1982.
- C. FS L-S-125 Screening, Insect, Nonmetallic.
- D. FS RR-P-1352 Partitions, Toilet, Complete; Revision C, 1989.
- E. FS RR-T-650 Treads, Metallic and Nonmetallic, Skid Resistant.
- F. FS RR-W-365 Wire Fabric (Insect Screening); 1980, Rev. A (Amended 1986).
- G. FS SS-T-312 Tile, Floor: Asphalt, Rubber, Vinyl, and Vinyl Composition; Revision B, 1974, and Amendment 1, 1979.
- H. FS TT-B-1325 Beads (Glass Spheres) Retro-Reflective.
- I. FS TT-P-115 Paint, Traffic (Highway, White and Yellow); Revision F, 1984.
- J. FS TT-P-1952 Paint, Traffic and Airfield Marking, Waterborne.
- K. FS W-C-375 Circuit Breakers, Molded Case; Branch Circuit and Service.
- L. FS W-C-596 Connector, Electrical, Power, General Specification for.
- M. FS W-S-896 Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification).
- N. STATE STD 01.01 Certification Standard Forced Entry and Ballistic Resistance of Structural Systems; Physical Security Division, Office of Physical Security Programs, Bureau of Diplomatic Security, United States Department of State.
- O. UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings.
- P. USPS Handbook AS-503 Standard Design Criteria; United States Postal Service.

3.07 GSA -- U.S. GENERAL SERVICES ADMINISTRATION

A. GSA PBS-P100 - Facilities Standards for the Public Buildings Service.

3.08 NIJ -- NATIONAL INSTITUTE OF JUSTICE (DEPT. OF JUSTICE)

A. NIJ 0108.01 - Standard for Ballistic Resistant Protective Materials.

3.09 PS -- PRODUCT STANDARDS

- A. PS 1 Structural Plywood.
- B. PS 2 Performance Standard for Wood Structural Panels.
- C. PS 20 American Softwood Lumber Standard.

3.10 USDA -- UNITED STATES DEPARTMENT OF AGRICULTURE

A. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service.

3.11 USGS -- UNITED STATES GEOLOGICAL SURVEY

A. USGS (FMWQ) - National Field Manual for the Collection of Water-Quality Data; United States Geological Survey.

END OF SECTION

SECTION 01 45 33 CODE-REQUIRED SPECIAL INSPECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Division of the State Architect (DSA) Procedures for construction oversight and inspections required during the course of construction.
- B. Code-required special inspections.
 - 1. Division of the State Architect (DSA) approved testing laboratory services and inspections required during the course of construction.
- C. Testing services incidental to special inspections.
- D. Submittals.
- E. Manufacturers' field services.
- F. Fabricators' field services.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 Administrative Requirements: Submittal procedures.
- B. Section 01 40 00 Quality Requirements.
- C. Section 01 60 00 Product Requirements: Requirements for material and product quality.

1.03 DEFINITIONS

- A. Code or Building Code: California Building Code and, more specifically, Chapter 17A -Structural Tests and Special Inspections, of same.
- B. Authority Having Jurisdiction (AHJ): Agency or individual officially empowered to enforce the building, fire and life safety code requirements of the permitting jurisdiction in which the Project is located. AHJ for this Project is Division of the State Architect.
- C. Special Inspection:
 - 1. Special inspections are inspections and testing of materials, installation, fabrication, erection or placement of components and connections mandated by the CBC that also require special expertise to ensure compliance with the approved contract documents and the referenced standards.
 - 2. Special inspections are separate from and independent of tests and inspections conducted by District or Contractor for the purposes of quality assurance and contract administration.

1.04 REFERENCE STANDARDS

- A. ACI 318 Building Code Requirements for Structural Concrete.
- B. AISC 341 Seismic Provisions for Structural Steel Buildings.
- C. AISC 360 Specification for Structural Steel Buildings.
- D. ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

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- E. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- F. ASTM C143/C143M Standard Test Method for Slump of Hydraulic-Cement Concrete.
- G. ASTM C31/C31M Standard Practice for Making and Curing Concrete Test Specimens in the Field.
- H. ASTM C172/C172M Standard Practice for Sampling Freshly Mixed Concrete.
- I. ASTM D1556/D1556M Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
- J. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
- K. ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- L. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- M. ASTM E543 Standard Specification for Agencies Performing Nondestructive Testing.
- N. AWS D1.1/D1.1M Structural Welding Code Steel.
- O. ICC-ES AC308 Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements.

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Special Inspection Agency Qualifications: Prior to the start of work, the Special Inspection Agency is required to:
 - 1. Submit agency name, address, and telephone number, names of full time registered Engineer and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
 - 3. Submit certification that Special Inspection Agency is acceptable to AHJ.
- C. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:
 - 1. Submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
 - 2. Submit certification that Testing Agency is acceptable to AHJ.
 - 3. Testing and inspections will be performed by an independent testing laboratory selected and employed by the District and approved by the Division of the State Architect (DSA).
 - a. Qualification of a testing agency or laboratory will be under the jurisdiction of the DSA Structural Safety Section (SSS). Procedural and acceptance criteria are set forth in the California Administrative Code (CBC) Chapter 4.
- D. Manufacturer's Qualification Statement: Manufacturer is required to submit documentation of manufacturing capability and quality control procedures. Include documentation of AHJ approval.

- E. Fabricator's Qualification Statement: Fabricator is required to submit documentation of fabrication facilities and methods as well as quality control procedures.
- F. Distribution List: The Testing Laboratory will make the following distribution of test and inspection reports:
 - 1 District
 - 2 Architect
 - 1 Structural Engineer
 - 1 Contractor
 - 1 District's Project Inspector
 - 1 Division of the State Architect
- G. Each and every test or inspection report shall bear the File Number and Application Number assigned to this project by the DSA.
- H. DSA Form 291: From the engineering manager of the laboratory of record.
- I. Special Inspection Reports: After each special inspection, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one each to the distribution list.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of special inspection.
 - h. Date of special inspection.
 - i. Results of special inspection.
 - j. Compliance with Contract Documents.
 - 2. Final Special Inspection Report: Document special inspections and correction of discrepancies prior to the start of the work.
 - 3. Comply with DSA IR 17-12, revised 04/23/20.
- J. Fabricator Special Inspection Reports: After each special inspection of fabricated items at the Fabricator's facility, Special Inspector is required to promptly submit at least two copies of report; one to Architect and one each to the distribution list.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of Special Inspector.
 - d. Date and time of special inspection.

- e. Identification of fabricated item and specification section.
- f. Location in the Project.
- g. Results of special inspection.
- h. Verification of fabrication and quality control procedures.
- i. Compliance with Contract Documents.
- j. Compliance with referenced standard(s).
- K. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one each to the distribution list.
 - 1. Include:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in the Project.
 - g. Type of test or inspection.
 - h. Date of test or inspection.
 - i. Results of test or inspection.
 - j. Compliance with Contract Documents.
 - k. Test reports shall be signed by a Civil Engineer licensed in the State of California.
 - 2. Test reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory.
 - a. Samples taken but not tested shall also be reported.
 - b. Records of special sampling operations as required shall also be reported.
 - c. Reports shall show that the material or materials were sampled and tested in accordance with the requirements of the CBC, and with the approved specifications.
 - d. They shall also state definitely whether or not the material or materials tested comply with requirements.
 - e. Test reports shall be issued within 14 days of finding being known, to all parties listed above.
 - 3. At the completion of the project, Testing Laboratory shall certify in writing and on all required DSA forms, that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.
 - 4. Verification of Test Reports:
 - a. The Testing Laboratory of record shall submit to the Division of the State Architect (DSA) a verified report covering all tests which are required to be made by that agency during the progress of the project.
 - 1) Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project.

- Specific testing requirements as listed on the Structural Test and Inspections (T&I) Form DSA-103 for this project. These tests may include the following forms:
 - (a) DSA-201: Soils Compaction.
 - (b) DSA-202: Sieve Analysis.
 - (c) DSA-203: Tension/Bend.
 - (d) DSA-204: Compression.
 - (e) DSA-206: Anchor Load.
 - (f) DSA-208: High-Strength Bolt.
 - (g) DSA-210: Ultrasonic (NDT).
 - (h) DSA-250: Special Inspection(s).
 - (i) DSA-291: Laboratory Verified Report.
 - (j) DSA-292: Special Inspection(s) Verified Report(s).
- 3) Other Division of the State Architect (DSA) Certification Documents (Reports) as may be required.
- b. DSA Form 292 Special Inspection Verified Report shall be from all special inspectors contracting directly and individually with the school board.
- L. Certificates: When specified in individual special inspection requirements, Special Inspector shall submit certification by the manufacturer, fabricator, and installation subcontractor to Architect and AHJ, in quantities specified for Product Data.
 - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect and AHJ.
- M. Manufacturer's Field Reports: Submit reports to Architect.
 - 1. Submit report in duplicate within 7 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.
- N. Fabricator's Field Reports: Submit reports to Architect and AHJ.
 - 1. Submit report in duplicate within 30 days of observation to Architect for information.
 - 2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in Contract Documents.

1.06 SPECIAL INSPECTION AGENCY

- A. District will employ services of a Special Inspection Agency to perform inspections and associated testing and sampling in accordance with ASTM E329 and required by the building code.
- B. The Special Inspection Agency may employ and pay for services of an independent testing agency to perform testing and sampling associated with special inspections and required by the building code.
- C. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

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1.07 TESTING AND INSPECTION AGENCIES

- A. District is to employ services of an independent inspection and testing agency to perform observation, testing and sampling associated with special inspections including those not required by the building code. CAC
 - 1. Project Inspector and testing lab are employed by the District and approved by:
 - a. A/E of Record.
 - b. Structural Engineer (when applicable).
 - c. DSA.
- B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.08 QUALITY ASSURANCE

- A. Special Inspection Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Testing Agency Qualifications:
 - 1. Independent firm specializing in performing testing and inspections of the type specified in this section.
 - 2. Testing Agency must possess DSA LEA Program acceptance.
- C. Testing and inspection services which are performed shall be in accordance with requirements of the CBC, and as specified herein. Testing and inspection services shall verify that work meets the requirements of the Construction Documents.
- D. In general, tests and inspections for structural materials shall include all items enumerated on the Structural Tests and Inspections list for this project as prepared and distributed by the Architect.
- E. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document.

1.09 INSPECTION BY THE DISTRICT

- A. The District shall have the right to reject materials and workmanship which are defective, or to require their correction.
 - 1. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the District.
 - 2. If the Contractor does not correct such rejected work within a reasonable time, the District may correct such rejected work and charge the expense to the Contractor.
- B. Should it be considered necessary or advisable by the District at any time before final acceptance of the entire work to make an examination of work already completed by removing or tearing out the completed work; the Contractor shall on request promptly furnish necessary facilities, labor and materials.
 - 1. If such work is found to be defective in any respect due to fault of the Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory

reconstruction. .

2. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the Contractor.

1.10 DISTRICT'S INSPECTOR

- A. A Project Inspector (IOR) employed by the District and approved by Architect, Structural Engineer and DSA in accordance with the requirements of the California Building Code will be assigned to the work.
 - 1. Project Inspector duties are specifically defined in CCR Title 24 Part 1, Sec. 4-211(b), 4-219, 4-333(b), 4-336 and 4-342.
- B. The District's Inspector shall at all times have access for the purpose of inspection to all parts of the work and to the shops where the work is in preparation, and the Contractor shall at all times maintain proper facilities and provide safe access for such inspection.
- C. The work of construction in all stages of progress shall be subject to the personal continuous observation of the District's Inspector.
 - 1. The Contractor shall furnish the Inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials.
 - 2. Inspection of the work shall not relieve the Contractor from any obligation to fulfill this Contract.
 - 3. Inspector of Record is required to work a normal 40 hour week on this project only. Any overtime required will be at the expense of the Contractor and sub-contractor requiring the inspection.

1.11 PAYMENTS

- A. Costs of initial testing and inspection, except as specifically modified herein, or specified otherwise in technical sections, will be paid for by the District, providing such testing and inspection indicates compliance with Contract Documents. Initial tests and inspections are defined as the first tests and inspections as herein specified.
- B. In the event a test or inspection indicates failure of a material or procedure to meet requirements of Contract Documents, costs for retesting and reinspection will be paid by the District and backcharged to the Contractor.
- C. Additional tests and inspections not herein specified but requested by District or Architect, will be paid for by District, unless results of such tests and inspections are found to be not in compliance with Contract Documents, in which case the District will pay all costs for initial testing as well as retesting and reinspection and backcharge the Contractor.
- D. Costs for additional tests or inspections required because of change in materials being provided or change of source or supply will be paid by District and backcharged to the Contractor.
- E. Costs for tests or inspections which are required to correct deficiencies will be paid by the District and backcharged to the Contractor.
- F. Cost of testing which is required solely for the convenience of Contractor in his scheduling and performance of work will be paid by the District and backcharged to the Contractor.

- G. Overtime costs for testing and inspections performed outside the regular work day hours, including weekends and holidays, will be paid for by the District and backcharged to the Contractor. Such costs include overtime costs for the District's Inspector.
- H. Testing Laboratory shall separate and identify on the invoices, the costs covering all testing and inspections which are to be backcharged to the Contractor as specified above.
- I. Testing Laboratory shall furnish to District a cost estimate breakdown covering initial tests and inspections required by Contract Documents. Estimate shall include number of tests, manhours required for tests, field and plant inspections, travel time, and costs.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SCHEDULE OF SPECIAL INSPECTIONS, GENERAL

- A. Frequency of Special Inspections: Special Inspections are indicated as continuous or periodic.
 - 1. Continuous Special Inspection: Special Inspection Agency is required to be present in the area where the work is being performed and observe the work at all times the work is in progress.
 - 2. Periodic Special Inspection: Special Inspection Agency is required to be present in the area where work is being performed and observe the work part-time or intermittently and at the completion of the work.
- B. Tests and inspections for the following will be required in accordance with the current CBC, unless otherwise specified.

3.02 SPECIAL INSPECTIONS FOR STEEL CONSTRUCTION (CHAPTER 17A AND 22A)

- A. Structural Steel: Comply with quality assurance inspection requirements of CBC.
- B. Erection Inspection: Testing Laboratory will visually inspect bolted and field welded connections, perform such additional tests and inspections of field work as are required by the Architect and prepare test reports for the Architect's review.
- C. Welding:
 - 1. Testing Laboratory will review welding procedure specifications as prepared by the fabricator.
 - 2. Structural Steel:
 - a. Inspect welding per CBC 1705A.2.5.
 - 1) Comply with DSA IR 17-3: Structural Welding Inspection: 2019 CBC; Revised 09/24/19.
 - b. Complete and Partial Joint Penetration Groove Welds: Verify compliance with AWS D1.1/D1.1M and AWS D1.8/D1.8M; continuous.
 - c. Multipass Fillet Welds: Verify compliance with AWS D1.1/D1.1M and BHMA A156.31; continuous.
 - d. Single Pass Fillet Welds Less than 5/16 inch Wide: Verify compliance with AWS D1.1/D1.1M and BHMA A156.31; periodic.

- e. Plug and Slot Welds: Verify compliance with AWS D1.1/D1.1M and BHMA A156.31; continuous.
- f. Single Pass Fillet Welds 5/16 inch or Greater: Verify compliance with AWS D1.1/D1.1M and BHMA A156.31; continuous.
- 3. Should defects appear in welds tested, repairs shall be similarly inspected at the Contractor's expense and at the direction of the Architect until satisfactory performance is assured.
- 4. Other methods of inspection, for example, X-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if felt necessary by the Architect.
- D. Corrections:
 - 1. Correct deficiencies in structural steel work which inspections and test reports indicate to be not in compliance with the specified requirements.
 - 2. Perform additional tests required to reconfirm noncompliance of the original work and to show compliance of corrected work. Costs for all additional tests will be paid for by the District and backcharged to the Contractor.

3.03 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION (CHAPTER 17A AND 19A)

- A. Inspection:
 - 1. Job Site Inspection: CBC 1705A.3, 1705A.3.5 (Conc. Preplacement), 1705A.3.6 (Placing Record), and 1910A.
 - 2. Batch Plant or Weighmaster Inspection: CBC 1705A.3.3.
- Reinforcing Steel, Including: Verify compliance with approved contract documents and ACI 318, Sections 20.2, 25.2 through 25.7, and 26.6.
 - 1. Reinforcing Bars: CBC 1901A.6; 1910A.2.
 - a. District's Inspector will inspect all reinforcement for concrete work for size, dimensions, locations and proper placement.
- C. Anchors Cast in Concrete: Verify compliance with ACI 318, 17.8.2; periodic.
- D. Bolts Installed in Concrete: Where allowable loads have been increased or where strength design is used, verify compliance with approved Contract Documents and ICC-ES AC308 approved report prior to and during placement of concrete; continuous.
 - 1. Comply with CBC Section 1910A.5; Table 1705A.3, items 4a & 4b, ASCE 7, Section 13.4.
- E. Anchors Post-Installed in Hardened Concrete: Verify compliance with ACI 318.
 - 1. Comply with CBC Section 1910A.5; Table 1705A.3, items 4a & 4b, ASCE 7, Section 13.4.
 - 2. Adhesive Anchors: Verify horizontally or upwardly-inclined orientation installations resisting sustained tension loads Section 17.8.2.4; continuous.
 - 3. Other Mechanical and Adhesive Anchors: Verify as per Chapter 17.8.2; periodic.
- F. Anchors Installed in Hardened Concrete: Verify compliance with ACI 318; periodic.
- G. Design Mix: Verify plastic concrete complies with the design mix in approved contract documents and with CBC Chapter 19A, ACI 318, Sections 26.4.3, 26.4.4; periodic.
 - 1. Portland Cement Tests: CBC 1705A.3.2, 1910A.1.

- 2. Concrete Aggregates: CBC 1705A.3.2, 1903A.5.
- 3. Batch Plant Inspection: CBC 1705A.3.3.
- 4. Waiver of Continuous Batch Plant Inspection and Tests: CBC 1705A.3.3.1.
- 5. Admixtures: CBC 1910A.1.
- 6. Proportions of Concrete: CBC 1904A (Durability) and 1905A (Modifications to ACI 318).
- H. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M and ACI 318, Chapter 26.5, 26.12, and record the following, continuous:
 - 1. Slump.
 - 2. Air content.
 - 3. Temperature of concrete.
 - 4. Strength Tests of Concrete: CBC 1905A.1.15; Table 1705A.3 Item 6; ACI 318-14 Sec. 26.12.
- I. Concrete Placement: Verify application techniques comply with approved Contract Documents and ACI 318, Chapter 26.5; continuous.
- J. Specified Curing Temperature and Techniques: Verify compliance with ACI 318, Chapter 26.5.3-26.5.5; continuous.
- K. Concrete Strength in Situ: Verify concrete strength complies with approved Contract Documents, CBC Table 1705A.3, 1905A.1.15, and modified ACI 318, Chapter 26.12.2,1(a).
- L. Formwork Shape, Location and Dimensions: Verify compliance with approved Contract Documents and ACI 318, Chapter 26.11.1.2(b); continuous.
- M. District Inspector (IOR) will do the following:
 - 1. Inspect placing of reinforcing steel and concrete at Project.
 - 2. Obtain weighmaster's certificate and identify mix before accepting each load.
 - 3. Keep daily record of concrete placement, identifying each truck load, time of receipt, and location of concrete in structure.
 - 4. Keep record until completion of Project and make available for inspection by DSA Field Engineer or representative.
 - 5. See also subparagraph on Waiver of Continuous Batch Plant Inspection above.
 - 6. During progress of work, take an additional number of test cylinders as directed by Architect. Conform to CBC 1905A.1.15 (modified ACI 318). Test cylinders need not be made for concrete used in exterior flatwork.
 - a. ACI 318 Section 26.12.2.1 shall be replaced and the Contractor shall comply with the following:
 - Samples for strength test of each class of concrete placed each day shall not be taken less than once for each 50 cubic yards (38.3m3) of concrete, or not less than once for each 2,000 square feet (186 m2) of surface area of for slabs or walls.
 - 2) Additional samples for seven day compressive strength tests shall be taken for each class of concrete at the beginning of the concrete work or whenever the

mix or aggregate is changed.

- 7. One set of cylinders shall consist of 4 samples all taken from same batch, one to be tested at age of 7 days and two at 28 days.
- 8. Make and store cylinders according to ASTM C31/C31M.
- 9. Deliver cylinders to laboratory or store cylinders in a suitable protected environment for pick up by laboratory personnel.
- 10. Make slump test of wet concrete according to test for slump of portland cement concrete, ASTM C143/C143M, at least at the same frequency that the cylinders are taken.

3.04 SPECIAL INSPECTIONS FOR SOILS

- A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
 - 1. Design bearing capacity of material below shallow foundations; periodic.
 - 2. Design depth of excavations and suitability of material at bottom of excavations; periodic.
 - 3. Materials, densities, lift thicknesses; placement and compaction of backfill: continuous.
 - 4. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.
- B. Testing: Classify and test excavated material; periodic.
- C. Excavations, Foundations and Retaining Walls (Chapters 17A, 18A,):
 - 1. Earth Compaction: CBC 1705A.6; Table 1705A.6, continuous; 1804A.6.
 - 2. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of compacted fill: CBC 1705A.6.1; Table 1705A.6, periodic; 1804A.6.
- D. Contractor shall remove unsatisfactory material, re-roll, adjust moisture, place new material, or in the case of excavations, provide proper protective measures, perform other operations necessary, as directed by the Geotechnical Engineer whose decisions and directions will be considered final.
- E. Soils Test and Inspection Procedure:
 - 1. Laboratory compaction tests to be used will be in accordance with ASTM D1557.
 - 2. Field density tests will be made in accordance with ASTM D1556/D1556M.
 - 3. Number of tests will be determined by Geotechnical Engineer. Materials in question may not be used pending test results.
 - 4. Excavation and embankment inspection procedure. Geotechnical Engineer will visually or otherwise examine such areas for bearing values, cleanliness and suitability.
 - 5. Earthwork Test Reports: In order to avoid misinterpretations by the reviewing agencies, all retest results shall be reported on the same sheet, immediately following the previous failure test to which it is related. Retests shall be clearly noted as such.

3.05 SPECIAL INSPECTIONS FOR CAST-IN-PLACE DEEP FOUNDATIONS

A. Materials, Equipment and Final Placement: Verify each item below complies with approved construction documents and approved geotechnical report.

- 1. Element length; continuous.
- 2. Element diameters and bell diameters; continuous.
- 3. Embedment into bedrock; continuous.
- 4. End bearing strata capacity; continuous.
- 5. Placement locations and plumbness; continuous.
- 6. Type and size of hammer; continuous.
- B. Drilling Operations: Observe and maintain complete and accurate records for each element; continuous.
- C. Material Volume: Record concrete and grout volumes.
- D. Concrete Elements Associated with Cast-in-Place Deep Foundations: Perform additional inspections as required by the Special Inspections for Concrete Construction article of this section.

3.06 SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE

- A. Seismic Force-Resisting Systems: Comply with the quality assurance plan requirements of AISC 341.
- B. Inspection: Comply with CBC 1705A.12.
- C. Testing: Comply with CBC 1705A.13.
- D. Structural Steel: Comply with the quality assurance plan requirements of AISC 341.
- E. Mechanical and Electrical Components:
 - 1. Anchorage of electric equipment required for emergency or standby power systems; periodic.
 - 2. Installation and anchorage of other electrical equipment; periodic.
 - 3. Vibration isolation systems where the approved Contract Documents require a nominal clearance of 1/4 inch or less between support frame and seismic restraint; periodic.
- F. Designated Seismic System Verification: Verify label, anchorage or mounting complies with certificate of compliance provided by manufacturer or fabricator.
- G. Structural Testing for Seismic Resistance:
 - 1. Concrete reinforcement: Comply with ACI 318, Section 20.2.2.5 and 21.1.52.
 - a. Materials Obtain mill certificates demonstrating compliance with ASTM A615/A615M; periodic.
 - b. Welding: Perform chemical tests complying with ACI 318, Section 26.6.4 to determine weldability; periodic.
 - 2. Non-Structural Components:
 - a. General Design Requirements: Obtain manufacturer certification of compliance with requirements of ASCE 7, Section 13.2.1; periodic.
 - b. Designated Seismic Force-Resisting Non-Structural System Components: Obtain manufacturer certification of compliance with ASCE 7, Section 13.2.2; periodic.
- H. Structural Observations for Seismic Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.07 SPECIAL INSPECTIONS FOR WIND RESISTANCE

- A. Cold-Formed Steel Light Frame Construction:
 - 1. Field welding; periodic.
 - 2. Screw attachment, bolting, anchoring and other fastening of components within the main wind force-resisting system; periodic
- B. Structural Observations for Wind Resistance: Visually observe structural system for general compliance with the approved Contract Documents; periodic.

3.08 STRUCTURAL OBSERVATIONS FOR STRUCTURES

- A. Provide Observations: For structure where one or more of the following conditions exist:
 - 1. Such observation is required by the registered design professional responsible for the structural design.
 - 2. Such observation is specifically required by AHJ.

3.09 SPECIAL INSPECTION AGENCY DUTIES AND RESPONSIBILITIES

- A. Special Inspection Agency shall:
 - 1. Verify samples submitted by Contractor comply with the referenced standards and the approved Contract Documents.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified reference standards.
 - 4. Ascertain compliance of materials and products with requirements of Contract Documents.
 - 5. Promptly notify Architect, SEOR, IOR, DSA, District and Contractor of observed irregularities or non-conformance of work or products.
 - 6. Perform additional tests and inspections required by Architect.
 - 7. Submit reports of all tests or inspections specified.
- B. Limits on Special Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the work.
- C. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- D. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.10 TESTING AGENCY DUTIES AND RESPONSIBILITIES

- A. Testing Agency Duties:
 - 1. Test samples submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
 - 6. Perform additional tests and inspections required by Architect.
 - 7. Attend preconstruction meetings and progress meetings.
 - 8. Submit reports of all tests or inspections specified.
- B. Limits on Testing or Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the work.
- C. Immediately upon determination of a test failure, the Laboratory shall telephone the results to the Architect. On the same day, Laboratory shall send test results by email to the Architect and to all relevant responsible parties of the project team, and District's Inspector
- D. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.
- E. Contractor will pay for re-testing required because of non-compliance with specified requirements.
- F. At the completion of the project, Testing Laboratory shall certify in writing and on all required DSA forms, that all work specified or required to be tested and inspected conforms to drawings, specifications and applicable building codes.
 - 1. See DSA Procedure PR 13-01.
- G. Duties of the Laboratory of Record related to the use of form DSA 152 are as follows:
 - 1. Meet with the Project Inspector, design professionals, and contractor as needed to mutually communicate and understand the testing and inspection program and the methods of communication appropriate for the project.
 - 2. Obtain a copy of the DSA approved construction documents from the design professional in general responsible charge prior to the commencement of construction
 - 3. Obtain a copy of the DSA approved Statement of Structural Tests and Special Inspections (form DSA 103) from the design professional in general responsible charge prior to the commencement of construction.

- 4. Report all project related activities to the Project Inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and Special Inspectors to ensure the testing and special inspection program is satisfactorily completed
- 5. Provide material testing as identified in the DSA approved construction documents.
- 6. Submit test reports to the Project Inspector on the day the tests were performed for any tests performed on-site
- 7. Submit material test reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the material tests were performed. Test reports are to be submitted to DSA, the Architect, structural engineer, Project Inspector and school district.
 - a. As a convenience, and if agreed upon by involved parties, the test reports may be submitted electronically as identified in Section 4 of this procedure.
- 8. Immediately submit reports of material tests not conforming to the requirements of the DSA approved construction documents. These reports shall be submitted to the DSA, Architect, structural engineer, Project Inspector and school district.
- 9. The Engineering Manager shall submit an interim Laboratory of Record Verified Report (form DSA 291) and the Geotechnical Engineer shall submit an interim Geotechnical Verified Report (form DSA 293) to DSA, the project inspector, school district and the Design Professional in General Responsible Charge.
 - a. The reports are required to be submitted upon any of the following events occurring:
 - 1) Within 14 days of the completion of the material testing/special inspection program.
 - 2) Work on the project is suspended for a period of more than one month.
 - 3) The services of the laboratory of record are terminated for any reason prior to completion of the project.
 - 4) The DSA requests a Verified Report. (See interim verified reports below. This is a "DSA request.")
- 10. The Engineering Manager shall submit an interim verified report (form DSA 291) and the Geotechnical Engineer shall submit form DSA 293 to DSA and a copy to the project inspector for each of the applicable sections of the form DSA 152, prior to the project inspector signing off that section of the project inspection card, if that section required material testing. The sections are:
 - a. Initial Site Work
 - b. Foundation Prep
 - c. Vertical Framing
 - d. Horizontal Framing
 - e. Appurtenances
 - f. Finish Site Work
 - g. Other Work
 - h. Final

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- H. Duties of Special Inspectors, employed by the Laboratory of Record, related to the use of form DSA 152 are as follows:
 - 1. Meet with the Project Inspector, design professionals, and contractor as needed to mutually communicate and understand the testing and inspection program and the methods of communication appropriate for the project.
 - 2. Report all project related activities to the Project Inspector. The Project Inspector is responsible for monitoring the work of the Laboratory of Record and Special Inspectors to ensure the testing and special inspection program is satisfactorily completed.
 - 3. Perform work under the supervision of the Engineering Manager for the Laboratory of Record
 - 4. Perform inspections in conformance with the DSA approved construction documents, applicable codes and code reference standards
 - 5. Prepare detailed daily inspection reports outlining the work inspected and provide the Project Inspector a copy of the reports on the same day the inspections were performed.
 - 6. Prepare detailed daily inspection reports outlining the work inspected and provide the Project Inspector a copy of the reports on the same day the inspections were performed.
 - 7. Immediately submit reports of materials or work not conforming to the requirements of the DSA approved construction documents. These reports shall be submitted to the DSA, Architect, structural engineer, Project Inspector and school district.
 - 8. Submit daily special inspection reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the special inspections were performed. The reports are to be submitted to the Architect, structural engineer, Project Inspector and school district.
 - 9. Submit Verified Report forms DSA 292 to the DSA, Project Inspector, district and design professional in responsible charge.
 - 10. The reports are required to be submitted upon any of the following events occurring:
 - 11. Within 14 days of the completion of the special inspection work.
 - 12. Work on the project is suspended for a period of more than one month.
 - 13. The services of the special inspector are terminated for any reason prior to completion of the project.
 - 14. The DSA requests a Verified Report. (See interim verified reports below. This is a "DSA request")
 - 15. Submit an interim Verified Report (form DSA 292) to the DSA and a copy to the Project Inspector for each of the applicable sections of the form DSA 152, prior to the Project Inspector signing off that section of the project inspection card, if that section required special inspections. The sections are:
 - a. Initial Site Work
 - b. Foundation
 - c. Vertical Framing
 - d. Horizontal Framing
 - e. Appurtenances

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- f. Non-Building Site Structures
- g. Finish Site Work
- h. Other Work
- i. Final
- 16. The Verified Reports shall be sent electronically to the DSA.
- I. Duties of Special Inspectors, <u>not</u> employed by the Laboratory of Record, related to the use of form DSA 152 are as follows:
 - 1. Meet with the project inspector, Laboratory of Record, the design professionals, and the contractors as needed to mutually communicate and understand the testing and inspection program, and the methods of communication appropriate for the project.
 - 2. Report all project related activities to the project inspector. The project inspector is responsible for monitoring the work of the Laboratory of Record and special inspectors to ensure the testing and special inspection program is satisfactorily completed.
 - 3. Perform work under the direction of the design professional in general responsible charge, as defined in Section 4-335(f)1B of the California Administrative Code (Title 24, Part 1).
 - 4. Perform inspections in conformance with the DSA approved construction documents, applicable codes and code reference standards.
 - 5. Prepare detailed daily inspection reports outlining the work inspected and provide the project inspector a copy of the reports on the same day the inspections were performed.
 - 6. Immediately submit reports of materials or work not conforming to the requirements of the DSA approved construction documents. These reports shall be submitted to DSA, the Architect, structural engineer, project inspector and the school district.
 - 7. Submit daily special inspection reports in a timely manner such that construction is not delayed and not to exceed 14 days from the date the special inspections were performed. The reports are to be submitted to DSA, the Architect, structural engineer, project inspector and the school district.
 - 8. Submit Special Inspection Verified Report forms DSA 292 to DSA, the project inspector, the school district and the Design Professional in General Responsible Charge.
 - a. The reports are required to be submitted upon any of the following events occurring:
 - 1) Within 14 days of the completion of the special inspection work.
 - 2) Work on the project is suspended for a period of more than one month.
 - 3) The services of the special inspector are terminated for any reason prior to completion of the project.
 - DSA requests a verified report. (See interim verified reports below. This is a "DSA request.")
 - 9. Submit an interim Special Inspection Verified Report (form DSA 292) to DSA and a copy to the project inspector for each of the applicable sections of the form DSA 152, prior to the project inspector signing off that section of the project inspection card, if that section required special inspections.

- a. The sections are:
 - 1) Initial Site Work
 - 2) Foundation Prep
 - 3) Vertical Framing
 - 4) Horizontal Framing
 - 5) Appurtenances
 - 6) Finish Site Work
 - 7) Other Work
 - 8) Final

3.11 CONTRACTOR DUTIES AND RESPONSIBILITIES

- A. DSA Requirements:
 - Each Multi-Prime Contractor or Subcontractor shall comply with DSA Construction Oversight Procedure PR 13-01. California Code of Regulations (CCR), Title 24, Part 1, CCR, Chapter 4, Article 1 (Sections 4-211 through 4-220) and Group1, Articles 5 and 6 (Sections 4-331 through 4-344) which provide regulations governing the construction process for projects under the jurisdiction of the Division of the State Architect (DSA).
 - a. Assist the Project Inspector (IOR) and complete and fill out the following forms during the course of construction.
 - 1) Form-102-IC: Construction Start Notice/ Inspection Card Request: Verify Project Inspector has an active form issued by DSA.
 - 2) Form-151: Project Inspector Notifications: Contractor to notify IOR and assist.
 - 3) Form-152: Project Inspection Card: See below.
 - 4) Form-154: Notice of Deviations/ Resolution of Deviations: Contractor to verify all deviations are reviewed, corrected, and accepted by the design professional, and filed with DSA through the Project Inspector (IOR).
 - (a) When the Project Inspector identifies deviations from the DSA approved construction documents the inspector must verbally notify the contractor. If the deviations are not corrected within a reasonable time frame, the inspector is required to promptly issue a written notice of deviation to the contractor, with a copy sent to the design professional in general responsible charge and the DSA.
 - (b) When the noticed deviations are corrected, the inspector is required to promptly issue a written notice of resolution to the contractor, with a copy sent to the design professional in general responsible charge and the DSA.
 - (c) Deviations include both construction deviations and material deficiencies.
 - (d) The written notice of deviations shall be made using form DSA 154.
 - (e) The notice of resolution of deviations shall be made using the original form DSA 154 that reported the deviations.
 - 5) Form-156: Commencement/Completion of Work Notification

- 6) Form-6.C: Verified Report Contractor: From each contractor having a contract with the school board.
- 2. Duties of Contractor related to the use of form DSA 152 are as follows:
 - a. The Contractor shall carefully study the DSA approved documents and shall plan a schedule of operations well ahead of time.
 - b. If at any time it is discovered that work is being done which is not in accordance with the DSA approved construction documents, the Contractor shall correct the work immediately.
 - c. Verify that forms DSA 152 are issued for the project prior to the commencement of construction.
 - d. Meet with the design team, the Laboratory of Record and the Project Inspector to mutually communicate and understand the testing and inspection program and the methods of communication appropriate for the project.
 - e. Notify the Project Inspector, in writing, of the commencement of construction of each and every aspect of the work at least 48 hours in advance by submitting form DSA 156 (or other agreed upon written documents) to the Project Inspector.
 - f. Notify the Project Inspector of the completion of construction of each and every aspect of the work by submitting form DSA 156 (or other agreed upon written documents) to the Project Inspector.
 - g. Consider the relationship of the signed off blocks and sections of the form DSA 152 and the commencement of subsequent work. Until the Project Inspector has signed off applicable blocks and sections of the form DSA 152, the Contractor may be prohibited from proceeding with subsequent construction activities that cover up the unapproved work. Any subsequent construction activities, that cover up the unapproved work, will be subject to a "Stop Work Order" from the DSA or the district and are subject to removal and remediation if found to be in non-compliance with the DSA approved construction documents.
 - h. Submit the final verified report. All prime contractors are required to submit final Contractor Verified Reports (form DSA 6-C) to DSA and the project inspector.
 - 1) The reports are required to be submitted upon any of the following events occurring:
 - (a) The project is substantially complete. DSA considers the project to be complete when the construction is sufficiently complete in accordance with the DSA approved construction documents so that the owner can occupy or utilize the project.
 - (b) Work on the project is suspended for a period of more than one month.
 - (c) The services of the contractor are terminated for any reason prior to the completion of the project.
 - (d) DSA requests a verified report.
- B. Contractor Responsibilities, General:
 - 1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
 - 2. Availability of Samples

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- a. Contractor shall make materials required for testing available to Laboratory and assist in acquiring these materials as directed by the District's Inspector. The samples shall be taken under the immediate direction and supervision of the Testing Laboratory or District's Inspector.
- b. If work which is required to be tested or inspected is covered up without prior notice or approval, such work may be uncovered at the discretion of Architect at no additional cost to the District. Refer to paragraph "Payments" herein.
- c. Unless otherwise specified, Contractor shall notify Testing Laboratory a minimum of 10 working days in advance of all required tests, and a minimum of 2 working days in advance of all required inspections. All extra expenses resulting from a failure to notify the Laboratory will be paid by the District and backcharged to the Contractor.
- d. Contractor shall give sufficient advance notice to Testing Laboratory in the event of cancellation or time extension of a scheduled test or inspection. Charges due to insufficient advance, notice of cancellations, or time extension will be paid for by the District and backcharged to the Contractor.
- 3. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
- 4. Provide incidental labor and facilities:
 - a. To provide access to work to be tested or inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
 - c. To facilitate tests or inspections.
 - d. To provide storage and curing of test samples.
- 5. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
- 6. Arrange with District's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- 7. The Contractor shall notify the District's Inspector a minimum of 5 working days in advance of the manufacture of material to be supplied by him under the Contract Documents, which must be by terms of the Contract be tested, in order that the District may arrange for the testing of such material at the source of supply.
- 8. Material shipped by the Contractor from the source of supply before having satisfactorily passed such testing and inspection or before the receipt of notice from said Inspector that such testing and inspection will not be required, shall not be incorporated in the Project.
- 9. The District will select and pay testing laboratory costs for all tests and inspections, but may be reimbursed by the Contractor for such costs under the Contract conditions. Any direct payments by the Contractor to the testing laboratory on this project is prohibited.
- C. Contractor shall submit a written statement of responsibility to comply with CBC section 1704A.4.
 - 1. Each contractor responsible for the construction of a main wind- or seismic-forceresisting system, designated seismic system or a wind- or seismic-resisting component

listed in the statement of special inspections shall submit a written statement of responsibility to the building official and the owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain the following:

- a. Acknowledgment of awareness of the special requirements contained in the statement of special inspections;
- b. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official;
- c. Procedures for exercising control within the contractor's organization, the method and frequency of reporting and the distribution of the reports; and
- d. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.
- D. Contractor Responsibilities, Seismic Force-Resisting System, Designated Seismic System, and Seismic Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and District prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.
- E. Contractor Responsibilities, Wind Force-Resisting System and Wind Force-Resisting Component: Submit written statement of responsibility for each item listed in the Statement of Special Inspections to AHJ and District prior to starting work. Statement of responsibility shall acknowledge awareness of special construction requirements and other requirements listed.
- F. Unless otherwise directed, materials not conforming to the requirements of Contract Documents shall be promptly removed from the Project site.

3.12 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES

- A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Architect 30 days in advance of required observations.
 - 1. Observer subject to approval of Architect.
 - 2. Observer subject to approval of District.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

END OF SECTION

SECTION 01 50 00 TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary telecommunications services.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers, enclosures, and fencing.
- D. Security requirements.
- E. Waste removal facilities and services.

1.02 RELATED REQUIREMENTS

A. Section 01 35 53 - Security Procedures

1.03 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, and water required for construction purposes.
- B. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
 - 2. Telephone Land Lines: One line, minimum; one handset per line.
 - 3. Internet Connections: Minimum of one; DSL modem or faster.
 - 4. Email: Account/address reserved for project use.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
 - 1. Provide temporary toilet facilities if maximum number of personnel on project is greater than 10.
 - 2. Submit proposed location of temporary toilet(s) to Construction Manager for approval.
 - a. Place on-site portable toilets away from building air intakes and entryway.
- B. Maintain daily in clean and sanitary condition.

1.06 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rightsof-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.07 FENCING

- A. Construction: Contractor's option.
- B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.08 SECURITY

- A. Provide security and facilities to protect Work, existing facilities, and District's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with District's security program.

1.09 CAFETERIA AND FOOD

- A. Construction personnel shall police their own areas. All cups, cans, paper, wrappers, and discarded food must be placed in trash receptacles at end of each break.
- B. Contractor(s) shall submit to Construction Manager proposed location of any break areas and eating areas for approval.

1.10 SMOKING AND TOBACCO

- A. Smoking and vaping is not permitted on property.
- B. No chewing tobacco or spitting of tobacco is permitted.

1.11 VEHICULAR ACCESS AND PARKING

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and District.
- C. Provide and maintain access to fire hydrants, free of obstructions.
- D. Provide means of removing mud from vehicle wheels before entering streets.
- E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.12 WASTE REMOVAL

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

- B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- C. Provide containers with lids. Remove trash from site periodically.
- D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing facilities used during construction to original condition.
- E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 56 39 TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Tree protection of existing trees and plants
- B. Tree pruning of existing trees

1.02 RELATED REQUIREMENTS

- A. Division 01 General Requirements: Temporary Facilities and Controls
- B. Division 31 Earthwork: Site Clearing.
- C. Division 32 Exterior Improvements: Landscape Work.

1.03 REFERENCE STANDARDS

- A. ANSI A300 Part 1 American National Standard for Tree Care Operations Tree, Shrub, and Other Woody Plant Management Standard Practices (Pruning).
- B. ASTM F567 Standard Practice for Installation of Chain-Link Fence.

1.04 DEFINITIONS

- A. Caliper: Diameter of a trunk measured by a diameter tape or the average of the smallest and largest diameters at 6 inches above the ground for trees up to, and including, 4 inch size; and 12 inches above the ground for trees larger than 4 inch size.
- B. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- C. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.05 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of the following:
 - 1. Organic Mulch: 1 quart volume of organic mulch; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch.
 - 2. Protection-Zone Fencing: Assembled Samples of manufacturer's standard size made from full-size components.
 - 3. Protection-Zone Signage: Full-size Samples of each size and text, ready for installation.
- C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
 - 1. Species and size of tree.
 - 2. Location on site plan. Include unique identifier for each.

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- 3. Reason for pruning.
- 4. Description of pruning to be performed.
- 5. Description of maintenance following pruning.
- D. Qualification Data: For qualified arborist and tree service firm.
- E. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- F. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- G. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.
 - 1. Use sufficiently detailed photographs or videotape.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.06 QUALITY ASSURANCE

- A. Arborist Qualifications:
 - 1. Certified Arborist as certified by ISA.
 - 2. Licensed Arborist in jurisdiction where Project is located.
- B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.
- C. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to temporary tree and plant protection including, but not limited to, the following:
 - a. Construction schedule. Verify availability of materials, personnel, and equipment needed to make progress and avoid delays.
 - b. Enforcing requirements for protection zones.
 - c. Arborist's responsibilities.
 - d. Contractor responsibilities
 - e. Field quality control.

1.07 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.

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- 5. Impoundment of water.
- 6. Excavation or trenching or digging unless otherwise indicated.
- 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- 8. Do not direct vehicle or equipment exhaust toward protection zones.
- 9. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Topsoil: Natural or cultivated top layer of the soil profile or manufactured topsoil; containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch. Insert dimension in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
 - 1. Obtain topsoil only from well-drained sites where topsoil is 4 inches deep or more; do not obtain from bogs or marshes.
 - 2. Refer to Division 32 Exterior Improvements, "Landscape Work" for material requirements.
- B. Topsoil: Stockpiled topsoil from location shown on Drawings.
- C. Organic Mulch: Free from deleterious materials and suitable as a top dressing for trees and shrubs, consisting of one of the following:
 - 1. Type: Wood and bark chips.
 - 2. Size Range: 1/2 inch minimum, 1 inch maximum.
 - 3. Color: Natural.
- D. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements. Previously used materials may be used when approved by Architect.
 - Chain-Link Protection-Zone Fencing: Galvanized-steel fencing fabricated from minimum 2 inch opening, 0.148 inch diameter wire chain-link fabric; with pipe posts, minimum 2-3/8 inch OD line posts, and 2-7/8 inch OD corner and pull posts; with 1-5/8 inch OD top rails and 0.177 inch diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.
 - a. Height: 6 feet.
 - b. Polymer-Coating Color: Black.
 - 2. Gates: Single swing access gates matching material and appearance of fencing, to allow for maintenance activities within protection zones; leaf width 36 inches36 inches.
- E. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes pre-punched and reinforced; legibly printed with nonfading lettering and as follows:
 - 1. Size: as required

- 2. Text: "TREE PROTECTION ZONE KEEP OUT. No unauthorized entry. No storage of vehicles, materials, or debris. No dumping of chemicals, slurry, paint, oil, etc. "
- 3. Lettering: 3 inch high minimum, black characters on white background.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.02 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Flag - Tie a 1 inch blue-vinyl tape around each tree trunk at 54 inches above the ground.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
- C. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated.
 - 1. Apply 3 inch average thickness of organic mulch. Do not place mulch within 6 inches of tree trunks.

3.03 TREE- AND PLANT-PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people and animals from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
 - 1. Chain-Link Fencing: Install to comply with ASTM F567 and with manufacturer's written instructions.
 - 2. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Architect.
 - 3. Access Gates: Install as required; adjust to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Architect. Install one sign spaced approximately every 35 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

- C. Maintain protection zones free of weeds and trash.
- D. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.
- E. Maintain protection-zone fencing and signage in good condition as acceptable to Architect and remove when construction operations are complete and equipment has been removed from the site.
 - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 - 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.04 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Division 31 Section "Earth Moving."
- B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only roots smaller than 2" in diameter that interfere with installation of utilities. Cut roots as required for root pruning.
- C. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches (75 mm) back from new construction and as required for root pruning.
- D. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.05 ROOT PRUNING

- A. Prune roots that are affected by temporary and permanent construction. Prune roots as follows:
 - 1. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
 - 2. Cut Ends: Do not paint cut root ends. Coat cut ends of roots more than 1-1/2 inches in diameter with emulsified asphalt or other coating formulated for use on damaged plant tissues as approved by the arborist.
 - 3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - 4. Cover exposed roots with burlap and water regularly.
 - 5. Backfill as soon as possible according to requirements in Section 31 22 00 Grading.

- B. Root Pruning at Edge of Protection Zone: Prune roots 12 inches outside of the protection zone, by cleanly cutting all roots to the depth of the required excavation.
- C. Root Pruning within Protection Zone: Clear and excavate by hand to the depth of the required excavation to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

3.06 CROWN PRUNING

- A. Prune branches that are affected by temporary and permanent construction. Prune branches as follows:
 - 1. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.
 - 2. Pruning Standards: Prune trees according to ANSI A300 Part 1 and the following:
 - a. Type of Pruning: Cleaning Thinning Raising Reduction.
 - 3. Cut branches with sharp pruning instruments; do not break or chop.
 - 4. Do not apply pruning paint to wounds.
- B. Chip removed branches and dispose of off-site.

3.07 REGRADING

- A. Lowering Grade: Where new finish grade is indicated below existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- B. Lowering Grade within Protection Zone: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist unless otherwise indicated.
 - 1. Root Pruning: Prune tree roots exposed by lowering the grade. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots as required for root pruning.
- C. Raising Grade: Where new finish grade is indicated above existing grade around trees, slope grade beyond the protection zone. Maintain existing grades within the protection zone.
- D. Minor Fill within Protection Zone: Where existing grade is 4 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

3.08 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

3.09 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.
 - 1. Submit details of proposed root cutting and tree and shrub repairs.
 - 2. Have arborist perform the root cutting, branch pruning, and damage repair of trees and shrubs.

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- 3. Treat damaged trunks, limbs, and roots according to arborist's written instructions.
- 4. Perform repairs within 24 hours.
- 5. Replace vegetation that cannot be repaired and restored to full-growth status, as determined by Architect.
- B. Trees: Remove and replace trees indicated to remain that are more than 66 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
 - 1. Provide new trees of same size and species as those being replaced for each tree that measures 4 inches or smaller in caliper size.
 - 2. Provide one new tree(s) of 6 inch caliper size for each tree being replaced that measure more than 4 inches in caliper size.
 - a. Species: Species selected by Architect.
 - 3. Plant and maintain new trees as specified in Division 32 Exterior Improvements, Section "Landscape Work"
- C. Soil Aeration: Where directed by Architect, aerate surface soil compacted during construction.
 - 1. Aerate 10 feet beyond drip line and no closer than 36 inches to tree trunk.
 - 2. Drill 2 inch diameter holes a minimum of 12 inches deep at 24 inches O.C.
 - 3. Backfill holes with an equal mix of native soil and sand.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION

SECTION 01 58 13 TEMPORARY PROJECT SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project identification sign.
- B. Project informational signs.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: Responsibility to provide signs.
- B. Section 05 50 00 Metal Fabrications: Miscellaneous connectors.

1.03 REFERENCE STANDARDS

A. FHWA (SHS) - Standard Highway Signs and Markings.

1.04 QUALITY ASSURANCE

- A. Design sign and structure to withstand 80 miles/hr wind velocity.
- B. Sign Painter: Experienced as a professional sign painter for minimum three years.
 - 1. Sign painter shall be regularly engaged and specializing in the design, execution, construction and installation of exterior signage of equivalent type, size and complexity as those required for Project.
- C. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Shop Drawing: Show content, layout, lettering, color, foundation, structure, sizes and grades of members.

PART 2 PRODUCTS

2.01 SIGN MATERIALS

- A. Structure and Framing: New, wood, structurally adequate to support sign panel and suitable for specified finish.
- B. Sign Surfaces: Exterior grade plywood with medium or high density phenolic sheet overlay, minimum 3/4 inch thick, standard large sizes to minimize joints. Provide sheet thickness as required to span across framing members and provide even, smooth surface without waves or buckles.
- C. Rough Hardware: Galvanized steel, as specified in Section 05 50 00 Metal Fabrications..
- D. Sign Face Paint and Primers: Exterior quality, primer, two gloss enamel finish coats; sign background of color as selected. Provide paint type as customarily used for sign painting,

adequate to resist weathering and fading for the scheduled construction period.

- E. Sign Structure Paint and Primers: Exterior quality, primer, one gloss enamel finish coats; color as selected. Provide paint type as customarily used for sign painting, adequate to resist weathering and fading for the scheduled construction period.
- F. Lettering: Exterior quality paint, colors as selected.

2.02 PROJECT IDENTIFICATION SIGN

- A. Provide painted sign of construction, design, and content shown on Drawings, location designated or agreed to by Architect.
 - 1. Graphic design, text, style of lettering, and colors shall be as directed; assume 4 colors and special graphic for Project title.
- B. Content:
 - 1. Project number, title, logo and name of District as indicated on Contract Documents.
 - 2. Include organizational logos of parties identified on sign.
 - 3. Names and titles of authorities.
 - 4. Names and titles of Architect and Consultants.
 - 5. Name of Prime Contractor and major Subcontractors.
- C. Graphic Design, Colors, Style of Lettering: Designated by Architect.
 - 1. Sign Painting: Sign panels shall be shop painted and field installed.
 - a. Sign painting shall be performed by professional sign painters. Silk screen method is recommended in order to accurately depict graphics.
 - b. Paint back and edges of sign panels for complete weather resistance and finished appearance.
- D. Project Address Signs: Provide Project name and street address signs, minimum of 4 feet wide, to identify Project to facilitate deliveries.
 - 1. Graphic design and colors shall match Project Identification Sign.
 - 2. Text shall be as directed.
- E. Lettering: Standard Alphabet Series C, as specified in FHWA (SHS).

2.03 PROJECT INFORMATIONAL SIGNS

- A. Restrictions: Signs other than Project Identification Sign specified above and Project Informational Signs specified below shall not be displayed without approval of Architect.
- B. Project Informational Signs: Informational signs, necessary for conduct of construction activities or required by governmental authorities having jurisdiction may be displayed when in conformance to sign construction and graphic requirements specified in this Section.
 - 1. Architect may review such signs. If so, review will be for sign construction, and graphic designs only.
 - 2. Adequacy of signage for safety and conformance to requirements of authorities having jurisdiction and trade practices shall be solely Contractor's responsibility.
- C. Painted informational signs of same colors and lettering as Project Identification sign, or standard products; size lettering to provide legibility at 100 foot distance.

- 1. Colors shall be as required by authorities having jurisdiction and, if not otherwise required, of colors consistent with Project graphics.
- 2. Informational signage shall be produced by professional sign painters and be of size and lettering style consistent with use.
- D. Provide at each field office, storage shed , and directional signs to direct traffic into and within site. Relocate as Work progress requires.
- E. Provide municipal traffic agency directional traffic signs to and within site.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install project identification sign within 30 days after date fixed by Notice to Proceed.
- B. Erect at location of high public visibility adjacent to main entrance to site.
- C. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
- D. Install sign surface plumb and level, with butt joints. Anchor securely.
- E. Paint exposed surfaces and edges of sign, supports, and framing for a finished appearance.
- F. Project Identification Sign Installation
 - 1. Construction: Construct sign support structure and install panels in durable manner, to resist high winds.
 - 2. Installation: Erect Sign on site at a lighted location of high public visibility, adjacent to the main entrance to the site, as approved by Architect.
 - a. Install sign at height for optimum visibility, on ground-mounted poles or attached to portable structure on skids.
 - b. Portable structure shall resist overturning force of wind.
 - 3. Street Address Signs: Locate and install signs at each access point from public streets.
- G. Project Informational Signs Installation:
 - 1. Construction: Construct sign support structure and install panels in durable manner, to resist high winds.
 - 2. Project Informational Signs Installation:
 - a. Locate signs as necessary for construction activities and as required by authorities having jurisdiction.
 - b. Install informational signs for optimum visibility, on ground-mounted posts or temporarily attached to surfaces of structures.
 - c. Attachment methods shall leave no permanent disfiguration or discoloration on completed Work.

3.02 MAINTENANCE

- A. Maintain signs and supports neat clean condition. Repair all deterioration, weathering and damage to structure framing, and signage.
- B. Sign Relocation: Relocate signs as required by progress of the Work.

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3.03 REMOVAL

A. Remove signs, framing, supports, and foundations at completion of Project and restore the area prior to Substantial Completion review.

END OF SECTION

SECTION 01 60 00 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
 - 1. System Completeness.
 - 2. Installation of Products.
- B. Re-use of existing products.
- C. Transportation, handling, storage and protection.
- D. Product option requirements.
- E. Substitution limitations.
- F. Procedures for District-supplied products.
- G. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: Identification of District-supplied products.
- B. Section 01 25 00 Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 01 40 00 Quality Requirements: Product quality monitoring.
- D. Section 01 61 16 Volatile Organic Compound (VOC) Content Restrictions: Requirements for VOC-restricted product categories.
- E. Section 01 74 19 Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.
- F. Technical Specifications Sections.

1.03 REFERENCE STANDARDS

- A. CAL (CDPH SM) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers.
- B. NFPA 70 National Electrical Code.
 - 1. Use California Electrical Code.

1.04 SUBMITTALS

- A. Proposed Products List: Submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
 - 1. Submit within 15 days after date of Agreement.
 - 2. For products specified only by reference standards, list applicable reference standards.
- B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers'

standard data to provide information specific to this Project.

- C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
 - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

1.05 QUALITY ASSURANCE

- A. CAL (CDPH SM) v1.1: California Department of Public Health (CDPH) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, v. 1.1–2010, for the emissions testing and requirements of products and materials.
- B. Manufacturer's Inventory of Product Content: Publicly available inventory of every ingredient identified by name and Chemical Abstract Service Registration Number (CAS RN).
 - 1. For ingredients considered a trade secret or intellectual property, the name and CAS RN may be omitted, provided the ingredient's role, amount, and GreenScreen Benchmark are given.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Drawings and Specifications:
 - 1. If a conflict exists between the Drawings and the Specifications (Project Manual), then the Contractor is to submit a Request for Interpretation from the Architect.
 - a. As noted in the General Conditions, the more stringent requirements govern, including cost of materials and/or installation.
 - 2. If a specific product is indicated on the Drawings for use, then that product is to be used without exception in the location identified.
 - 3. If the Contractor proposes the use of another product other than the item indicated, whether or not listed in these specifications, Contractor is to submit the product using the complete substitution process. See the the Article titled "SUBSTITUTIONS".
 - 4. DSA (Division of the State Architect) approval is also required prior to the use or installation of any substitution, on any product or location of product (requiring a revision to the Drawings or Specifications), included in these construction documents.
 - a. Installation of a non-approved product may result in the Contractor removing and replacing the non-approved product at the Contractor's own expense.
- B. General: Items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock, and include materials, equipment, assemblies, fabrications and systems.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.

- 2. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed or installed to form a part of the Work.
- 3. Equipment: A product with operating parts, whether motorized or manually operated, that requires connections such as wiring or piping.
- C. Specific Product Requirements: Refer to requirements of Section 01 40 00 Quality Requirements and individual product technical Sections for specific requirements for products.
- D. Minimum Requirements: Specified requirements for products are minimum requirements. Refer to general requirements for quality of the Work specified in Section 01 40 00 - Quality Requirements and elsewhere herein.
- E. Standard Products:
 - 1. Where specific products are not specified, provide standard products of types and kinds that are suitable for the intended purposes and that are usually and customarily used on similar projects under similar conditions.
 - 2. Products shall be as selected by Contractor and subject to review and acceptance by the District and Architect.
- F. Product Completeness:
 - 1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 - 2. Comply with additional requirements specified herein in Article titled "SYSTEM COMPLETENESS".
- G. Code Compliance:
 - 1. All products, other than commodity products prescribed by Code, are to have a current ICC Evaluation Service Research Report (ICC ESR), CABO National Evaluation Report (NER), or other testing agencies as accepted by the Division of the State Architect.
 - 2. Refer to additional requirements specified in Section 01 41 00 Regulatory Requirements.

2.02 SYSTEM COMPLETENESS

- A. The Contract Drawings and Specifications are not intended to be comprehensive directions on how to produce the Work. Rather, the Drawings and Specifications are instruments of service prepared to describe the design intent for the completed Work.
- B. It is intended that all equipment, systems and assemblies be complete and fully functional even though not fully described. Provide all products and operations necessary to achieve the design intent described in the Contract Documents.
- C. Refer to related general requirements specified in Section 01 41 00 Regulatory Requirements regarding compliance with minimum requirements of applicable codes, ordinances and standards.
- D. Omissions and Misdescriptions: Contractor shall report to Architect immediately when elements essential to proper execution of the Work are discovered to be missing or misdescribed in the Drawings and Specifications or if the design intent is unclear.

- Should an essential element be discovered as missing or misdescribed prior to receipt of Bids, an Addendum will be issued so that all costs may be accounted for in the Contract Sum.
- 2. Should an obvious omission or misdescription of a necessary element be discovered and reported after execution of the Agreement, Contractor shall provide the element as though fully and correctly described, and a no-cost Change Order shall be executed.
- 3. Refer to related General Requirements specified in Section 01 30 00 Administrative Requirements regarding construction interfacing and coordination.

2.03 EXISTING PRODUCTS

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the District, or otherwise indicated as to remain the property of the District, become the property of the Contractor; remove from site.

2.04 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by Contract Documents.
 - 1. Provide products that fully comply with the Contract Documents, are undamaged and unused at installation.
 - Comply with additional requirements specified herein in Article titled "PRODUCT OPTIONS".
- B. See Section 01 40 00 Quality Requirements, for additional source quality control requirements.
- C. Use of products having any of the following characteristics is not permitted:
 - 1. Made outside the United States, its territories, Canada, or Mexico.
 - 2. Containing lead, cadmium, or asbestos.
- D. Where other criteria are met, Contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions, as defined in Section 01 61 16.
 - 2. If wet-applied, have lower VOC content, as defined in Section 01 61 16.
 - 3. Are extracted, harvested, and/or manufactured closer to the location of the project.
 - 4. Have longer documented life span under normal use.
 - 5. Result in less construction waste. See Section 01 74 19
- E. Provide interchangeable components of the same manufacture for components being replaced.
 - 1. To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work.
 - 2. When options are specified for the selection of any of two or more products, provide product selected to be compatible with products previously selected.
- F. Product Nameplates and Instructions:

- 1. Except for required Code-compliance labels and operating and safety instructions, locate nameplates on inconspicuous, accessible surfaces. Do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.
- 2. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:
 - a. Name of manufacturer
 - b. Name of product
 - c. Model and serial number
 - d. Capacity
 - e. Operating and Power Characteristics
 - f. Labels of Tested Compliance with Codes and Standards
- 3. Refer to additional requirements which may be specified in various sections, as included in this Project Manual.
- 4. For each item of service-connected or power-operated equipment, provide operating and safety instructions, permanently affixed and of durable construction, with legible machine lettering. Comply with all applicable requirements of authorities having jurisdiction and listing agencies.
- G. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Size terminal lugs to CEC/NFPA 70, include lugs for terminal box.

2.05 PRODUCT OPTIONS

- A. Unless the specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, or type of construction or any specific name, make, trade name, or catalog number, with or without the words "or equal," such specification shall be deemed to be used for the purpose of facilitating description of the material, process, or article desired and shall be deemed to be followed by the words "or equal."
 - 1. See Section 01 25 00 Substitution Procedures.
- B. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
 - 1. Reference Standards:
 - a. Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified.
 - b. Refer to general requirements specified in Section 01 42 19 Reference Standards regarding compliance with referenced standards, standard specifications, codes, practices and requirements for products.
 - 2. Product Description:
 - a. Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that has the specified attributes and

otherwise complies with specified requirements.

- 3. Performance Requirements:
 - a. Where Specifications require compliance with performance requirements, provide product(s) that comply and are recommended by the manufacturer for the intended application.
 - b. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
- D. Products Specified by Identification of Manufacturer and Product Name or Number:
 - 1. "Specified Manufacturer": Provide the specified product(s) of the specified manufacturer.
 - a. If only one manufacturer is specified, without "acceptable manufacturers" being identified, provide only the specified product(s) of the specified manufacturer.
 - b. If District standard is indicated make all efforts to provide that product.
 - c. If the phrase "or equal" or "approved equal" is stated or reference is made to the "or equal provision," products of other manufacturers may be provided if such products are equivalent to the specified product(s) of the specified manufacturer.
 - 1) Equivalence shall be demonstrated by submission of information in compliance with requirements of Section 01 25 00 Substitution Procedures.
 - 2. "Acceptable Manufacturers":
 - a. Product(s) of the named manufacturers, if equivalent to the specified product(s) of the specified manufacturer, will be acceptable in accordance with the requirements of Section 01 25 00 Substitution Procedures.
 - Exception: Considerations regarding changes in Contract Time and Contract Sum will be waived if no increase in Contract Time or Contract Sum results from use of such equivalent products.
 - 3. Unnamed manufacturers: Product(s) of unnamed manufacturers will be acceptable when disclosed during the bidding period and only as follows:
 - a. Unless specifically stated that substitutions will not be accepted or considered, the phrase "or equal" shall be assumed to be included in the description of specified product(s).
 - b. Equivalent products of unnamed manufacturers will be accepted in accordance with the "or equal" provision specified herein, below.
 - c. If provided, products of unnamed manufacturers shall be subject to the requirements of Section 01 25 00 Substitution Procedures.
 - 4. Quality basis:
 - a. Specified product(s) of the specified manufacturer shall serve as the basis by which products by named acceptable manufacturers and products of unnamed manufacturers will be evaluated.

- b. Where characteristics of the specified product are described, where performance characteristics are identified or where reference is made to industry standards, such characteristics are specified to identify the most significant attributes of the specified product(s) which will be used to evaluate products of other manufacturers.
- E. Products Specified by Combination of Methods: Where products are specified by a combination of attributes, including manufacturer's name, product brand name, product catalog or identification number, industry reference standard, or description of product characteristics, provide products conforming to all specified attributes.
- F. "Or Equal" Provision: Where the phrase "or equal" or the phrase "or approved equal" is included, equivalent product(s) of unnamed manufacturer(s) may be provided as specified above in subparagraph titled "Unnamed manufacturers" and Section 01 25 00 Substitution Procedures with the following conditions:
 - 1. The requirements of Section 01 25 00 Substitution Procedures applies to products provided under the "or equal" provision.
 - a. Exception: If the proposed product(s) are determined to be equivalent to the specified product(s) of the specified manufacturer, the requirement specified for substitutions to result in a net reduction in Contract Time or Contract Sum will be waived.
 - 2. Use of product(s) under the "or equal" provision shall not result in any delay in completion of the Work, including completion of portions of the Work for use by District or for work under separate contract by District.
 - 3. Use of product(s) under the "or equal" provision shall not result in any costs to the District, including design fees and permit and plan check fees.
 - 4. Use of product(s) under the "or equal" provision shall not require substantial change in the intent of the design, in the opinion of the Architect.
 - a. The intent of the design shall include functional performance and aesthetic qualities.
 - 5. The determination of equivalence will be made by the Architect and District, and such determination shall be final.
- G. Visual Matching:
 - 1. Where Specifications require matching a sample, the decision by the Architect on whether a proposed product matches shall be final.
 - 2. Where no product visually matches but the product complies with other requirements, comply with provisions for substitutions for selection of a matching product in another category.
- H. Visual Selection of Products:
 - 1. Where requirements include the phrase "as selected from manufacturer's standard colors, patterns and textures", or a similar phrase, selections of products will be made by indicated party or, if not indicated, by the Architect. The will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.
 - 2. The Architect will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.

2.06 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 25 00 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

- A. See Section 01 10 00 Summary for identification of District-supplied products.
- B. District's Responsibilities:
 - 1. Arrange for and deliver District reviewed shop drawings, product data, and samples, to Contractor.
 - 2. Arrange and pay for product delivery to site.
 - 3. On delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 - 5. Arrange for manufacturers' warranties, inspections, and service.
- C. Contractor's Responsibilities:
 - 1. Review District reviewed shop drawings, product data, and samples.
 - 2. Receive and unload products at site; inspect for completeness or damage jointly with District.
 - 3. Handle, store, install and finish products.
 - 4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
 - 1. Schedule delivery to minimize long-term storage and prevent overcrowding construction spaces.
 - 2. Coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
- D. Transport and handle products in accordance with manufacturer's instructions.

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- E. Transport products by methods to avoid product damage.
- F. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- G. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- H. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- I. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.
- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
 - 1. Structural Loading Limitations: Handle and store products and materials so as not to exceed static and dynamic load-bearing capacities of project floor and roof areas.
- C. Inspection Provisions: Arrange storage to provide access for inspection and measurement of quantity or counting of units.
- D. Structural Considerations: Store heavy materials away from the structure in a manner that will not endanger supporting construction.
- E. Store and protect products in accordance with manufacturers' instructions.
- F. Store with seals and labels intact and legible.
- G. Arrange storage of materials and products to allow for visual inspection for the purpose of determination of quantities, amounts, and unit counts.
- H. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- I. For exterior storage of fabricated products, place on sloped supports above ground.
 - 1. Place products on raised blocks, pallets or other supports, above ground and in a manner to not create ponding or misdirection of runoff.
- J. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
 - 1. Execute a formal supplemental agreement between District and Contractor allowing offsite storage, for each occurrence.
- K. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
 - 1. Periodically inspect to ensure products are undamaged, and are maintained under required conditions.
 - 2. Remove and replace products damaged by improper storage or protection with new products at no change in Contract Sum or Contract Time.

- 3. Weather-Resistant Storage:
 - a. Store moisture-sensitive products above ground, under cover in a weathertight enclosure or covered with an impervious sheet covering. Provide adequate ventilation to avoid condensation.
 - b. Maintain storage within temperature and humidity ranges required by manufacturer's instructions.
 - c. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing with foreign matter.
- L. Comply with manufacturer's warranty conditions, if any.
- M. Do not store products directly on the ground.
- N. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- O. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- P. Prevent contact with material that may cause corrosion, discoloration, or staining.
- Q. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- R. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

3.05 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified, are necessary due to Project conditions or are required by authorities having jurisdiction.
- B. Anchor each product securely in place, accurately located and aligned with other Work.
- C. Clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Completion review. Refer to additional requirements specified in General Conditions along with Section 01 50 00 - Temporary Facilities and Controls and Section 01 70 00 - Execution and Closeout Requirements.

3.06 PROTECTION OF COMPLETED WORK

- A. Provide barriers, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.
- B. Remove protective measures when no longer required and prior to Completion review of the Work.
- C. Comply with additional requirements specified in Section 01 50 00 Temporary Construction Facilities and Controls.

END OF SECTION

SECTION 01 61 16 VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for VOC-Content-Restricted products.
- B. Requirement for installer certification that they did not use any non-compliant products.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 Administrative Requirements: Submittal procedures.
- B. Section 01 40 00 Quality Requirements: Procedures for testing and certifications.
- C. Section 01 60 00 Product Requirements: Fundamental product requirements, substitutions and product options, delivery, storage, and handling.

1.03 DEFINITIONS

- A. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
 - 1. Exterior paints and coatings.
 - 2. Exterior adhesives and sealants.
 - 3. Other products when specifically stated in the specifications.
- B. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- C. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.

1.04 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency.
- B. ASTM D3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
- C. CARB (SCM) Suggested Control Measure for Architectural Coatings; California Air Resources Board.
- D. GreenSeal GS-36 Standard for Adhesives for Commercial Use.
- E. SCAQMD 1113 Architectural Coatings.
- F. SCAQMD 1168 Adhesive and Sealant Applications.

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.

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- C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.
 - 1. Use the form following this section for installer certifications.
- D. Verification of compliance with VOC limits as specified in the CalGreen Code Section 5.504 shall be provided at the request of the Building Inspector.
 - 1. Product certification and specifications.
 - 2. Chain of custody certifications.
 - 3. Product, labeled and invoiced as meeting the Composite Wood Products regulation.
 - 4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards
 - 5. Other methods approved by the building official.

1.06 QUALITY ASSURANCE

- A. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
 - 1. Evidence of Compliance: Acceptable types of evidence are:
 - a. Report of laboratory testing performed in accordance with requirements.
 - b. Published product data showing compliance with requirements.
 - c. Certification by manufacturer that product complies with requirements.
- B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. All VOC restricted products shall be compliant with local jursidiction, South Coast Air Quality Management District, and Caifornia Green Standards Code, Rules and Regulations in effect at the time of installation. Products specified in this project shall be used as a basis of design. Updated products that are compliant with the rules in force at the time of installation shall be submitted as substitutions when they become available.
 - 1. If a product is found to be non-compliant with the VOC rules at the scheduled time of installation, notify the Architect a minimum of 90 days prior to installation. Contractor shall submit a suggested compliant product that is equal to the performance and cost of the specified product using the substitution procedure.

2.02 MATERIALS

- A. All Products: Comply with the most stringent of federal, State, and local requirements, or these specifications.
- B. VOC-Content-Restricted Products: VOC content not greater than required by the following:

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- 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.
- 2. Aerosol Adhesives: GreenSeal GS-36.
- 3. Joint Sealants: SCAQMD 1168 Rule.
- 4. Paints and Coatings: Each color; most stringent of the following:
 - a. 40 CFR 59, Subpart D.
 - b. SCAQMD 1113 Rule.
 - c. CARB (SCM).
 - d. CalGreen Building Standards Section 5.504, Table 504.4.3 "VOC Content Limits for Architectural Coatings".
- C. Other Product Categories: Comply with limitations specified elsewhere.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

- A. District reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to District.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

END OF SECTION

SECTION 01 61 16.01 ACCESSORY MATERIAL VOC CONTENT CERTIFICATION FORM

FORM

1.01 IDENTIFICATION:

- A. Project Name: Grossmont HS Press Box & Bleacher
- B. Project No.: 1-30-55A
- C. Architect: Ruhnau Clarke Architects

1.02 USE OF THIS FORM:

- A. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, there is a possibility that such accessory materials might contain VOC content in excess of that permitted, especially where such materials have not been explicitly specified.
 - 1. Each installer of work on this project is required to certify that his/their use of these particular materials complies with the contract documents and to provide documentation showing that the products used do not contain the prohibited content.
- B. Contractor is required to obtain and submit this form from each installer of work on this project.
- C. For each product category listed, check the correct paragraph.
- D. If any of these accessory materials has been used, attach to this form product data and MSDS sheet for each such product.

1.03 VOC CONTENT RESTRICTIONS ARE SPECIFIED IN SECTION 01 61 16.

A. Volatile organic compounds (VOCs) are defined by the U.S. EPA, California Air Resources Board (CARB), South Coast Air Quality Management District (SCAQMD), along with other state and local regulations applicable to this project.

2.01 PRODUCT CERTIFICATION

- A. I certify that the installation work of my firm on this project:
 - 1. [HAS] [HAS NOT] required the use of any ADHESIVES.
 - 2. [HAS] [HAS NOT] required the use of any JOINT SEALANTS.
 - 3. [HAS] [HAS NOT] required the use of any PAINTS OR COATINGS.
 - 4. [HAS] [HAS NOT] required the use of any COMPOSITE WOOD or AGRIFIBER PRODUCTS.
- B. Product data and MSDS sheets are attached.

3.01 CERTIFIED BY: (INSTALLER/MANUFACTURER/SUPPLIER FIRM)

- A. Firm Name: _____
- B. Print Name: _____
- C. Signature: _____
- D. Title: ______ (officer of company)
- E. Date: _____

END OF SECTION

SECTION 01 70 00 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures.
- B. Pre-installation meetings.
- C. Cutting and patching.
- D. Surveying for laying out the work.
- E. Cleaning and protection.
- F. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- G. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.
- B. Section 01 30 00 Administrative Requirements: Submittals procedures.
- C. Section 01 40 00 Quality Requirements: Testing and inspection procedures.
- D. Section 01 45 33 Code-Required Special Inspections: Construction oversight procedures by Division of the State Architect regarding the execution, approval, and closeout of this building project.
- E. Section 01 71 23 Field Engineering: Additional requirements for field engineering and surveying work.
- F. Section 01 74 19 Construction Waste Management and Disposal: Additional procedures for trash/waste removal, recycling, salvage, and reuse.
- G. Section 01 78 00 Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.
- H. Section 01 79 00 Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- I. Section 02 41 00 Demolition: Demolition of whole structures and parts thereof; site utility demolition.
- J. Individual Product Specification Sections:
 - 1. Advance notification to other sections of openings required in work of those sections.
 - 2. Limitations on cutting structural members.

1.03 REFERENCE STANDARDS

- A. CBC Ch. 11B California Building Code-Chapter 11B.
- B. CFC Ch. 35 California Fire Code Chapter 35 Welding and Other Hot Work.

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C. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
 - 1. On request, submit documentation verifying accuracy of survey work.
 - 2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
 - 3. Submit surveys and survey logs for the project record.
- C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of District or separate Contractor.
 - 6. Include in request:
 - a. Identification of Project.
 - b. Location and description of affected work. Include shop drawings as necessary to identify locations and communicate descriptions.
 - c. Necessity for cutting or alteration.
 - d. Description of proposed work and products to be used.
 - e. Effect on work of District or separate Contractor.
 - f. Effect on existing construction of District and, if applicable, work for Project being provided by District under separate contract.
 - g. Written permission of affected separate Contractor.
 - h. Date and time work will be executed.
 - 7. Include written evidence that those performing work under separate contract for District have been notified and acknowledge that cutting and patching work will be occurring. Include written permission for intended cutting and patching, included scheduled times.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.05 QUALIFICATIONS

- A. For demolition work, employ a firm specializing in the type of work required.
 - 1. Minimum of 5 years of documented experience.
- B. For surveying work, employ a land surveyor registered in California and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

- C. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in California. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.
- D. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in California.

1.06 PROJECT CONDITIONS

- A. Protect site from puddling or running water.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
 - 1. Provide dust-proof enclosures to prevent entry of dust generated outdoors.
- C. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
 - 1. Minimize amount of bare soil exposed at one time.
 - 2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
 - 3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
 - 4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
- D. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
 - 1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers, pneumatic hammers, air-operated nail guns, and diesel engines.
 - 2. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.
- E. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- F. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.07 COORDINATION

- A. See Section 01 10 00 for occupancy-related requirements.
- B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- C. Notify affected utility companies and comply with their requirements.
- D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

- E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- F. Coordinate completion and clean-up of work of separate sections.
- G. After District occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of District's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
- C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

- A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
 - 1. Coordinate operations of the various trades to assure efficient and orderly installation of each part of Work.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify Architect four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of examination, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with electronic copies to Architect, District, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

- A. Notify the District at least 48 hours before staking is to be started.
- B. Verify locations of survey control points prior to starting work.
- C. Promptly notify Architect of any discrepancies discovered.
- D. Contractor shall locate and protect survey control and reference points.
- E. Control datum for survey is that established by District provided survey.
- F. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- G. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- H. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- I. Utilize recognized engineering survey practices.
- J. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- K. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, ground floor elevations.
 - 4. Controlling lines and levels required for mechanical and electrical trades.
- L. Periodically verify layouts by same means.
- M. Maintain a complete and accurate log of control and survey work as it progresses.
- N. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

- A. Dimensions for Accessibility:
 - 1. Conventions: See CBC Ch. 11B Figure 11B-104. Dimensions that are not stated as "maximum" or "minimum" are absolute.
 - 2. Tolerances shall be per CBC Ch. 11B-104.1.1 "Construction and manufacturing tolerances. All dimensions are subject to conventional industry tolerances except where the requirement is stated as a range with specific minimum and maximum end points."
- B. In addition to compliance with regulatory requirements, conduct construction operations in compliance with ASTM F477 and NFPA 241, including applicable recommendations in Appendix A.
- C. When welding or doing other hot work, comply with CFC Ch. 35.
- D. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- E. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- F. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- G. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- H. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. Perform whatever cutting and patching is necessary to:
 - 1. Complete the work.
 - 2. Fit products together to integrate with other work.
 - 3. Provide openings for penetration of mechanical, electrical, and other services.
 - 4. Match work that has been cut to adjacent work.
 - 5. Repair areas adjacent to cuts to required condition.
 - 6. Repair new work damaged by subsequent work.
 - 7. Remove samples of installed work for testing when requested.
 - 8. Remove and replace defective and non-complying work.
- C. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
 - 1. Coordinate installation or application of products for integrated Work.
 - 2. Uncover completed Work as necessary to install or apply products out of sequence.
 - 3. Remove and replace defective or non-conforming Work.
 - 4. Provide openings for penetration of utility services, such as plumbing, mechanical and electrical Work.
- D. After uncovering existing Work, inspect conditions affecting proper accomplishment of Work.

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- E. Temporary Supports: Provide supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- F. Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Contractor to be acceptable.
- G. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- H. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
 - 1. Use a diamond grit abrasive saw or similar cutter for smooth edges. Do not overcut corners.
- I. Restore work with new products in accordance with requirements of Contract Documents.
- J. Fit work neat and tight allowing for expansion and contraction.
- K. Patching:
 - 1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
 - 2. Match color, texture, and appearance.
 - 3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
- L. Finishing: Refinish surfaces to match adjacent and similar finishes as used for the Project.
 - 1. For continuous surfaces, refinish to nearest intersection or natural break.
 - 2. For an assembly, refinish entire unit.

3.07 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site weekly and dispose off-site; do not burn or bury.

3.08 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

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- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.
- G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- H. Prohibit traffic from landscaped areas.
- I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.09 PROJECT CLOSEOUT CONFERENCE

- A. Schedule and conduct a project closeout conference, at a time convenient to District and Architect, but no later than 90 days prior to the scheduled date of Completion.
 - 1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 - Attendees: Authorized representatives of District, Commissioning Authority (CxA), Architect, and relevant consultants; Contractor and project superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of record documents.
 - b. Commissioning.
 - c. Procedures required prior to inspection for Completion and for final inspection for acceptance.
 - d. Submittal of written warranties.
 - e. Coordination of separate contracts.
 - f. District's partial occupancy requirements.
 - g. Installation of District's furniture, fixtures, and equipment.
 - h. Responsibility for removing temporary facilities and controls.
 - 4. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.

3.10 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Testing, adjusting, and balancing HVAC systems: See Division 23 HVAC.

3.11 FINAL CLEANING

A. Cleaning and Disposal Requirements, General: Conduct cleaning and disposal operations in compliance with all applicable codes, ordinances and regulations, including environmental protection laws, rules and practices.

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- B. Execute final cleaning prior to final project assessment.
 - 1. Clean areas to be occupied by District prior to final completion before District occupancy.
- C. Final Inspection Review Cleaning, General: Execute a thorough cleaning prior to Completion review by Architect and District. Employ experienced workers or professional cleaners for cleaning operations for final inspection review.
- D. Use cleaning materials that are nonhazardous.
 - 1. Cleaning Agents and Materials: Use only those cleaning agents and materials which will not create hazards to health or property and which will not damage or degrade surfaces.
 - a. Use only those cleaning agents, materials and methods recommended by manufacturer of the material to be cleaned.
 - b. Use cleaning materials only on surfaces recommended by cleaning agent manufacturer.
 - c. Before use, review cleaning agents and materials with Construction Manager for suitability and compatibility. Use no cleaning agents and materials without approval as noted above.
 - 2. Cleaning Procedures: All cleaning processes, agents and materials shall be subject to Architect, District and/or Construction Manager review and approval. Processes and degree of cleanliness shall be as directed by Architect, District and/or Construction Manager.
- E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- F. Clean debris from area drains and drainage systems.
- G. Clean site; sweep paved areas, rake clean landscaped surfaces.
- H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

- A. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to Architect and District.
- B. Accompany District, Architect, and Construction Manager on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's comprehensive list of items to be completed or corrected.
 - 1. As authorized by the District; Architect and Architect's and District's consultants, as appropriate, will attend a meeting at the Project site to review Contract closeout procedures and to review the list of items to be completed and corrected (punch list) to make the Work ready for acceptance by the District.
 - 2. This meeting shall be scheduled not earlier than 14 days prior to the date anticipated for the Final Inspection review.
- C. Notify Architect when work is considered ready for Architect's Final inspection.
- D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Final inspection.

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- 1. Final Application for Payment: In the Application for Payment that coincides with the date Final Inspection/Completion is claimed, show 100 percent completion for the portion of the Work claimed substantially complete.
- 2. Warranties, Bonds and Certificates: Submit specific warranties, guarantees, workmanship bonds, maintenance agreements, final certifications and similar documents.
- 3. Tests and Instructions: Complete start-up testing of systems, and instruction of the District's personnel. Remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
- E. Clearing and Cleaning: Prior to the Final Inspection review, Contractorr shall conduct a thorough cleaning and clearing of the Project area, including removal of construction facilities and temporary controls.
- F. Inspection and Testing: Prior to the Final Inspection review, complete inspection and testing required for the Work, including securing of approvals by authorities having jurisdiction.
 - 1. Complete inspections and tests of electrical power and signal systems.
- G. District will occupy all of the building as specified in Section 01 10 00.
- H. Conduct Final Inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.
 - 1. Correction (Punch) List: Contractor shall prepare and distribute at the preliminary Contract closeout review meeting, a typewritten, comprehensive list of items to be completed and corrected (punch list) to make the Work ready for acceptance by the District.
 - a. The punch list shall include all items to be completed or corrected prior to the Contractor's application for final payment.
 - b. The punch list shall identify items by location (room number or name) and consecutive number. For example, 307-5 would identify item 5 in Room 307, Roof-4 would identify item 4 on Roof.
 - c. Contractor shall prepare separate lists according to categories used for Drawings. For example, provide lists for Architectural, Structural, Electrical, Civil, and Landscape.
 - d. Architect, Architect's consultants and District's consultants, if in attendance, will conduct a brief walk-through of Project with the Contractor to review scope and adequacy of the punch list.
 - e. Verbal comments will be made to the Contractor by the DSA, the Architect and the Architect's and District's consultants, if in attendance, during the walk-through. These comments will indicate generally the additions and corrections to be made to the punch list. Such comments shall not be considered to be comprehensive; Contractor shall use the comments as guidance in preparing the punch list for the Final Inspection review.
 - 2. Final Inspection Meeting: On a date mutually agreed by the District, Architect, and Contractor, a meeting shall be conducted at the Project site to determine whether the Work is satisfactory and complete for filing a Notice of Completion.

- a. Contractor shall provide three working days notice to Architect for requested date of Final Inspection meeting.
- b. The Construction Manager, the Architect with Architect's / District's consultants, as authorized by the District, will attend the Final Inspection meeting.
- c. In addition to conducting a walk-through of the facility and reviewing the punch list, the purpose of the meeting shall include submission of warranties, guarantees and bonds to the District, submission of operation and maintenance data (manuals), provision of specified extra materials to the District, and submission of other Contract closeout documents and materials as required and if not already submitted.
- d. The Construction Manager, Architect and Architect's consultants, as appropriate, will conduct a walk-through of the facility with the Contractor and review the punch list.
- e. Contractor shall correct the punch list and record additional items as may identified during the walk-through, including notations of corrective actions to be taken.
- f. Contractor shall retype the punch list and distribute it within three working days to those attending the meeting.
- g. If additional site visits by the Construction Manager, the Architect and the Architect's and District's consultants are required to review completion and correction of the Work, the costs of additional visits shall be reimbursed to the District by the Contractor by deducting such costs from the Final Payment.
- I. Correct items of work listed in Final Correction Punch List and comply with requirements for access to District-occupied areas.
- J. Notify Architect when work is considered finally complete and ready for Architect's Final Inspection.
 - 1. Architect's Certification of Completion:
 - a. When Architect determines that list of items to be completed and corrected (Punch List) is sufficiently complete for District to occupy Project for the use to which it is intended.
- K. Complete items of work determined by Architect listed in executed Certificate of Completion.

3.13 FINAL PAYMENT

- A. After completion of all items listed for completion and correction, after submission of all documents and products and after final cleaning, submit final Application for Payment, identifying total adjusted Contract Sum, previous payments and sum remaining due.
- B. Payment will not be made until the following are accomplished:
 - 1. All Project Record Documents have been transferred and accepted by District.
 - 2. All extra materials and maintenance stock have been transferred and received by District.
 - 3. All warranty documents and operation and maintenance data have been received and accepted by District.
 - 4. All liens have been released or bonded by Contractor.
 - 5. Contractor's surety has consented to Final Payment.
 - 6. All documentation required by DSA has been completed.

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3.14 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Project Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the District.

END OF SECTION

SECTION 01 71 23 FIELD ENGINEERING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Field engineering services by Contractor.
- B. Land surveying services by Contractor.

1.02 DESCRIPTION OF SERVICES

- A. Specific services listed in this section are in addition to, and do not supersede, general Execution and Closeout Requirements.
- B. Sole responsibility for establishing all locations, dimensions and levels of items of work.
- C. Sole responsibility for provision of all materials required to establish and maintain benchmarks and control points, including batter boards, grade stakes, structure, and pipeline elevation stakes, and other items.
- D. Having a skilled instrument person(s) available on short notice when necessary for laying out the work.
- E. Keeping a transit, theodolite, or TST (total station theodolite with electronic distance measurement device); leveling instrument; and related implements such as survey rods and other measurement devices, at the project site at all times.
- F. Provision of facilities and assistance necessary for Architect to check lines and grade points placed by Contractor.
 - 1. Performance of excavation or embankment work until after all cross-sectioning necessary for determining payment quantities for Unit Price work have been completed and accepted by Architect.
- G. Preparation and maintenance of daily reports of activity on the work. Submission of reports containing key progress indicators and job conditions to Architect.
 - 1. Number of employees at the Site.
 - 2. Number employees at the Site for each of Contractor's subcontractors.
 - 3. Breakdown of employees by trades.
 - 4. Major equipment and materials installed as part of the work.
 - 5. Major construction equipment utilized.
 - 6. Location of areas in which construction was performed.
 - 7. Materials and equipment received.
 - 8. Work performed, including field quality control measures and testing.
 - 9. Weather conditions.
 - 10. Safety.
 - 11. Delays encountered, amount of delay incurred, and the reasons for the delay.

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- 12. Instructions received from Architect or District, if any.
- H. Preparation and maintenance of professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the work.
- I. Prior to backfilling operations, surveying locating, and recording on a copy of Contract Documents an accurate representation of buried work and Underground Facilities encountered.
- J. Setting up and executing time-lapse photography of construction activities.

1.03 REFERENCE STANDARDS

- A. FGDC-STD-007.1 Geospatial Positioning Accuracy Standards Part 1: Reporting Methodology.
- B. FGDC-STD-007.2 Geospatial Positioning Accuracy Standards Part 2: Standards for Geodetic Networks.
- C. FGDC-STD-007.4 Geospatial Positioning Accuracy Standards Part 4: Architecture, Engineering, Construction, and Facilities Measurement.
- D. SMACNA (SRM) Seismic Restraint Manual Guidelines for Mechanical Systems.
- E. State Plane Coordinate System for California.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Submit in addition to items required in Section 01 70 00 Execution and Closeout Requirements.
- C. Informational Submittals: Submit the following:
 - 1. Field Engineering: Submit daily reports, with content as indicated in this section.
 - a. When requested by Architect, submit for Record documentation verifying accuracy of field engineering including, but not limited to, Contractor's survey notes and field notes.
 - 2. Final property survey.

1.06 QUALITY ASSURANCE

- A. Field Engineer's Qualifications: As established in Section 01 70 00 Execution and Closeout Requirements.
- B. Land Surveyor's Qualifications: As established in Section 01 70 00 Execution and Closeout Requirements.
- C. Use adequate number of skilled and thoroughly-trained workers to perform the work of this section in a timely and comprehensive manner.
- D. Minimum accuracy for required work is as follows:

- 1. Grade: Horizontal Tolerance: Plus or minus 0.5 feet, Vertical Tolerance: Plus or minus 0.05 feet.
- 2. Culverts and ditches: Horizontal Tolerance: Plus or minus 0.5 feet, Vertical Tolerance: Plus or minus 0.05 feet.
- 3. Structures: Horizontal Tolerance: Plus or minus 0.5 feet (location), Vertical Tolerance: Plus or minus 0.05 feet.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. Notify District's Representative and Architect of any discrepancies immediately in writing before proceeding to lay out the work. Locate and protect existing benchmarks and base line. Preserve permanent reference points during construction.
- B. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify existing conditions.

3.02 FIELD ENGINEERING

- A. Maintain field office files, drawings, specifications, and record documents.
- B. Coordinate field engineering services with Contractor's subcontractors, installers, and suppliers as appropriate.
- C. Prepare layout and coordination drawings for construction operations.
- D. Check and coordinate the work for conflicts and interferences, and immediately advise Architect and District of all discrepancies of which Contractor is aware.
- E. Cooperate as required with Architect and District in observing the work and performing field inspections.
- F. Review and coordinate work on a regular basis with shop drawings and Contractor's other submittals.
- G. In general, match existing adjacent grades and maintain existing flow lines.
- H. Check the location, line and grade of every major element as the work progresses. Notify the Architect when deviations from required lines or grades exceed allowable tolerances. Include in such notifications a thorough explanation of the problem, and a proposed plan and schedule for remedying the deviation. Do not proceed with remedial work without District's concurrence of the remediation plan.
- I. Check all formwork, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials and equipment for compliance with shop drawings and Contract Documents requirements.
- J. Check all bracing and shoring for structural integrity and compliance with designs prepared by the Contractor.

3.03 LAND SURVEYING

- A. General: Follow standards for geospatial positioning accuracy.
 - 1. FGDC-STD-007.1 as amended by Authority Having Jurisdiction.
 - 2. FGDC-STD-007.2 as amended by Authority Having Jurisdiction.
 - 3. FGDC-STD-007.4 as amended by Authority Having Jurisdiction.
- B. Coordinate survey data with the State Plane Coordinate System of California.
- C. Contractor is responsible for the restoration of all property corners and control monuments damaged or destroyed by construction-related activities. Any disturbed monuments must be replaced at Contractor's expense by a surveyor licensed in California, and approved by the Architect.
 - 1. Temporarily suspend work at such points and for such reasonable times as the District may require for resetting monuments. The Contractor will not be entitled to any additional compensation or extension of time.

3.04 CONSTRUCTION SURVEYING

- A. General: Perform surveying as applicable to specific items necessary for proper execution of work.
 - 1. Alignment Staking: Provide alignment stakes at 50 foot intervals on tangent, and at 25 foot intervals on curves.
 - 2. Slope Staking: Provide slope staking at 50 foot intervals on tangent, and at 25 foot intervals on curves. Re-stake at every ten-foot difference in elevation.
 - 3. Structure: Stake out structures, including elevations, and check prior to and during construction.
 - 4. Pipelines: Stake out pipelines including elevations, and check prior to and during construction.
 - 5. Site Utilities: Stake out utility lines including elevations, and check prior to and during construction.
 - 6. Road: Stake out roadway elevations at 50 foot intervals on tangent, and at 25 foot intervals on curves.
 - 7. Cross-sections: Provide original, intermediate, and final staking as required, for site work and other locations as necessary for quantity surveys.
 - 8. Easement Staking: Provide easement staking at 50 foot intervals on tangent, and at 25 foot intervals on curves. If required by project conditions, provide wooden laths with flagging at 100 foot intervals.
 - 9. Record Staking: Provide permanent stake at each blind flange and each utility cap is provided for future connections. Use stakes for record staking of material(s) acceptable to Architect.
 - 10. Structural Frame: Upon completion, certify location and plumbness.
- B. Surveying to Determine Quantities for Payment.
 - 1. For each application for progress payment, perform such surveys and computations necessary to determine quantities of work performed or placed. Perform surveys

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necessary for Architect to determine final quantities of work in place.

- 2. Notify Architect at least 24 hours before performing survey services for determining quantities. Unless waived in writing by Architect, perform quantity surveys in presence of Architect.
- C. Record Log: Maintain a log of layout control work. Record any deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used.
- D. Use by the Architect: The Architect may at any time use line and grade points and markers established by the Contractor. The Contractor's surveys are a part of the work and may be checked by the Architect at any time.
- E. Accuracy:
 - 1. Establish Contractor's temporary survey references points for Contractor's use to at least second-order accuracy (e.g., 1:10000). Set construction staking used as a guide for the work to at least third-order accuracy (e.g., 1:5000). Provide the absolute margin for error specified below on the basis established by such orders.
 - a. Horizontal accuracy of easement staking: Plus or minus 0.1 feet.
 - b. Accuracy of other staking shall be plus or minus 0.04 feet horizontally and plus or minus 0.02 feet vertically.
 - c. Include an error analysis sufficient to demonstrate required accuracy in survey calculations.
 - 2. District reserves the right to check the Contractor's survey, measurements, and calculations. The requirement for accuracy will not be waived, whether this right is exercised or not.

3.05 SUPPORT AND BRACING

- A. General requirements: Design all support and bracing systems, if required. Provide for attachment to portions of the building structure capable of bearing the loads imposed. Design systems to not overstress the building structure.
- B. Seismic Bracing: Design where required by authorities having jurisdiction.
 - 1. Design and install all support systems to comply with the seismic requirements of the Construction Code of California.
 - 2. Design and install seismic bracing so as not to defeat the operation on any required vibration isolation or sound isolation devices.
 - 3. For seismic bracing guidelines for mechanical, electrical and plumbing systems, refer to SMACNA (SRM).

3.06 REPORTS

A. Submit two copies of Contractor's daily reports at Architect's field office (or electronically) by 9:00 AM the next working day after the day covered in the associated report. Daily report shall be signed by responsible member of Contractor's staff, such as project manager or superintendent, or foreman designated by Contractor as having authority to sign daily reports.

3.07 RECORDS

- A. Maintain at the Site a complete and accurate log of control and survey work as it progresses.
 - 1. Organize and record survey data in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standards of practice in California. Record Contractor's surveyor's original field notes, computations, and other surveying data in Contractor-furnished hard-bound field books. Contractor is solely responsible for completeness and accuracy of survey work, and completeness and accuracy of survey records, including field books. Survey records, (including field books) may be rejected by District due to failure to organize and maintain survey records in a manner that allows reasonable and independent verification of calculations, and/or allows identification of elevations, dimensions, and grades of the work.
 - 2. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Architect.
- B. Submit three copies of final property survey to District. Include on the survey a certification, signed by the surveyor, that principal metes, bounds, lines, and levels of the Project are accurately positioned as shown on the survey. Include the following information:
 - 1. Structure locations from property lines, and distances to adjacent buildings.
 - 2. Dimensions and locations of drives, walks, walls, underground utilities, appurtenances, and major site features.
 - 3. Location of easements.
 - 4. Final grading topographic survey.

3.08 CLOSEOUT ACTIVITIES

- A. See Section 01 78 00 Closeout Submittals, for closeout submittals.
- B. See Section 01 79 00 Demonstration and Training, for additional requirements.

END OF SECTION

SECTION 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

- A. Comply with the requirements Section 5.408 of the California Green Building Standards Code.
 - Recycle and/or salvage for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste in accordance with Section 504.8.1.1, 5.408.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent.
- B. District requires that this project generate the least amount of trash and waste possible.
- C. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- D. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- E. Required Recycling, Salvage, and Reuse: The following may not be disposed of in landfills or by incineration:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood.
 - 5. Land clearing debris, including brush, branches, logs, and stumps; see Section 31 10 00 Site Clearing for use options.
 - a. Comply with California Green Code (CGC) 5.408.3; Excavated soil and land clearing debris: 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled.
 - 1) Exception: Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.
 - 6. Concrete: May be crushed and used as riprap, aggregate, sub-base material, or fill.
 - 7. Bricks: May be used on project if whole, or crushed and used as landscape cover, subbase material, or fill.
 - 8. Concrete masonry units: May be used on project if whole, or crushed and used as subbase material or fill.
 - 9. Asphalt paving: May be recycled into paving for project.
 - 10. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames, and other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 11. Glass.
 - 12. Gypsum drywall and plaster.

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- 13. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (http://flooring.dupont.com) and Interface (www.interfaceinc.com) conduct reclamation programs.
- 14. Roofing.
- 15. Paint.
- 16. Plastic sheeting.
- 17. Rigid foam insulation.
- 18. Windows, doors, and door hardware.
- 19. Plumbing fixtures.
- 20. Mechanical and electrical equipment.
- 21. Fluorescent lamps (light bulbs).
- 22. Acoustical ceiling tile and panels.
- 23. Materials which could be hazardous and subject to special disposal regulations include but are not limited to the following: CalGreen Section 5.408.2
 - a. Lead-Based Paint
 - b. Asbestos: Found in older pipe insulation, asphalt floor tiles, linoleum, insulation, etc.
 - c. Polychlorinated Biphenyls (PCBs):
 - 1) Found in electrical oil filled equipment manufactured prior to 1978 such as transformers, switches and fluorescent lamp ballasts.
 - 2) Also found in adhesive, sealant, caulk, glazing putty, roofing material, pesticide vehicle, ink, paper, fabric dye, gaskets, and hydraulic fluid.
 - d. HVAC Refrigerants: Containing Fluorinated and Chlorinated compounds.
 - e. Drinking Fountain Refrigerants: Containing Fluorinated and Chlorinated compounds.
 - f. Fluorescent Light Tubes: Contain mercury.
 - g. EXIT signs and Smoke Detectors: May contain unregulated, radioactive tritium. · Required to be returned to manufacturer.
 - h. Contaminated Soils.
 - i. Pressure Treated Lumber.
- F. Contractor shall submit periodic Waste Disposal Reports; all landfill disposal, recycling, salvage, and reuse must be reported regardless of to whom the cost or savings accrues; use the same units of measure on all reports.
 - 1. Contractor's quantitative reports for construction waste materials as a condition of approval of progress payments.
- G. Contractor shall develop and follow a Waste Management Plan designed to implement these requirements. CalGreen Section 5.408.1.1.

1.

- H. The following sources may be useful in developing the Waste Management Plan:
 - 1. California Recycling Department, at www.dgs.ca.gov/BSC/CALGreen.
 - 2. General information contacts regarding construction and demolition waste:

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- a. Directory of Wood-Framed Building Deconstruction and Reused Building Materials Companies: www.fpl.fs.fed.us/documnts/fplgtr/fpl_gtr150.pdf.
- b. Additional resources to be developed by Contractor with assistance from District and **Contractor**, as requested.
- 3. Recycling Haulers and Markets: The source list below contains local haulers and markets for recyclable materials. This list is provided for information only and is not necessarily comprehensive; other haulers and markets are acceptable.
 - a. CAL-MAX: www.calrecycle.ca.gov/calmax/.
 - 1) A free service designed to help businesses find markets for non-hazardous materials they have traditionally discarded.
 - b. General Recycling/Reuse Centers: For information on qualified local solid waste haulers contact the California Department of Resources Recycling and Recovery CalRecycle. The website lists wastes recycling facilities in counties throughout the State of California.
 - 1) www.calrecycle.ca.gov.
- 4. Recycling Economics Information: The above lists contain information that may be useful in estimating the costs or savings or recycling options.
- I. Methods of trash/waste disposal that are not acceptable are:
 - 1. Burning on the project site.
 - 2. Burying on the project site.
 - 3. Dumping or burying on other property, public or private.
 - 4. Other illegal dumping or burying.
 - 5. Incineration, either on- or off-site.
- J. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: List of items to be salvaged from the existing building for relocation in project or for District.
- B. Section 01 30 00 Administrative Requirements: Additional requirements for project meetings, reports, submittal procedures, and project documentation.
- C. Section 01 50 00 Temporary Facilities and Controls: Additional requirements related to trash/waste collection and removal facilities and services.
- D. Section 01 60 00 Product Requirements: Waste prevention requirements related to delivery, storage, and handling.
- E. Section 01 70 00 Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.
- F. Section 31 10 00 Site Clearing: Handling and disposal of land clearing debris.

1.03 DEFINITIONS

- A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.
 - 1. Debris that is not hazardous as defined in CalGreen Section 5.408.2 and California Code of Regulations, Title 22, Section 66261.3 et seq.
 - 2. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel.
 - 3. The debris may be commingled with rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Diversion: Avoidance of demolition and construction waste sent to landfill or incineration. Diversion does not include using materials for landfill, alternate daily cover on landfills, or materials used as fuel in waste-to-energy processes.
- E. Enforcement Agency (EA). Enforcement agency as defined in CA Public Resources Code 40130.
- F. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.
- G. Landfill, Inert waste or Inert Disposal Facility:
 - 1. A disposal facility that accepts only inert waste such as soil and rock, fully cured asphalt paving, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, and ceramics, for land disposal.
- H. Landfill, Class III:
 - 1. A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations.
 - 2. A Class III landfill must have a solid waste facilities permit from the California Integrated Waste Management Board (CIWMB) and is regulated by the Enforcement Agency (EA).
- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.
- K. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.
- L. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

- M. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- N. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- O. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- P. Recycling Center: A facility that receives only C&D material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than 10% of the amount separated for reuse by weight.
- Q. Return: To give back reusable items or unused products to vendors for credit.
- R. Reuse: To reuse a construction waste material in some manner on the project site.
- S. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- T. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.
- U. Separated for Reuse:
 - 1. Materials, including commingled recyclables.
 - 2. Separated or kept separate from the solid waste stream for the purpose of:
 - a. Additional sorting or processing those materials for reuse or recycling.
 - 1) In order to return them to the economic mainstream in the form of raw material for new, reused, or reconstituted products.
 - b. Products shall meet the quality standards necessary to be used in the marketplace.
 - c. Includes materials that have been "source separated".
- V. Solid Waste:
 - 1. All putrescible and nonputrescible solid, semisolid, and liquid wastes, including:
 - a. Garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes.
 - b. Abandoned vehicles and parts thereof.
 - c. Discarded home and industrial appliances.
 - d. Dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste.
 - e. Manure, vegetable or animal solid and semisolid wastes.
 - f. Other discarded solid and semisolid wastes.
 - 2. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.
- W. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
 - 1. Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation, for the purpose of additional

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sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.

- X. Toxic: Poisonous to humans either immediately or after a long period of exposure.
- Y. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- Z. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.
- AA. Waste Hauler: A company that possesses a valid permit from the local waste management authority to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal in the locality.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Submit Waste Management Plan within 30 calendar days after receipt of Notice to Proceed, or prior to any trash or waste removal, whichever occurs sooner; submit projection of all trash and waste that will require disposal and alternatives to landfilling.
 - 1. Submit four copies of CWMP for review.
 - a. Contractor's Construction Waste and Recycling Plan must be approved by the Architect and Construction Manager prior to the start of Work.
 - 2. Approval of the Contractor's CWMP shall not relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
- C. Waste Management Plan: Include the following information:
 - 1. Analysis of the trash and waste projected to be generated during the entire project construction cycle, including types and quantities.
 - 2. Landfill Options: The name, address, and telephone number of the landfill(s) where trash/waste will be disposed of, the applicable landfill tipping fee(s), and the projected cost of disposing of all project trash/waste in the landfill(s).
 - 3. Landfill Alternatives: List all waste materials that will be diverted from landfills by reuse, salvage, or recycling.
 - a. List each material proposed to be salvaged, reused, or recycled.
 - b. List the local market for each material.
 - c. State the estimated net cost, versus landfill disposal.
 - 4. Meetings: Describe regular meetings to be held to address waste prevention, reduction, recycling, salvage, reuse, and disposal.
 - 5. Materials Handling Procedures: Describe the means by which materials to be diverted from landfills will be protected from contamination and prepared for acceptance by designated facilities; include separation procedures for recyclables, storage, and packaging.
 - 6. Transportation: Identify the destination and means of transportation of materials to be recycled; i.e. whether materials will be site-separated and self-hauled to designated centers, or whether mixed materials will be collected by a waste hauler.

- 7. Recycling Incentives: Describe procedures required to obtain credits, rebates, or similar incentives.
- D. Waste Disposal Reports: Submit at specified intervals, with details of quantities of trash and waste, means of disposal or reuse, and costs; show both totals to date and since last report.
 - 1. Submit updated Report with each Application for Progress Payment; failure to submit Report will delay payment.
 - a. Inert materials shall achieve a construction waste diversion rate of at least 95 percent.
 - 1) These materials include, but are not limited to, concrete, asphalt and rock.
 - 2) Earthwork is not included.
 - 3) Excavated soil shall not be included in any of the calculations used to ensure compliance with this specification section.
 - b. The overall diversion rate must be based on weight.
 - c. The diversion rate of individual materials can be measured in either weight or volume, but the rate shall be converted into the units selected for calculating the overall diversion rate.
 - 1) All individual material diversions must be converted to a consistent set of units when calculating the overall diversion rate for the all reports and submittals required for the Work.
 - d. Base conversion rate numbers on standard conversion rate data for construction projects provided by the California Integrated Waste Management Board (CIWMB). This data is available at the following internet location, www.calrecycle.ca.gov/LGCentral/Library/Guidance.
 - 2. Submit Report on a form acceptable to District.
 - 3. Landfill Disposal: Include the following information:
 - a. Identification of material.
 - b. Amount, in tons or cubic yards, of trash/waste material from the project disposed of in landfills.
 - c. State the identity of landfills, total amount of tipping fees paid to landfill, and total disposal cost.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.
 - 4. Recycled and Salvaged Materials: Include the following information for each:
 - a. Identification of material, including those retrieved by installer for use on other projects.
 - b. Amount, in tons or cubic yards, date removed from the project site, and receiving party.
 - c. Transportation cost, amount paid or received for the material, and the net total cost or savings of salvage or recycling each material.
 - d. Include manifests, weight tickets, receipts, and invoices as evidence of quantity and cost.

- e. Certification by receiving party that materials will not be disposed of in landfills or by incineration.
- 5. Material Reused on Project: Include the following information for each:
 - a. Identification of material and how it was used in the project.
 - b. Amount, in tons or cubic yards.
 - c. Include weight tickets as evidence of quantity.
- 6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

- A. See Section 01 60 00 Product Requirements for substitution submission procedures.
- B. For each proposed product substitution, submit the following information in addition to requirements specified in Section 01 60 00:
 - 1. Relative amount of waste produced, compared to specified product.
 - 2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Sum.
 - 3. Proposed disposal method for waste product.
 - 4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

- A. See Section 01 30 00 for additional requirements for project meetings, reports, submittal procedures, and project documentation.
- B. See Section 01 50 00 for additional requirements related to trash/waste collection and removal facilities and services.
- C. See Section 01 60 00 for waste prevention requirements related to delivery, storage, and handling.
- D. See Section 01 70 00 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.
- B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, District, and Architect.
- C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

- D. Meetings: Discuss trash/waste management goals and issues at project meetings.
 - 1. Prebid meeting.
 - 2. Preconstruction meeting.
 - 3. Regular job-site meetings.
- E. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
 - 1. As a minimum, provide:
 - a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
 - b. Separate dumpsters for each category of recyclable.
 - c. Recycling bins at worker lunch area.
 - 2. Provide containers as required.
 - 3. Provide temporary enclosures around piles of separated materials to be recycled or salvaged.
 - 4. Provide materials for barriers and enclosures that are nonhazardous, recyclable, or reusable to the maximum extent possible; reuse project construction waste materials if possible.
 - 5. Locate enclosures out of the way of construction traffic.
 - 6. Provide adequate space for pick-up and delivery and convenience to subcontractors.
 - 7. If an enclosed area is not provided, clearly lay out and label a specific area on-site.
 - 8. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.
- F. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.
- G. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.
- H. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.
- I. Salvage: Set aside, sort, and protect products to be salvaged for reuse off-site.

3.03 DISPOSAL OPERATIONS AND WASTE HAULING

- A. Remove waste materials from Project Site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except for items or materials to be salvaged, recycled, or otherwise reused.
 - 2. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on site.
 - 3. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority.

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- 4. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials.
- 5. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
- 6. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- 7. Do not burn or bury waste materials on or off site. Appropriate on-site topical application of ground gypsum or wood, or use of site paving as granulated fill is considered reuse, not waste.

3.04 PLAN AND REPORT FORMS

A. See suggested forms on the following pages.

END OF SECTION

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit After Award of Contract and Prior to Start of Work)

Project Title:										
Contract or Work Order No.:										
Contractor's Name:										
Street Address:						r				
City:		State:		Zi	p:					
Phone: ()				Fax: ()						
E-Mail Address:										
Prepared by: (Print Name)										
Date Submitted:										
Project Period:		From:			TO	:				
	Pous	a Recycling or Dispose	Processes T	o Ro Llood						
Reuse, Recycling or Disposal Processes To Be Used Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate										
the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the										
sections below:										
01 - Reuse of building ma 02 - Salvaging building ma						g fixtures)				
03 - Recycling source sep)			
04 - Recycling source sep										
05 - Recycling commingle 06 - Recycling material as			ixed debris re	ecycling cent	er or tr	ansfer statior	1			
07 - Delivery of soils or m			al (inert fill).							
08 - Disposal at a landfill	or transfer station		(<i>,</i>							
09 - Other (please describ	pe)									
	a aadaa ta indiaa	Types of Material T			+					
	e codes to indica = Concrete	ite the types of mate		-						
A = AsphaltC = ConcreteM = MetalsI = Mixed InertG = Green MaterialsD = DrywallP/C=Paper/CardboardW/C = Wire/CableS= Soils (Non Hazardous)										
M/C = Miscellaneous Construction Debris R = Reuse/Salvage W = Wood O = Other (describe)										
Facilities Used: Provide N										
Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period										
Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).										
		TION I - RE-USED/RE	CYCLED MA	TERIALS						
Include all recyclin	g activities for sou	rce separated or mixe	d material re	cycling cente	rs whe	re recycling v	/ill occur.			
Type of Type of		Total T			Total Quant	ities				
Material Activity	Facility to be U		Loads		ons	Cubic YD	Other Wt.			
(ex.) M 04	ABC Metals, Lo	os Angeles	24	4 3	355					
a. Total Diversion										

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued										
		SECTION II - DISPOSE								
Inc	lude all dispo	osal activities for landfills, transfer stations	s, or inert landfills v							
				Total Quantities						
Type of	Type of		Total Truck	-		Other				
Material	Activity	Facility to be Used/Location	Loads	Tons	Cubic YD	Wt.				
(ex.) D	08	DEF Landfill, Los Angeles	2	35						
b. Total Disp	oosal			0	0	0				
SECTION III - TOTAL MATERIALS GENERATED										
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation										
				Tons	Cubic YD	Other Wt.				
a. Total Reu	sed/Recycle	ed		0	0	0				
b. Total Disp	posed			0	0	0				
c. Total Gen	erated			0	0	0				
	SE	CTION IV - CONTRACTOR'S LANDFILL I	DIVERSION RATE	CALCULATI	ON					
		Add totals from Sectio	n I + Section II							
						Other				
				Tons 0	Cubic YD	Wt.				
a. Materials Re-Used and Recycled										
b. Materials Disposed										
c. Total Materials Generated (a. + b. = c.)					0	0				
		te (Tonnage Only)*								
* Use tons o	only to calcu	ulate recycling percentages: Tons Reus	sed/Recycled/Tor	is Generate	d = % Recycle	ed				
Contractor's activities):	s Comments	s (Provide any additional information	pertinent to plan	ned reuse,	recycling, or o	disposal				
Notes:1. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)c. Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)a. Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)d. Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous 										

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

(Submit With Each Progress Payment)

Project Title									
Contract or	Work Order	No.:							
Contractor's	s Name:								
Street Addr	ess:								
City:						State:			Zip:
Phone: ()					Fax: ()		
E-Mail Addr	ess:								
Prepared by	: (Print Nam	ie)							
Date Submi	tted [.]								
Project Peri			From:				тс):	
		- Douio	e, Recycling or D	Dispesal D	e e e e e e e e e e e e e e e e e e e	. Do Lico	4		
the type of p sections belo 01 - Reuse of 02 - Salvaging 03 - Recycling 04 - Recycling 05 - Recycling 06 - Recycling 07 - Delivery 08 - Disposal 09 - Other (pl A = Asphalt D = Drywall M/C = Misco Facilities Use Total Truck Lo	rocess or actives w: building mate g building mate g source sepan g commingled g material as A of soils or mix at a landfill on lease describe Use th C = P/C ellaneous Co d: Provide Na oads: Provide	ese codes to indi Concrete =Paper/Cardbo onstruction Deb me of Facility an Number of Trucl are available at si	ypes of material tems on site (i.e items at an offsi n site (i.e. crush t an offsite recyc aterials at an off Cover at landfills nert landfill for d Types of Mate cate the types o ard W/C d Location (City) ks Hauled from S	ls, and est e. crushed ite salvage ing aspha cling cent fsite mixed s disposal (in erial To B of materia M = Met = Wire/C euse/Salv Site During	imated qu base or re e or re-use lt/concrete er (i.e. scra d debris red hert fill). <u>e Genera</u> that will b cals able vage g Reporting	antities ed clay bi e center (e for reu ap metal cycling c ted ted be gener I = M S = Sc W = V g Period	that will b rick) (i.e. lighting se or grinn or green enter or t ated on t ixed Inen vils (Non- Wood	be recycled o ng, fixtures) ding for mulo materials) ransfer statio he project rt G = G Hazardous) O = O	r disposed in the h) on reen Materials <u>ther (describe)</u>
Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).									
SECTION I - RE-USED/RECYCLED MATERIALS									
Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.									
Type of Material	Type of Activity	Facility to be U	lead / location		Total Tru Loads	uck	Tons	Total Quar Cubic YE	
(ex.) M	O4	ABC Metals, Lo			24		355		Other wt.
	04	ABC MC(ab), L(5 71180103		24		555		
a. Total Dive	arsion								
	5151011								

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

Continued						
		SECTION II - DISPOSE	D MATERIALS			
Inc	lude all dispo	osal activities for landfills, transfer stations	, or inert landfills	where no re	cycling will occ	ur.
					Total Quantiti	ies
Type of	Type of		Total Truck			Other
Material	Activity	Facility to be Used/Location	Loads	Tons	Cubic YD	Wt.
(ex.) D	08	DEF Landfill, Los Angeles	2	35		
	<u> </u>					
b. Total Dis	oosal	-		-		
		SECTION III - TOTAL MATE	RIALS GENERATE	D		
This se	ection calculat	es the total materials to be generated during th	e project period (Rei	use/Recycle +	Disposal = Gener	ration
				Tons	Cubic YD	Other Wt.
a. Total Reu	sed/Recycle	ed				
b. Total Dis	posed					
c. Total Gen	erated					
	SE	CTION IV - CONTRACTOR'S LANDFILL I	DIVERSION RATE	CALCULAT	ION	
		Add totals from Sectio	n I + Section II			
						Other
				Tons	Cubic YD	Wt.
a. Materials Re-Used and Recycled						
b. Materials Disposed						
c. Total Materials Generated (a. + b. = c.)						
d. Landfill Diversion Rate (Tonnage Only)*						
* Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled						
	s comments	s (Provide any additional information	pertinent to plan	ned reuse,	recycling, or	disposal
activities):						
Notes:	_					_
		Factors: From Cubic Yards to Tons	c. Ferrous Metal	s: .22 (ex. 10	000 CY Ferrous	Metal = 220
(Use when so a. Asphal		available) 00 CY Asphalt = 610 tons. Applies to	tons) d. Non-Ferrous I	Metals: 10/	ex. 1000 CY No	n-Ferrous
	chunks of as		Metals = 100 t		CA. 1000 CT NU	
b. Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies e. Drywall Scrap: .20						
to brok	to broken chunks of concrete) f. Wood Scrap: .16					

SECTION 01 78 00 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project record documents.
- B. Operation and maintenance data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. District issued Bidding Instructions and Contract General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 30 00 Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 45 33 Code-Required Special Inspections: Construction oversight procedures by DSA regarding the execution, approval, and closeout of this building project.
- D. Section 01 70 00 Execution and Closeout Requirements: Contract closeout procedures.
- E. Section 01 78 39 Project Record Documents: Detailed requirements.
- F. Individual Product Sections: Specific requirements for operation and maintenance data.
- G. Individual Product Sections: Warranties required for specific products or Work.
 - 1. Special Project warranty requirements for specific products or elements of the Work; commitments and agreements for continuing services to District.

1.03 DEFINITIONS

- A. Warranty: Assurance to District by Contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work, in whole or in part, for the duration of the specified period of time.
- B. Guarantee: Assurance to District by Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.
- C. Standard Product Warranty: Preprinted, written warranty published by product manufacturer for particular products and specifically endorsed by the manufacturer to the District.
- D. Special Project Warranty: Written warranty required by or incorporated into Contract Documents, to extend time limits provided by standard warranty or to provide greater rights for District.
- E. Correction Period: As defined in the Conditions of the Contract, Correction Period shall be synonymous with "warranty period", "guarantee period" and similar terms used in the Contract Specifications.

1.04 SUBMITTALS

- A. Advance Submittals: For equipment and systems, or component parts of systems, put into service during construction and operated by District, submit documents within ten days of start of operation by District.
- B. Final Completion Submittals: Prior to application for final payment, Contractor shall submit 3 copies the following:
 - 1. Agency Document Submittals: Submit to District all documents required by authorities having jurisdiction, including serving utilities and other agencies. Submit original versions of all permit cards, with final sign-off by inspectors. Submit all certifications of inspections and tests.
 - a. Complete all required Contractor forms and obtain DSA approval of these same forms. Comply with "Final Certification of Construction" per Title 24 Part 1 section 4-339.
 - 1) Form-6.C: Verified Report Contractor: From each Contractor having a contract with the District.
 - 2. Final Specifications Submittals: Submit to District all documents and products required by Specifications to be submitted, including the following:
 - a. Project record drawings and specifications.
 - b. Operating and maintenance data.
 - c. Guarantees, warranties and bonds.
 - d. Keys and keying schedule.
 - e. Spare parts and extra stock.
 - f. Test reports and certificates of compliance.
 - 3. Certificates of Compliance and Test Report Submittals: Submit to District certificates and reports as specified and as required by authorities having jurisdiction, including the following:
 - 4. Lien and Bonding Company Releases: Submit to District, with copy to Architect, evidence of satisfaction of encumbrances on Project by completion and submission of The American Institute of Architects Forms:
 - a. G706 Contractor's Affidavit of Payment of Debts and Claims;
 - b. G706A Contractor's Affidavit of Release of Liens;
 - c. (if applicable) G707 Consent of Surety;
 - d. or forms as as agreed to by the District.
 - e. Comply also with other requirements of District, as directed.
 - f. All signatures shall be notarized.
 - 5. Subcontractor List: Submit to two copies to District and two copies to Architect of updated Subcontractor and Materials Supplier List.
 - 6. Warranty Documents: Prepare and submit to District all warranties and bonds as specified in Contract General Conditions and this Section.
- C. Project Record Documents: Submit final progress markup PDF documents by uploading via Bluebeam to Architect with claim for final Application for Payment.
- D. Warranties and Bonds:

- 1. For equipment or component parts of equipment put into service during construction with District's permission, submit documents within 10 days after acceptance.
- 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
- 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.05 WARRANTIES AND GUARANTEES

- A. General:
 - 1. Provide all warranties and guarantees with District named as beneficiary.
 - 2. For equipment and products, or components thereof, bearing a manufacturer's warranty or guarantee that extends for a period of time beyond the Contractor's warranty and guarantee, so state in the warranty or guarantee.
- B. Provisions for Special Warranties: Refer to Conditions of the Contract for terms of the Contractor's special warranty of workmanship and materials.
- C. General Warranty and Guarantee Requirements:
 - 1. Warranty shall be an agreement to repair or replace, without cost and undue hardship to District, Work performed under the Contract which is found to be defective during the Correction Period (warranty or guarantee) period.
 - 2. Repairs and replacements due to improper maintenance or operation, or due to normal wear, usage and weathering are excluded from warranty requirements unless otherwise specified.
- D. Specific Warranty and Guarantee Requirements: Specific requirements are included in product Specifications Technical Sections, including content and limitations.
- E. Disclaimers and Limitations:
 - 1. Manufacturer's disclaimers and limitations on product warranties and guarantees shall not relieve Contractor of responsibility for warranty and guarantee requirements.
 - 2. This applies to the Work that incorporates such products, nor shall they relieve suppliers, manufacturers, and installers required to countersign special warranties with Contractor.
- F. Related Damages and Losses: When correcting warranted Work that has been found defective, remove and replace other Work that has been damaged as a result of such defect or that must be removed and replaced to provide access for correction of warranted Work.
- G. Reinstatement of Warranty:
 - 1. When Work covered by a warranty has been found defective and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement.
 - 2. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- H. Replacement Cost:
 - 1. Upon determination that Work covered by a warranty has been found to be defective, replace or reconstruct the Work to a condition acceptable to District, complying with applicable requirements of the Contract Documents.

- 2. Contractor is responsible for all costs for replacing or reconstructing defective Work regardless of whether District has benefited from use of the Work through a portion of its anticipated useful service life.
- I. District's Recourse:
 - 1. Written warranties made to the District are in addition to implied warranties, and do not limit the duties, obligations, rights and remedies otherwise available under law, nor shall warranty periods be interpreted as limitations on time in which the District can enforce such other duties, obligations, rights, or remedies.
 - 2. Rejection of Warranties:
 - a. The District reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- J. Warranty as Condition of Acceptance:
 - 1. District reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment shall be required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. See also Section 01 78 39 Project Record Documents.
- B. Record Documents are to be maintained and submitted in searchable live electronic format (PDF), unflattened.
 - 1. Develop in compliance with Section 01 30 00 Administrative Requirements.
 - 2. Acceptable markup software:
 - a. Adobe Acrobat Professional.
 - b. Bluebeam Revu.
- C. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings.
 - 2. Project Manual with Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- D. Ensure entries are complete and accurate, enabling future reference by District.
- E. Store record documents separate from documents used for construction.
- F. Record information concurrent with construction progress.

- G. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
 - 4. Provide copies of all approved addenda, directives, corrections, and change orders affecting the associated project.
 - a. These copies shall be included with the "Bid Set" and/or "Record Set" listed above and formatted as detailed above.
- H. Record Drawingsand Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Reproducible (PDF) set of Contract Drawings will be provided to Contractor by District through Architect or Construction Manager.
 - 2. Measured depths of foundations in relation to finish first floor datum.
 - 3. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 4. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 5. Field changes of dimension and detail.
 - 6. Details not on original Contract drawings.
 - a. Application of copies of details produced and provided by Architect during construction will be accepted.
 - 7. Sketches, clarifications (RFI's), Field Orders, Supplemental Instructions, Construction Change Documents, and Approved Change Orders
- I. Submission: Submit by uploading, Record Documents to Architect prior to each Application for Payment.
 - 1. Provide, by email, to the Architect, a download link the Record Documents consisting of an unflattened PDF format with live text and redline mark-ups, not scanned.
 - 2. Maintain one additional paper copy and one in PDF format (on CD) of the fire suppression and fire protection detection system drawings and specifications at the building premises.
 - a. One copy is to be kept on site for a period of three years to comply with CFC section 901.6.2.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as

maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Product data, with catalog number, size, composition, and color and texture designations.
 - 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for District's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
 - 1. Provide duplicate electronic formatted (PDF) versions of the O&M binder for record purposes. Organize the same as the printed versions.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

- I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.
 - 4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.05 WARRANTIES AND BONDS

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with District's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Project Warranty and Guarantee Forms:
 - 1. Example forms for special Project warranties and guarantees are included at the end of this Section.
 - 2. Prepare written documents utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer.
 - a. Submit a draft to District through Architect for approval prior to final execution.
 - 3. Refer to product Specifications Sections of Divisions 2 through 33 for specific content requirements, and particular requirements for submittal of special warranties.
 - 4. Prepare standard warranties and guarantees, excepting manufacturers' standard printed warranties and guarantees, on Contractor's, subcontractor's, material supplier's, or manufacturer's own letterhead, addressed to District.
 - 5. Warranty and guarantee letters shall be signed by all responsible parties and by Contractor in every case, with modifications only as approved in advance by District to suit the conditions pertaining to the warranty or guarantee.
- C. Manufacturer's Guarantee Form:
 - 1. Manufacturer's guarantee form may be used in lieu of special Project form included at the end of this Section.
 - 2. Manufacturer's guarantee form shall contain appropriate terms and identification, ready for execution by the required parties.
 - 3. If proposed terms and conditions restrict guarantee coverage or require actions by District beyond those specified, submit draft of guarantee to District through Architect

for review and acceptance before performance of the Work.

- 4. In other cases, submit draft of guarantee to District through Architect for approval prior to final execution of guarantee.
- D. Signatures: Signatures shall be by person authorized to sign warranties, guarantees and bonds on behalf of entity providing such warranty, guarantee or bond.
- E. Co-Signature: All installer's warranties and bonds shall be co-signed by Contractor. Manufacturer's guarantees will not require co-signature.
- F. Verify that documents are in proper form, contain full information, and are notarized.
- G. Co-execute submittals when required.
- H. Retain warranties and bonds until time specified for submittal.
- I. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- J. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
 - 1. If more than one volume of warranties, guarantees and bonds is produced, identify volume number on binder.
- K. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- L. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- M. Form of Warranty and Bond Submittals:
 - 1. Prior to final Application and Certificate for Payment, compile two copies of each required warranty, guarantee and bond, properly executed by Contractor, or jointly by Contractor, subcontractor, supplier, or manufacturer.
 - 2. Collect and assemble all written warranties and guarantees into binders and deliver binders to District for final review and acceptance.
 - 3. Include Table of Contents for binder, neatly typed, following order and Section numbers and titles as used in the Project Manual.
 - 4. Provide heavy paper dividers with celluloid or plastic covered tabs for each separate warranty.
 - a. Mark tabs to identify products or installation, and Section number and title.
 - 5. Include on separate typed sheet, if information is not contained in warranty or guarantee form, a description of the product or installation, and the name, address, telephone number and responsible person for applicable installer, supplier and manufacturer.
 - 6. When operating and maintenance data manuals are required for warranted construction, include additional copies of each required warranty and guarantee in each required manual.

a. Coordinate with requirements listed in the prior articles for operating and maintenance data manuals.

3.06 TIME OF WARRANTY AND BOND SUBMITTALS

- A. Submission of Preliminary Copies:
 - 1. Unless otherwise specified, obtain preliminary copies of warranties, guarantees and bonds within ten days of completion of applicable item or Work.
 - 2. Prepare and submit preliminary copies for review as specified herein.
- B. Submission of Final Copies:
 - 1. Submit fully executed copies of warranties, guarantees and bonds within ten days of date identified in Certificate of Completion but no later than three days prior to date of final Application for Payment.
- C. Date of Warranties and Bonds:
 - 1. Unless otherwise directed or specified, commencement date of warranty, guarantee and bond periods shall be the date established in the Certificate of Completion.
 - 2. Warranties for Work accepted in advance of date stated in Certificate of Completion:
 - a. When a designated system, equipment, component parts or other portion of the Work is completed and occupied or put to beneficial use by District:
 - 1) By separate agreement with Contractor, prior to completion date established in the Certificate of Completion, submit properly executed warranties to District within ten days of completion of that designated portion of the Work.
 - 2) List date of commencement of warranty, guarantee or bond period as the date established in the Certificate of Completion.
 - 3. Warranties for Work not accepted as of date established in the Certificate of Completion:
 - a. Submit documents within ten days after acceptance, listing date of acceptance as beginning of warranty, guarantee or bond period.
- D. Duration of Warranties and Guarantees:
 - 1. Unless otherwise specified or prescribed by law, warranty and guarantee periods shall be not less than the Correction Period required by the Conditions of the Contract.
 - 2. In no case, the period is to be less than one year from the date established for completion of the Project in the Certificate of Completion.
 - 3. See product Specifications Sections of the Project Manual for extended warranty and guarantee beyond the minimum one year duration.

END OF SECTION

SECTION 01 78 00.01 WARRANTY FORM LETTER

FOR CONTRACTOR'S / SUBCONTRACTOR'S / MANUFACTURER'S WARRANTY

CONTRACTOR'S/SUBCONTRACTOR'S/SUPPLIER'S LETTERHEAD

SPECIAL LIMITED PROJECT WARRANTY FOR ______ WORK.

We, the undersigned, do hereby warrant that the portion of the Work described above which we have provided for Grossmont HS Press Box & Bleacher is in accordance with the Contract Documents and that all such Work as installed will fulfill or exceed all minimum warranty requirements. We agree to repair or replace Work installed by us, together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or function within a period of (years), commencing (date identified in Certificate of Completion, unless otherwise directed) and terminating (date).

The following terms and conditions apply to this warranty (obtain District 's approval before submission):

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the District, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the District to have said defective Work repaired or replaced to be made good, and agree to pay to the District upon demand all moneys that the District may expend in making good said defective Work, including all collection costs and reasonable attorney fees.

LOCAL REPRESENTATIVE: FOR WARRANTY MAINTENANCE, REPAIR, OR REPLACEMENT SERVICE, CONTACT:

(Name)		
(Address)		
(City)	(State) (ZIP)	
(Phone)/		
(signed)		
(Date)	(Typed Name)	
(Title)	(Firm)	
CONTRACTOR:		
State License No:		
(signed)		
(Date)	(Typed Name)	
(Title)	(Firm)	
FORM LETTER		
Grossmont Union High School District	Warranty Forn	n letter
Grossmont HS Press Box & Bleacher	01 78 0	
RCA Project No. 1-30-55A		

FORM LETTER

FOR CONTRACTOR'S / MANUFACTURER'S GUARANTEE

CONTRACTOR'S / MANUFACTURER'S LETTERHEAD

SPECIAL LIMITED PROJECT [___WARRANTY__] [__GUARANTEE__] FOR ______ WORK.

We, the undersigned, do hereby [__warrant__] [__guarantee__] that the portion of the Work described above which [__we have provided__] [__was provided by (Installer or Subcontractor's Name)__] for Grossmont HS Press Box & Bleacher in accordance with the Contract Documents and that all such Work as installed will fulfill or exceed all minimum warranty requirements. We agree to repair or replace Work installed by [__us,__] [__(Installer or Subcontractor's Name)__] together with any adjacent Work which is displaced or damaged by so doing, that proves to be defective in workmanship, material, or function within a period of (years), commencing (date indicated in Certificate of Completion, unless otherwise directed) and terminating (date).

The following terms and conditions apply to this [__warranty__] [__guarantee__] (obtain District's approval before submission):

In the event of our failure to comply with the above-mentioned conditions within a reasonable time period determined by the District, after notification in writing, we, the undersigned, all collectively and separately, hereby authorize the District to have said defective Work repaired or replaced to be made good, and agree to pay to the District upon demand all moneys that the District may expend in making good said defective Work, including all collection costs and reasonable attorney fees.

LOCAL REPRESENTATIVE: FOR WARRANTY MAINTENANCE, REPAIR, OR REPLACEMENT SERVICE, CONTACT:

• • •	(State) (ZIP)	-
(Phone)/		
(signed)		
(Date)	(Typed Name)	
(Title)	(Firm)	
CONTRACTOR: State License No:		
	(Typed Name)	
(Title)	(Firm)	
FORM LETTER		
Grossmont Union High School District		Warranty Form Lattor
Grossmont HS Press Box & Bleacher		Warranty Form Letter 01 78 00.01 - 2
RCA Project No. 1-30-55A		017000.01-2

END OF SECTION

SECTION 01 78 39 PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Record Drawings.
- B. Record Specifications.
- C. Record Product Data.
- D. Record Samples.
- E. Record Photos.
- F. Record Schdeule of Values.
- G. Miscellaneous record submittals.

1.02 RELATED REQUIREMENTS:

- A. Section 01 20 00 Price and Payment Procedures: Schedule of Values.
- B. Section 01 30 00 Administrative Requirements: Project Coordination.
- C. Section 01 78 00 Closeout Submittals: General Closeout.

1.03 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Recorded actual locations.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 RECORD DRAWINGS

- A. Record Documents: Construction Manager is to maintain one set of electronicaly marked-up PDF copy of the Contract Drawings including Shop Drawings, incorporating new and revised drawings as modifications are issued.
 - 1. Preparation: Mark Record Drawings to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record document.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.

e	Grossmont Union High School District
Ģ	Grossmont HS Press Box & Bleacher
F	RCA Project No. 1-30-55A

- e. Cross-reference Record Drawings to corresponding archive photographic documentation.
- 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Field changes of dimensions from Contract Drawings.
 - b. Revisions to details shown on Contract Drawings.
 - 1) Details not on original Contract Drawings. Application of copies of details produced and provided by Architect during construction will be accepted.
 - c. Depths of foundations and footing, measured in relation to finish First Floor datum.
 - d. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent ground improvements.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuits.
 - g. Actual equipment locations and sizes.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Permanent Room names and Room numbers.
 - k. Changes made by Change Order or Construction Change Directive.
 - I. Changes made following written orders by District or Construction Manager.
 - m. Changes made following Architect's written orders.
 - n. Note clarifications from RFI's.
 - o. Field records for variable and concealed conditions.
 - p. Record information on the Work that is shown only schematically.
- 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up Record Drawings.
- 4. Mark Record sets with erasable, red text and graphics. Use other colors to distinguish between changes for different categories of the Work at same location.
- 5. Mark important additional information that was either shown schematically or omitted from original Contract Drawings.
- 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before Final Inspection, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
 - 1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 - a. Format: PDF, Version, Microsoft Windows operating system.
 - 2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.

- 3. Refer instances of uncertainty to Architect and Construction Manager for resolution.
- 4. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 01 35 50 Requests for Electronic Files for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.
- C. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.
 - 1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.
 - 2. Consult Architect and Construction Manager for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
- D. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Format: Annotated PDF electronic file with comment function enabled. Do not flatten the document.
 - 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sectionidentification. Include identification in each digital data file.
 - 4. Identification:
 - a. Project name and number.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect and Construction Manager.
 - e. Name of Contractor.

3.02 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications in PART 2 to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.

- 4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
- 5. Note related Change Orders, record Product Data, and Record Drawings, where applicable.
- B. Format: Submit Record Specifications as annotated PDF electronic file. Do not flatten the document.

3.03 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file. Do not flatten the document.
 - 1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

3.04 RECORD SAMPLES

- A. Immediately before date of Substantial Completion, meet with District or Construction Manager at Project site to determine which Samples maintained during the construction period aer to be transmitted to District or Construction Manager for record purposes.
- B. Comply with District or Construction Manager's instructions for packaging, identification, marking, and delivery to District or Construction Manager's Sample storage space. Dispose of other Samples in the manner specified for disposing surplus and waste materials

3.05 RECORD PHOTOS

- A. Photograph all work before covering up, including:
 - 1. The extent of all open trenches and manholes.
 - 2. Identify all exposed utilities in the photos.
 - 3. Show photograph locations and dates on Record Drawings.

3.06 RECORD SCHEDULE OF VALUES

A. Provide a PDF copy of the final Schedule of Values as indicated in Section 01 20 00 - Price and Payment Procedures.

3.07 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

- 1. Field records on excavations and foundations.
- 2. Field records on underground construction and similar work.
- 3. Surveys showing locations and elevations of underground lines.
- 4. Invert elevations of drainage piping.
- 5. Surveys establishing building lines and levels.
- 6. Authorized measurements using unit prices or allowances.
- 7. Records of plant treatment.
- 8. Ambient and substrate condition tests.
- 9. Certifications received in lieu of labels on bulk products.
- 10. Batch mixing and bulk delivery records.
- 11. Testing and qualification of trade persons.
- 12. Documented qualification of installation firms.
- 13. Load and performance testing.
- 14. Inspections and certifications by governing authorities.
- 15. Leakage and water-penetration tests.
- 16. Fire-resistance and flame-spread test results.
- 17. Final inspection and correction procedures.
- B. Format: Submit miscellaneous record submittals as PDF electronic file.
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

3.08 SUBMISSION

- A. Keep Project Record Documents current, as they will be reviewed for completeness by Architect, Engineer, Project Inspector, and Construction Manager; as a condition of certification for each Progress Payment Application.
- B. Prior to the date of the Notice of Completion, submit marked Record Documents to Architect and Construction Manager for review, approval and further processing.

3.09 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.
- B. Review of documents by Architect, Engineer, Project Inspector, or Construction Manager to be in concert with approval of the monthly Application for Payment.
- C. Maintenance of Record Documents and Samples:
 - 1. Store record documents and Samples in the field office apart from the Contract Documents used for construction.
 - 2. Do not use project record documents for construction purposes.
 - 3. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss.

4. Provide access to project record documents for Architect and Construction Manager reference during normal working hours.

3.10 FINAL SUBMITTAL/CLOSEOUT

A. Contractor is to provide a complete coordinated set of electronic PDF Record Documents to the Architect as part of the final closeout procedure.

END OF SECTION

SECTION 01 79 00 DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

- A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.
- B. Training of District personnel in operation and maintenance is required for:
 - 1. All software-operated systems.
 - 2. HVAC systems and equipment.
 - 3. Plumbing equipment.
 - 4. Electrical systems and equipment.
 - 5. Conveying systems.
 - 6. Landscape irrigation.
 - 7. Items specified in individual product Sections.
- C. Training of District personnel in care, cleaning, maintenance, and repair is required for:
 - 1. Roofing, waterproofing, and other weather-exposed or moisture protection products.
 - 2. Finishes, including flooring, wall finishes, ceiling finishes.
 - 3. Fixtures and fittings.
 - 4. Items specified in individual product Sections.

1.02 RELATED REQUIREMENTS

- A. Section 01 78 00 Closeout Submittals: Operation and maintenance manuals.
- B. Section 01 91 13 General Commissioning Requirements: Additional requirements applicable to demonstration and training.
- C. Other Specification Sections: Additional requirements for demonstration and training.

1.03 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Training Plan: District will designate personnel to be trained; tailor training to needs and skilllevel of attendees.
 - 1. Each Sub, Design-Builder SubContractor and vendor responsible for training submits a written training plan to the Architect and District Representative for review and approval prior to training.
 - 2. Submit to Architect for transmittal to District.
 - 3. Submit not less than four weeks prior to start of training.
 - 4. Revise and resubmit until acceptable.
 - 5. Provide an overall schedule showing all training sessions.

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- 6. Include at least the following for each training session:
 - a. Identification, date, time, and duration.
 - b. Description of products and/or systems to be covered.
 - 1) Equipment list
 - c. Name of firm and person conducting training; include qualifications.
 - d. Intended audience, such as job description.
 - e. Objectives of training and suggested methods of ensuring adequate training.
 - Agenda and subjects (design intent, equipment inspections, modes of operation, system interactions, troubleshooting, preventative maintenance, etc.)
 - f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
 - g. Media to be used, such a slides, hand-outs, etc.
 - 1) The approved O&M manuals shall be used during the training for equipment specific references.
 - h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.
- C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
 - 1. Include applicable portion of O&M manuals.
 - 2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
 - 3. Provide one extra copy of each training manual to be included with operation and maintenance data.
- D. Training Reports:
 - 1. Identification of each training session, date, time, and duration.
 - 2. Sign-in sheet showing names and job titles of attendees.
 - 3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include answers to questions that could not be answered in original training session.
 - 4. Include Commissioning Authority's formal acceptance of training session.
- E. Video Recordings: Submit digital video recording of each demonstration and training session for District's subsequent use.
 - 1. Format: DVD Disc.
 - 2. Label each disc and container with session identification and date.

1.04 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
 - 1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.

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2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 TRAINING OF OWNER PERSONNEL

- A. The Contractor and Design-Builder SubContractors shall be responsible for training coordination and scheduling and for ensuring that training is completed.
- B. The Commissioning Authority (CA) shall be responsible for reviewing and approving the content of the training of Owner personnel for commissioned equipment.
- C. The specific training requirements of District personnel by Subs, Design-Builder SubContractors and vendors is specified in the Division in which the equipment is specified.
- D. For primary HVAC equipment, the Controls Contractor shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.

3.02 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by District.
- B. Demonstrations conducted during Functional Testing need not be repeated unless District personnel training is specified.
- C. Demonstration may be combined with District personnel training if applicable.
- D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.03 TRAINING - GENERAL

- A. Commissioning Authority will prepare the Training Plan based on draft plans submitted.
- B. Conduct training on-site unless otherwise indicated.
- C. District will provide classroom and seating at no cost to Contractor.
- D. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Authority.
- E. Provide training in minimum two hour segments.
- F. The Commissioning Authority is responsible for determining that the training was satisfactorily completed and will provide approval forms.

- G. Training schedule will be subject to availability of District's personnel to be trained; reschedule training sessions as required by District; once schedule has been approved by District failure to conduct sessions according to schedule will be cause for District to charge Contractor for personnel "show-up" time.
- H. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
 - 1. The location of the O&M manuals and procedures for use and preservation; backup copies.
 - 2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
 - 3. Typical uses of the O&M manuals.
- I. Product- and System-Specific Training:
 - 1. Review the applicable O&M manuals.
 - 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
 - 3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 - 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 - 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 - 6. Discuss common troubleshooting problems and solutions.
 - 7. Discuss any peculiarities of equipment installation or operation.
 - 8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 - 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 - 10. Review spare parts and tools required to be furnished by Contractor.
 - 11. Review spare parts suppliers and sources and procurement procedures.
- J. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 02 41 00 DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building demolition . Existing bleachers.
- B. Selective demolition of built site elements.
 - 1. Demolition and removal of existing site improvements within Project area, as indicated on Drawings and as necessary to accomplish the Work, including:
 - a. Asphaltic concrete and portland cement concrete paving.
 - b. Pavement cutting and removal.
 - c. Debris removal.
 - 2. Handling and disposal of removed materials.
 - 3. Dewatering of excavations as necessary to control surface and sub-surface water.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 10 00 Summary: Description of items to be removed by District.
- C. Section 01 10 00 Summary: Description of items to be salvaged or removed for re-use by Contractor.
- D. Section 01 50 00 Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- E. Section 01 60 00 Product Requirements: Handling and storage of items removed for salvage and relocation.
- F. Section 01 70 00 Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- G. Section 01 74 19 Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- H. Section 31 22 00 Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- I. Section 31 23 23 Fill: Filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 Safety and Health Regulations for Construction.
- B. CFC Ch. 33 Fire Safety During Construction and Demolition.
- C. NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations.

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1.04 DEFINITIONS

- A. Remove: Remove and legally dispose of items, except those identified for use in recycling, reuse, and salvage programs.
- B. Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human or animal life; affect other species of importance to humanity; or degrade the utility of the environment for aesthetic, cultural or historical purposes.
- C. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively for the purpose of disposal.
 - 1. Inert Solids/Inert Waste: Non-liquid solid waste including, but not limited to, soil and concrete, that does not contain hazardous substances or soluble pollutants at concentrations in excess of water-quality standards established by a regional water board and does not contain significant quantities of decomposable solid waste.
- D. Class III Landfill: A landfill that accepts non-hazardous materials such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from the State of California.
- E. Demolition Waste: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The materials may include rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.
- F. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.
- G. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- H. Reuse: The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- I. Solid Waste: All putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Pre-Construction Conference: Conduct a pre-construction conference one week prior to the start of the work of this section; require attendance by all affected trades.

- B. Convene a conference at the Project site 3 days prior to starting demolition to review the Drawings and Specifications, requirements of authorities having jurisdiction, instructions and requirements of serving utilities, sequencing and interface considerations and project conditions.
- C. Conference shall be attended by DSA, supervisory and quality control personnel of Contractor and all subcontractors performing this and directly-related Work.
- D. Submit minutes of meeting to District, Project Inspector and Architect, for Project record purposes.
- E. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.
 - 1. Refer to sequence requirements specified in Section 01 10 00 Summary; and construction progress schedule requirements specified in Section 01 32 16 Construction Progress Schedule.

1.06 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain property of Grossmont Union High School District, demolished materials shall become the Contractor's property and shall be removed, recycled, or disposed from Project site in an appropriate and legal manner.
 - 1. Arrange a meeting no less than ten (10) days prior to demolition with the District or DSA and other designated representatives to review any salvageable items to determine if District wants to retain ownership, and discuss Contractor's Waste Management and Recycling Plan.

1.07 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.
 - 2. Areas for temporary and permanent placement of removed materials.
- C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
 - 1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
 - 2. Identify demolition firm and submit qualifications.
- D. Demolition phase:
 - 1. Proposed dust-control measures.
 - 2. Proposed noise-control measures.
 - 3. Schedule of demolition activities indicating the following:
 - a. Detailed sequence of demolition and removal work, including start and end dates for each activity.
 - b. Dates for shutoff, capping, and continuation of utility services.
 - 4. Contractor's Waste Management and Recycling Plan: See Section 01 74 19 Construction Waste Management and Disposal.

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- a. This plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
- 5. Contractor's Reuse, Recycling, and Disposal Report: See Section 01 74 19 Construction Waste Management and Disposal.
- E. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.
 - 1. Record drawings: Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

1.08 SUBMITTALS

- A. Demolition and Removal Procedures and Schedule: Submit for Project record only.
- B. Project Record Drawings: Submit in accordance with provisions specified in Section 01 78 00 -Closeout Submittals. Indicate verified locations of underground utilities and storm drainage system on project record drawings.

1.09 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Company specializing in the type of work required.
 - 1. Minimum of 5 years of documented experience.

1.10 SCHEDULING

- A. Schedule Work to precede new construction.
- B. Describe demolition removal procedures and schedule.
- C. Perform work between the hours of 8am and 5pm, subject to noise abatement regulations and District's approval for noise considerations.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

- A. Remove the entire building designated Existing Bleachers.
- B. Remove paving and curbs as required to accomplish new work.
- C. Remove other items indicated, for salvage, relocation, and recycling.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Conform to the relevant Article of the General Conditions, Air Quality Management District and other applicable regulatory procedures when discovering hazardous or contaminated materials.
- B. Selective Demolition of Site and Building Elements:
 - 1. Use techniques acceptable to authorities having jurisdiction and which will achieve intended results and provide protection of surrounding features to remain.

- 2. Some items may have been demolished prior to Work of this Contract. Verify existing conditions prior to start of demolition. If items are or have been demolished contact the Architect.
- 3. Some items may require postponement of demolition until late in Contract Time period.
- 4. Phase demolition as necessary to provide adequate interfacing of related Work.
- 5. Demolish in an orderly and careful manner. Protect existing foundations, retaining walls, utility structures, other structures and finish materials to remain.
- C. Field Measurements and Conditions:
 - 1. Survey existing conditions and correlate with requirements indicated to determine extent of demolition and recycling required.
 - 2. In addition to provisions of the Conditions of the Contract, verify dimensions and field conditions prior to construction. Verify condition of substrate and adjoining Work before proceeding with demolition Work. If conflict is found notify DSA, Project Inspector and Architect.
- D. Comply with other requirements specified in Section 01 70 00.
- E. Comply with governing EPA notification regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Obtain and pay for all permits required.
- F. Environmental Controls
 - 1. Comply with federal, state and local regulations pertaining to water, air, solid waste, recycling, chemical waste, sanitary waste, sediment and noise pollution.
 - 2. Confine demolition activities to areas defined by public roads, easements, and work area limits indicated on the drawings.
 - 3. Temporary Construction: Remove indications of temporary construction facilities, such as haul roads, work areas, structures, stockpiles or waste areas.
 - 4. Water Resources: Comply with applicable regulations concerning the direct or indirect discharge of pollutants to underground and natural surface waters.
 - a. Oily Substances: Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water in such quantities as to affect normal use, aesthetics, or produce a measurable ecological impact on the area.
 - 1) Store and service construction equipment at areas designated for collection of oil wastes.
 - 5. Dust Control, Air Pollution, and Odor Control: Prevent creation of dust, air pollution and odors.
 - a. Use temporary enclosures and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.
 - b. Store volatile liquids, including fuels and solvents, in closed containers.
 - c. Properly maintain equipment to reduce gaseous pollutant emissions.
 - 6. Noise Control: Perform demolition operations to minimize noise.
 - a. Provide equipment, sound-deadening devices, and take noise abatement measures that are necessary to comply with the requirements of this Contract.

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- G. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Comply with applicable requirements of NFPA 241 and CFC Ch. 33.
 - 3. Use of explosives is not permitted.
 - 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - a. Survey condition of the building to determine whether removing any element might result in a structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during demolition.
 - Retain a licensed and qualified civil or structural engineer to provide analysis, including calculations, necessary to ensure the safe execution of the demolition work.
 - b. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
 - c. Perform surveys as the Work progresses to detect hazards resulting from demolition activities.
 - 5. Provide, erect, and maintain temporary barriers and security devices.
 - a. Provide, erect, and maintain temporary barriers, safety and security devices , for protection of streets, sidewalks, curbs, adjacent property and the public.
 - b. Protection: Protect existing construction and adjacent areas with temporary barriers and security devices in accordance with requirements specified in Section 01 50 00 - Temporary Facilities and Controls.
 - 1) Review location and type of construction of temporary barriers with District and/or the DSA.
 - 2) Barriers shall control dust, debris and provide protection for persons occupying and using adjacent facilities.
 - 3) Maintain protected egress and access at all times, in accordance with requirements of authorities having jurisdiction and with permission of DSA (AHJ having jurisdiction).
 - 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 8. Do not close or obstruct roadways or sidewalks without permit.
 - 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 - 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

- H. Do not begin removal until receipt of notification to proceed from District.
- I. Do not begin removal until built elements to be salvaged or relocated have been removed.
- J. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
 - 4. Protect existing landscaping materials, appurtenances, structures and items that are not to be demolished, or are on adjacent property.
 - 5. Mark location of utilities.
- K. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- L. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.
- M. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect in accordance with requirements of Section 01 60 00 Product Requirements.
- N. Perform demolition in a manner that maximizes salvage and recycling of materials.
 - 1. Comply with requirements of Section 01 74 19 Construction Waste Management and Disposal.
 - 2. Dismantle existing construction and separate materials.
 - 3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.
- O. Damages: Promptly repair damages to adjacent facilities caused by demolition operations.
- P. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to District.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to District.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

- I. Utility Lines, Posts and Structures:
 - 1. Work by Utility: Posts, conductors, guy wires, boxes, structures and equipment shown to be cleared or removed by the responsible utility company or agency shall be considered work under a separate contract.
 - 2. Coordination: The Contractor shall arrange, schedule and coordinate work by utility companies and agencies.
 - 3. Payment: Costs, if any, imposed by utility companies and agencies shall be included in the Contract Sum.

3.04 BUILDING DEMOLITION

- A. Demolish buildings completely and remove from the site. Use methods required to complete Work within limitations of governing regulations and as follows:
 - 1. Locate demolition equipment throughout the building and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 2. Demolish concrete and masonry in sizes that will be suitable for acceptance at recycling or disposal facilities.
 - 3. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 4. Break up and remove concrete slabs on grade in small sizes, suitable for acceptance at recycling or disposal facilities, unless otherwise shown to remain.
 - 5. Remove all disconnected, abandoned utilities on site.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 74 19 Waste Management.
- C. Remove temporary work.
- D. Leave site in clean condition, ready for subsequent work.
- E. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 03 10 00 CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Openings for other work.
- B. Form accessories.
- C. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 20 00 Concrete Reinforcing.
- B. Section 03 30 00 Cast-in-Place Concrete.
- C. Section 05 50 00 Metal Fabrications: Placement of embedded steel anchors and plates in cast-in-place concrete.
- D. Section 31 23 16 Excavation: Shoring and underpinning for excavation.
- E. Section 32 13 13 Site Concrete: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

- A. ACI 117 Specification for Tolerances for Concrete Construction and Materials.
- B. ACI 301 Specifications for Concrete Construction.
- C. ACI 318 Building Code Requirements for Structural Concrete.
- D. ACI 347R Guide to Formwork for Concrete.
- E. ASTM D695 Standard Test Method for Compressive Properties of Rigid Plastics.
- F. PS 1 Structural Plywood.
- G. CBC Chapter 19A.

1.04 DEFINITIONS

- A. Unexposed Finish: A general-use finish, with no appearance criteria, applicable to all formed concrete concealed from view after completion of construction.
- B. Exposed Finish: A general-use finish applicable to all formed concrete exposed to view and including surfaces which may receive a paint coating (if any).

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on void form materials and installation requirements.
 - 1. Form release agent.
- C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

1.06 QUALITY ASSURANCE

- A. Industry Standard: Formwork design and construction shall be in accordance with ACI 301, ACI 318, and ACI 347R.
- B. Maintain one copy of each installation standard on site throughout the duration of concrete work.
- C. Regulatory Requirements: Conform to formwork construction requirements of the California Building Code (CBC) Title 24, Part 2, Chapter 19A as amended and adopted by authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.
- B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-inplace concrete work.
- B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.
- C. Chamfer outside corners of beams, joists, columns, and walls.
- D. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.
- E. Comply with relevant portions of ACI 301, ACI 318, and ACI 347R.
- F. Provide materials for contact with concrete which impart suitable surface quality to completed concrete. Use the following form types:
 - 1. Forms for Exposed Finish Concrete:
 - a. Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces.
 - b. Furnish in largest practical sizes to minimize number of joints and to conform to joint system shown on the Drawings.
 - 2. Forms for Unexposed Finish Concrete:
 - a. Plywood, lumber, metal, or another acceptable material.
 - b. Provide lumber dressed on at least two edges and one side for tight fit.
 - c. When unexposed concrete is intended to receive waterproofing, provide form as for exposed finish concrete.
- G. Provide materials to construct formwork to support forming materials in contact with concrete, of sufficient capacity to withstand pressures of concrete placement and to support concrete in place until cured, without distortion.

2.02 WOOD FORM MATERIALS

- A. Softwood Plywood for Concealed Surfaces: PS 1,undamaged face C Grade, Group 2 Plugged EXT or APA Structural I Sheathing.
- B. Hardboard: For curved surfaces, tempered hardboard, Masonite Corp., or equal.
- C. Lumber: Douglas fir or douglas fir-larch species; appropriate for intended use grade; with grade stamp clearly visible.
 - 1. Sound and undamaged straight edges, and solid knots, to maintain principal shores to support concrete until minimum strength is achieved as approved by Structural Engineer.
- D. Embedded Nailers: Clear all heart redwood or pressure preservative-treated (PPTDF) douglas fir, edges reverse beveled to key into concrete.

2.03 FORMWORK ACCESSORIES

- A. Form Ties: Removable, adjustable-length or snap-off type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
 - 1. Do not use materials containing diesel oil or petroleum-based compounds.
 - 2. Does not impair subsequent treatments of concrete surfaces or bond of applied coatings.
 - 3. Products:
 - a. Nox-Crete Inc; BIO-NOX: www.nox-crete.com/#sle.
 - b. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/#sle.
 - c. W. R. Meadows, Inc; Duogard II (water-based): www.wrmeadows.com/#sle.
 - d. Or Equal Substitutions: See Section 01 60 00 Product Requirements.
- C. Dowel Sleeves: Plastic sleeve and nailable plastic base for smooth, round, steel load-transfer dowels.
 - 1. Thickness: 0.125 inch
 - 2. Compression Resistance, ASTM D695: 5,500-8,000 PSI.
 - 3. Products:
 - a. BoMetals, Inc: www.bometals.com/#sle.
 - b. Sika Corporation; Speed Dowel: usa.sika.com
 - c. Or Equal Substitutions: See Section 01 60 00 Product Requirements.
- D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- E. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 50 00.
- F. Screed Pins and Chairs:

- 1. Provide units that leave no metal closer than 1-1/2 inch to the plane of the exposed concrete surface.
- 2. Manufacturers:
 - a. Grann Adjustable Quick Screed (800/554-7266).
 - b. Dayton Richmond (800/745-3700).
 - c. Aztek (877/531-3344).
 - d. Or Equal Substitutions: See Section 01 60 00 Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 SYSTEM REQUIREMENTS

- A. Formwork Design Requirements: Formwork products and execution specified herein are for finish surface quality only.
 - 1. Design, layout and construction of formwork shall be solely the responsibility of the Contractor.
 - 2. Design and construct formwork, shoring and bracing to conform to California Building Code (CBC), Title 24, Part 2, Chapter 19A requirements and ACI 318.
 - 3. Resulting concrete shall conform to shapes, lines and dimensions indicated and required.
- B. Coordination:
 - 1. Coordinate Work specified in this Section with other Sections which require placement of embedded products and provision of openings and recesses.
 - 2. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from the Architect before proceeding.

3.03 EARTH FORMS

- A. Earth (Soil) Forms, General: Except as otherwise indicated on Drawings, conform to ACI 301, ACI 347R and California Building Code (CBC) requirements. Refer also to notes on Structural Drawings.
- B. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.04 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301, ACI 347R and California Building Code (CBC) Title 24, Part 2 requirements.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
 - 1. Use form ties of sufficient strength and sufficient quantities to prevent formwork spreading.

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- 2. Maintain principal shores to support concrete until minimum required strength is achieved.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
 - 1. Design and fabricate forms for easy removal, without impact, shock, or damage to concrete surfaces or other portions of the work.
 - 2. Design to support all applied loads until concrete is adequately cured, within allowable tolerances and deflection limits.
- D. Align joints and make watertight. Keep form joints to a minimum. Make forms watertight to prevent leakage of concrete mortar. Locate form joints, at exposed concrete, to be symmetrical about center of panel, unless otherwise noted. Align joints symmetrically at exposed conditions.
- E. Permanent openings: Provide openings to accommodate Work specified in other Sections. Size and locate openings accurately. Securely support items built into forms; provide additional bracing at openings and discontinuities in formwork.
- F. Temporary openings: Provide temporary openings for cleaning and inspection. Provide drain openings at bottoms of formwork to allow water to drain. Locate temporary openings in most inconspicuous locations at base of forms, closed with tight-fitting panels designed to minimize appearance of joints in finished concrete Work.
- G. Obtain approval before framing openings in structural members that are not indicated on drawings.
- H. Coordinate this section with other sections of work that require attachment of components to formwork.
- I. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect before proceeding.
- J. Inspection: Before placing of concrete, and after placement of reinforcing steel in the forms, provide notification so that proper inspection can be made. Make such notification at least 2 working days in advance of placing concrete.
- K. Rejection of Defective Work: Any movement or bellying of forms during construction or variations in excess of the tolerances specified shall be considered just cause for the removal of such forms and, in addition, the concrete construction so affected. Reconstruct forms, place new concrete and required reinforcing steel at no additional cost to the District.

3.05 APPLICATION - FORM RELEASE AGENT

- A. Form Release Agent: Provide either form materials with factory applied non-absorptive liner or field applied form coating to comply with applicable air quality regulations for VOC. If field applied coating is employed, thoroughly clean and recondition formwork and reapply coating before each use. Rust on form surfaces is not acceptable.
- B. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- C. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- D. Do not apply form release agent where concrete surfaces to receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.06 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
 - 1. Install accessories in accordance with manufacturer's instructions and referenced standards, level, straight and plumb.
- B. Locate and set in place items that are cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
 - 1. Openings: Size and locate formed openings, depressions, recesses and chases to accommodate products to be applied to, built into and pass through concrete Work. Coordinate size, location and placement of inserts, embedded products, openings and recesses with Work specified in other Sections.
 - 2. Anchors and Other Devices: Set and build into concrete formwork anchorage devices and other embedded products required for Work to be attached to or supported by concrete elements.
 - 3. Locating Embedded Products and Openings: Use setting drawings, diagrams, instructions and templates to set embedded products.
 - 4. Screeds: Set screeds and establish level for tops of concrete slabs and leveling for finish surfaces. Shape surfaces as indicated on the Drawings. Provide cradle, pad or base type screed supports for concrete over waterproof membranes and vapor retarders.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- E. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- F. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints are not apparent in exposed concrete surfaces.

3.07 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
 - 1. At above grade forms, flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - 2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.
- C. Formwork Reuse: Do not reuse wood and plywood forming materials which contact concrete, except as follows:
 - 1. High density plywood may be cleaned and reused for exposed concrete.
 - 2. Unfaced plywood may be reused for concealed concrete.
 - 3. Steel and fiberglass forming materials may be cleaned and reused.

D. Patching and Repairs: Patch tie holes with sheet metal patches and restore forms to like new condition prior to reuse.

3.08 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.
 - 1. Also as specified in ACI 301, ACI 318, and ACI 347R, unless otherwise specified or indicated.
- B. Camber slabs and beams in accordance with ACI 301.

3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 Quality Requirements.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
 - 1. Comply with CBC Table 1705A.3, item 12.
- C. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.10 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
 - 1. Comply with California Building Code (CBC) requirements.
 - 2. Formwork supporting weight of concrete may not be removed until concrete has reached a minimum of specified 28-day compressive strength and no earlier than 21 days after pour.
 - 3. Removal of Load Bearing Formwork:
 - a. Do not remove shoring and forms supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, until concrete has attained its 28 day specified compressive strength, unless otherwise specified or permitted by the Structural Engineer of Record.
 - b. Determine the actual compressive strength has attained is adequate to support the weight of the concrete and superimposed loads.
 - c. Maintain curing and protection operations after form removal.
 - 4. Removal of Non Load Bearing Formwork After Superimposed Loads or as Approved by Engineer:
 - a. Provided that concrete has hardened sufficiently, that it is not damaged, and has achieved sufficient strength to support its own weight and all imposed construction and design loads, forms not actually supporting weight of concrete or weight of soffit forms may be removed after concrete has cured at not less than 50 degrees F for 24 hours.
 - b. Maintain curing and protection operations after form removal.

- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
 - 1. Remove formwork progressively so no unbalanced loads are imposed on structure. Remove formwork without damaging concrete surfaces.
 - 2. Remove or snap off metal spreader ties inside wall surface. Cut nails and form ties off flush and leave surfaces level and clean.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

3.11 PATCHING

- A. Schedule: Patch forming and tie holes immediately after form removal.
- B. Cleaning: Clean surface of all loose materials and soiling.
- C. Patching: Patch all holes and depressions with grouting gun and grout mix of one part cement and 2-1/2 parts mortar sand.

3.12 FORMWORK SCHEDULE

- A. Footings and Walls, Not Exposed to View: Site fabricated plywood or lumber, coated with form release agent.
- B. Footings and Walls, Exposed to View: Site fabricated plywood, coated with form release agent compatible with applied finish coatings.

END OF SECTION

SECTION 03 20 00 CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 10 00 Concrete Forming and Accessories.
- B. Section 03 30 00 Cast-in-Place Concrete.
- C. Division 26 Electrical: Grounding connection to concrete reinforcement.

1.03 REFERENCE STANDARDS

- A. ACI 318 Building Code Requirements for Structural Concrete.
- B. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- C. ASTM A706/A706M Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
- D. ASTM A996/A996M Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement.
- E. ASTM A1064/A1064M Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- F. AWS B2.1/B2.1M Specification for Welding Procedure and Performance Qualification.
- G. AWS A5.5/A5.5M Specification for Low-Alloy Steel Electrodes for Shielded Metal Arc Welding.
- H. AWS D1.4/D1.4M Structural Welding Code Steel Reinforcing Bars.
- I. CRSI (DA4) Manual of Standard Practice.
- J. CRSI (P1) Placing Reinforcing Bars.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Reinforcement supporting and spacing devices at exposed concrete only, to demonstrate non-corroding and non-staining characteristics.
 - 2. Adhesive compounds.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E. Reports: Submit certified copies of mill test report of reinforcement materials analysis.
- F. Quality Control Submittals: Submit the following information related to quality assurance requirements specified:
 - 1. Certifications: Submit to the testing laboratory mill test certificates for all reinforcing steel, showing physical and chemical analysis. If steel is to be welded, include in chemical analysis the percentages of carbon, manganese, copper, nickel, and chromium, and optionally the percentages of molybdenum and vanadium.
 - 2. Certifications: If steel is to be welded, submit certifications to the testing laboratory signed by AWS Certified Welding Inspector (CWI) of prequalified welding procedures, qualifications of welding procedures unless prequalified, qualification of welding operators, and qualification of welders.
- G. Welding Procedure Specification Submittal: Submit to Testing Laboratory written Welding Procedure Specifications (WPS) as defined by AWS D1.4/D1.4M. The WPS shall be prepared by the Fabricator for review and approval by the Architect (Structural Engineer) and Testing Laboratory as complying with specified criteria, and shall be readily available to the welding inspector.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with CRSI (DA4), CRSI (P1), and ACI 318.
 - 1. Maintain one copy of each document on project site.
- B. Regulatory Requirements: Conform to California Building Code (CBC) Title 24 Part 2, Chapter 19A requirements as amended and adopted by authorities having jurisdiction, for details of reinforcement.
- C. Provide Architect, Project Inspector, and Special Inspector with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.
- D. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.4/D1.4M and no more than 12 months before start of scheduled welding work.
 - 1. Only AWS Certified Welding Inspectors shall be used for tests and qualifications associated with welding of reinforcing steel.
 - 2. Only AWS qualified welders or welding operators shall perform welding of reinforcing steel.
- E. Coordinate Work specified in this Section with other Sections which require placement of embedded products and provision of openings and recesses.
- F. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect (Structural Engineer) before proceeding.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver reinforcement bars new and free from rust and mill scale in original bundles marked with durable identification tags.

- B. Storage: Store reinforcement to avoid excessive rusting or fouling with grease, oil, dirt or other bond-weakening coatings.
- C. Handling: Take precautions to maintain reinforcement identification after bundles are broken.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
 - 1. Deformed billet-steel bars.
 - 2. Unfinished.
- B. Reinforcing Steel: ASTM A706/A706M, Grade 60 (60,000 psi), deformed low-alloy steel bars.
 - 1. Unfinished.
 - 2. Carbon Content: 0.55 % maximum.
- C. Reinforcing Steel: #3 Deformed bars, ASTM A615/A615M Grade 60 (420), Type A.
- D. Tie Wire: ASTM A1064/A1064M steel wire, unfinished.
- E. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
 - Chairs, Bolsters, Bar Supports, Spacers: Wire-bar-type devices, complying with CRSI (DA4), for spacing, supporting and fastening reinforcing bars and welded wire reinforcement in place. Sized and shaped for adequate support of reinforcement during concrete placement.
 - a. Supports at Slab on Grade: Provide devices with load-bearing pads or horizontal runners where base material does not support chair legs, to prevent puncture of vapor retarder/barrier or provide precast concrete block bar supports of equal or greater strength to specified concrete.
 - b. Corrosion Resistance:
 - 1) Provide stainless steel or plastic components for placement within 1-1/2 inches of weathering surfaces.
 - (a) Provide plastic coated, plastic-tipped (CRSI, Class 1) or stainless steel types at exposed-to-view concrete surfaces.
 - (b) Provide only stainless steel (CRSI Class 2) at exterior exposed surfaces to be painted.
 - 3. Welding Electrodes: AWS A5.5/A5.5M E80XX, low hydrogen, with a minimum yield point of 80,000 psi, for welding grade 60 reinforcing steel.

2.02 RE-BAR SPLICING:

- A. Coupler Systems: Mechanical devices for splicing reinforcing bars; capable of developing 160% of steel reinforcing design strength in tension and compression.
- B. Dowel Bar Splicer with Dowel-Ins: Mechanical devices for connecting dowels; Type II capable of developing 160% of steel reinforcing design strength in tension and compression.

C. Grout: Cementitious, non-metallic, non-shrink grout for use with manufacturer's grout sleeve reinforcing bar coupler system.

2.03 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) Manual of Standard Practice.
- B. Welding of reinforcement is permitted only with the specific approval of Architect. Perform welding in accordance with AWS D1.4/D1.4M.
- C. Fusion welded reinforcing steel assemblies are not permitted.
- D. Locate reinforcing splices not indicated on drawings at point of minimum stress. See Structural Drawings,
 - 1. Review locations of splices with Architect (Structural Engineer) before fabrication and placement. .

PART 3 EXECUTION

3.01 PREPARATION

- A. Cleaning: Clean reinforcement to remove loose rust and mill scale, soil, and other materials which may reduce or destroy bond with concrete.
- B. Adjustment and Inspection: Do not bend or straighten reinforcement in a manner injurious to material. Do not use bars with kinks or bends not shown on Drawings and reviewed shop drawings, or bars with reduced cross-section due to corrosion or other cause.
- C. Do not bend bars No. 5 and larger in the field.
- D. Do not bend bars more than once in the same location.

3.02 PLACEMENT

- A. General: Place and secure reinforcement as specified herein, as indicated and noted on Drawings and in compliance with recommended details and methods of reinforcement placement and support specified in CRSI Placing Reinforcing Bars.
- B. Place, support and secure reinforcement against displacement. Do not deviate from required position.
 - 1. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- C. Do not displace or damage vapor barrier.
- D. Accommodate placement of formed openings.
- E. Maintain concrete cover around reinforcing as indicated on Structural Drawings:
- F. Comply with applicable code for concrete cover over reinforcement.
 - 1. If not otherwise indicated on Drawings or specified herein, provide concrete cover in compliance with ACI 318.
- G. Bond and ground all reinforcement to requirements of Division 26.
- H. Coordination: Locate reinforcement to accommodate embedded products and formed openings and recesses.

- I. Dowels: Secure tie dowels in place before depositing concrete. Provide No. 3 bars for securing dowels where no other reinforcement is provided.
- J. Reinforcement Splices, General: Provide standard reinforcement splices by lapping ends, placing bars in contact and tightly wire tying. Comply with details and requirements of ACI 318 for minimum lap of spliced bars and criteria indicated on the Drawings.
 - 1. Clearances for Splices: Wherever possible, provide minimum 1-1/2 inch clearance between sets of splices. Stagger horizontal bars so that adjacent spices are minimum 48 inches apart.
- K. Reinforcement Supports: Support reinforcement on metal chairs, spacers or metal hangers to provide required coverage and to properly locate reinforcement. Do not use wood. Avoid cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.
 - 1. Support Spacing: Space chairs and accessories in conformance with CRSI Placing Reinforcing Bars.
- L. Welding of Reinforcement Steel
 - 1. Welding: Perform welding under continuous inspection and supervision of a qualified Registered Deputy Inspector employed by testing and inspection agency. Weld reinforcement as indicated on Drawings.
 - 2. If mill test report is not available, make chemical analysis of bars representative of bars to be welded. Bars with CE above 0.75 shall not be welded.
 - 3. No welds shall be made at bends in reinforcing bars. Welds to be 1 inch minimum from bends
- M. Corrections During Concrete Placement: Maintain reinforcing steel workers on-site during placement of concrete for resetting reinforcement displaced by runways, workers and other causes.

3.03 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 40 00 Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.
- B. Inspector of Record, as specified in Section 01 45 33 Code-Required Special Inspections, will inspect installed reinforcement for conformance to contract documents before concrete placement.
- C. Defective Reinforcement Work: The following shall be considered defective and may be ordered to be removed and reconstructed at no change in Contract Time or Sum.
 - 1. Bars with kinks or bends not shown on Drawings.
 - 2. Bars injured due to bending or straightening.
 - 3. Bars heated or bent.
 - 4. Reinforcement not placed in accordance with Drawings and Specifications.
 - 5. Rusty or oily bars.

6. Bars exposed in surface of concrete or without adequate concrete cover.

END OF SECTION

SECTION 03 30 00 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete foundations and anchor bolts for pre-engineered structure.
- B. Joint devices associated with concrete work.
- C. Miscellaneous concrete elements, including equipment pads.
- D. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Section 03 10 00 Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 20 00 Concrete Reinforcing.
- C. Section 32 13 13 Site Concrete: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- B. ACI 301 Specifications for Concrete Construction.
- C. ACI 304R Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- D. ACI 305R Guide to Hot Weather Concreting.
- E. ACI 306R Guide to Cold Weather Concreting.
- F. ACI 308R Guide to External Curing of Concrete.
- G. ACI 318 Building Code Requirements for Structural Concrete.
- H. ASTM C33/C33M Standard Specification for Concrete Aggregates.
- Ι. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- ASTM C94/C94M Standard Specification for Ready-Mixed Concrete. J.
- K. ASTM C109/C109M Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens).
- L. ASTM C143/C143M Standard Test Method for Slump of Hydraulic-Cement Concrete.
- M. ASTM C171 Standard Specification for Sheet Materials for Curing Concrete.
- N. ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete.
- O. ASTM C827/C827M Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures.
- P. ASTM C881/C881M Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
- Q. ASTM C979/C979M Standard Specification for Pigments for Integrally Colored Concrete.

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- R. ASTM C1107/C1107M Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
- S. ASTM C1602/C1602M Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
- T. ASTM D2103 Standard Specification for Polyethylene Film and Sheeting.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 19 -Concrete: Design and Durability Requirements, and Chapter 26 - Construction Documents and Inspection.
 - a. Reports must include all the data as required to verify conformance with ACI 318, Section 5.2 and 5.3, and the following:
 - 1) Mix design identification number.
 - 2) Cement certification.
 - 3) Admixture data.
 - 4) Aggregate test data.
 - 3. Mix Design Review and Approval Process: An engineer from a DSA approved (LEA) testing laboratory shall review the mix design report and the design professional in responsible charge of the project shall approve the mix design.
 - Review by LEA Engineer: A qualified civil engineer associated with a DSA approved (LEA) testing laboratory shall review the report for conformance with ACI 318, Sections 5.2 and 5.3. He shall issue an evaluation report of findings and recommendation for either acceptance or rejection and forward his report to the design professional in responsible charge of the project.
 - b. Approval by the Project Engineer in Responsible Charge: Based on the findings and recommendation of the LEA engineer's evaluation report, the project design professional in responsible charge decides whether to accept or reject the mix design. He will issue a letter stating his acceptance or rejection. The letter shall be sent to DSA, and copied to the project inspector, the LEA laboratory, and the mix design engineer.
 - c. Documentation by the Concrete Supplier: The concrete supplier shall submit copies of the cement certification, fly ash certification of compliance or test data, admixture data, aggregate test data, and mix design identification number to the project inspector and the LEA engineer who reviewed the mix design report.

- 4. Mix Design: Submit mix designs prepared, stamped and signed by a Civil Engineer licensed in the State of California.
- D. Quality Control Submittals:
 - 1. Field tests: Submit reports of all slump, strength and air content tests as required by authorities having jurisdiction and as indicated on the Drawings and specified herein.
 - 2. Delivery tickets: Have available copies of delivery tickets complying with ASTM C94/C94M for each load of concrete delivered to site. Include on the tickets the additional information specified in the ASTM document.
- E. Test Reports: Submit report for each test or series of tests specified.
- F. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
 - 1. Maintain one copy of each document on site.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. Regulatory Requirements:
 - 1. Conform to California Building Code (CBC) Chapter 19A requirement, as amended and adopted by authorities having jurisdiction.
 - 2. Chemical products field-applied to concrete shall comply with applicable air quality requirements of authorities having jurisdiction.
 - a. Comply with Section 01 61 16 Volatile Organic Compound (VOC) Content Restrictions, CALGreen Section 5.504.4 Finish material pollutant control; 5.504.4.1 Adhesives, sealants and caulks; 5.504.4.3 Paints and coatings.
 - b. Comply with CALGreen Section A5.405.4 Recycled content.
 - c. Comply with CALGreen Section A5.406 Enhanced Durability and Reduced Maintenance.
- E. Testing Agency Services: District will engage an independent testing and inspection agency to conduct tests and perform other services specified for quality control during construction, as required by Section(s) 01 40 00 Quality Requirements and 01 45 33 Code-Required Special Inspections.
- F. Coordination: Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories. Coordinate concrete requirements with Work specified for underground utilities and mechanical and electrical equipment pads and bases.

1.06 DELIVERY AND HANDLING

- A. Protection During Concrete Placement: Provide protective coverings and runways, and use appropriate equipment and means of access to Work areas to avoid soiling or damage to existing conditions.
- B. Runoff: Prevent run off of water contaminated by construction agents and chemicals from soiling existing surfaces and from contaminating existing and future landscape areas.

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PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 10 00.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type II Moderate Portland type.
 - 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. Acquire aggregates for entire project from same source.
 - 2. Fine and coarse aggregates, CBC Title 24, Part 2.
 - 3. Concrete indicated to receive abrasive blast or retardeded finish: Design mix with uniform fine to coarse gradation of aggregates to produce evenly textured finish surface.
 - 4. Other than Structural Concrete: Conform to requirements for structural concrete.
- C. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

- A. Use no admixtures not included in mix design. Products of the following manufacturers are specified and will be acceptable provided they comply with referenced standards all other requirements of the Contract Documents:
- B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- C. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
 - 1. Products:
 - a. Euclid Chemical Company; ACCELGUARD 80: www.euclidchemical.com/#sle.
 - b. Or Equal Substitutions: See Section 01 60 00 Product Requirements.
- D. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
 - 1. Provide pigmented type, with ASTM C979/C979M inorganic pigments.
- E. Water Reducing Admixture: ASTM C494/C494M Type A.
 - 1. Products:
 - a. Euclid Chemical Company; EUCON NW: www.euclidchemical.com/#sle.
 - b. Or Equal Substitutions: See Section 01 60 00 Product Requirements.

2.05 ACCESSORY MATERIALS

- A. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. Grout: Comply with ASTM C1107/C1107M.

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- 2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
 - a. Maximum: Plus 4 percent.
 - b. Minimum: Plus 1 percent.
- 3. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
- 4. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
- 5. Products containing aluminum powder are not permitted.
- 6. Flowable Products:
 - a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
 - b. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; DURAGROUT: www.laticrete.com/our-products/concrete-constructionchemicals/#sle.
 - c. SpecChem, LLC; SC Precision Grout: www.specchemllc.com/#sle.
 - d. W. R. Meadows, Inc; 588-10K: www.wrmeadows.com/#sle.
 - e. W. R. Meadows, Inc; 1428 HP: www.wrmeadows.com/#sle.
 - f. Or Equal Substitutions: See Section 01 60 00 Product Requirements.
- 7. Low-Slump, Dry Pack Products:
 - a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
 - b. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; Duragrout: www.lmcc.com/#sle.
 - c. Or Equal Substitutions: See Section 01 60 00 Product Requirements.

2.06 BONDING AND JOINTING PRODUCTS

- A. Epoxy Bonding System:
 - 1. Complying with ASTM C881/C881M and of Type required for specific application.
 - 2. Products:
 - a. Adhesives Technology Corporation: www.atcepoxy.com/#sle.
 - b. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com/#sle.
 - c. Euclid Chemical Company; DURALFLEX GEL: www.euclidchemical.com/#sle.
 - d. Euclid Chemical Company; DURALFLEX LV: www.euclidchemical.com/#sle.
 - e. Euclid Chemical Company; DURAL 452 GEL, DURAL 452 LV, or DURAL 452 MV: www.euclidchemical.com/#sle.
 - f. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
 - g. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000, or SpecPoxy 3000FS: www.specchemllc.com/#sle.
 - h. W. R. Meadows, Inc; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000: www.wrmeadows.com/#sle.
 - i. Or Equal Substitutions: See Section 01 60 00 Product Requirements.
- B. Dowel Sleeves: Plastic sleeve for smooth, round, steel load-transfer dowels.

2.07 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
 - 1. Products:
 - a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
 - b. Euclid Chemical Company ; EUCOBAR: www.euclidchemical.com/#sle.
 - c. Nox-Crete Inc; Monofilm: www.nox-crete.com/#sle.
 - d. SpecChem, LLC; SpecFilm Concentrate or SpecFilm: www.specchemllc.com/#sle.
 - e. W. R. Meadows, Inc ; Evapre or Evapre-RTU: www.wrmeadows.com/#sle.
 - f. Or Equal Substitutions: See Section 01 60 00 Product Requirements.
- B. Moisture-Retaining Sheet: ASTM C171.
 - 1. Curing paper, regular.
 - 2. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
- C. Polyethylene Film: ASTM D2103, 4 mil, 0.004 inch thick, clear.
- D. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

- Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations and ACI 318.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- D. Normal Weight Concrete:
 - 1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
 - 2. Water-Cement Ratio: As indicated on Structural Drawings.
 - 3. Maximum Slump: 5 inches
 - 4. Maximum Aggregate Size: 1 inch.
 - a. Structural Concrete: Maximum size not larger than 1/5 of narrowest dimension between forms, 1/3 depth of slab nor 3/4 of minimum clear spacing between individual reinforcing bars.
 - b. Other than Structural Concrete: Conform to requirements for structural concrete.

2.09 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

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B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.
- B. Verify that concrete cover requirements are met in formwork construction and reinforcement placement.
- C. Verify that all embedded products and formed openings and recesses are correctly placed.

3.02 PREPARATION

- A. Verify that forms are clean and free of rust before applying release agent.
- B. Prepare previously placed concrete by cleaning with hydro-blasting or wet sand blasting to provide suitable surface for bonding. Provide minimum aggregate exposure of 1/4 inch.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.

3.03 CONCRETE MIXING

A. Concrete Mixing, General: Comply with ACI 318 as adopted by CBC, Title 24, Part 2, Chapter 19A and ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete. Introduce and mix admixtures in compliance with manufacturer's instructions and recommendations.

3.04 PLACING CONCRETE

- A. Notify District's Inspector and at least 2 working days in advance of placing concrete.
- B. Place concrete in accordance with ACI 304R.
 - 1. General: Comply with ACI 318 as adopted by CBC, Title 24, Part 2, Chapter19A and as follows:
 - a. Schedule continuous placement of concrete to prevent the formation of cold joints.
 - b. Deliver ready mix concrete in accordance with ASTM C94/C94M. Place concrete within 90 minutes after start of mixing.
 - c. Provide construction joints if concrete for a particular element or component cannot be placed in a continuous operation.
 - 1) Submit for review, proposed locations of joints prior to pouring. See Structural Drawings for additional requirements.

- d. Deposit concrete as close as possible to its final location, to avoid segregation.
- 2. Placement in Forms: Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
 - a. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
 - b. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.
 - c. Do not use vibrators to move concrete laterally.
- C. Hot Weather Placement: Comply with recommendations of ACI 305R when ambient temperature before, during, or after concrete placement is expected to exceed 90 deg F or when combinations of high air temperature, low relative humidity, and wind speed are such that the rate of evaporation from freshly poured concrete would otherwise exceed 0.2 lbs./SF/Hr..
 - 1. Use evaporation reducer.
 - 2. Do not add water to approved concrete mixes under any conditions.
 - 3. Provide mixing water at lowest feasible temperature, and provide adequate protection of poured concrete to reduce rate of evaporation.
 - 4. Use fog nozzle to cool formwork and reinforcing steel immediately prior to placing concrete.
- D. Cold-Weather Placement: Comply with provisions of ACI 306R when air temperature has fallen to or is expected to fall below 40 deg F. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. Uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- E. Notify Architect not less than 24 hours prior to commencement of placement operations.
- F. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- G. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

3.05 CONCRETE FINISHING

- A. Repair surface defects, immediately after removing formwork.
 - 1. Remove honeycombed areas and other defective concrete down to sound concrete, cutting perpendicular to surface or slightly undercutting without damaging reinforcement. Dampen patch location and area immediately surrounding it prior to

applying bonding compound or patching mortar.

2. Before bonding compound has dried, apply patching mixture matching original concrete in materials and mix except for omission of coarse aggregate, and using a blend of white and normal portland cement as necessary to achieve color match. Consolidate thoroughly and strike off slightly higher than surrounding surface.

3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than seven days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

3.07 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of Work specified in other Sections, after such Work is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work. Us non-shrink grout where required or indicated.
- B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 Quality Requirements.
- B. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- C. Provide free access to concrete operations at project site and cooperate with appointed firm.
- D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- E. Field Certifications: For all concrete, provide signed copy of batch plant's certificate stating quantity of each material, amount of water, admixtures, departure time and date accompanying each load of materials or concrete.
- F. Field Tests of Concrete: Perform tests in accordance with applicable California Building Code requirements, ACI 301 and requirements of authorities having jurisdiction.
- G. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- H. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure four concrete test cylinders. Obtain test samples for every 2,000 sq ft 50 cu yd or less and structural concrete of each class of concrete placed (CBC requirement).
 - 1. Test one cylinder at 7 days and two at 28 days after placement.

- 2. Maintain fourth cylinder to be tested at 56 days only if 28-day test fails to meet strength requirement.
- 3. Take one additional test cylinder during cold weather concreting and cure it at job site under same conditions as concrete it represents. Test cold weather cylinder at 28 days.
- I. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- J. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.09 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
 - 1. Obtain repair details from Architect (Structural Engineer) and approved by DSA before proceeding.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.10 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.
- B. Protect concrete from marring and damage due to weather and construction activities.
 - 1. Protective measures shall include providing temporary coverings, and be in accordance with Section 01 50 00 Temporary Facilities and Controls, and shall prohibit all non-essential construction activities, including cleaning and maintenance of construction equipment.
 - 2. In particular, protect concrete floor slabs from oil, paint and other products that might penetrate and degrade concrete surface.

END OF SECTION

SECTION 05 50 00 METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated steel items.
- B. Requirements for materials and equipment for post-installed mechanical and adhesive anchors in concrete.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

1.03 REFERENCE STANDARDS

- A. ACI 318 Building Code Requirements for Structural Concrete.
- B. ACI 355.4 Qualification of Post-Installed Adhesive Anchors in Concrete.
- C. ACI 440.2R Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures.
- D. AISC 201 AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures.
- E. ASTM A193/A193M Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
- F. ASTM A36/A36M Standard Specification for Carbon Structural Steel.
- G. ASTM A510/A510M Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel.
- H. ASTM A53/A53M Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- I. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- J. ASTM A307 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- K. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- L. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- M. ASTM A653/A653M Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- N. ASTM A1011/A1011M Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
- O. ASTM B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

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- P. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.
- Q. ASTM F3125/F3125M Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- R. ASTM F594 Standard Specification for Stainless Steel Nuts.
- S. AWS A2.4 Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- T. AWS B2.1/B2.1M Specification for Welding Procedure and Performance Qualification.
- U. AWS D1.1/D1.1M Structural Welding Code Steel.
- V. AWS D1.2/D1.2M Structural Welding Code Aluminum.
- W. IAS AC172 Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172.
- X. SSPC-PA 1 Shop, Field, and Maintenance Coating of Metals.
- Y. SSPC-Paint 15 Steel Joist Shop Primer/Metal Building Primer.
- Z. SSPC-Paint 20 Zinc-Rich Coating (Type I Inorganic, and Type II Organic).
- AA. SSPC-SP 5 White Metal Blast Cleaning.
- BB. SSPC-SP 6 Commercial Blast Cleaning.
- CC. SSPC-SP 10 Near-White Metal Wet Abrasive Blast Cleaning.
- DD. SSPC-SP 2 Hand Tool Cleaning.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. ICC ES Reports: If requested, ICC Evaluation Service report indicating conformance with ICC-ES Acceptance Criteria.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172 or AISC 201.

1.05 QUALITY ASSURANCE

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.
- Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172 or AISC 201.
- C. Welder's Qualifications:

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- 1. Welding shall be performed by certified welders qualified in accordance with procedures specified in applicable referenced AWS standard, using materials, procedures and equipment of the type required for the Work.
- 2. Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone re-certification.
- D. Testing Agency Qualifications: An independent agency qualified according to ASTM E329 and Section 01 45 33 for testing indicated.
- E. Installer Training: Prior to beginning the work, manufacturer or manufacturer's representative shall provide on-site training for all contractor's personnel who will be installing anchors.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Conform to applicable requirements of California Building Code (CBC), Title 24, Part 2, as amended and adopted by authorities having jurisdiction.
 - 1. Comply with Title 24, Part 9, California Fire Code Chapter 35 "Welding and Other Hot Work."

2.02 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M, for channels, angles and plates.
- B. Steel Tubing: ASTM A500/A500M Grade B cold-formed structural tubing.
- C. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- D. Slotted Channel Framing: ASTM A653/A653M, Grade 33.
- E. Slotted Channel Fittings: ASTM A1011/A1011M.
- F. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
- G. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain; or ASTM A325N.
- H. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- I. Screws: ASTM A510/A510M, Grade 1018 and 1022,
- J. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
 - 1. Provide Type ER70S-6, Grade E70XX-low hydrogen electrodes for shielded metal arc welding.
- K. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
 - 1. Comply with SSPC-PA 1. Coordinate with requirements specified in Section 09 91 13 -Exterior Painting and 09 91 23 - Interior Painting .
 - a. Coordinate primer with finish paint and coating, as applicable, to provide sound foundation for field-applied topcoats despite prolonged exposure during construction.
- L. Galvanize all exterior steel members to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.

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2.03 FABRICATION

- A. Ferrous Metal Surfaces, General:
 - 1. For metal fabrications exposed to view upon completion of the Work: Provide ferrous metals materials selected for their surface flatness, smoothness, and freedom from surface blemishes.
 - 2. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.
- B. Hot-dip galvanize fabricated ferrous items, indicated as remaining unpainted, after fabrication. Field connections shall be bolted or screwed where possible. Avoid field cutting and welding which damage galvanized coating.
- C. Fit and shop assemble items in largest practical sections, for delivery to site.
- D. Fabricate items with joints tightly fitted and secured.
- E. Gas cutting of non-structural steel items may be acceptable where stress is not transmitted through flame-cut surfaces.
 - 1. Make cuts clean and to contour.
 - 2. Deduct 1/8 inch from effective width of members cut by torch.
- F. Continuously seal joined members by intermittent welds and plastic filler.
- G. Joints Exposed to Weather or Water: Fabricate to keep water out, or provide adequate drainage of water that penetrates.
- H. Steel Tubing and Piping Fabrication: Unless otherwise indicated, close ends with plate stock so no exposed ends of tubing and piping. Grind all edges.
- I. Connections, General:
 - 1. Component parts of built-up members shall be well-pinned with closely-fitted contact.
 - 2. Conceal connections where possible.
 - 3. Otherwise, make countersinks for concealment after fabrication, except where noted.
- J. Welding: Conform to AWS D1.1/D1.1M recommendations.
 - 1. Do not field weld galvanized components to remain unfinished.
 - 2. Provide continuous welds at welded corners and seams.
 - 3. Grind exposed welds smooth and flush with base material.
 - 4. Re-weld to fill holes. Putties and fillers are not acceptable.
- K. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- L. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
 - 1. Bolted and Screwed Connections:
 - a. Provide holes and connections for work specified in other Sections.

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- b. Use bolts for field connections only.
- c. Provide washers under heads and nuts bearing on wood.
- d. Draw all nuts tight and nick threads of permanent connections.
- e. Use beveled washers where bearing is on sloped surfaces.
- f. Where screws must be used for permanent connections in ferrous metal, use flat head type, countersunk, with screw slots filled and finished smooth and flush.
- M. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

- A. Rough Hardware
 - 1. Provide bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as indicated on Drawings.
- B. Other Products and Fabrications
 - 1. Other Products and Fabrications: Provide all materials not specifically described but required for a complete and proper installation, as selected by the Contractor, subject to review and acceptance by Construction Manager and Architect.
- C. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; electro-galvanized per ASTM B633 Type III, SC 1 finish.

2.05 POST INSTALLED CONCRETE ANCHORS

- A. Manufacturers:
 - 1. Manufacturers: Provide products as indicated on the approved Structural Drawings.
 - 2. Substitutions: Substitutions of products from manufacturer's not listed are not permitted.
 - a. Substitution of structural anchors requires structural calculations and DSA approval.
- B. Materials:
 - 1. Conform to ACI 355.4 and ICC ER Report.
 - 2. Interior Use: For use in conditioned environments free from potential moisture, provide zinc plated carbon steel anchors.
 - 3. Exterior Use:
 - a. In exposed or potentially wet environments, and for attachment of exterior cladding materials, provide stainless steel anchors.
 - b. Stainless steel nuts and washers shall be of matching alloy group of equal or greater strength than the rod.
 - c. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 - 4. Deformed Reinforcing Bars: Deformed steel rebar conforming to ASTM A615/A615M Grade 60. Permissible sizes as described in each adhesive products ICC report.
- C. Mechancial Anchors:

- 1. Expansion, screw or undercut anchors having current ICC approval for use in cracked and uncracked concrete, with a published ICC Evaluation Service report.
 - a. Type and size as indicated on drawings.
- 2. Basis of Design Approved Products conforming to this specification are acceptable for anchoring to concrete are as indicated on Drawings:
 - a. Hilti, Inc. Tulsa, OK; Hilti Kwik Bolt TZ2 Carbon and Stainless Steel Anchors in Cracked and Uncracked Concrete (ICC Report ESR-4266); www.us.hilti.com.
- D. Adhesive Anchors:
 - 1. Cartridge Injection Adhesive Anchors: Threaded carbon steel rod, inserts, or reinforcing dowels complete with required nuts, washers, adhesive system and manufacturer's installation instructions.
 - a. Type and size as indicated on drawings.
 - b. Current ICC approval for use in cracked and uncracked concrete with a published ICC Evaluation Service report required.
 - 2. Interior Use: Unless otherwise indicated on the Drawings, provide:
 - a. Carbon steel threaded rods conforming to specification as indicated on structural drawings. Where no specification and grade are indicated, provide: ASTM A193/A193M Type B7 with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 - 3. Exterior Use: As indicated on the Drawings, provide stainless steel anchors.
 - a. Stainless steel anchors shall be AISI Type 304 and Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener.
 - b. All nuts shall conform to ASTM F594, unless otherwise specified.
 - 4. Basis of Design Approved Products conforming to this specification are acceptable for anchoring to concrete are as indicated on Drawings:
- E. Power-Driven/Powder Actuated Fasteners
 - 1. Use only if approved by Architect, generally not permitted where not specifically indicated or in load-bearing installations; as indicated on Drawings.
 - a. Substitutions: See Section 01 60 00 Product Requirements.

2.06 FINISHES - STEEL

- A. Mechanical Finishes: Complete finishing prior to fabrication wherever possible.
 - 1. After fabrication, finish all joints, bends, abrasions, and other surface blemishes to match finish.
 - 2. Protect finish on exposed surfaces by using temporary protective covering.
- B. Prime paint steel items.
 - 1. Exceptions: Galvanize items to be embedded in concrete.
 - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

- C. Prepare surfaces to be primed in accordance with SSPC-SP2.
 - 1. Exterior fabrications: Clean in accordance with SSPC-SP 5, SSPC-SP 6, 8, or SSPC-SP 10.
- D. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- E. Prime Painting: One coat.
- F. Galvanizing of Structural Steel Members: Galvanize all exterior steel members after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- G. Galvanizing of Non-structural Items: Galvanize all exterior steel membersafter fabrication to ASTM A123/A123M requirements.

2.07 FABRICATION TOLERANCES

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.
- F. Punch, drill and reaming in manner to leave clean, true lines and surfaces.
 - 1. Oversize hole 1/16 inch by punching, when material thickness is equal to or less than bolt diameter plus 1/8 inch.
 - 2. Sub-punch 1/16 inch smaller than bolt and drill or ream to oversize by 1/16 inch, when material thickness is thicker than bolt diameter plus 1/8 inch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Field Inspection of Fabricated Products: Prior to installation, inspect products for damage and verify markings and dimensions against reviewed submittals.
- C. Environmental Conditions: Do not install products intended for interior locations when spaces are uncovered and unprotected from inclement weather.
- D. Coordination: Coordinate metal fabrications Work with Work specified in other Sections so that related Work shall be accurately and properly joined.
- E. Post Installed Anchors
 - 1. Verification of Conditions
 - a. Base Material Strength: Unless otherwise specified, do not drill holes in concrete until concrete has achieved full design strength.
 - b. Temperature of concrete surface and ambient air temperature must meet manufacturer's requirements prior to use of adhesive anchor products.
 - c. Embedded Items:

- 1) Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors.
- 2) Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items.
- 3) Take precautions as necessary to avoid damaging anything embedded in the concrete including electrical/telecommunications conduit, gas pipes, and plumbing pipes.
- 4) Notify the Architect if reinforcing steel or other embedded items are encountered during drilling.
- d. Beginning of installation indicates acceptance of existing conditions.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete.
- C. Make provision for erection loads with temporary bracing. Keep work in alignment.
- D. Obtain Architect's review prior to site cutting or making adjustments not indicated on Drawings and reviewed shop drawings.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
 - 1. Touch up galvanized steel with cold galvanizing compound.

3.04 INSTALLATION OF POST-INSTALLED ANCHORS

- A. Installation shall comply with all manufacturer's instructions and current ICC ESR report.
- B. Post-Installed Anchors in Hardened Concrete.
 - 1. Drilled-in anchors and/or powder driven pins in existing non-prestressed reinforced concrete: use care and caution to avoid cutting or damaging the existing reinforcing bars.
 - 2. Maintain a minimum clearance of one inch between the reinforcement and the drilled-in anchor and/or pin.
- C. Manufacturer shall provide on-site training for all personnel who will be installing postinstalled adhesive anchors at the beginning of the work. Installation of anchors must be performed by a certified installer.

- D. Where manufacturer recommends use of special tools for installation of anchors, such tools shall be used, unless otherwise permitted specifically by the Engineer.
- E. Drill holes with rotary impact hammer drills using carbide-tipped bits. Bits must be of type required and permitted by ICC ESR report.
 - 1. Drill holes with rotary impact hammer drills using carbide-tipped bits or core drills using diamond core bits.
 - 2. Drill bits shall be of diameters as specified by the anchor manufacturer.
 - 3. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
 - 4. Where anchors are to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer.
 - 5. Cored holes may only be used if acceptable to the Engineer and in compliance with ICC ESR report.
- F. Holes shall be cleared of debris after holes are drilled per manufacturer's instructions.
 - 1. For adhesive installations, at a minimum, holes shall be blown out with oil-free compressed air and shall be brushed with a wire or nylon brush.
 - 2. Holes shall than be blown out one additional time with oil-free compressed air.
 - 3. Additional hole cleaning requirements may be required by manufacturer and ICC ESR Report.
- G. During adhesive curing time period, the temperature of the substrate shall be kept above the minimum substrate temperature as defined by the manufacturer. Contractor shall determine the appropriate means and methods to ensure that the temperature is kept above the required minimum temperature required before adhesive installation is begun.

3.05 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.06 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 45 33 Code-Required Special Inspections.
- B. Inspection: Special inspection of post-installed anchors shall be provided as required by the ICC-ES report for that anchor and not less than the requirements of the Structural Drawings and the following (whichever is the most restrictive):
 - 1. Continuously observe the installation of all anchors, or as specified in the ICC report.
 - a. Minimum anchor embedments, proof loads and torques shall be as shown on the Drawings.
 - b. Load Testing: Per Structural General Notes on Drawings.
 - c. Verify anchor type, anchor dimensions, hole dimensions, anchor spacing, edge distances, anchor embedment and adherence to the manufacturer's published installation instructions.

- d. For adhesive anchors also verify hole cleaning technique, adhesive expiration date and proper mixing and dispensing.
- 2. Subsequent inspection of installation will be required when there is a change of personnel doing the installation. Change is defined as any one or more persons drilling or preparing holes, or installing anchors.
- 3. Visually inspect 100% of all installed anchors.
- C. Reporting:
 - 1. Daily reports shall reference the applicable ICC-ES report number, indicate that all specified criteria were complied with and provide itemized verification of all inspected items.
 - 2. Special Inspector shall immediately report any deviations from the requirements to the Architect.
- D. Defective Work:
 - 1. Installations that are not accepted by the Special Inspector shall be considered defective.
 - 2. Provide additional testing and inspection to determine acceptability of defective work, as directed by the Architect at Contractor's expense.

3.07 REPAIR OF DEFECTIVE WORK

- A. Remove and replace misplaced, defective or malfunctioning anchors at Contractor's expense. Replacement of anchors requires signed structural detail, unless otherwise noted.
- B. Fill empty anchor holes and patch failed anchor locations with high-strength, non-shrink nonmetallic grout.

END OF SECTION

SECTION 07 92 00 JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.
- D. District-provided field quality control.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

1.03 REFERENCE STANDARDS

- A. ASTM C661 Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.
- B. ASTM C920 Standard Specification for Elastomeric Joint Sealants.
- C. ASTM C1193 Standard Guide for Use of Joint Sealants.
- D. ASTM C1330 Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- E. ASTM C1521 Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
 - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
 - 2. List of backing materials approved for use with the specific product.
 - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

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- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.
- F. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- D. District will employ an independent testing agency to perform the field quality control inspection and testing as referenced in PART 3 of this section and as follows, to prepare and submit the field quality control plan and log, and to provide recommendations of remedies in the case of failure.
 - 1. Contractor shall cooperate with testing agency and repair failures discovered and destructive test location damage.
- E. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.

1.06 WARRANTY

- A. See Section 01 78 00 Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
 - 1. Adhesives Technology Corporation: www.atcepoxy.com.
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Dow Corning Corporation: www.dowcorning.com/construction/sle.
 - 4. Fortifiber Building Systems Group: www.fortifiber.com/sle.
 - 5. Hilti, Inc: www.us.hilti.com/#sle.
 - 6. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us/#sle.
 - 7. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com/sle.
 - 8. Pecora Corporation: www.pecora.com.
 - 9. QUIKRETE Companies: www.quikrete.com/#sle.

- 10. Sherwin-Williams Company: www.sherwin-williams.com.
- 11. Sika Corporation: www.usa-sika.com.
- 12. Specified Technologies Inc: www.stifirestop.com/#sle.
- 13. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
- 14. W.R. Meadows, Inc: www.wrmeadows.com/sle.
- 15. Substitutions: See Section 01 60 00 Product Requirements.
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
 - 1. Adhesives Technology Corporation: www.atcepoxy.com.
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Dayton Superior Corporation: www.daytonsuperior.com.
 - 4. Dow Corning Corporation: www.dowcorning.com/construction/sle.
 - 5. Master Builders Solutions by BASF: www.master-builders-solutions.basf.us/en-us/#sle.
 - 6. Pecora Corporation: www.pecora.com.
 - 7. QUIKRETE Companies: www.quikrete.com/#sle.
 - 8. Sherwin-Williams Company: www.sherwin-williams.com.
 - 9. Sika Corporation: www.usa-sika.com.
 - 10. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
 - 11. W.R. Meadows, Inc: www.wrmeadows.com/sle.
 - 12. Substitutions: See Section 01 60 00 Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

- A. Scope:
 - 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
 - 2. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.

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- e. Joints between suspended panel ceilings/grid and walls.
- B. Type CP-1 Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.

2.03 JOINT SEALANTS - GENERAL

- A. Sealants and Primers: Provide products with levels of volatile organic compound (VOC) content as indicated in Section 01 61 16.
- B. Colors: As indicated on the drawings. Match adjacent surface.

2.04 NONSAG JOINT SEALANTS

- A. Type ST-1 Silyl-Terminated Polyether (STPE) and Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 35 percent, minimum.
 - 2. Hardness Range: 20 to 40, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: To be selected by Architect from manufacturer's full range.
 - 4. Service Temperature Range: Minus 40 to 180 degrees F.
 - 5. Manufacturers:
 - a. Sherwin-Williams Company; Stampede 100 Low-Modulus Hybrid Urethane Sealant: www.sherwin-williams.com/#sle.
 - b. Substitutions: See Section 01 60 00 Product Requirements.
- B. Type PS-1 Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
 - 1. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
 - 2. Color: To be selected by Architect from manufacturer's full range.
 - 3. Service Temperature Range: Minus 40 to 180 degrees F.
 - 4. Manufacturers:
 - a. Master Builders Solutions by BASF; MasterSeal NP1: www.master-builders-solutions.basf.us/en-us/#sle.
 - b. Sherwin-Williams Company; Stampede-1/-TX Polyurethane Sealant: www.sherwin-williams.com/#sle.
 - c. Sika Corporation; Sikaflex-1a: www.usa-sika.com/#sle.
 - d. Sika Corporation; Sikaflex-15 LM: www.usa-sika.com/#sle.
 - e. W. R. Meadows, Inc; POURTHANE NS: www.wrmeadows.com/#sle.
 - f. Substitutions: See Section 01 60 00 Product Requirements.
- C. Non-Sag "Traffic-Grade" Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; explicitly approved by manufacturer for continuous water immersion and traffic without the necessity to recess sealant below traffic surface.
 - 1. Movement Capability: Plus and minus 25 percent, minimum.
 - 2. Hardness Range: 40 to 50, Shore A, when tested in accordance with ASTM C661.

- 3. Color: To be selected by Architect from manufacturer's full range.
- 4. Service Temperature Range: Minus 40 to 180 degrees F.

2.05 SELF-LEVELING SEALANTS

- A. Self-Leveling Silicone Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent, explicitly approved by manufacturer for traffic exposure when recessed below traffic surface; not expected to withstand continuous water immersion.
 - 1. Movement Capability: Plus 100 percent, minus 50 percent, minimum.
 - 2. Hardness Range: 0 to 15, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: To be selected by Architect from manufacturer's full range.
 - 4. Service Temperature Range: Minus 40 to 180 degrees F.
 - 5. Manufacturers:
 - a. Sika Corporation; Sikasil 728SL: www.usa-sika.com/#sle.
 - b. Substitutions: See Section 01 60 00 Product Requirements.
 - 6. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
 - 7. Color: To be selected by Architect from manufacturer's full range.
 - 8. Service Temperature Range: Minus 40 to 180 degrees F.
 - 9. Manufacturers:
 - a. Pecora Corporation: www.pecora.com.
 - b. Sherwin-Williams Company; Stampede 1SL Polyurethane Sealant: www.sherwinwilliams.com/#sle.
 - c. Sika Corporation; Sikaflex-1c SL: www.usa-sika.com/#sle.
 - d. Substitutions: See Section 01 60 00 Product Requirements.
- B. Self-Leveling Polysulfide Sealant: ASTM C920, Grade P, Uses M and A; multicomponent; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
 - 1. Movement Capability: Plus and minus 25 percent.
 - 2. Hardness Range: 30 to 55, Shore A, when tested in accordance with ASTM C661.
 - 3. Color: To be selected by Architect from manufacturer's full range.
 - 4. Service Temperature Range: Minus 40 to 180 degrees F.
 - 5. Manufacturers:
 - a. W.R. Meadows, Inc; Deck-O-Seal (pourable): www.wrmeadows.com/#sle.
 - b. Substitutions: See Section 01 60 00 Product Requirements.
- C. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.
 - 1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.
 - 2. Manufacturers:
 - a. ARDEX Engineered Cements; ARDEX ARDIFIX: www.ardexamericas.com/#sle.

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b. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
 - 1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type C Closed Cell Polyethylene.
 - 2. Type for Joints Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type B Bi-Cellular Polyethylene.
 - 3. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.
- D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.
 - 1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
 - 2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
 - 3. Record each test on Preinstallation Adhesion Test Log as indicated.
 - 4. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
 - 5. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

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D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
 - 1. Width/depth ratio of 2:1.
 - 2. Neck dimension no greater than 1/3 of the joint width.
 - 3. Surface bond area on each side not less than 75 percent of joint width.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

3.04 FIELD QUALITY CONTROL

- A. District will employ an independent testing agency to perform field quality control inspection and testing as specified in PART 1 under QUALITY ASSURANCE article.
- B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.
- C. Destructive Adhesion Testing: If there are any failures in first 1000 linear feet, notify Architect immediately.
- D. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.
- E. Repair destructive test location damage immediately after evaluation and recording of results.

END OF SECTION

SECTION 10 14 00 SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room and door signs.

1.02 REFERENCE STANDARDS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. ASTM D1187/D1187M Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.

1.03 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
 - 2. When content of signs is indicated to be determined later, request such information from District through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 3. Submit for approval by District through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- F. Verification Samples: Submit samples showing colors specified.
- G. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
- H. Manufacturer's Qualification Statement.
- I. Maintenance Materials: Furnish the following for District's use in maintenance of project.
 - 1. See Section 01 60 00 Product Requirements, for additional provisions.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flat Signs:
 - 1. ASI Sign Systems, Inc.: www.asisignage.com.
 - 2. Best Sign Systems, Inc: www.bestsigns.com.
 - 3. Cosco Industries (ADA signs): www.coscoarchitecturalsigns.com/#sle.
 - 4. Cosco Industries (non-ADA signs): www.coscoarchitecturalsigns.com/#sle.
 - 5. FASTSIGNS: www.fastsigns.com/#sle.
 - 6. Inpro: www.inprocorp.com/#sle.
 - 7. Mohawk Sign Systems, Inc: www.mohawksign.com.
 - 8. Seton Identification Products: www.seton.com/aec.
 - 9. Substitutions: See Section 01 60 00 Product Requirements.

2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with ADA Standards and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
 - 1. Requirements for Persons with Disabilities: Provide identifying devices meeting the requirements for the physically disabled of the following codes:
 - a. California Building Code (CBC) Title 24, Part 2; Chapter 11B, Accessibility.
 - b. Code of Federal Regulations 36 CFR 1191 Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.
 - c. Accessible Means of Egress Signage: CBC 1009.
 - 1) Two-Way Communications Signage: CBC 1009.8
 - (a) Provide at the landing of each elevator or bank of elevators on each accessible floor, one or more stories above or below the level of exit discharge. Coordinate content with system provider. CBC 1009.11
 - 2) When included, provide Area of Refuge Signage indicating special accessibility provisions as shown: CBC 1009.9

- (a) Each door providing access to an area of refuge from an adjacent floor area shall be identified by a sign stating: AREA OF REFUGE.
- (b) Each door providing access to an exterior area for assisted rescue shall be identified by a sign stating: EXTERIOR AREA FOR ASSISTED RESCUE.
- (c) Comply with Chapter 11B, Section 11B-703.5, as applicable, requirements for visual characters and include the International Symbol of Accessibility.
- (d) Where exit sign illumination is required by Section 1013.3, the signs shall be illuminated.
- (e) Locate at each door to an area of refuge and exterior area for assisted rescue in accordance with Section 1013.4, signage with visual characters, raised character and braille complying with Chapter 11B, Sections 11B-703.1, 11B-703.2, 11B-703.3 and 11B-703.5.
- (f) Provide International Symbol of Accessibility to comply with Chapter 11B, Section 11B-703.
- 3) Directional Signage: CBC 1009.10.
 - (a) Provide directional signage complying with Chapter 11B, Section 11B-703.5 indicating the location of all other means of egress and which are accessible means of egress:
 - (1) At exits serving a required accessible space but not providing an approved accessible means of egress.
 - (2) At elevator landings.
 - (3) Within areas of refuge.
- 2. Raised characters shall comply with CBC 11B-703.2.
 - a. Depth: It shall be 1/32 inch minimum above their background and shall be sans serif uppercase and be duplicated in Braille.
 - b. Height: It shall be 5/8 inch minimum and 2 inches maximum based on the height of the uppercase letter "I". CBC Section 11B-703.2.5
 - c. Finish and contrast: Characters and their background shall have a non-glare finish. Character shall contrast with their background with either light characters on a dark background or dark characters on a light background. CBC Section 11B-703.5.1
 - d. Proportions: It shall be selected from fonts where the width of the uppercase letter "0" is 60 % minimum and 110 % maximum of the height of the uppercase letter "I". Stroke thickness of the uppercase letter "I" shall be 15% maximum of the height of the character. CBC Sections 11B-703.2.4 and 11B-703.2.6; If characters are both visual and raised, provide stroke width min. 10% and max. 15% of the character "I".
 - e. Character Spacing: Spacing between individual tactile characters shall comply with CBC Section 11B-703.2.7.
 - 1) 11B-703.2.8 Line spacing. Spacing between the baselines of separate lines of raised characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.
 - f. Format: Text shall be in a horizontal format. CBC 11B-703.2.9.
 - g. Braille: It shall be contracted (Grade 2) and shall comply with CBC Sections 11B-703.3 and 11B-703.4. Braille dots shall have a domed and rounded shape and

shall comply with CBC Table and Figure 11B-703.3.1.

- h. Mounting height: Tactile sign on signs shall be located 48 inches minimum to the baseline of the lowest Braille cells and 60 inches maximum to the baseline of the highest line of raised characters above the finish floor or ground surface. CBC Section and Figure 11B-703.4.1.
- i. Mounting location: A tactile sign shall be located per CBC Section and Figure 11B-703.4.2 as follows:
 - 1) alongside a single door on the latch side.
 - 2) on the inactive leaf of a double door with one active leaf.
 - 3) to the right of the right hand door at double doors with two active leafs.
 - 4) on the nearest adjacent wall where there is no wall space at the latch side of a single door or at the right side of double doors with two active leafs.
 - 5) so that a clear floor space of 18 x 18 inch minimum, centered on the tactile characters, is beyond the arc of any door swing between the closed position and 45 degree open position.
- j. Visual characters shall comply with CBC Section 11B-703.5 and shall be 40 inches minimum above finish floor or ground.
 - Visual character stroke thickness of the uppercase letter "I" shall be 10 % minimum and 20% maximum of the height of the character. CBC Section 11B-703.5.7
- k. Pictograms shall comply with CBC Section 11B-703.6.
- I. Symbol of accessibility shall comply with CBC Section 11B-703. 7.
- m. Variable message signs shall comply with CBC Section 11B-703.8.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
 - 1. Sign Type: Flat signs with injection molded or etched panel media as specified.
 - 2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
 - 3. Character Height: 1 inch.
 - 4. Sign Height: 3 inches, unless otherwise indicated.
 - 5. Doors: Identify with room numbers to be determined later, not the numbers indicated on drawings.
 - 6. Conference and Meeting Rooms: Identify with room numbers to be determined later, not the numbers indicated on drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.
 - 7. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
 - 8. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers to be determined later, and braille.
 - a. Identify all single user toilet facilities as gender neutral facilities by a door symbol that complies with CBC Sections 11B-216.8 and 11B-703.7.2.6.3.
 - 1) No pictogram, text, or braille is required.

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- 2) Tactile jamb signage shall comply with appropriate technical requirements of CBC Section 11B-703.
 - (a) Examples of appropriate designations are "ALL-GENDER RESTROOM", "RESTROOM", or "UNISEX RESTROOM". DSA BU-17.
 - (b) Provide "RESTROOM" as the signage text, unless indicated otherwise on Drawings.
- 3) See Drawings for actual sign to be provided.
- b. Geometric Symbols: The symbol color shall contrast with door or wall.
 - 1) Comply with CBC 11B-216.8.1 at the entrances to toilet and bathing rooms.
 - 2) Comply with CBC 11B-703.7.2.6.
 - (a) Men's: An equilateral triangle, ¼ inch thick edges with edges 12 inches long and a vertex pointing upward.
 - (b) Women's: A circle, ¼ inch thick and 12 inches in diameter.
 - (c) Unisex: A circle, ¼ inch thick and 12 inches in diameter with a equilateral triangle, ¼ inch thick edges with edges 12 inches long and a vertex pointing upward, superimposed on and geometrically inscribed within the circle and within the 12 inch diameter. The vertex of the triangle shall be located ¼ inch from the edge of the circle. The triangle shall contrast with the circle symbol, either light on a dark background or dark on a light background. The circle symbol shall contrast with the door.
 - (1) No pictogram is to be provided.
 - (d) Mount within 1 inch of the centerline of the door at minimum 58 inches and 60 inches maximum from the centerline of the symbol to the finished floor surface.
- 9. Exits: Provide raised character and Braille exit signs per CBC Section 1013.4 at the following locations:

Location	Text	
Grade level exit	door	EXIT
Exit door to exit	stair	EXIT STAIR DOWN.
Exit door to exit	ramp	EXIT RAMP DOWN.

- C. Emergency Evacuation Maps:
 - 1. Allow for one map per building.
 - 2. Map content to be provided by District.
 - 3. Use clear plastic panel silk-screened on reverse, in brushed aluminum frame, screwmounted.

2.03 SIGN TYPES

- A. Flat Signs: Signage media without frame.
 - 1. Edges: Square.
 - 2. Corners: Square.

- 3. Clear Cover: For customer produced sign media, provide clear cover of polycarbonate plastic, glossy on back, non-glare on front.
- 4. Wall Mounting of One-Sided Signs: Tape adhesive.
 - a. Provide visually matching back plate when mounted on a glass surface.
- B. Color and Font: Unless otherwise indicated:
 - 1. Character Font: Helvetica, Arial, or other sans serif font.
 - 2. Character Case: Upper case only.
 - 3. Background Color: As scheduled.
 - 4. Character Color: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

- A. Engraved Panels: Laminated colored plastic; engraved or photopolymer etched through face to expose core as background color:
 - 1. Interior Basis of Design Product: InTouch[™] ADA-Ready[™] Sign System with requirements indicated for materials, thickness, finish colors, designs, shapes, sizes and details as manufactured by ASI Sign Systems, Inc., or approved equal.
 - 2. Total Thickness: 1/8 inch, matte finished acrylic.
 - 3. Fabrication:
 - a. Tactile Graphics and Text:
 - Fabrication process: Provide tactile copy and grade 2 Braille raised 1/32 inch minimum from plaque first surface by manufacturer's photopolymer bonded process. Sign face of single material, tactile characters and Braille integral to photopolymer. Adhesive-fixed characters are not acceptable.
 - 2) Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position, and colors. Tactile characters to be raised min. 1/32 inch from surface. Computerized translation of sign copy to be responsibility of the manufacturer.
 - b. Letter style[s], color[s], letter size[s] and layout position:
 - 1) As selected by Architect from manufacturer's standard letter style and color charts.
 - c. Text Schedule: As indicated on Drawings.
 - d. Tactile Lettering and Graphics Color Options: As selected by Architect from manufacturer's standard colors.
 - e. Mounting Panel Options:
 - 1) Size:
 - (a) Same size.
 - f. Background Appearance Options:
 - 1) Solid color[s]: As selected by Architect from manufacturer's standard colors.
 - 2) Subsurface custom graphics.

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- g. Overall panel size: As indicated on Drawings.
- h. Shape: As indicated on Drawings.
- B. Etched Metal Panels: Zinc based panel etched through face to expose core as background color:
 - 1. Exterior Basis of Design Product: SignEtch[™] ADA-Ready[™] Sign System with requirements indicated for materials, thickness, finish colors, designs, shapes, sizes and details as manufactured by ASI Sign Systems, Inc., or approved equal.
 - 2. Total Thickness: 1/8 inch.
 - 3. Paint: Primer and urethane based color coat, of type standard with manufacturer.
 - a. U.V. resistant clear urethane top coat required for exterior applications.
 - 4. Fabrication:
 - a. Tactile Graphics and Text:
 - 1) Fabrication process: Provide tactile copy and grade 2 Braille raised 1/32 inch minimum from plaque first surface by manufacturer's photochemical etching.
 - 2) Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position, and colors.
 - b. Letter style[s], color[s], letter size[s] and layout position:
 - 1) As selected by Architect from manufacturer's standard letter style and color charts.
 - c. Raised text and graphic finishes: (Match Existing)
 - 1) Colors/Sheen:
 - (a) As selected by Architect from manufacturer's standard colors.
 - (b) Finish: Matte.
 - d. Text Schedule: As indicated on Drawings.
 - e. Edge Detail: Square.
 - f. Edge Finish: Brushed.
 - g. Overall panel size: As indicated on Drawings.
 - h. Recessed Graphics Color Options:
 - 1) As selected by Architect from manufacturer's standard colors.
 - i. Recessed Area Texture Options:
 - 1) Smooth paint.

2.05 NON-TACTILE SIGNAGE MEDIA

- A. Silk Screened Plastic Panels: Letters and graphics silk screened onto reverse side of plastic surface:
 - 1. Sign Color: Clear.
 - 2. Total Thickness: 1/8 inch.

2.06 ACCESSORIES

- A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material.
- C. Exposed Screws: Stainless steel.
 - 1. Exposed fasteners are permitted only where specifically indicated, and shall be tamper proof stainless steel, countersunk, and may be painted or finished to match adjacent surfaces.
- D. Adhesives:
 - 1. Type recommended by the manufacturer of the material specified to be laminated or adhered.
 - 2. No adhesives that fade, discolor or delaminate as a result of proximity to sunlight or heat therefrom shall be used.
 - 3. Adhesives shall not change the color or otherwise deteriorate the materials to which they are to be applied.
 - 4. The adhesives shall be of non-staining, non-yellowing quality.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Do not start work until deficiencies have been corrected. Start of work of this section constitutes acceptance of the surfaces.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Mounting Method:
 - 1. Mount signs to surfaces with a minimum of four countersunk tamperproof stainless steel fasteners.
 - 2. Provide anchorage where necessary for fastening signs securely in place.
 - a. Anchorage not otherwise specified or indicated shall include expansion shields and power-driven fasteners;
 - 1) when approved:
 - (a) machine or metal screws to metal doors.
 - b. Provide backing plates for mounting to expanded metal substrates.
 - 3. Adhere signs to glass with adhesive.
- C. Install neatly, with horizontal edges level.

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- D. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and CBC Chapter 11B.
 - 1. Room and Door Signs: Locate on wall at latch side of door a minimum of 48 inches to the baseline of the lowest braille cells; with baseline of highest line of raised character text at maximum 60 inches above finished floor.
 - a. Comply with CBC 11B-703.4.1
- E. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

3.03 FIELD QUALITY CONTROL

A. Inspect signs for information content, appearance, location and Braille per as noted in Section 01 45 33 - Code-Required Special Inspections.

3.04 ADJUST AND CLEAN

A. Repair damage to signs incurred during installation. Replace signs which cannot be repaired to new condition. Clean glass, frames, and other sign surfaces, adjust hardware for proper operation.

END OF SECTION

SECTION 10 14 53 TRAFFIC, PARKING AND SITE SIGNAGE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Traffic and parking control, plaque, and informational signage.
- B. Sign supports and foundations.

1.02 RELATED SECTIONS

A. Section 10 14 00 - Signage: Informational signage in addition to on-site signage specified in this section.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1910.145 Accident Prevention Signs and Tags.
- B. ANSI Z535.4 American National Standard for Product Safety Signs and Labels.
- C. ANSI Z535.2 American National Standard for Environmental and Facility Safety Signs.
- D. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete.
- E. NFPA 704 Standard System for the Identification of the Hazards of Materials for Emergency Response.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including location, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. When content of signs is indicated to be determined later, request such information from District through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
 - 2. Submit for approval by District through Architect prior to fabrication.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable Codes and regulations of authorities having jurisdiction for accessible parking stall identification, including the following:
 - 1. California Code of Regulations (CCR), Title 24, Parts 2, 3 and 5.
 - 2. California Building Code (CBC) Section 11B-502.6, including amendments and supplements as adopted by Authority Having Jurisdiction (AHJ) as shown on Drawings.
 - 3. Manual on Uniform Traffic Control Devices as adopted by the State Department of Transportation.
 - a. Reflectively requirements

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PART 2 - PRODUCTS

2.01 TRAFFIC AND PARKING CONTROL SIGNAGE

- A. Manufacturers:
 - 1. Hawkins Traffic Safety Supply, Inc.: www.hawkinstraffic.com.
 - 2. Safeway Sign Company: www.safewaysign.com.
 - 3. Western Highway Products, Inc.: www.westernhighway.com.
 - 4. Substitutions: See Section 01 6000 Product Requirements.
- B. Plaque Signs: Provide manufacturer's standard silk-screened signs, baked-on enamel applied over Diamond Grade (DG), (10-year projected life) retro-reflectorized backing; on aluminum or 16 gage galvanized steel sheet. Provide with anti-graffiti protective overlay film. Produce smooth, even, level sign surfaces, constructed to remain flat under installed condition within a tolerance of plus or minus 1/16-inch measured diagonally. Provide two holes for post mounting.
 - 1. Fire Lane Signs:
 - a. Single post mount, of size, color and sign text as shown on site plan or as required by local codes and fire department authority.
 - b. Quantity, location and mounting heights to be determined by local fire department authority.
 - 2. Fire Safety Signage:
 - a. Provide sign, types, shapes, and content as indicated on Drawings and as required for products in-use, stored, and installed.
 - b. Comply with OSHA 29 CFR 1910.145, NFPA 704, ANSI Z535.2, ANSI Z535.4, and California Fire Code.

2.02 ACCESSORIES AND FASTENERS

- A. Accessories: Provide welded galvanized steel fittings and galvanized or stainless steel bolts, nuts and washers.
- B. Fasteners: Provide tamper-proof galvanized steel fasteners.
 - 1. Tufnut System (714) 962-5838, Allegheny Bolt (Tampruf brand; (516) 568-1052 or equal.

2.03 SIGN SUPPORTS AND FOUNDATION

- A. Support Posts:
 - 1. Galvanized steel pipe, minimum 2-1/2 inch diameter or as indicated, with caps.
- B. Concrete: Ready-mixed, complying with ASTM C94/C94M; normal Portland cement; 3,500 psi strength at 28 days, 3 inch slump; 3/4 inch nominal size aggregate.
- C. Provide other materials as necessary for complete installation, as recommended by manufacturer and selected by Contractor, subject to approval of Architect.

2.04 FABRICATION

A. Provide signs and supports factory-prefabricated and pre-finished, ready for assembly and installation.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means installer accepts existing surfaces.

3.02 INSTALLATION

- A. Locate informational signage as verified in field by District. Verify and coordinate sign locations to prevent conflict with underground utilities.
- B. Excavate for sign support footings to depth as shown on Drawings or, if not shown, as recommended by manufacturer. Provide forms for concrete not supported by compacted soil.
- C. Set posts in concrete base, minimum 12 inch diameter and 18 inches deep; unless indicated otherwise on Drawings.
 - 1. Signs mounted to walls shall be attached firmly with appropriate expansion anchors or bolting, adhesive not permitted.
 - 2. Seal all holes water tight.
- D. Place and cure concrete in accordance with requirements of Section 03 30 00 Cast-in-Place Concrete.
- E. Install plaque signage to posts, with panel facing traffic as necessary.

END OF SECTION

SECTION 13 34 16 GRANDSTANDS AND BLEACHERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Permanent grandstand, as indicated on Drawings.
 - 1. Concrete Foundation
 - 2. Steel Substructure
 - 3. Decking System
 - 4. Press Box
 - a. Press Box Support Structure
- B. Design engineering of bleachers as a complete system, including foundations.

1.02 REFERENCE STANDARDS

- A. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design.
- B. AISC 201 AISC Certification Program for Structural Steel Fabricators, Standard for Steel Building Structures.
- C. ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- D. ASTM A36/A36M Standard Specification for Carbon Structural Steel.
- E. ASTM A123/A123M Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- F. ASTM A307 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
- G. ASTM A500/A500M Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- H. ASTM A529/A529M Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
- I. ASTM A572/A572M Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
- J. ASTM A780/A780M Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
- K. ASTM A992/A992M Standard Specification for Structural Steel Shapes.
- L. ASTM E94/E94M Standard Guide for Radiographic Examination Using Industrial Radiographic Film.
- M. ASTM E164 Standard Practice for Contact Ultrasonic Testing of Weldments.
- N. ASTM E165/E165M Standard Practice for Liquid Penetrant Testing for General Industry.
- O. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.

- P. ASTM E709 Standard Guide for Magnetic Particle Testing.
- Q. ASTM F3125/F3125M Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
- R. AWS A2.4 Standard Symbols for Welding, Brazing, and Nondestructive Examination.
- S. AWS B2.1/B2.1M Specification for Welding Procedure and Performance Qualification.
- T. AWS D1.1/D1.1M Structural Welding Code Steel.
- U. AWS D1.2/D1.2M Structural Welding Code Aluminum.
- V. AWS D1.8/D1.8M Structural Welding Code Seismic Supplement.
- W. CBC Ch. 11B California Building Code-Chapter 11B.
- X. IAS AC172 Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172.
- Y. ICC 300 Standard for Bleachers, Folding and Telescoping Seating, and Grandstands.
- Z. NFPA 102 Standard for Grandstands, Folding and Telescopic Seating, Tents, and Membrane Structures.
- AA. RCSC (HSBOLT) Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections.

1.03 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on each product to be used:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings: Complete layout with dimensions, seat heights, row spacing and rise, aisle widths and locations, points of connection to substrate, assembly dimensions, and material types and finishes.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Provide drawings customized to this project.
 - 3. Include Professional Engineer certification.
- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.
- E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172 or AISC 201.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section, with not less than ten years of documented experience.
- B. Installer Qualifications: Manufacturer's installation crew.

- C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.
- D. Testing Agency Qualifications: An independent agency qualified according to ASTM E329 and Section 01 45 33 for testing indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 WARRANTY

- A. See Section 01 78 00 Closeout Submittals, for additional warranty requirements.
- B. Provide manufacturer's one-year warranty against defects in materials or workmanship.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Product: Horizontal Beam Design as manufactured by Southern Bleacher Company, Inc., www.southernbleacher.com, or approved equal.
 - 1. For any product not identified as "Basis of Design", submit information as specified for substitutions.
 - 2. Substitution may or may not be accepted after Architect and District review with complete evaluation for content and schedule impact.
 - 3. Substitutions shall include all costs for redesign with consequential changes by other trades along with the Architect and related approvals by governing agencies.
 - a. Revision to shop drawings illustrating changes is not considered adequate for DSA review and approval.
 - b. A minimum fee of \$10,000.00 for DSA review processing by the Architect will need to be included for additional DSA review of any substituted system other than the basis of design.
 - c. An additional minimum allowance of \$10,000.00 is required for Architect's time to review the substituted system prior to submitting for governing agency approval.
 - d. The indicated fee amounts are minimums. These are subject to increase pending Architect and DSA reviews of the proposed substitution.
 - 4. Substitutions may be acceptable, based on Architect's review and approval, for submittal to DSA.
 - a. If substituted manufacturer cannot reproduce design and <u>DSA approval</u> in a timely manner, then they shall be subject to a time and material back charge for any delays in the project.
 - b. Architect approval is required prior to DSA submittal and DSA approval is required prior to installation.

2.02 REGULATORY REQUIREMENTS

- A. Conform to applicable requirements of California Building Code (CBC), Title 24, Part 2, as amended and adopted by authorities having jurisdiction.
 - 1. Comply with Title 24, Part 9, California Fire Code Chapter 35 "Welding and Other Hot Work."
- B. Regulatory Requirements: Conform to California Building Code (CBC), Title 24, Part 2, Section 11B-505 and 11B-405.8 as amended and adopted by authorities having jurisdiction.
 - 1. Top of gripping surfaces of handrails shall be 34 inches minimum and 38 inches maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above such surfaces.
 - 2. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1-1/2 inches minimum.
 - a. Handrail may be located in a recess if the recess is 3 inches maximum deep and 18 inches minimum clear above the top of the handrail.
 - 3. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20% of their length.
 - a. Where provided, horizontal projections shall occur 1-1/2 inches minimum below the bottom of the handrail gripping surfaces.
 - 4. Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1-1/4 inch minimum and 2 inches maximum.
 - 5. Handrail gripping surfaces with a non-circular cross section shall have an outside dimension of 4 inches minimum and 6-1/4 inches maximum, and a cross-sectional dimension of 2-1/4 inches maximum.
 - 6. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.
 - 7. Handrails shall not rotate within their fittings.
 - 8. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with CBC Section 11B-505.10.
 - a. Such extensions are not required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
 - 9. A 2 inch minimum high curb or a barrier shall be provided to prevent the passage of a 4 inch diameter sphere rolling off the sides of a ramp surface.
 - a. Such a curb or barrier shall be continuous and uninterrupted along the length of a ramp. CBC Section 11B-405.9.2

2.03 SYSTEM DESCRIPTION

- A. Horizontal Beam Design
- B. Vertical columns are placed nominally 18 feet on center laterally and as required on center front to back.
- C. Horizontal beams are wide flange beams.

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- D. Traverse bays free of cross-bracing the total length of the grandstand.
- E. Stringers are wide flange with steel angle rise and depth fabrication and are placed 6 feet on center.
- F. Front Walkway:
 - 1. Width: 10'-4" on home side.
 - 2. Elevated: 5'-0" on home side stand, above grade at the benchmark.
- G. Entry stairs to be firmly anchored to uniformly poured concrete bases.
 - 1. Stair rise: 7 inches with aluminum closure and contrasting aluminum stair nose.
 - 2. Stair tread depths: 11 inches.
 - 3. Guardrails: As required by code.
 - 4. Handrails: Comply with regulations of CBC Ch. 11B and ADA Standards.
- H. Aisles:
 - 1. Aisles with seating on both sides to have discontinuous mid-aisle handrails.
 - a. Discontinuous with breaks at intervals not to exceed five rows.
 - b. Breaks: Clear width of at least 22 inches and not greater than 36 inches horizontally.
 - 2. Anodized aluminum handrails with rounded ends to be provided with an intermediate handrail below the main handrail.
 - 3. Aluminum tread nosing of contrasting color on aisle steps.
 - 4. Half-steps: Provided for riser heights above 8 inches.
 - a. Provide equal rise and run throughout aisle.
 - b. Each with aisle nosing with non-skid black powder coated finish or other paint system meeting AAMA 603.8 specifications with a hardness rating of 2H and riser closure with clear anodized finish.
 - 5. Indicate aisles with a riser height of non-uniformity distinctive markings as required by code.
- I. Decking:
 - 1. Rise per row 14" on home side, with tread depth of 26 inches.
 - 2. Each seat 17 inches above its respective tread.
 - 3. Mill Aluminum Decking Arrangement
 - a. Interlock 2000 closed deck on home stand
 - b. Tongue & Groove closed deck on visitors stand
 - 4. Seating Selection
 - a. Anodized Aluminum Bench Seat
 - 1) 2 x 10 (standard), Die #7758 with height of 1 1/2".
- J. Guardrails:
 - 1. All sides of bleacher, entry stairs and ramps, portals, and landings.
 - 2. Anodized aluminum with end plugs at ends of straight runs and/or elbows at corner.
 - 3. Secure to angle rail risers by galvanized fasteners.

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- 4. Provide railing at heights as required by code for its location on the grandstand.
- 5. Include intermediate railing, or galvanized chain-link fencing fastened in place with galvanized fasteners and aluminum ties.
- K. Ramps:
 - 1. Slope: 1 in 12.5 wide-flange ramps, except for starter section which is of angle fab construction
 - 2. Guardrails: As required by code plus toe board.
 - 3. Handrails: Comply with regulations of CBC Ch. 11B and ADA Standards.
- L. Disable Access Provision:
 - 1. Quantity of wheelchair spaces: 18 on home stand and 6 on the visitors stand.
 - 2. Riser area adjacent to wheelchair spaces to have closed intermediate construction.
- M. Clear anodized aluminum riser board facades for both home and visitors' grandstands.

2.04 PRESS BOX WITH METAL STRUCTURE

- A. Type II Construction:
 - 1. Press Box Support Structure: Integrally supported by grandstand. Support Structure to be 8 feet deep.
 - 2. Press Box Dimensions: 36 feet wide x 8 feet long.
 - 3. Filming Area/Observation Deck located on Press Box roof.
 - 4. Press Box to be of flat-front design, open construction, allowing inspection of electrical wiring, switches, and other components without destructive disassembly.
- B. Press Box: All materials shall be new and shall comply with ASTM specifications.
 - 1. Floor
 - a. Main support to be a galvanized steel floor frame sized to support structure and metal belly pan for support of insulation.
 - Floor to be INTERLOCK Aluminum Decking System, extruded aluminum alloy 6063-T6, mill finish. Attach Decking System to steel floor frame with mechanical fasteners at end of plank and at intermediate supports. (Tongue & Groove or Standard extrusion is not acceptable.)
 - c. Insulation: Poly-encapsulated Formaldehyde-free fiberglass building insulation R-13, 3 1/2 inches thick. Batt or roll as manufactured by Johns Manville, or equal.
 - 2. Wall Structure
 - a. 4 inch x 4 inch x 11 gauge square tubing with maximum span of 14 feet on front wall and maximum span of 6 feet on back wall and 4 inch x 2 1/2 inch x 14 gauge steel "cees" with maximum spacing of 5 feet for all walls with siding. Spans greater than these require engineered calculations for design.
 - Steel framing shapes to meet one of the following ASTM's, A500 Grade A or B 45 ksi, A36 50ksi, A1011 CS Type B.
 - Insulation: Poly-encapsulated Formaldehyde-free fiberglass building insulation R-13, 3 1/2 inches thick. Batt or roll as manufactured by Johns Manville or equal.

- 3. Interior Finish
 - a. ½ or 5/8 inch vinyl coated gypsum panels (as required), Gold Bond vinyl-surfaced Durasan.
 - b. Cove Base: Vinyl 4 inches x .080.
 - c. Exterior Finish
 - 26-gauge prefinished R-Panel paneling as manufactured by MBCI, Signature 200 color series, or equal.
 - 2) Wall panels are attached with #12 TEK screws 6" O.C. at the top, midpoint and bottom of the panels.
 - 3) Lap screws are placed at each end of the panels, at the intermediate supports, and at the mid-point between supports (TEK #14).
 - 4) All fasteners to be painted same color as exterior paneling.
- 4. Roof Structure
 - a. 4 inch x 4 inch x 11 gauge square tubing with maximum spacing of 6 feet on center and 4 inch x 2 ½ inch x 14 gauge steel "cees" with maximum spacing of 2 feet on center.
 - b. Roof: 1/8 inch four way steel plate roof, continuous welded seams coated with acrylic metal primer as manufactured by Coronado and 36 mils of acrylink roof coating as manufactured by Isothermal Protective Coatings, or equal. Plate is welded on both sides of rafters with 1-1/2 inch long 1/8 inch fillet welds on 12 inch centers.
 - c. Insulation: Poly-encapsulated Formaldehyde-free fiberglass building insulation, R-19 (minimum) 6 inches thick. Batt or roll as manufactured by Johns Manville or equal.
 - d. Cornice: 26 gauge steel prefinished to match metal siding.
 - e. Ceiling: 24 inch x 24 inch x 5/8 inch acoustical lay in ceiling tile with removable tiles per CBC, applicable category per seismic zone, ref. DSA IR 25-5).
- 5. Exterior Door(s)
 - a. Full flush steel construction with hollow or polystyrene core. 18-gauge skin sheets. Dimensions: 3 feet 0 inches x 6 feet 8 inches. Color: Coordinated with press box siding color.
 - b. Steel door frame (16 gauge) complete with ½ inch threshold and weather-stripping.
 - c. Exterior Hardware: Yale 546F Exterior Trim, or equal. Handles shall be lever type that allows operation without tight grasping or twisting of the wrist. Keyed alike locks.
 - d. Interior Hardware: Yale 2100 Exit Device, or equal. Handle shall be panic bar that allows for opening without any grasping, twisting or turning.
- 6. Interior Doors
 - a. Interior Hollow Core Birch Unit. Dimensions: 3 feet 0 inches x 6 feet 8 inches.
 - b. Hardware: Handles shall be lever type that allows operation without tight grasping or twisting of the wrist.
- 7. Interior Walls

- a. Framing to be steel galvanized studs (25 gauge) 1 1/4 inch x 3 5/8 inch or 4 inch at maximum 2 feet on center.
- b. Finishes are to be consistent with all other interior finishes.
- 8. Windows
 - a. Frame: Extruded aluminum single hung, horizontal sliding unit, thermal break.
 - b. Sash: Tilt toward inside for easy cleaning.
 - c. Glazing: Clear tempered panes.
 - d. Dimensions of each unit: Dependent on compartment size. At interior wall locations or structural support locations the dimension between windows shall be no greater than 6 inches.
 - e. Finish: Electrostatically applied acrylic enamel.
- 9. Work Bench
 - a. 1 inch thick x 19 inch wide clear anodized aluminum work bench supported by 4 inch x 2 1/2 inch x 14 gauge steel. Countertops heights shall be constructed to allow wheelchair usage at all locations.
- 10. Caulking: Sonneborn NP1 Polyurethane sealant, all temperature, UV Finishes are to be consistent with all other interior finishes.
- 11. Electrical
 - a. Submittal drawing shall indicate devices and circuitry.
 - b. Fixtures: Low Profile lay-in LED fixtures. Fixtures shall be located above countertop and be maximized to full length of compartment space.
 - c. Wiring to be in EMT, flexible metal conduit or surface raceway. N.E.C. breaker panel to be 100 amp flush or surface mounted on wall with 1 1/4 inch conduit stubbed out bottom of press box or 2 inch rigid conduit to be stubbed out at back wall of press box ready for service line to be connected. (Service line to Press Box is responsibility of Owner).
 - d. Electrical outlet(s) installed per NEC shall be standard duty. All outlets shall be surface or flush mounted.
 - e. Sound, Telephone, Clock, and Field Communication: Empty single or double outlet boxes (as required) per N.E.C. with 3/4 inch conduit stubbed out bottom of Press Box for use of Owner. Outlet boxes to be flush mounted into wall. Any wiring completed on-site will be responsibility of such contractor for inspections. A quantity of two will be provided. Owner shall indicate additional boxes needed.
 - f. Filming Area/Observation Deck: Weathertight outlet box for cameras. Quantity: One. Owner shall indicate additional outlets needed.
- 12. Filming Area/Observation Deck
 - a. Access
 - 1) Interior: Roof hatch with OSHA-rated aluminum ladder mounted to an interior back wall.
 - b. Roof guard railing to be 42" above walking surface around perimeter of deck attached to 5/8 inch galvanized studs to be welded to roof support structure. The

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guard railing to include anodized aluminum with 9-gauge galvanized chain link fencing fastened in place with galvanized fasteners and aluminum ties.

- 13. Coiling Shutters at Windows
 - a. General:
 - 1) Summary:
 - (a) All Aluminum Roofing Counter Doors shall be Series CD8 as manufactured by The Cookson Company, Phoenix, Arizona. Furnished materials shall include all curtains, bottom bars, guides, brackets, hoods, operating mechanisms and any special features.
 - (b) Work not to be included by The Cookson Company includes design of, material for and preparation of door openings but not limited to structural or miscellaneous iron work, metal or wood trim, access panels, and finish painting.
 - 2) Quality Assurance:
 - (a) All rolling counter doors shall be designed to a standard maximum of 10 cycles per day and an overall maximum of 20,000 operating cycles for the life of the door.
 - 3) Products:
 - (a) Materials:
 - The door curtain shall be constructed of interconnected .050 extruded aluminum No. 8 (1-5/16" high by 3/8" deep) slats as designated by The Cookson Company. The curtain shall receive a 204-R1 clear anodized finish.
 - (2) The bottom bar shall be constructed of tubular extruded aluminum measuring 1-5/16" deep by 2-1/4" high with double vinyl astragal on the bottom edge. The bottom bar shall receive a 204-R1 clear anodized finish.
 - (3) The guides shall be constructed of extruded aluminum and measures 1-3/4" square. Each side of the channel portion capturing the curtain shall contain wool pile weather-stripping. The guides shall receive a 204-R1 clear anodized finish.
 - (4) The brackets shall be constructed of 3/16" thick die cast aluminum.
 - (5) The barrel shall be steel tubing of not less than 4" in diameter. Oil tempered torsion springs shall be capable of correctly counter balancing the width of the curtain. The barrel shall be designed to limit the maximum deflection to .03" per foot of opening width. The barrel shall receive one (1) coat of bronze rust- inhibiting prime paint.
 - (6) The hood shall be fabricated from .040 aluminum and shall be formed to fit the square brackets. The hood shall receive a 204-R1 clear anodized finish.
 - (b) Operation:
 - (1) Crank up operation required.
 - (c) Locking Mechanism:

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- (1) The push-up doors shall be secured by means of a concealed sliding bolt deadlock in the bottom bar operated by a thumb turn.
- 4) Execution:
 - (a) Installation:
 - (1) All Cookson Rolling Aluminum Counter Doors shall be installed by an authorized Cookson Distributor

2.05 DESIGN REQUIREMENTS

- A. Comply with ICC 300.
- B. Design and size components have been done to withstand the following load requirements without damage or permanent set, when tested in accordance with ASCE 7, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
- C. Design framing system to withstand the following loads:
 - 1. Live Load: 100 pounds per square foot over gross horizontal projection.
 - 2. Live Load on Seat and Tread Plank: 120 pounds per linear foot
 - 3. Lateral Sway Stress: 24 pounds per linear foot of seat plank.
 - 4. Perpendicular Sway Stress: 10 pounds per linear foot of seat plank.
 - 5. Wind Load: 30 pounds per square foot over vertical projection.
- D. Design handrails and railings to withstand the following loads:
 - 1. Concentrated Load on Handrails: 200 pounds in any direction.
 - 2. Concentrated Load on Guardrails: 200 pounds in any direction along top rail.
 - 3. Live Load on Handrails: 50 pounds per linear foot, applied in any direction.
 - 4. Live Load on Guardrails:
 - a. Horizontal: 50 pounds per linear foot, applied at the guardrail height.
 - b. Vertical: 100 pounds per linear foot, simultaneously applied vertically to top of guardrail.
- E. Design bleacher systems to other physical requirements specified in this Section.

2.06 APPLICATIONS

- A. Grandstand: See Drawings for dimensions.
 - 1. Provide a design certified by a licensed Professional Engineer licensed in California.
 - 2. Provide a design that has been in use for at least 5 years; submit documentation.
 - 3. Design to comply with applicable requirements of NFPA 102 and requirements of code authorities having jurisdiction; where conflicts between requirements occur, comply with whichever is more stringent.
 - 4. Provide guardrails with chain link fence infill at sides and back.
 - 5. Provide guardrails on front wherever the first tread is more than 24 inches (610 mm) above ground level.
 - 6. Provide stair railings at each set of steps.

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2.07 MATERIALS AND COMPONENTS

- A. Steel Angles and Plates: ASTM A36/A36M.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Steel Shapes, Plates, and Bars: ASTM A529/A529M high-strength, carbon-manganese structural steel, Grade 50.
- D. Steel Plates and Bars: ASTM A572/A572M, Grade 50 (345) high-strength, columbiumvanadium steel.
- E. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
- F. Steel Component Finish:
 - 1. Prepare structural component surfaces in accordance with SSPC-SP 3.
 - 2. Galvanize structural steel members to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.
- G. Sub-Framing System: Prefabricated, modular frames with cross bracing.
 - 1. Material: Extruded aluminum structural angle sections, of alloy 6061-T6, with mill finish.
 - 2. Frame Spacing: Maximum of 72 inches.
 - 3. Sized for vertical rise of 8 inches and horizontal depth of 24 inches per row, with seat 17 inches above tread.
 - 4. Welding: AWS D1.1/D1.1M, AWS D1.2/D1.2M, and AWS D1.8/D1.8M. By AWS certified welders.
 - 5. Anchorage as indicated on Drawings.
- H. Tread Planks: Extruded aluminum sections, of alloy 6063-T6, with ribbed top and mill finish.
 - 1. Size: 2 inches deep by 10 inches wide.
 - 2. Provide end caps on each exposed end.
 - 3. Wherever sections are placed end to end, provide joint sleeve assembly of same material to maintain alignment.
- I. Seat Planks: Extruded aluminum sections, of alloy 6063-T6, with ribbed top and Class II AA-M10C22A31 natural anodized finish.
 - 1. Size: 2 inches deep by 10 inches wide.
 - 2. Provide end caps on each exposed end.
 - 3. Wherever sections are placed end to end, provide joint sleeve assembly of same material to maintain alignment.
- J. Step Planks: Extruded aluminum sections, of alloy 6063-T6, with ribbed top and mill finish.
 - 1. Size: 2 inches deep by 12 inches wide.
 - 2. Provide end caps on each exposed end.
- K. Riser Planks: Extruded aluminum sections, of alloy 6063-T6, with mill finish.
 - 1. Size: 6 inches high.
 - 2. Provide end caps on each exposed end.

- L. Plank End Caps: Formed aluminum, of alloy 6063-T6, with Class II AA-M10C22A31 natural anodized finish.
- M. Railings: Anodized aluminum pipe railing with formed elbows at corners and caps at ends of straight runs, fastened to framing system.
 - 1. Pipe Size: 1.66 inch outside diameter.
 - 2. Height at Front: 42 inches above tread.
 - 3. Height at Back and Sides: 42 inches above adjacent seat.
 - 4. Infill at Back and Sides: 9 gage diameter aluminum wire woven chain link with twisted selvages, fastened to aluminum pipe panel frame.
- N. Fasteners:
 - 1. Bolts and Nuts: ASTM A307 or ASTM F3125/F3125M, steel, hot-dipped galvanized or stainless steel.
 - 2. Hold-Down Clips: Aluminum, alloy 6063-T6.

2.08 SOURCE QUALITY CONTROL

- A. General: Materials and fabrication procedures shall be subject to inspection and tests in mill, shop, and field, conducted by a qualified inspection agency, as specified in Section 01 40 00 Quality Requirements and Section 01 45 33 Code-Required Special Inspections.
 - 1. Such inspections and tests do not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.
 - 2. Promptly remove and replace materials or fabricated components that do not comply.
- B. Provide shop testing and analysis of structural steel.
- C. High-Strength Bolts: Provide testing and verification of shop-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts", testing at least 100 percent of bolts at each connection.
- D. Welded Connections: Visually inspect all shop-welded connections and test at least 20 percent of welds using one of the following:
 - 1. Radiographic testing performed in accordance with ASTM E94/E94M.
 - 2. Ultrasonic testing performed in accordance with ASTM E164.
 - 3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 - 4. Magnetic particle inspection performed in accordance with ASTM E709.
 - a. Performed on root pass and on finished weld.
 - b. Cracks or zones of incomplete fusion or penetration not acceptable.
- E. See also part 3 article "Field Quality Control".

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are consistent with those on the shop drawings.
- B. Do not begin installation until substrates have been properly prepared.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Clean surfaces thoroughly prior to installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- D. Make provision for erection loads with temporary bracing. Keep work in alignment.
- E. Obtain Architect's review prior to site cutting or making adjustments not indicated on Drawings and reviewed shop drawings.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install items plumb and level, accurately fitted, free from distortion or defects.
- C. Do not field cut or alter seats or structural members without approval.
- D. Field weld components as indicated on drawings.
- E. Perform field welding in accordance with AWS D1.1/D1.1M.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
 - 1. Touch up galvanized steel with cold galvanizing compound.

3.04 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.05 FIELD QUALITY CONTROL

- A. Provide manufacturer's field representative to inspect completed installation.
- B. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 Quality Requirements.
- C. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts."
- D. Welded Connections: Visually inspect all field-welded connections and test at least 20 percent of welds using one of the following:
 - 1. Radiographic testing performed in accordance with ASTM E94/E94M.
 - 2. Ultrasonic testing performed in accordance with ASTM E164.
 - 3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
 - 4. Magnetic particle inspection performed in accordance with ASTM E709.
- E. Report: Welding inspector will submit a signed report to the Architect, Structural Engineer, Project Inspector, and Authority Having Jurisdiction (Division of the State Architect) verifying that welding was performed in compliance with specified and Code-mandated requirements and that adequate methods were used to determine the quality of the welding.

F. Re-Inspection: After correction of deficiencies in structural steel work which inspections and test reports indicate, additional inspections and tests will be performed to confirm that structural steel complies with specified requirements. Costs of re-inspections shall be paid in accordance with Conditions of the Contract.

3.06 CLEANING AND TOUCH-UP

- A. Cleaning: Perform initial cleaning immediately after completion of installation. Prepare surfaces for finish painting.
- B. Galvanizing Touch-Up: Touch up galvanizing immediately after installation, including field welding.
 - 1. Prepare surface and apply cold galvanizing compound in compliance with ASTM A780/A780M and the manufacturer's instructions and recommendations.

3.07 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products after Substantial Completion.

END OF SECTION

SECTION 26 01 00

ELECTRICAL GENERAL PROVISIONS

PART 1 - SUMMARY

- 1.1 This Division of the specification outlines the provisions of the contract work to be performed under this Division.
- 1.2 This Section applies to and forms a part of each section of specifications in Division 26 and all work performed under Division 26, 27 and 28.
- 1.3 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under general requirements.
- 1.4 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.
- 1.5 Where the words 'provide' or 'provision' are used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- 1.6 Where items are specified in the singular, this Division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

PART 2 - CONTRACTOR QUALIFICATIONS

2.1 The Contractor shall have a current California C-10 Electrical Contractor's license and all individuals working on this project shall have passed the Department of Industrial Relations Division of apprenticeship Standards – "Electrician Certification Program."

PART 3 - CODES, PERMITS AND FEES

- 3.1 Comply with all applicable laws, ordinances, rules, regulations, codes, or rulings of governmental units having jurisdiction as well as standards of NFPA and serving utility requirements.
- 3.2 Obtain permits, fees, inspections, meter and the like, associated with work in each section of this Division.
- 3.3 Installation procedures, methods and conditions shall comply with the latest requirements of the Federal Occupational Safety and Health Act (OSHA).

PART 4 - EXAMINATION OF PREMISES

4.1 Examine the construction drawings and premises prior to bidding. No allowances will be made for not being knowledgeable of existing conditions.

PART 5 - STANDARDS

- 5.1 The following standard publications of the latest editions enforced, and supplements thereto shall form a part of these specifications. All electrical work must, as a minimum, be in accordance with these standards.
 - 5.1.1 2019 California Electrical Code (CEC), Part 3 Title 24 CCR.
 - 5.1.2 National Fire Protection Association.
 - 5.1.3 Underwriters' Laboratories, Inc. (UL).
 - 5.1.4 Certified Ballast Manufacturers' Association (CBM).
 - 5.1.5 National Electrical Manufacturers' Association (NEMA).
 - 5.1.6 Institution of Electrical & Electronics Engineers (IEEE).
 - 5.1.7 American Society for Testing & Materials (ASTM).
 - 5.1.8 National Board of Fire Underwriters (NBFU).
 - 5.1.9 National Board of Standards (NBS).
 - 5.1.10 American National Standards Institute (ANSI).
 - 5.1.11 Insulated Power Cable Engineers Association (IPECS).
 - 5.1.12 Electrical Testing Laboratories (ETL).
 - 5.1.13 National Electrical Safety Code (NESC).
 - 5.1.14 2019 California Building Code (CBC), Part 2, Title 24 CCR.
 - 5.1.15 2019 California Fire Code (CFC), Part 9, Title 24, CCR.
 - 5.1.16 2016 NFPA 72 with California State Amendments
 - 5.1.17 National Electrical Testing Association (NETA), 2010 or most current

PART 6 - DEFINITIONS

- 6.1 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- 6.2 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.
- 6.3 Finish Space: Any space ordinarily visible, including exterior areas.

PART 7 - WORK AND MATERIALS

- 7.1 Unless otherwise specified, all materials must be new and of the best quality. Materials previously incorporated into other projects, salvaged, or refurbished are not considered new. Perform all labor in a thorough and workmanlike manner.
- 7.2 All materials provided under the contract must bear the UL label where normally available. Note that this requirement may be repeated under equipment specifications. In general, such devices as will void the label should be provided in separate enclosures and wired to the labeled unit in proper manner.

PART 8 - SHOP DRAWINGS AND SUBMITTALS

- 8.1 Submit shop drawings and all data in accordance with Division 1 of these specifications and as noted below for all equipment provided under this Division.
- 8.2 Shop drawings submittals demonstrate to the Architect that the Contractor understands the design concept. The Contractor demonstrates their understanding by indicating which equipment and material they intend to furnish and install and by detailing the fabrication and installation methods of material and equipment he intends to use. If deviations, discrepancies, or conflicts between submittals and specifications are discovered either prior to or after submittals are processed, notify the Architect immediately.
- 8.3 Manufacturer's data and dimension sheets shall be submitted giving all pertinent physical and engineering data including weights, cross sections and maintenance instructions. Standard items of equipment such as receptacles, switches, plates, etc., which are cataloged items, shall be listed by manufacturer.
- 8.4 Index all submittals and reference them to these specifications. All submittal items shall be assembled and submitted, one for each specification section. (Multiple specification sections may be grouped together in one common submittal binder, as long as each individual section is clearly identified.) Partial or incomplete submittal sections will not be reviewed.

PART 9 - EQUIPMENT PURCHASES

- 9.1 Arrange for purchase and delivery of all materials and equipment within 20 days after approval of submittals. All materials and equipment must be ordered in ample quantities for delivery at the proper time. If items are not on the project in time to expedite completion, the Owner may purchase said equipment and materials and deduct the cost from the contract sum.
- 9.2 Provide all materials of similar class or service by one manufacturer.

PART 10 - COOPERATIVE WORK

- 10.1 Correct without charge any work requiring alteration due to lack of proper supervision or failure to make proper provision in time. Correct without charge any damage to adjacent work caused by the alteration.
- 10.2 Cooperative work includes: General supervision and responsibility for proper location and size of work related to this Division, but provided under the other sections of these specifications, and installation of sleeves, inserts, and anchor bolts for work under each section in this Division.

PART 11 - VERIFICATION OF DIMENSIONS

- 11.1 Scaled and figured dimensions are approximate only. Before proceeding with work, carefully check and verify dimensions, etc., and be responsible for properly fitting equipment and materials together and to the structure in spaces provided.
- 11.2 Drawings are essentially diagrammatic, and many offsets, bends, pull boxes, special fittings, and exact locations are not indicated. Carefully study drawings and premises in order to determine best methods, exact location, routes, building obstructions, etc. and install apparatus and equipment in manner and locations to avoid obstructions, preserve headroom, keep openings and passageways clear, and maintain proper clearances.

PART 12 - CLOSING-IN OF UNINSPECTED WORK

12.1 Cover no work until inspected, tested, and approved by the Architect. Where work is covered before inspection and test, uncover it and when inspected, tested, and approved, restore all work to original proper condition at no additional cost to Owner.

PART 13 - EXCAVATION AND BACKFILL

- 13.1 All excavation and backfill shall be in accordance with Division 1 of these specifications and as noted below.
- 13.2 Perform all necessary excavation, shoring, and backfilling required for the proper laying of all conduits inside the building and premises, and outside as may be necessary.
- 13.3 Excavate all trenches open cut, keep trench banks as nearly vertical as practicable, and sheet and brace trenches where required for stability and safety. Excavate trenches true to line and make bottoms no wider than necessary to provide ample work room. Grade trench bottoms accurately. Machine grade only to the top line of the conduits, doing the remainder by hand. Do not cut any trench near or under footings without first consulting the Architect. All trenches shall be done in accordance with OSHA standards and regulations.

- 13.4 Backfilling shall be done with each layer compacted before another layer is added. No stones or coarse lumps shall be laid directly on a conduit or conduits.
- 13.5 Trenches shall be filled with the specified material. Sod, if any, shall be removed in cut sections and replaced in same manners.
- 13.6 Provide pumps and drainage of all open trenches for purposes of installing electrical duct and wiring.
- 13.7 Perform all backfilling in accordance with the requirements of and under the direction of the Geotechnical Engineer.
- 13.8 Where new underground trenching is required on sites or in any area where existing underground utilities exist, the Contractor shall provide an independent professional utility locating service to locate exact vertical and horizontal locations of all existing utilities. Where existing utilities are found the Contractor shall hand dig those areas to avoid disruption. The Contractor shall be responsible for immediate repairs to existing underground utilities damaged during construction. The Contractor shall repair all existing asphalt, concrete and landscape surfaces damaged or removed during construction to match their original conditions. Where trenching extends through public streets or roadways, the Contractor shall notify underground service alert in addition to the independent locating service 48 hours before start of construction to determine location of existing utilities by calling (800) 422-4133.

PART 14 - CONCRETE

- 14.1 Where used for structures to be provided under the contract such as bases, etc., concrete work, and associated reinforcing shall be as specified under Division 3 of these specifications.
- 14.2 See other sections for additional requirements for underground vaults, cable ducts, etc.

PART 15 - ACCESSIBILITY

- 15.1 Install all control devices or other specialties requiring reading, adjustment, inspection, repairs, removal, or replacement conveniently and accessibly throughout the finished building.
- 15.2 All required access doors or panels in walls and ceilings are to be furnished and installed as part of the work under this Section. Refer to Division 1 of these specifications and as noted below.
- 15.3 Where located in fire rated assemblies, provide doors which match the rating of the assembly and are approved by the jurisdictional authority.

- 15.4 Refer to 'finish schedule' for types of walls and ceilings in each area and the architectural drawings for rated wall construction.
- 15.5 Coordinate work of the various sections to locate specialties requiring accessibility with others to avoid unnecessary duplication of access doors.

PART 16 - FLASHING

16.1 Flash and counter flash all conduits penetrating roofing membrane as shown on Architectural drawings. All work shall be in accordance with Division 7 of these specifications.

PART 17 - IDENTIFICATION OF EQUIPMENT

- 17.1 All electrical equipment shall be labeled, tagged, stamped, or otherwise identified in accordance with the following schedules:
 - 17.1.1 General:
 - 17.1.1.1 In general, the installed laminated nameplates as hereinafter called for shall also clearly indicate its use, areas served, circuit identification, voltage and any other useful data.
 - 17.1.1.2 All auxiliary systems, including communications, shall be labeled to indicate function.
 - 17.1.2 Lighting and Local Panelboards:
 - 17.1.2.1 Panel identification shall be with white and black micarta nameplates. Letters shall be no less than 3/8" high.
 - 17.1.2.2 Circuit directory shall be two column typewritten card set under glass or glass equivalent. Each circuit shall be identified by the room number and/or number of unit and other pertinent data as required.
 - 17.1.3 Distribution Switchboards and Feeders Sections:
 - 17.1.3.1 Identification shall be with 1" x 4" laminated white micarta nameplates with black lettering on each major component, each with name and/or number of unit and other pertinent data as required. Letters shall be no less than 3/8" high.
 - 17.1.3.2 Circuit breakers and switches shall be identified by number and name with 3/8" x 1-1/2" laminated micarta nameplates with 3/16" high letters mounted adjacent to or on circuit breaker or switch.

- 17.1.4 Disconnect Switches, Motor Starters and Transformers:
 - 17.1.4.1 Identification shall be with white micarta laminated labels and 3/8" high black lettering.
- 17.1.5 All communication system terminal boxes including T.V., telephone/intercom, security, fire alarm, clock, and computer networking shall be provided with white micarta laminated labels and 3/8" high black lettering.

PART 18 - CONSTRUCTION FACILITIES

- 18.1 Furnish and maintain from the beginning to the completion all lawful and necessary guards, railings, fences, canopies, lights, warning signs, etc. Take all necessary precautions required by City, State Laws, and OSHA to avoid injury or damage to any persons and property.
- 18.2 Temporary power and lighting for construction purposes shall be provided under this Section. All work shall be in accordance with Division 1 of these specifications.

PART 19 - GUARANTEE

19.1 Guarantee all material, equipment and workmanship for all sections under this Division in writing to be free from defect of material and workmanship for one year from date of final acceptance, as outlined in the general conditions. Replace without charge any material or equipment proven defective during this period. The guarantee shall include performance of equipment under all site conditions, conditions of load, installing any additional items of control and/or protective devices, as required.

PART 20 - PATENTS

20.1 Refer to the General Conditions for Contractor's responsibilities regarding patents.

PART 21 - PLUMBING (DIVISION 22) / HEATING, VENTILATING, AND AIR CONDTIONING (DIVISION 23) / ELECTRICAL – COORDINATION REQUIREMENTS

21.1 All electrical work performed for this project shall conform to the California Electrical Code, to Local Building Codes and in conformance with Division 22, 23, and 26 of these specifications, whether the work is provided under the "Plumbing", "Heating, Ventilating, and Air Conditioning", or the "Electrical" Division of these specifications. Where the Division 22 and/or Division 23 Contractor is required to provide electrical work, he shall arrange for the work to be done by a licensed Division 26 Contractor, using qualified electricians. The Division 22 and/or Division 23 Contractor shall be solely and completely responsible for the correct functioning of all equipment regardless of who provided the electrical work.

- 21.2 The work under Division 22 and/or Division 23 shall include the following:
 - 21.2.1 All motors required by mechanical equipment.
 - 21.2.2 All starters for mechanical equipment which are not provided under the electrical division as part of a motor control center or otherwise indicated on the electrical drawings.
 - 21.2.3 All wiring interior to packaged equipment furnished as an integral part of the equipment.
 - 21.2.4 All control **wiring and conduit** for mechanical control systems.
 - 21.2.5 All control systems required by mechanical equipment.
- 21.3 The work under Division 26 shall include the following:
 - 21.3.1 All power wiring and conduit; and conduit only for EMS control conductors between each building and the main control panel.
 - 21.3.2 Electrical disconnects as shown on the electrical drawings.
 - 21.3.3 Starters forming part of a motor control center.
- 21.4 All power wiring and conduit to equipment furnished under Division 22 and/or Division 23 shall be provided under Division 26. Control wiring and conduit, whether line voltage or low voltage, shall be provided under the division which furnishes the equipment.
- 21.5 Power wiring shall be defined as all wiring between the panelboard switchboard overcurrent device, motor control center starter or switch, and the safety disconnect switch or control panel serving the equipment. Also, the power wiring between safety disconnect switch and the equipment line terminals.
- 21.6 Control wiring shall be defined as all wiring, either line voltage or low voltage, required for the control and interlocking of equipment, including but not limited to wiring to motor control stations, solenoid valves, pressure switches, limit switches, flow switches, thermostats, humidistats, safety devices, smoke detectors, and other components required for the proper operation of the equipment.
- 21.7 All motor starters which are not part of motor control centers and which are required for equipment furnished under this Division shall be furnished and installed by the Division furnishing the equipment and power wiring connected under Division 26. Motor starters and control devices in motor control centers shall be furnished and installed under Division 26.

- 21.8 Division 26 Contractor shall make all final connections of power wiring to equipment furnished under this Division.
- 21.9 Wiring diagrams complete with all connection details shall be furnished under each respective Section.
- 21.10 Motor starters supplied by Plumbing and/or Heating, Ventilating and Air Conditioning shall be fused combination type minimum NEMA Size 1, and conform to appropriate NEMA standards for the service required. Provide NEMA type 3R/12 gasketed enclosures in wet locations. Provide all starters with appropriately sized overload protection and heater strips provided in each phase, hand/off auto switches, a minimum of 2 NO and NC auxiliary contacts as required, and an integral disconnecting means. For ½ horsepower motors and below, when control requirements do not dictate the use of a starter, a manual motor starter switch with overload protection in each phase may be provided. Acceptable manufacturers are Allen Bradley, General Electric, Square D, Furnas and Cutler Hammer.

PART 22 - EQUIPMENT ROUGH-IN

22.1 Rough-in all equipment, fixtures, etc. as designed on the drawings and as specified herein. The drawings indicate only the approximate location of rough-ins. Mounting heights of all switches, receptacles, wall mounted fixtures and such equipment must be coordinated with the Architectural Designs. The Contractor shall obtain all rough-in information before progressing with any work for rough-in connections. Minor changes in the contract drawings shall be anticipated and provided for under this Division of the specifications to comply with rough-in requirements.

PART 23 - OWNER FURNISHED AND OTHER EQUIPMENT

23.1 Rough-in and make final connections to all Owner furnished equipment shown on the drawings and specified, and all equipment furnished under other sections of the specifications.

PART 24 - EQUIPMENT FINAL CONNECTIONS

- 24.1 Provide all final connections for the following:
 - 24.1.1 All equipment furnished under this Division.
 - 24.1.2 Electrical equipment furnished under other sections of the specification.
 - 24.1.3 Owner furnished equipment as specified under this Division.

PART 25 - INSERTS, ANCHORS, AND MOUNTING SLEEVES

25.1 Inserts and anchors must be:

- 25.1.1 Furnished and installed for support of work under this Division.
- 25.1.2 Mounting of equipment that is of such size as to be free standing and that equipment which cannot conveniently be located on walls, such as motor starters, etc., shall be rigidly supported on a framework of galvanized steel angle of Unistrut or B-line systems with all unfinished edges painted.
- 25.1.3 Furnish and install all sleeves as required for the installation of all work under all Sections of this Division and for all communication systems including any communication systems described in this Section which are bid to the General Contractor. Sleeves through floors, roof, and walls shall be as described in "Conduit and Fittings" Section 26 05 33.

PART 26 - SEISMIC ANCHORING

- 26.1 All switchgear and other free-standing electrical equipment or enclosures shall be anchored to the floor and braced at the top of the equipment to the structure. The Contractor shall submit drawings signed by the Contractors registered structural Engineer indicating method of compliance prior installation.
- 26.2 All sound systems, communication, signal or data networking equipment or enclosures shall be anchored to the structure. The Contractor shall submit drawings signed by the Contractors registered Structural Engineer indicating method of compliance prior to installation.

PART 27 - RUST PROOFING

- 27.1 Rust proofing must be applied to all ferrous metals and shall be in accordance with Section 05500 of these specifications and as noted below.
 - 27.1.1 Hot-dipped galvanized shall be applied and after forming of angle-iron, bolts, anchors, etc.
 - 27.1.2 Hot-dipped galvanized coating shall be applied after fabrication for junction boxes and pull boxes cast in concrete.

PART 28 - GENERAL WIRING

28.1 Where located adjacent in walls, outlet boxes shall not be placed back to back, nor shall extension rings be used in place of double boxes, all to limit sound transmission between rooms. Provide short horizontal nipple between adjacent outlet boxes, which shall have depth sufficient to maintain wall coverage in rear by masonry wall.

- 28.2 In those instances where outlet boxes, recessed terminal boxes, or recessed equipment enclosures are installed in a fire rated assembly, provide "Flamesafe FSD 1077" fire stopping pads or approved equal, over the outlet or box.
- 28.3 Complete rough-in requirements of all equipment to be wired under the contract are not indicated. Coordinate with respective trades furnishing equipment or with the Architect as the case may be for complete and accurate requirements to result in a neat, workmanlike installation.

PART 29 - SEPARATE CONDUIT SYSTEMS

- 29.1 Each electrical and signal system shall be contained in a separate conduit system as shown on the drawings and as specified herein. This includes each power system, each lighting system, each signal system of whatever nature, telephone, standby system, sound system, control system, fire alarm system, etc.
- 29.2 Further, each item of building equipment must have its own run of power wiring. Control wiring may be included in properly sized conduit for equipment feeders of #6 AWG and smaller, having separate conduit for larger sizes.

PART 30 - CLEANUP

- 30.1 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- 30.2 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.
- 30.3 During the progress of the work, keep the premises clean and free of debris.

PART 31 - UTILITY SERVICES

- 31.1 The Division 26 Contractor shall contact the serving utility companies; notify the serving power, telephone and cable TV utilities of the following:
 - 31.1.1 Name and address of Contractor.
 - 31.1.2 Estimated times of construction start, completion and required service connections.
 - 31.1.3 Project service voltage, phase load, and service size.
 - 31.1.4 Provide to the Architect written verification from each utility company indicating their concurrence with the contract documents.

- 31.2 Contractor shall notify underground service alert 48 hours before start of construction to determine location of existing utilities by calling (800) 422-4133. All work shall be in accordance with the Division 1 Sections of these specifications.
- 31.3 All utility company requirements shall be complied with and approval shall be obtained from the utility company for service equipment. Such as, verification of a field test of the ground fault protection on the main service equipment, panic hardware and etc.

PART 32 - TEST AND INSPECTION PROCEDURES – EXISTING MEDIUM VOLTAGE, AIR INSULATED, CIRCUIT BREAKER TESTS

- 32.1 Tests shall be done in accordance with ANSI/NETA Standards and by a contractor certified in medium voltage testing and procedures. Contractor qualifications shall be submitted to the electrical engineer of record for approval.
- 32.2 Testing shall not be done or scheduled until the outage is scheduled and approved by the owner. Outage shall not exceed 24 hours unless approved by the owner and coordinated with the CM and Architect of Record.
- 32.3 Visual and Mechanical Inspection
 - 32.3.1 Inspect physical and mechanical condition.
 - 32.3.2 Inspect anchorage, alignment, and grounding.
 - 32.3.3 Verify that all maintenance devices are available for servicing and operating the breaker.
 - 32.3.4 Clean the Unit.
 - 32.3.5 Inspect arc chutes.
 - 32.3.6 Inspect moving and stationary contacts for condition, wear, and alignment.
 - 32.3.7 Close/open breaker and check for binding, friction, contact alignment, contact sequence, and penetration.
 - 32.3.8 Perform all mechanical operation tests on the operating mechanism in accordance with manufacturer's published data.
 - 32.3.9 Inspect bolted electrical connections for high resistance using one of the following methods:
 - 32.3.9.1 Use of a low-resistance ohmmeter in accordance with Section 33.4.

- 32.3.9.2 Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.
- 32.3.9.3 Perform a thermographic survey in accordance with NETA standards.
- 32.3.10 Verify cell fit and element alignment.
- 32.3.11 Verify racking mechanism operation.
- 32.3.12 Inspect puffer operation.
- 32.3.13 Use appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.
- 32.3.14 Record as-found and as-left operation-counter readings.
- 32.4 Electrical Tests
 - 32.4.1 Perform resistance measurements through bolted connections with a low-resistance ohmmeter, if applicable. See Section 33.3.
 - 32.4.2 Perform insulation-resistance tests for one minute on each pole, phase-to-phase and phase-to-ground with the circuit breaker closed, and across each open pole. Apply voltage in accordance with manufacturer's published data.
 - 32.4.3 Perform a contact/pole-resistance test.
 - 32.4.4 With the breaker in a test position, perform the following tests:
 - 32.4.4.1 Trip and close breaker with the control switch.
 - 32.4.4.2 Trip breaker by operating each of its protective relays. Recalibrate and adjust relay settings based on time current study to be done for the project.
 - 32.4.4.3 Verify mechanism charge, trip-free, and antipump functions.
 - 32.4.4.4 Verify blowout coil circuit continuity.
 - 32.4.4.5 Verify operation of heaters, if applicable.
 - 32.4.4.6 Test instrument transformers in accordance with NETA standards.
- 32.5 Test Values
 - 32.5.1 Test Values Visual and Mechanical

- 32.5.1.1 Bolt-torque levels should be in accordance with manufacturer's published data.
- 32.5.1.2 Results of the thermographic survey shall be in accordance with NETA standards.
- 32.5.1.3 Compare travel and velocity values to manufacturer's published data.
- 32.5.2 Test Values Electrical
 - 32.5.2.1 Compare bolted connection resistance values to values of similar connections. Investigate values which deviate from those of similar bolted connections by more than 50 percent of the lowest value.
 - 32.5.2.2 Circuit breaker insulation resistance should be in accordance with manufacturer's published standards.
 - 32.5.2.3 Insulation-resistance values of circuit breakers should be in accordance with manufacturer's published data. Values of insulation resistance less than manufacturer's recommendations should be investigated.
 - 32.5.2.4 Microhm or dc millivolt drop values shall not exceed the high levels of the normal range as indicated in the manufacturer's published data. If manufacturer's data is not available, investigate values that deviate from adjacent poles or similar breakers by more than 50 percent of the lowest value.
 - 32.5.2.5 Breaker mechanism charge, close, open, trip, trip-free, and antipump features shall function as designed.
 - 32.5.2.6 Minimum pickup for trip and close coils shall be in accordance with manufacturer's published data.
 - 32.5.2.7 Power-factor or dissipation-factor and capacitance values should be within ten percent of nameplate rating for bushings. Hot collar tests are evaluated on a milliampere/milliwatt loss basis, and the results should be compared to values of similar bushings.
 - 32.5.2.8 If no evidence of distress or insulation failure is observed by the end of the total time of voltage application during the over potential test, the circuit breaker is considered to have passed the test.
 - 32.5.2.9 The blowout coil circuit should exhibit continuity.
 - 32.5.2.10 Heaters should be operational.

32.5.2.11 The results of instrument transformer tests shall be in accordance with manufacturer's standards.

PART 33 - PAINTING

33.1 Paint all unfinished metal as required in accordance with Division 1 of these specifications. (Galvanized and factory painted equipment shall be considered as having a sub-base finish.)

PART 34 - GENERAL DEMOLITION REQUIREMENTS

- 34.1 Remove existing work and items which are required to be removed in such manner that minimum damage and disturbance is caused to adjacent and connection work scheduled to remain. Repair or replace existing work schedule.
- 34.2 Include preparation of existing areas to receive new materials and removal of materials and equipment to alter or repair the existing building as indicated and as specified.
- 34.3 Perform demolition exercising proper care to prevent injury to the public, workmen and adjoining property.
- 34.4 Perform the removal, cutting, drilling of existing work with extreme care and use small tools in order not to jeopardize the structural integrity of the building.
- 34.5 Rebuild to existing condition or better, existing work which has to be removed to allow the installation of new work as required.
- 34.6 Remove, protect and reinstall existing items as indicated. Replace materials scheduled for reuse which are damaged by the Contractor to the extent that they cannot be reused, with equal quality material, and installation.
- 34.7 Do not reuse in this project materials and items removed from existing site or building, except with specific written approval by the Architect in each case, unless such removed material or item is specifically indicated or specified to be reused.
- 34.8 Remove materials and equipment indicated to be salvaged for reinstallation and store to prevent damage and reinstall as the work progresses. Do not reuse in this project, other materials and equipment removed from existing site or building, except with specific written approval by the Architect in each case.
- 34.9 Patch areas requiring patching, including damage caused by removing, relocating or adding fixtures and equipment, damages caused by demolition at adjacent materials.
- 34.10 Do not stockpile debris in the existing building, without the approval of the Architect. Remove debris as it accumulates from removal operations to a legal disposal area.

- 34.11 Contractor to assume existing oil filled and dry transformers, oil switches, ballasts, lamps, wooden poles, cross arms, computers, computer monitors, and conductor insulation containing materials considered hazardous. Comply with local, state and federal regulations, laws, and ordinances concerning removal, handling and protection against exposure or environmental pollution. Contractor shall be responsible for removal of the above hazardous materials where encountered. Include all costs for such removal as part of this contract.
- 34.12 All fluorescent, compact fluorescent, high intensity discharge, metal halide, mercury vapor, high and low-pressure sodium, and neon lamps are to be disposed of as required by the California Waste Rule Regulations as described in the California Code of Regulations, Title 22, Division 4.5 and Chapter 23.
- 34.13 **Communication System:** Where new communication systems, (including telephone, intercom, clock, security, fire alarm, data, multimedia, CATV or lighting controls) are installed to replace existing systems, unless where otherwise directed the existing systems shall remain fully operational until the new system has been installed and tested. Demolition of the existing systems shall include removal of all equipment and associated wiring and exposed conduits and providing new blank covers for all abandoned device locations.
- 34.14 **Salvage Power Equipment:** The Contractor shall carefully remove all existing switchboards, panelboards, transformers, and confirm in writing which items the Owner wishes to keep. These items shall be transported to the Owner's maintenance facilities by the Contractor. All remaining items shall be disposed of by the Contractor.
- 34.15 **Salvage Lighting Equipment:** The Contractor shall confirm in writing which items the Owner wishes to keep. These items shall be transported to the Owner's maintenance facilities by the Contractor. All remaining items shall be disposed of by the Contractor.
- 34.16 **Salvage Communication Equipment:** The Contractor shall carefully remove all communication devices (telephone, intercom, clock, security, fire alarm, data, multimedia, CATV or lighting controls) and box each type of devices separately. The Contractor shall deliver all items to the Owner's maintenance facility.

PART 35 - PROJECT CLOSEOUT

- 35.1 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this Division, in accordance with Division 1 of these specifications and as described below.
- 35.2 Equipment Lists and Maintenance Manuals:
 - 35.2.1 Prior to completion of job, Contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items

for every piece of material equipment supplied under this Section of the specifications:

- 35.2.1.1 Name, model, and manufacturer.
- 35.2.1.2 Complete parts drawings and lists.
- 35.2.1.3 Local supply for parts and replacement and telephone number.
- 35.2.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.
- 35.3 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

PART 36 - RECORD DRAWINGS

- 36.1 The Division 26 Contractor shall maintain record drawings as specified in accordance with Division 1 of these specifications, and as noted below.
- 36.2 Drawings shall show locations of all concealed underground conduit runs, giving the number and size of conduit and wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all of the actual additions or changes made. All as-built drawing information shall be prepared by the contractor in AutoCAD, updating the contract computer files as needed to reflect actual installed conditions for all site plans, lighting, power, communication, networking, audio visual, security or fire alarms systems included in the scope of work for this project.
- 36.3 One set of these record drawings shall be delivered to the Architect. The engineer will review documents for completeness and will not be responsible for editing contractor computer files.

PART 37 - CHANGES AND EXTRA WORK

- 37.1 When **changes** in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:
 - 37.1.1 The material Costs shall **not exceed** the latest edition of the "Trade Service" end column "C" price list. The materials prices may be higher only where the Contractor can produce invoices to substantiate higher material costs. The Contractor shall submit a print out copy of the trade service sheets with the change order to substantiate these values.
 - 37.1.2 The labor Costs shall <u>not exceed</u> the latest edition of the "NECA Manual of Labor Units" <u>normal column</u>.
- 37.2 When **credits** in work are requested, the Division 26 Contractor shall provide unit prices for the work involved in accordance with Division 1 of these specifications, and the following:
 - 37.2.1 The Material Costs shall <u>not be less than 80% of</u> the latest edition of the "Trade Service" end column price list. The materials prices may be lower only where the Contractor can produce invoices to substantiate lower material costs. Restocking fees may also be included in this amount where applicable.
 - 37.2.2 The Labor Costs shall <u>not be less than 80% of</u> the latest edition of the "NECA Manual of Labor Units" <u>normal column</u>.
- 37.3 Conduit pricing for conduits of all types sized 3" or smaller.

When changes in the scope of work require the Contractor to estimate conduit Installations, they shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for conduit installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

- 37.3.1 Couplings.
- 37.3.2 Set Screw or Compression Fittings, locknuts, Bushings and washers.
- 37.3.3 Conduit straps and associated screws or nails.
- 37.3.4 LB fittings or other specialty fittings or specialty mounting hardware may be included where needed.
- 37.4 Wire pricing for all types and sizes.

When changes in the scope of work require the Contractor to estimate wire installations, they shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for wire installation represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

37.4.1 Locknuts, Bushings, tape, wire markers.

37.5 When changes in the scope of work require other equipment installations such as lighting fixtures, panelboards, switchboards, wiring devices, communications equipment etc. the Contractor shall **NOT include labor values (only material cost may be included)** for any of the below items. The labor values for these equipment items represented in the NECA manual are inflated to a point where additional labor for the below items can not be justified.

37.5.1 Associated screws, nails, bolts, anchors or supports.

37.5.2 Locknuts, washers, tape.

37.6 The total labor hours for extra work will be required to be calculated as follows:

37.6.1 Change orders with 1 to 30 total labor hours

General Laborer	10%	of total labor hours
Journeyman	10%	of total labor hours
Foreman	80%	of total labor hours

37.6.2 Change orders with 31 to 100 total labor hours

General Laborer	20%	of total labor hours
Journeyman	40%	of total labor hours
Foreman	40%	of total labor hours

37.6.3 Change orders with over 100 total labor hours

General Laborer	30%	of total labor hours
Journeyman	50%	of total labor hours
Foreman	20%	of total labor hours

37.7 When change orders are issued which allow the work to be completed in the normal sequence of construction, the labor rates shall be based on the most current "Prevailing Wage" – straight time total hourly rate. When change orders require the Contractor to work out of sequence the "Prevailing Wage"– daily overtime hourly rate shall apply. Special condition situations shall be reviewed on an individual basis for alternate hourly rate schedules.

- 37.8 Costs <u>will not</u> be permitted for additional supervision on site or office time for processing any change order other than the 10% overhead allowance as described in Division 1. Cost for special equipment required to install items for an individual change order are permitted and must be individually identified. Lump Sum cost for small tools or any other cost not specifically required for the change order are <u>not</u> permitted.
- 37.9 Contractor estimates shall be formatted to clearly identify each of the following:
 - 37.9.1 Line item description of each type of material or labor item.
 - 37.9.2 Description of quantity for each item.
 - 37.9.3 Description of (material cost per / quantity).
 - 37.9.4 Description of (labor cost per / quantity).
 - 37.9.5 Description of total labor hour breakdown per Foreman, Journeyman or General Laborer as described above.

PART 38 - ELECTRONIC FILES

- 38.1 The Contractor shall make a <u>written</u> request directly to Johnson Consulting Engineers for electronic drawing files. As a part of the written request, please include the following information:
 - 38.1.1 Clearly indicate each drawing sheet needed (i.e., E1.1, E2.1, etc.).
 - 38.1.2 Identify the name, phone number, mailing address and e-mail address of the person to receive the files.
 - 38.1.3 Provide written confirmation and agreement with the requirements described for payment of computer files, as described below.
- 38.2 Detail or riser diagram sheets, or any other drawings other than floor plans or site plans, *will not be made available to the Contractor*.
- 38.3 Files will only be provided in the AutoCAD format in which they were created.
- 38.4 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use.
- 38.5 CAD files will be made available via e-mail or on disk, depending on the quantity of files requested. The Contractor requesting the files will be required to pay \$50.00 per drawing plan, or \$300.00 maximum, whichever is <u>less</u>.

SECTION 26 05 19 POWER CONDUCTORS

PART 1 – GENERAL

- 1.1 Furnish and install wire and cable for branch circuits and feeders specified herein and as shown on the electrical drawings.
- 1.2 Submittals: Submit manufacturers' data for the following items:
 - 1.2.1 All cables and terminations

1.3 <u>Common submittal mistakes which will result in the submittals being rejected:</u>

- 1.3.1 Not including all items listed in the above itemized description.
- 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining, or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.3 Not including actual manufacturer's catalog information of proposed products.
- 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed

PART 2 – PRODUCTS

- 2.1 Wire and cable Rated 120 volt to 600 volt.
 - 2.1.1 All wire and cable shall be new, 600 volt insulated copper, of types specified below for each application. All wire and cable shall bear the UL label and shall be brought to the job in unbroken packages. Wire insulation shall be the color as specified herein and shall be type THWN-2. Insulated conductors shall be installed in all exterior exposed raceways. Conductors for branch circuit lighting, receptacle, power and miscellaneous systems shall be a minimum of No. 12 AWG. Increase conductor size to No. 10 AWG for 120 volt circuits greater than 100 feet from the panel to the load and for 277 volt circuits greater than 200 feet from the panel to the load. Circuit home-runs indicated to be larger than No. 12 must be increased the entire length of the circuit, including equipment grounding conductor. Wire sizes No. 14 through No. 10 shall be solid. No. 8 and larger shall be stranded.
 - 2.1.2 Aluminum conductors will be permitted (only where specifically identified on the drawings. See "600 Volt Feeder Schedule") in sizes 2/0 or larger. Conductors shall be listed by Underwriters Laboratories (UL) and suitable for op

eration at 600 volts or less, at a maximum operating temperature of 90N C maximum in wet or dry locations. Conductors shall be marked "SUN-RES". Aluminum alloy conductors shall be compact stranded conductors of STABILOY[®] (AA-8030) as manufactured by Alcan Cable or Listed equal. AA-8000 Series aluminum alloy conductor material shall be recognized by The Aluminum Association.

- 2.1.3 MC type armored cable reference Section 26 05 33.
- 2.2 Wire and cable for systems below120 volts.
 - 2.2.1 All low voltage and communications systems cables routed underground shall be provided with a moisture resistant outer jacket, West Penn "Aquaseal" or equal, unless otherwise specified.

PART 3 - EXECUTION

- 3.1 Wire and cable shall be pulled into conduits without strain using powdered soapstone, mineralac, or other approved lubricant. In no case shall wire be repulled if same has been pulled out of a conduit run for any purpose. No conductor shall be pulled into conduit until conduit system is complete, including junction boxes, pull boxes, etc.
- 3.2 All connections of wires shall be made as noted below:
 - 3.2.1 Connections to outlets and switches: Wire formed around binding post of screw.
 - 3.2.2 No. 10 wire and smaller: Circuit wiring connections to lighting fixtures and other hard wired equipment shall be made with pressure type solderless connectors, Buchanan, Scotchlock, Wing Nut, or approved equal. Alternate "WAGO" #773 series or "IDEAL" #32, 33, 34 and 39 series push wire style connectors are also acceptable.
- 3.3 All wiring shall be continuous without splicing unless where specifically noted on the drawings or where permitted below.
 - 3.3.1 No. 10 wire and smaller above grade: Quantities as needed, connection made with pressure type solderless connectors, Scotchlock or equal.
 - 3.3.2 No. 10 wire and smaller below grade: Quantities as needed, connection made with 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
 - 3.3.3 No. 8 wire and larger above grade: Quantities <u>only</u> where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as

recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).

- 3.3.4 No. 8 wire and larger below grade: Quantities <u>only</u> where indicated, 'Raychem' long barrel compression terminals with crimping tool and quantity of crimps as recommended by manufacturer, provide 'Raychem' WCSM-S series in-line heat shrink, sealant coated splice kit. Alternate products must be UL listed for direct burial/submersible and rated to (1000V).
- 3.4 All wiring throughout shall be color coded as follows:

480 volt system	208 or 240 volt system
Brown	Black
Orange	Red
Yellow	Blue
Grey	White
Green	Green
	Brown Orange Yellow Grey

- 3.5 Wiring must be color coded throughout its entire length, except feeders may have color coded plastic tape at both ends and any other accessible point.
- 3.6 All control wiring in a circuit shall be color coded, each phase leg having a separate color, and with all segments of the control circuit, whether in apparatus or conduit, utilizing the same color coding.
- 3.7 At all terminations of control wiring, the wiring shall have a numbered T&B or Brady plastic wire marker.
- 3.8 Cables when installed are to be properly trained in junction boxes, etc., and in such a manner as to prevent any forces on the cable which might damage the cable.
- 3.9 All conductors to be installed into a common raceway, shall be pulled into the raceway at the same time.
- 3.10 All conductors shall be installed in such a manner as to not exceed the manufacturers' recommended pulling tension and bending radius. The equipment used for pulling must be specifically designed for the purpose. Motorized vehicles such as pickup trucks, are not acceptable.

SECTION 26 05 26 GROUNDING

PART 1 – GENERAL

- 1.1 Furnish and install grounding and grounding conductors and electrodes as specified herein and as shown on the drawings.
- 1.2 Submit catalog data for all components.
- 1.3 **Common submittal mistakes which will result in the submittals being rejected:**
 - 1.3.1 Not including all items listed in the above itemized description.
 - 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.3.3 Not including actual manufacturer's catalog information of proposed products.
 - 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – EXECUTION

- 2.1 Grounding
 - 2.1.1 All panelboard cabinets, equipment, enclosures, and complete conduit system shall be grounded securely in accordance with pertinent sections of CEC Article 250. Conductors shall be copper. All electrically operated equipment shall be bonded to the grounded conduit system. All non-current carrying conductive surfaces that are likely to become energized and subject to personal contact shall be grounded by one or more of the methods detailed in CEC Article 250. All ground connections shall have clean contact surfaces. Install all grounding conductors in conduit and make connections readily accessible for inspection.
 - 2.1.2 Provide an insulated equipment grounding conductor in all branch circuit and feeder raceway systems, sized in accordance with CEC 250-1122.
 - 2.1.3 Provide an additional individual insulated grounding conductor for each circuit which contains an isolated ground receptacle or surge suppression receptacle.
 - 2.1.4 Grounding of metal raceways shall be assured by means of provisions of grounding bushings on feeder conduit terminations at the panelboard, and by

means of insulated continuous stranded copper grounding wire extended from the ground bus in the panelboard to the conduit grounding bushings.

- 2.1.5 Except for connections which access for periodic testing is required, make grounding connections which are buried or otherwise inaccessible by exothermite type process.
- 2.1.6 The following ohmic values shall be test certified for each item listed. A written report signed and witnessed by the project IOR shall be provided to the engineer. If the ohmic value listed cannot be obtained additional grounding shall be installed to reach the value listed.

 - 2.1.6.2 Step down transformers and non-current carrying metal parts 25 ohms.
 - 2.1.6.3 Manholes, handholes, etc.

SECTION 26 05 33 CONDUIT AND FITTINGS

PART 1 – GENERAL

- 1.1 Furnish and install conduit and fittings as shown on the drawings and as specified herein.
- 1.2 Submit Manufacturer's data on the following:
 - 1.2.1 Conduit.
 - 1.2.2 Fittings
 - 1.2.3 Fire stopping Material.
 - 1.2.4 Surface Raceways.
 - 1.2.5 Type MC or MC-PCS cable, provide construction details and UL "E" number.

1.3 **Common submittal mistakes which will result in the submittals being rejected:**

- 1.3.1 Not including all items listed in the above itemized description.
- 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.3 Not including actual manufacturer's catalog information of proposed products.
- 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Rigid steel conduit, intermediate metal conduit (IMC), electrical metallic tubing (EMT) and flexible metallic conduit shall be steel, hot dipped galvanized after fabrication.
- 2.2 PVC conduit shall be Carlon or approved equal.
- 2.3 Liquid tight flexible metal conduit shall be Anaconda Sealtite type UA or approved equal. Fittings shall be Appleton, Crouse-Hinds, Steel City, T&B, or equivalent.
- 2.4 MC type armored cable, when utilized, shall be provided with the following:

- 2.4.1 Comply with UL 1479 and CEC 330
- 2.4.2 90°C, copper, THHN conductors.
- 2.4.3 Minimum #12 insulated grounding conductor.
- 2.4.4 Conductors sized No. 10 and smaller shall be solid, No. 8 and larger shall be stranded.
- 2.4.5 Oversized (150%) neutrals or separate neutrals shall be provided.
- 2.4.6 Increase phase conductors to No. 10 AWG for 120 volt circuits greater than 100 feet from panel to load and for 277 volt circuits greater than 200 feet from panel to load. Where required increase conductor sizes for entire length of circuit.
- 2.4.7 Interlocked armored <u>aluminum</u> sheath.
- 2.4.8 AC or BX type armored cable shall <u>**not**</u> be substituted in lieu of MC type cable.
- 2.4.9 Color code cable according to cable type and configuration.
- 2.4.10 Acceptable manufacturers are AFC and Alflex.
- 2.5 MC-PCS luminary armored cable , when utilized, shall be provided with the following:
 - 2.5.1 Comply with UL 1479 and CEC 330
 - 2.5.2 90°C, copper, THHN conductors.
 - 2.5.3 Minimum #12 insulated grounding conductor.
 - 2.5.4 Lighting phase conductors sized No. 10 and smaller shall be solid, lighting control conductors shall be sized no. 16 solid.
 - 2.5.5 Interlocked armored <u>aluminum</u> sheath.
 - 2.5.6 AC or BX type armored cable shall **<u>not</u>** be substituted in lieu of MC type cable.
 - 2.5.7 Color code phase cable according to cable type and configuration. color code control conductors purple/gray.
 - 2.5.8 Acceptable manufacturers are AFC and Alflex.
- 2.6 Fire stopping material shall provide an effective seal against fire, heat, smoke and fire gases. Fire stopping material shall be tested to comply with ASTME 814 and UL 1479.

The submittal for this product shall include the UL listed system number and installation requirements for each type of penetration seal required for this project.

- 2.7 Each length of conduit shall be stamped with the name or trademark of the manufacturer and shall bear the UL label.
- 2.8 All plastic conduit shall be rigid, schedule 40, heavy wall PVC. All PVC conduit shall be UL listed. Underground utility company conduits shall comply with local utility co. requirements.
- 2.9 Plastic conduit shall be stored on a flat surface, and protected from the direct rays of the sun.
- 2.10 Where branch circuit or communication raceways cannot be concealed in ceilings or walls and are required to be exposed in interior spaces, provide nonmetallic surface raceway system sized per the manufacturer capacity requirements. A full complement of nonmetallic fittings must be available and matching device boxes and cover plates must be provided. The color of the raceway system, components and boxes shall be (white). Where data networking cabling is to be installed, all raceway fittings shall meet Category 5 radius requirements. Where specific raceway types have been noted on the drawings they shall be as follows:

2.10.1 System 'SR'	Hubbell Wiremold Panduit Hellerman-Tyton	WALLTRAK 1 series ECLIPSE PN05series LD5 series TSR2 series
2.10.2 System 'SR2'	Hubbell Wiremold Panduit Hellerman-Tyton	WALTRAK 22 2300D Series D2P10 TSR3 series
2.10.3 System 'SR3'	Hubbell Wiremold Panduit Hellerman-Tyton	BASETRAK series 5400 - series 70 series MCR Infostream" series

Provide with offset boxes, inline boxes may only be used where specifically shown on the drawings.

PART 3 - FITTINGS

- 3.1 All metallic fittings, including those for EMT, flexible conduit, or malleable iron. Die cast fittings of any other material are not permitted.
- 3.2 Locknuts shall be steel or malleable iron with sharp clean cut threads.

- 3.3 Entrance seals shall be 0.Z. type FSK or equivalent.
- 3.4 Bushings and locknuts: Where conduits enter boxes, panels, cabinets, etc., they shall be rigidly clamped to the box by locknuts on the outside, and a lock nut and plastic bushing on the inside of the box. All conduits shall enter the box squarely.
- 3.5 Furnish and install insulated bushings as per CEC article No. 300 4 (F) on all conduits. The use of insulated bushings does not exclude the use of double locknuts to fasten conduit to the box.
- 3.6 Transition from plastic to steel conduits shall be with PVC female threaded adaptors.
- 3.7 Couplings and connectors for rigid steel or IMC conduit must be threaded, or compression type (set screw fittings are not permitted).
- 3.8 Couplings and connectors for EMT shall be compression, watertight. Set screw connectors are not acceptable, except for systems below 120 volts.
- 3.9 MC or MC-PCS type armored cable shall be provided with listed clamp type die cast zinc set screw connectors. Anti-short bushings shall be provided at all cable ends.
- 3.10 Connectors for flexible metal conduit shall be steel or malleable iron with screw provided to clinch the conduit into the adapter body. For sizes up to ¾" a screw-in, "Jake type," fitting may be used.
- 3.11 Install approved expansion fittings, or liquid tight flex conduit with a minimum 6" slack for conduits passing through all expansion and seismic joints.

PART 4 - EXECUTION

- 4.1 All branch circuits shall be installed concealed in walls or above ceilings or in concrete floor slabs. PVC conduits installed in concrete floor slabs shall transition to PVC coated rigid steel where conduits penetrate above finished grade or finished floor.
- 4.2 Conduit sizes for various numbers and sizes of wire shall be as required by the CEC, but not smaller than ½" for power wiring and ¾" for communications and fire alarm systems unless otherwise noted. Conduit in slab or below grade shall be ¾" minimum trade size, unless otherwise identified.
- 4.3 Conduit size shall be such that the required number and sizes of wires can be easily pulled in and the Contractor shall be responsible for the selection of the conduit sizes to facilitate the ease of pulling. Conduit sizes shown on the drawings are minimum sizes in accordance with appropriate tables in the CEC. If because of bends or elbows a larger conduit size is required, the Contractor shall so furnish without further cost to the Owner.

- 4.4 The Contractor shall be entirely responsible for the proper protection of this work from the other trades on the job. When conduit becomes bent or holes are punched through same, or outlets moved after being roughed-in, the Contractor shall replace same, without additional cost to the Owner.
- 4.5 Rigid steel conduit or IMC shall be used as follows:
 - 4.5.1 Exposed exterior locations.
 - 4.5.2 Exposed interior locations below eight feet above floor, except in electrical rooms and closets.
 - 4.5.3 In hazardous or classified areas as required by CEC.
- 4.6 EMT conduit shall be used for areas as follows:
 - 4.6.1 All interior communications, signal, and data networking systems.
 - 4.6.2 All interior power wiring systems where not required to be in rigid steel, IMC or flexible conduit.
- 4.7 Flexible conduit shall be used for areas as follows:
 - 4.7.1 To connect motors, transformers, and other equipment subjected to vibration or where specifically detailed on the drawings.
 - 4.7.2 Flexible conduit shall not be used to replace EMT in other locations where the conduit will be exposed.
 - 4.7.3 Flexible metal conduit shall be ferrous. Installation shall be such that considerable slack is realized. The conduit shall contain separate code sized grounding conductor.
 - 4.7.4 Liquid tight flexible conduit shall be used in conformance with CEC in lengths not to exceed 4'. For equipment connections, route the conduit at 90 degrees to the adjacent path for point of connection. The conduit shall contain separate code sized grounding conductor. Use liquid tight flexible conduit for all equipment connections exposed in possible wet, corrosive or oil contaminated areas, e.g., shops and outside areas.
- 4.8 MC armored cable may be used as follows:
 - 4.8.1 All branch circuit wiring for lighting and power circuits where permitted and installed in compliance with UL 1569 and CEC 330.
- 4.9 MC-PCS luminary armored cable may be used as follows:

- 4.9.1 All Lighting branch circuit wiring for lighting circuits where permitted and installed in compliance with UL 1569 and CEC 300-22(c), 330. This cable permits conductors of control circuits to be placed in a cable with lighting power circuits or class 1 circuits.
- 4.9.2 It shall not be considered an acceptable option to install lighting control class 1 circuits as an open wire installation.
- 4.10 MC and MC-PCS armored cable shall **<u>not</u>** be used for the following areas:
 - 4.10.1 Any exterior, underground or buried in concrete circuits.
 - 4.10.2 Any circuits feeding HVAC equipment or pumps or any circuit with 30 AMPs or greater overcurrent protection.
 - 4.10.3 Any exposed interior locations except in electrical, communication or mechanical equipment rooms.
 - 4.10.4 Any exposed interior damp/wet locations, kitchens, science classrooms, shop areas, or concealed in science classroom casework, unless provided with approved PVC jacket.
 - 4.10.5 Any hazardous rated area.
- 4.11 Plastic conduit shall be used for all exterior underground, in slab, and below slab on grade conduit installations. Install bell ends at all conduit terminations in manholes and pull boxes. Where plastic conduit transitions from below grade to above grade, no plastic conduit shall extend above finished exterior grade, or above interior finished floor level.
- 4.12 Plastic conduit joints shall be made up in accordance with the manufacturer's recommendations for the particular conduit and coupling selected. Conduit joint couplings shall be made watertight. Plastic conduit joints shall be made up by brushing a plastic solvent cement on the inside of a plastic fitting and on the outside of the conduit ends. The conduit and fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly.
- 4.13 All underground conduit depths shall be as detailed on the drawings or a minimum of 30" below finished grade (when not specifically detailed otherwise), for all exterior underground conduits. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.
- 4.14 All underground conduits for power systems (600v and higher), shall be concrete encased and a minimum of 48" below grade or as detailed on the drawings. Where concrete slurry or concrete encasement is provided, include "Red" color dye in mixture.

- 4.15 Conduit shall be continuous from outlet to outlet, cabinet or junction box, and shall be so arranged that wire may be pulled in with the minimum practical number of junction boxes.
- 4.16 All conduits shall be concealed wherever possible. All conduit runs may be exposed in mechanical equipment rooms, electrical equipment rooms, electrical closets, and in existing or unfinished spaces. No conduit shall be run exposed in finished areas without the specific approval of the Architect.
- 4.17 All raceways which are not buried or embedded in concrete shall be supported by straps, clamps, or hangers to provide a rigid installation. Exposed conduit shall be run in straight lines at right angles to or parallel with walls, beams, or columns. In no case shall conduit be supported or fastened to other pipes or installed to prevent the ready removal of other trades piping. Wire shall not be used to support conduit.
- 4.18 It shall be the responsibility of the Contractor to consult the other trades before installing conduit and boxes. Any conflict between the location of conduit and boxes, piping, duct work, or structural steel supports, shall be adjusted before installation. In general, large pipe mains, waste, drain, and steam lines shall be given priority.
- 4.19 Conduits above lay-in grid type ceilings shall be installed in such a manner that they do not interfere with the "lift-out" feature of the ceiling system. Conduit runs shall be installed to maintain the following minimum spacing wherever practical.
 - 4.19.1 Water and waste piping not less than 3".
 - 4.19.2 Steam and steam condensate lines not less than 12".
 - 4.19.3 Radiation and reheat lines not less than 6".
- 4.20 Provide all necessary sleeves and chases required where conduits pass through floors or walls as part of the work of this section. Core drilling will only be permitted where approved by the Architect.
- 4.21 All empty conduits and surface mounted raceways shall be provided with a ¼" polypropylene plastic pull cord and threaded plastic or metal plugs over the ends. Fasten plastic "Dymo" tape label to exposed spare conduit to identify "power" or "communication" system, and to where it goes.
- 4.22 The ends of all conduits shall be securely plugged, and all boxes temporarily covered to prevent foreign material from entering the conduits during construction. All conduit shall be thoroughly swabbed out with a dry swab to remove moisture and debris before conductors are drawn into place.

- 4.23 Bending: Changes in direction shall be made by bends in the conduit. These shall be made smooth and even without flattening the pipe or flaking the finish. Bends shall be of as long a radius as possible, and in no case smaller than CEC requirements.
 - 4.23.1 For power conduits for conductors (600v and below), provide minimum 36" radius (vertical) and 72" radius (horizontal) bends.
 - 4.23.2 For power conduits for conductors (greater than 600v), provide minimum 72" radius (vertical) and 72" radius (horizontal) bends.
- 4.24 Supports: Conduit shall be supported at intervals as required by the California Electrical Code. Where conduits are run individually, they shall be supported by approved conduit straps or beam clamps. Straps shall be secured by means of toggle bolts on hollow masonry, machine screws or bolts on metal surfaces, and wood screws on wood construction. [No perforated straps or wire hangers of any kind will be permitted. Where individual conduits are routed, or above ceilings, they shall be supported by hanger rods and hangers.] Conduits installed exposed in damp locations shall be provided with clamp backs under each conduit clamp, to prevent accumulation of moisture around the conduits.
- 4.25 Where a number of conduits are to be run exposed and parallel, one with another, they shall be grouped and supported by trapeze hangers. Hanger rods shall be fastened to structural steel members with suitable beam clamps or to concrete inserts set flush with surface. A reinforced rod shall be installed through the opening provided in the concrete inserts. Beam clamps shall be suitable for structural members and conditions. Rods shall be galvanized steel 3/8" diameter minimum. Each conduit shall be clamped to the trapeze hanger with conduit clamps.
- 4.26 All concrete inserts and pipe clamps shall be galvanized. All steel bolts, nuts, washers, and screws shall be galvanized or cadmium plated. Individual hangers, trapeze hangers and rods shall be prime-coated.
- 4.27 Openings through fire rated floors/walls and/or smoke walls through which conduits pass shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. Sleeves shall be provided for power or communication system cables which are not installed in conduits, and shall be sealed inside and out to comply with manufacturers UL system design details. Where multiple conduits and/or cable tray systems pass thru fire-rated walls at one location, the Contractor shall submit copies of the manufacturers UL system design details proposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.
- 4.28 Provide cap or other sealing type fitting on all spare conduits. Conduits stubbed into buildings from underground where cable only extends to equipment, the conduit/cable end shall be sealed to prevent moisture from entering the room or space.

- 4.29 All conduits which are part of a paralleled feeder or branch circuit shall be installed underground.
- 4.30 All conduits which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
 - 4.30.1 The Contractor shall coordinate all conduit requirements with each system supplier prior to bid to determine special conduit system requirements.
 - 4.30.2 The Contractor shall provide a pull rope in all conduits for these systems.
 - 4.30.3 The Contractor shall provide conduit sleeves for all open cable installations thru rated walls or block walls. Provide conduit from each building main termination cabinet or backboard to the nearest accessible ceiling for access into all electrical or communications rooms.
- 4.31 In addition to the above requirements, the following requirements shall apply to all data networking conduits:
 - 4.31.1 Flexible metal conduit may only be used where required at building seismic and/or expansion joints.
 - 4.31.2 All underground conduits shall be provided with minimum 24" radius elbows (vertical) and 60" (horizontal).
 - 4.31.3 No length of conduit above grade shall be installed to exceed 150 feet between pull boxes, or points of connection, unless where specifically detailed on the drawings.
 - 4.31.4 No length of conduit shall be installed to exceed two 90 degree bends between pull boxes, or points of connection, unless where specifically detailed on the drawings.
- 4.32 Where surface raceways are installed in interior spaces, the Contractor shall take care to route in straight lines at right angles to or parallel with walls, beams, or columns. All raceways and device boxes shall be securely screwed to the finish surface with zinc screw "Auger" anchors Stk #ZSA1K by Gray Bar Electric or equal. Tape adhesive application will not be permitted.
- 4.33 The Contractor who installs surface raceway systems shall provide and install complete with wire retention clips, one for every (8) vertical feet or (5) horizontal feet or portion thereof. This Contractor shall also provide <u>each</u> raceway channel with pull strings.

- 4.34 It shall be the responsibility of the Contractor installing the raceway to coordinate the installation of raceway device plates and inserts with the communications or data contractors.
- 4.35 MC or MC-PCS cable shall be cut using a specific metallic sheath armor stripping tool. The use of hacksaws, dikes or any other tools not specifically designed to remove the armor sheath will not be permitted.
- 4.36 MC or MC-PCS cables installed in attic spaces or above lay-in ceilings shall be installed to be protected from physical damage. The cable shall be mounted along the sides or bottom of joists, rafters or studs.
- 4.37 Support wires used for supporting ceilings, lighting fixtures or other equipment items shall <u>not</u> be used to support MC or MC-PCS cables. Conduits, duct work, piping or any other equipment shall not be used to support or mount MC cables.
- 4.38 MC or MC-PCS cable supports, fasteners and clips shall be designed specifically for use with MC cables. Standard conduit supports, fasteners and clips, nails or other items are not permitted for installing MC cables.

SECTION 26 05 34 OUTLET AND JUNCTION BOXES

PART 1 - GENERAL

- 1.1 Furnish and install electrical wiring boxes as specified and as shown on the electrical drawings.
- 1.2 Submit manufacturer's data for all items.

1.3 <u>Common submittal mistakes which will result in the submittals being rejected:</u>

- 1.3.1 Not including all items listed in the above itemized description.
- 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.3 Not including actual manufacturer's catalog information of proposed products.
- 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Boxes shall be as manufactured by Steel City, Appleton, Raco, or approved equal.
- 2.2 All boxes must conform to the provisions of Article 370 of the CEC. All boxes shall be of the proper size to accommodate the quantity of conductors enclosed in the box. Minimum box size shall be 4" square x 1-½" deep.
- 2.3 Boxes generally shall be hot dipped galvanized steel with knockouts. Boxes on exterior surfaces or in damp locations shall be corrosion resistant, cast feraloy and shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Boxes shall be Appleton Type FS, Crouse-Hinds, or the approved equal. Conduit bodies shall be corrosion resistant, cast malleable iron. Conduit bodies shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Crouse-Hinds, or the approved equal. Conduit bodies shall be corrosion resistant, cast malleable iron. Conduit bodies shall have threaded hubs for rigid conduit and neoprene gaskets for their covers. Conduit bodies shall be Appleton Unilets, Crouse-Hinds, or the approved equal. Where recessed, boxes shall have square cut corners.
- 2.4 Deep boxes shall be used in wall covered by wainscot or paneling and in walls or glazed tile, brick, or other masonry which will not be covered with plaster. Through the wall type boxes shall not be used unless specifically called for. All boxes shall be nongangable. Boxes in concrete shall be of a type to allow the placing of conduit

without displacing the reinforcing bars. All lighting fixture outlet boxes shall be equipped with the proper fittings to support and attach a light fixture.

- 2.5 All light, switch, receptacle, fire alarm devices and similar outlets shall be provided with approved boxes, suitable for their function. Back boxes shall be furnished and installed as required for the equipment and/or systems under this contract.
- 2.6 Pull and junction boxes shall be code gauge boxes with screw covers. Boxes shall be rigid under torsional and deflecting forces and shall be provided with angle from framing where required. Boxes shall be 4" square with a blank cover in unfinished areas and with a plaster ring and blank cover in finished areas. Covers for flush mounted oversize boxes shall extend ¾" past boxes all around. Covers for 4" square boxes shall extend ¼" past box all around.
- 2.7 All terminal cabinets and junction boxes or equipment back boxes which are required as a part of systems specified in Divisions 27 or 28, or any other low voltage communication systems, shall be furnished and installed by the Division 26 Contractor.
 - 2.7.1 The Division 26 Contractor shall coordinate all box requirements with each system supplier prior to bid to determine special cabinet or back box requirements. The Contractor shall also provide stainless steel blank cover plates for all low voltage systems installed for future equipment.
 - 2.7.2 The Contractor shall provide all plywood backboards indicated on walls or inside equipment enclosures. All backboards shall be a minimum of ³/₄" thick fire rated type plywood.
 - 2.7.3 The Contractor shall coordinate exact rough in locations and requirements with each system supplier.
- 2.8 In addition to the above requirements, boxes for data networking wiring and equipment shall comply with the following:
 - 2.8.1 All boxes shall be a minimum of 4-11/16" square x 2-1/8" deep.
 - 2.8.2 Where pull boxes are required on individual conduits 1-¼" or smaller, provide 4-11/16" square x 2-1/8" deep boxes. Where pull boxes are required on conduits larger than 1-¼" for straight pull through, provide eight times the conduit trade size for box length. Where pull boxes are required on conduits larger than 1-¼" for an angle or a U-pull through installation, provide a minimum distance of six times the conduit trade size between the entering and exiting conduit run for each cable.
- 2.9 Recessed boxes installed in fire rated floors/walls and /or smoke walls shall be sealed by Fire stopping material to comply with Division 1 to seal off flame, heat, smoke and fire gases. The Contractor shall submit copies of the manufacturers UL system design details pr

oposed for use on this project. All Fire stopping material shall have an hourly fire-rating equal to or higher than the fire rating of the floor or wall through which the conduit, cables, or cable trays pass.

PART 3 - EXECUTION

- 3.1 Boxes shall be installed where required to pull cable or wire, but in finished areas only by approval of the Architect. Boxes shall be rigidly attached to the structure, independent of any conduit support. Boxes shall have their covers accessible. Covers shall be fastened to boxes with machine screws to ensure continuous contact all around. Covers for surface mounted boxes shall line up evenly with the edges of the boxes.
- 3.2 Outlets are only approximately located on the plans and great care must be used in the actual location of the outlets by consulting the various detailed drawings and specifications. Outlets shall be flush with finished wall or ceiling, boxes installed symmetrically on such trim or fixture. Refer to drawings for location and orientation of all outlet boxes.
- 3.3 Furnish and install all plaster rings as may be required. Plaster rings shall be installed on all boxes where the boxes are recessed. Plaster rings shall be of a depth to reach the finished surface. Where required, extension rings shall be installed so that the plaster ring is flush with the finished surface.
- 3.4 All cabinets and boxes shall be secured by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard precast inserts on concrete or solid masonry; machine screws or bolts on metal surfaces and wood screws on wood construction. All wall and ceiling mounted outlet boxes shall be supported by bar supports extending from the studs or channels on either side of the box. Boxes mounted on drywall or plaster shall be secured to wall studs or adequate internal structure.
- 3.5 Boxes with unused punched-out openings shall have the openings filled with factory-made knockout seals.
- 3.6 Where standby power and normal power are to be located in the same outlet box or 480V in a switch box, install partition barriers to separate the various systems.
- 3.7 All device boxes and junction boxes for fire alarm system shall be painted red and shall be 4-11/16" square by 2-1/8" deep. No exceptions.

SECTION 26 05 43

UNDERGROUND PULL BOXES AND MANHOLES

PART 1 – GENERAL

- 1.1 Furnish and install electrical underground pullboxes and manholes as specified and as shown on the electrical drawings.
- 1.2 Submit manufacturer's data for all items.

1.3 **Common submittal mistakes which will result in the submittals being rejected:**

- 1.3.1 Not including all items listed in the above itemized description.
- 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.3 Not including actual manufacturer's catalog information of proposed products.
- 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 The concrete for pull boxes and manholes shall be class 5500 psi or as noted on the drawings. All pullboxes and manholes and covers located in parking lots, driveways, roads, or any other driveable areas shall be traffic rated.
- 2.2 Each manhole shall be provided with a fiberglass ladder and ground rod. Ground rods shall be copper or a copper-clad steel 3/4" diameter by 10-feet long. All non-current carrying metallic components shall be grounded to the ground rods with minimum #6 copper wire.
- 2.3 All underground pullboxes shall be provided with steel bolt down type covers. Bolts shall be bronze or brass. All communication or signal system pullboxes shall be sized to comply with CEC Article 370 unless where other sizes are specifically noted on the drawings.
- 2.4 All underground pullbox and manhole covers shall be provided with either "electrical" or "telephone" or "fire alarm" markings. The telephone marking shall be used to identify telephone, T.V., clock or any other types of communication systems.

2.5 All power and communication systems shall be provided with separate pullboxes or manholes. Fire alarm circuits shall also be provided with separate pullboxes from any other type of communication systems.

PART 3 - INSTALLATION

- 3.1 Shoring of the excavation shall be in accordance with all federal, state and local regulations.
- 3.2 Provide sealing material for the joints between sections per manufacturer's instructions.
- 3.3 The contractor shall make the top and access assembly or lid flush with surrounding areas where installed in driveable or normal walking areas.

SECTION 26 24 16 PANEL BOARDS

PART 1 - GENERAL

- 1.1 Furnish and install branch circuit panel boards as specified herein and as indicated on the drawings. Submit manufacturers' data on all items.
- 1.2 Submit manufacturers' data on all panel boards and components including:
 - 1.2.1 Enclosures and covers
 - 1.2.2 Breakers
 - 1.2.3 Surge Protective Device (SPD) equipment
 - 1.2.4 Incident energy level calculations
 - 1.2.5 Common submittal mistakes which will result in the submittals being rejected:
 - 1.2.5.1 Not arranging the circuit breakers in panels to match the orientations indicated on the drawings. In other words, if a 30 amp breaker is shown on the drawing in Space #2, this must be the location it appears on the submittal schedule. Standard factory arrangements will not be accepted.
 - 1.2.5.2 Not including all items listed in the above itemized description.
 - 1.2.5.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
 - 1.2.5.4 Not including actual manufacturer's catalog information of proposed products.
 - 1.2.5.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

2.1 The interrupting rating of circuit breakers shall be 10,000 amps for the 120/208 system and 14,000 amp for 277/480 volt systems. Refer to drawings for higher interrupting rating requirements. All components and equipment enclosures shall be manufactured by the same manufacturer. Circuit breakers shall be permitted to be series rated to limit the available fault current to no more than the above ratings.

- 2.2 All panels shall be fully bussed. Recessed panel enclosures shall be a maximum of 20" wide and 5-3/4" deep for all panels 600 amp rated and less.
- 2.3 All busses shall be tin-plated aluminum and shall be located in the rear of the panelboard cabinet. Individual circuit breakers shall be bolt on type and removable from the cabinet without disturbing the bussing in any way. All panel boards shall contain ground busses.
- 2.4 Panel covers shall be door in door style, with one lock. Door lock shall allow access to breakers only. Access to wireways without removal of cover shall be permitted by (non removable) screws behind the locked door. Panel cover shall be provided with full length piano hinge. All locks for all panels provided in this project shall be keyed alike.
- 2.5 Each panel shall have a two-column circuit index card set under glass or glass equivalent on the inside of the door. Each circuit shall be identified as to use and room or area. Areas shall be designated by room numbers. Room numbers shown on the drawings may change and contractor shall verify final room numbers with the architect prior to project completion.
- 2.6 Tandem mounted or wafer type breakers are not acceptable.
- 2.7 Multiple breakers shall have one common trip handle or be internally connected. Handle ties are not acceptable.
- 2.8 Breaker arrangements shown in the drawings shall be maintained. The circuit breakers in panels must match the orientations indicated on the drawings. In other words, if a 30 amp breaker is shown on the drawing in Space #2, this must be the location it appears on the submittal schedule. Standard factory arrangements will not be accepted.
- 2.9 Where conductor sizes exceed the standard breaker lug wire range, or where multiple conductors per phase are required, the panelboard manufacturer shall provide the breaker with suitable lugs for terminating the specified conductors.
- 2.10 Acceptable manufacturers are Square D, Eaton, Siemens or General Electric.
- 2.11 Equipment manufactured by any other manufacturers not specifically listed in Section2.10 are not considered equal, or approved for use on this project.

Surge Protective Devise (SPD)

2.12 Surge Protective Device (SPD) panelboards, shall be provided with an integrated circuit breaker panelboard and parallel connected suppression / filter system in a single enclosure. The SPD panelboard shall meet the following parameters: IEEE C62.41.1,

IEEE C62.41.2, IEEE C62.45, UL 1283 and the UL 1449, Third Edition, effective September 29, 2009.

- 2.13 The panelboard shall be UL 67 Listed and the SPD shall be UL 1449 labeled as Type 1 or Type 2 or as Type 4 intended for Type 1 or Type 2 applications. SPD shall be factory installed integral to the panel board.
- 2.14 The SPD panelboard shall be top or bottom feed according to requirements. A circuit directory shall be located inside the door.
- 2.15 SPD shall meet or exceed the following criteria:
 - 2.15.1 For standard areas supply SPD having 100kA per phase surge current capacity. For mountain and desert areas (areas with over 5 lightning strikes per year), SPD shall have a per phase surge current capacity of 200kA.
 - 2.15.2 UL 1449 Third Edition Revision; effective September 29, 2009, Voltage Protection Ratings shall not exceed the following:

VOLTAGE	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>	<u>L-L</u>	MCOV
208Y/120	700V	700V	700V	1200V	150V
480Y/277	1200V	1200V	1200V	2000V	320V

- 2.15.3 SPD shall be UL labeled with 100kA Short Circuit Current Rating (SCCR).
- 2.16 UL 1449 Third Edition Revision; effective September 29, 2009, Voltage Protection Ratings shall not exceed the following:

VOLTAGE	<u>L-N</u>	<u>L-G</u>	<u>N-G</u>	<u>L-L</u>	<u>MCOV</u>
208Y/120	700V	700V	700V	1200V	150V
480Y/277	1200V	1200V	1200V	2000V	320V

- 2.17 SPD shall be UL labeled with a minimum 100kVA short circuit rated (SCCR).
- 2.18 UL 1449 Listed Maximum Continuous Operating Voltage (MCOV) (verifiable at UL.com):

System Voltage	Allowable System Voltage Fluctuation (%)	MCOV
208Y/120	25%	150V
480Y/277	15%	320V

- 2.19 SPD shall incorporate a UL 1283 listed EMI/RFI filter with minimum attenuation of 50dB at 100 kHz. No filtering is required for a 100kA SPD.
- 2.20 Suppression components shall be heavy duty 'large block' MOVs, each exceeding 30mm diameter.
- 2.21 Type 4 SPD shall include a serviceable, replaceable module.

- 2.22 SPD shall be equipped with the following diagnostics:
 - 2.22.1 Visual LED diagnostics including a minimum of one green LED indicator per phase, and one red service LED.
 - 2.22.2 No other test equipment shall be required for SPD monitoring or testing before or after installation.
- 2.23 SPD shall have a response time no greater than 1/2 nanosecond
- 2.24 SPD shall have a 10 year warranty
- 2.25 The SPD panelboard shall have removable interior
- 2.26 The SPD panelboard main bus shall be aluminum and rated for the load current required
- 2.27 The SPD panelboard shall include a 200% rated neutral assembly with copper neutral bus
- 2.28 The unit shall be provided with a safety ground bus

(SPD) Quality Assurance

- 2.29 Manufacturer Qualifications: Engage a firm with at least 5 years experience in manufacturing transient voltage surge suppressors.
- 2.30 Manufacturer shall be ISO 9001 or 9002 certified.
- 2.31 The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of ten (10) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.
- 2.32 The SPD shall be compliant with the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC.

PART 3 – EXECUTION

- 3.1 Painting of panelboard covers in finished areas shall be done by the general contractor.
- 3.2 Provide a spare 3/4" conduit stubbed to an accessible area for each of every three (3) spares or spaces provided in recessed panel boards.
- 3.3 All lugs shall be torque tested in the presence of the inspector of record.

Arc Flash and Shock Hazard

- 3.4 The Contractor is to provide, and submit to the engineer for approval, incident energy level calculations as determined using the methodologies described in NFPA 70E or IEEE standard 1584-2002.
 - 3.4.1 All studies shall be performed by "Emerson Electric" (858) 695-9551, MTA (858) 472-0193, or Terra Power Solutions (858) 380-8170. Studies performed by manufactures or other engineering or testing companies must submit qualifications for approval by Johnson Consulting Engineers, 7 days prior to bid for this project.
- 3.5 A warning label, as specified in the above standard, shall be placed on each switchboard, panelboard, and safety switch indicating the incident energy levels on the equipment to warn qualified personnel in accordance with NFPA 70E, section 110.16 Labels shall be laminated white micarta with black lettering on each. Letters shall be no less than 3/8" high.
- 3.6 The incident level calculations for each piece of equipment shall be given to the owner and maintained on file by the maintenance department
- 3.7 The design goal is to minimize the incident energy to which a maintenance employee may be exposed.

END OF SECTION

SECTION 26 27 26

SWITCHES AND RECEPTACLES

PART 1 – GENERAL

- 1.1 Furnish and install all wiring devices as shown on drawings and as herein specified. Unless otherwise noted, device and plate numbers shown are Hubbell and shall be considered the minimum standard acceptable. Other acceptable manufacturers are Pass and Seymour, Leviton, General Electric and Bryant.
- 1.2 Submit manufacturers' data on all items.

1.3 **Common submittal mistakes which will result in the submittals being rejected:**

- 1.3.1 Not correctly indicating ampacity rating of proposed devices.
- 1.3.2 Not including all items listed in the above itemized description.
- 1.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.4 Not including actual manufacturer's catalog information of proposed products.
- 1.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

2.1 All switches shall be of the quiet mechanical type, Specification Grade, 20 amp, 120/277 volt AC as follows:

	HUBBELL	LEVITON	PASS & SEYMOUR
Single Pole	CS120	CS1202	CS20AC1
Two Pole	CS1222	CS2202	CSB20AC2
Three-way	CS320	CS3202	CS20AC3
Key Switch	HBL1221L	1221-2L	PS20AC1-L

2.2 All switches shall have the "on" and the "off" position indicated on the handle. If switches of higher ampere ratings are required, they shall be of similar type and quality as those shown above. Groups of switches shown at one location shall be installed under a single plate up to a maximum of six where more than six switches are shown coordinate arrangement with the Architect.

- 2.3 Dimmer switches for incandescent lamp loads shall be square-law type, slide control dimmer with OFF position, Lutron or Hubbell "Nova-T" Series NT-600 (0-500 watt load), NT-1000 (501-900 watt load), NT-1500 (901-1500 watt load), or equal (no known equal).
- 2.4 All convenience receptacles and special outlets throughout shall be grounding type. Convenience receptacles shall be side wired, parallel slot, two pole, three wire, 20 amp as follows:

	<u>HUBBELL</u>	LEVITON	PASS & SEYMOUR
Duplex	5352	5362	PS5362
GFCI	GFR5362	7899	2097
Isolated Ground	IG5362	5362IG	IG6300
Tamper Proof		8300SG	TR63H

- 2.5 All safety or tamper proof receptacles shall have no exposed external current carrying metal parts and shall have integral wiring leads suitable for two or three wire installations.
- 2.6 Special receptacles shall be as noted on the drawings.
- 2.7 Weatherproof plates shall be designed to meet CEC Article 410-57, wet location listed with cover "open." Where weatherproof receptacles have been identified to be provided with locking covers, the cover shall be as manufactured by Pass & Seymour #4600-8 or Cole Lighting 310 Series. Rough-in requirements vary between manufacturers. Contractor to field verify requirements prior to installation.
- 2.8 All plates throughout shall be stainless steel. Where wiring devices are installed in concrete block walls, provide oversized 3-1/2" x 5" coverplates.
- 2.9 All devices shall be white unless otherwise noted or a special purpose outlet.
- 2.10 Unless where specifically detailed on the drawings, floor boxes shall be PVC suitable for concrete poured floors of minimum 3-1/2" depth, with a modular design to gang two or three sections together.
 - 2.10.1 Carlon #E976 series or approved equal
 - 2.10.2 Provide brass cover with brass carpet flange unless otherwise detailed.

PART 3 – EXECUTION

3.1 Switches for room lighting shall be located no more than 12" center line from door jamb at plus 48" center line above finished floor or +46" to top of devices where located over casework, reference CBC Figure 11B-5D.

- 3.2 All receptacles shall be mounted at plus 18" to center line above finished floor unless noted or shown otherwise. All receptacles shall be installed with the ground pin up, at the top of the receptacle to comply with IEEE 602-1986.
- 3.3 Furnish and install wall plates for all wiring devices, and outlet boxes, including special outlets, sound, communication, signal, and telephone outlets, etc. as required. All cover plates shall be appropriate for type of device.

END OF SECTION

SECTION 26 28 16 DISCONNECTS

PART 1 – GENERAL

- 1.1 Furnish and install all disconnect switches as shown on the drawings and as required by the CEC.
- 1.2 Submit manufacturers' data for all disconnects and fuses.
 - 1.2.1 Disconnects
 - 1.2.2 Fuses

1.3 **Common submittal mistakes which will result in the submittals being rejected:**

- 1.3.1 Not including all items listed in the above itemized description.
- 1.3.2 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.3.3 Not including actual manufacturer's catalog information of proposed products.
- 1.3.4 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

PART 2 – PRODUCTS

- 2.1 Acceptable manufacturers shall be Square D, Cutler Hammer, Siemens or General Electric.
- 2.2 Equipment manufactured by any other manufacturers not specifically listed in Section 2.1 are <u>not</u> considered equal, or approved for use on this project.
- 2.3 All switches shall be heavy-duty type, externally operated, quick-make, quick-break, rated 600 volts or 240 volts as required, with the number of poles and ampacity as noted. All switches for motors shall be HP rated. Switches shall have NEMA-Type 1 enclosures, except switches located where exposed to outdoor conditions shall have NEMA Type 3R enclosure. Switches generally shall be fused except where noted to be non-fused on the drawings.
- 2.4 Where fuses are indicated, fuses shall be Bussman or Littlefuse (no known equal). Fuses shall be current limiting type with time delay characteristics to suit the equipment served.

PART 3 - EXECUTION

- 3.1 Mount all switches to structure or U-channel support. U-channel supports shall be cleaned and painted to prevent rust.
- 3.2 Switches shall be accessible with proper clearances in front per CEC 110-16.
- 3.3 All lugs shall be torque tested in the presence of the inspector of record.
- 3.4 Arc Flash and Shock Hazard
 - 3.4.1 The contractor is to provide, and submit to the engineer for approval, incident energy level calculations as determined using the methodologies described in NFPA 70E or IEEE standard 1584-2002.
 - 3.4.2 A warning label, as specified in the above standard, shall be placed on each switchboard, panelboard, and safety switch indicating the incident energy levels on the equipment to warn qualified personnel in accordance with NFPA 70E, section 110.16 Labels shall be laminated white micarta with black lettering on each. Letters shall be no less than 3/8" high.
 - 3.4.3 The incident level calculations for each piece of equipment shall be given to the owner and maintained on file by the maintenance department.
 - 3.4.4 The design goal is to minimize the incident energy to which a maintenance employee may be exposed and in no case more than 8 cal./cm².

END OF SECTION

SECTION 27 01 00

COMMUNICATIONS GENERAL PROVISIONS

PART 1 - SUMMARY

- 1.1 This Division of the specifications outlines the provisions of the contract work to be performed as a sub contract under the Division 26 scope of work. Reference the Division 26 Electrical General Provisions for scope of work and general requirements.
- 1.2 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under Division 1 requirements.

END OF SECTION

SECTION 27 10 00

VOICE / DATA / IP INTERCOM-CLOCK INFRASTRUCTURE

PART 1 – GENERAL

- 1.1 Include all labor, equipment and materials necessary for providing a complete networking infrastructure system as described herein and/or as indicated on the drawings.
- 1.2 Related specification sections:
 - 1.2.1 Section 26 01 00 General Provisions
 - 1.2.2 Section 26 05 33 Conduit and Fittings
 - 1.2.3 Section 26 05 19 Conductors
 - 1.2.4 Section 26 05 34 Outlet and Junction Boxes
- 1.3 Approved Products and minimum contractor certifications
 - 1.3.1 All components shall be manufactured by one of approved manufacturers, the installing contractor must have the accompanying certification from the product manufacturer for installation of a "Warranted System" as required by each manufacturer and as indicated in these specifications. Acceptable manufacturers are:

1.3.2 Commscope

- 1.3.2.1 Installing contractor must be **Commscope** certified to install this system
- 1.3.2.2 Installing Contractor must be PartnerPro certified to install any of the systems under the Commscope Family of brand names
- 1.3.2.3 The Infrastructure System shall be provided with a 25-Year Warranty
- 1.3.2.4 Pursuant to Public Contract Code Section 3400(b), the materials, products, things or services in this Specifications section are designated by specific brand name or trade name for the purposes of matching other products in existing District projects to establish District-wide uniform, complete and compatible systems in order to facilitate the most technologically competitive and feasible education for school children in the District. A copy of the District findings and

Resolution in accordance with Public Contract Code Section 3400(b) is available upon written request at the District.

- 1.3.3 Systems or components as manufactured by any other manufacturers which, are not specifically listed in 1.3.2 are not approved for use on this project. Specified system warranties are to be established between the component manufacturers and the owner, warranties between the cable manufacturer or installing contractor and the owner are not considered equal.
- 1.3.4 Installing contractor qualifications: Firms and their personnel must be regularly engaged in the installation of data networking cabling and equipment for systems of similar type and scope. The contractor must have a full service office able to respond to emergency callouts during the warranty period. The contractor must also provide complete installation of all wiring and devices or equipment. Subcontracts with electrical contractors or other warranted or non-warranted contractors for supervised installation of any part of this system are not approved. All conduit and standard back boxes will be furnished and installed by the electrical contractor. Specialty boxes will be furnished by the equipment supplier and installed by the electrical contractor.
- 1.3.5 Equipment qualifications: It is the intent of these specifications that each bidder provides all hardware, components and installation services that are necessary to ensure a fully operational Category-6 wiring system including warranties, proposed in the EIA/TIA Category-6 and the ISO Class E drafts.
- 1.3.6 Warranty: Warranty shall be a full "Performance Warranty" installed by a "Certified Contractor" as specified by one of the approved manufacturer's A "Component Warranty" will not be considered equal. All components, labor, and 'Link Performance Criteria" shall be warranted by one of the approved manufacturers. Warranty shall be to the customer for 25-years (some warranty programs may be greater, this is a minimum requirement) after Customer acceptance and sign-off of the completed system. The contractor must provide documentation from one of the approved manufacturers as indicated in Section 1.3.2 indicating their qualifications for installation of this system in compliance with the manufacturers warranty requirements as a warranted contractor.
- 1.4 In order to ensure project cohesion, a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all labor; cabling; equipment; supplies; materials, and training. The Contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful contractor must be factory trained on all aspects of system hardware. The successful Contractor shall be a California licensed C7 or C10 premise wiring contractor as defined

in this specification. Subcontractors may not be utilized in the implementation of the plant wiring installation or certification process. The contractor shall provide a licensed, qualified electrical contractor for installation of all conduits, outlet and junction boxes, trenching and pull box installations.

- 1.5 The drawings indicate a schematic routing of cables above ceilings. The Contractor shall field-verify the most appropriate routing of all above-ceiling cable prior to bid. Where cables penetrate through walls a conduit sleeve shall be provided. Where cables pass through fire rated walls, the conduit sleeve shall be sealed to maintain the rating of the wall assembly.
- 1.6 General Submittal Requirements
 - 1.6.1 **Phase I Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:
 - 1.6.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:
 - 1.6.1.2 Description and quantity of each product.
 - 1.6.1.3 Manufacturer's Name and Model Number.
 - 1.6.1.4 Manufacturer's Specification Sheet or Cut Sheet. Material Cut Sheets shall provide detailed product information and shall be original manufacturer product bulletins. Copies of material information from vendor websites shall not be considered equal and will not be excepted.
 - 1.6.1.5 Material Cut Sheet part number provided shall be highlighted or provided with an arrow directed at the corresponding part number.
 - 1.6.1.6 Specification Item Number referenced for each required product or if not shown in the specifications, Drawing Detail Number being referenced. (ie; Spec. 271000 Item 2.1 or DWG E4.15/#1)
 - 1.6.1.7 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.

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- 1.6.2 **Phase II Submittal** shall be provided with (20) working days after the approval of the Phase I submittals and prior to any fabrication of field conduit installations. All shop drawings shall be engineered in a CAD Software. Submission shall include electronic print copies to match the contract drawings, and Phase II submittals drawings shall include the following:
 - 1.6.2.1 MDF and IDF equipment rack or cabinet elevations will be required to be provided including cable routing, grounding, support, UPS, network electronics, etc. and position of all components in the rack or cabinet.
 - 1.6.2.2 Provide labeling plan which identifies the proposed scheme for identifying all components including racks, patch panels (fiber and copper), site distribution feed cables, horizontal station cables and site conduit systems (handholes, pullboxes, etc.).
 - 1.6.2.3 Provide shop drawings showing all end device locations, tap values, paging zones and amplifier sizing for each zone for analog speakers and horns, including devices connected to IP-Based zone controllers.

1.6.3 **Common submittal mistakes** which will result in submittals being rejected:

- 1.6.3.1 Not including the qualifications of the installing contractor.
- 1.6.3.2 Not including all items listed in the above itemized description.
- 1.6.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.6.3.4 Not including actual manufacturer's catalog information of proposed products.
- 1.6.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.
- 1.6.4 **Common submittal mistakes** which will result in submittals being rejected:
 - 1.6.4.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.
 - 1.6.4.2 Not including all items listed in the above itemized description.

- 1.6.4.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlights, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.
- 1.6.4.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.
- 1.6.4.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.
- 1.6.4.6 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:
- 1.6.4.7 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in the bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e. E1.1, E2.1, E4.1 etc.)
- 1.6.4.8 Identify the Name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.
- 1.6.4.9 Detail or Riser diagram sheet, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.
- 1.6.4.10 Files will only be provided in the AutoCAD format in which they were created (i.e. version 2015 or version 2016). Files will not be made available in REVIT format.
- 1.6.4.11 Requests for files will be processed as soon as possible; a minimum of (7) working days should be the normal processing time. The Contractor shall be completely responsible for requeting the files in time for their use and delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.

PART 2 - PRODUCTS

2.1 Equipment racks have been detailed on the drawings and additional component information requirements have been described in the MDF or IDF products sections. The following is a list of approved manufacturers for each type of rack system.

- 2.1.1 Alternate equipment manufacturers other than those indicated will not be reviewed or approved for use on this project.
- 2.1.2 (Open Frame) shall be manufactured by Chatsworth Products Inc. (CPI). CPI Model #50120-703 Quadrarack 4-Post equipment rack, 84" High by 29" Deep, black color. See MDF and IDF Room sketches for quantity of racks required.
- 2.2 Open Frame 4-Post Racks, 19" mounting Width by 84" High by 29" Deep with #12-24 mounting holes as shown in the MDF of IDF Room layouts. Contractor shall be responsible for providing all racks and accessories. Furnish and install with the following:
 - 2.2.1 The racks shall be provided with structural seismic bracing using cable runway to the top of the rack.
 - 2.2.2 Universal 12" cable runway shall be as manufactured by CPI Model 10250-712. The cable runway shall be furnished with the additional adapters, connectors, support components, bends and offsets and extensions as required to fit the room and layout.
 - 2.2.3 Anchor the cable runway to the wall with the appropriate width angle bracket and bolts as manufactured by CPI Model #11421-712.
 - 2.2.4 The cable runway shall also be attached to the top of the rack with the appropriate adapter panel. Cable runway shall be directly attached to the 4-Post racks with J-Hooks.
 - 2.2.5 Cable runway routed along walls, shall be offset from the wall a minimum of 6" and shall be supported with cantilevered wall mount brackets.
 - 2.2.6 Floor mounted racks shall be structurally anchored to the floor with the anchors and bolts.
 - 2.2.7 Provide full length vertical wire managers, CPI Double-Sided Narrow Vertical Manager, Part #12096-703, on each side of each rack. Vertical managers between racks may be substituted with the CPI #11729-703 6" wide double-sided manager. Single narrow vertical managers shall be provided on each end of the group of racks.
 - 2.2.8 Provide (1) adjustable full depth vented shelf for each 4-Post equipment rack as manufactured by CPI #12700-719.
 - 2.2.9 Provide horizontal wire managers between each patch panel or (1) manager per patch panel. Provide (1) spare manager per rack. Provide 2RMU height managers for each 48-Port patch panel and 1RMU height managers for 24-Port patch panels. CPI part #30130-719 and #30139-719.

- 2.2.10 Rack mounted surge arrest style power distribution units (PDU) shall be Contractor College District furnished and Contractor installed. Coordinate with the District for the final locations of the PDUs in the racks and the type to be provided.
- 2.2.11 Provide One or Two Rack-Mounted Power Distribution Units per equipment rack as shown on the Detail Drawings. Rack mounted surge-arrest style Power Distribution Unit (PDU), 1RU (Rack Unit) in height, TrippLite Model #PDUMH15NET2 with (8) NEMA 5-15R outlets, built-in SNMP Ethernet interface and NEMA L5-15P input with 5-20P adapter or approved equal by APC. Provide with minimum 10-foot cord for the PDU.
- 2.2.12 Contractor shall be responsible for neatly routing, storing and connecting the power cords from the PDUs to the electrical outlet or UPS as directed by the District. Power cords shall be dressed separately from the UTP cables or any other low voltage cable and shall be secured to the back of the rack or cable runway with Velcro ties.
- 2.2.13 Contractor shall be responsible for neatly routing, storing and connecting the power cords from the PDUs to the electrical outlet or UPS as directed by the District. Power cords shall be dressed separately from the UTP cables or any other low voltage cable and shall be secured to the back of the rack or cable runway with Velcro ties.
- 2.2.14 Furnish grounding to each rack. Each rack shall be provided with a grounding terminal block, #6 Ground wire from the rack to the bus bar and a compression lug on the end of the ground wire at the bus bar. Provide grounding components as manufactured by CPI #40167-001 terminal block and #40162-901 compression lug or approved equal.
- 2.2.15 Provide (1) ground bus bar kit per MDF Room. Ground Bus Bar Kit as manufactured by CPI #40158-012 or approved equal. Ground Bus Bar and all bonding conductors to the bus bar shall be labeled. Grounding conductors shall be routed to the equipment racks, cable runway and electrical panel

Main Distribution Frame (Existing MPR Building)

- 2.3 The main Distribution Frame (MDF) Room is existing
- 2.4 Provide Fiber Optic Feed Cable Patch Panels Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have a sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements, including bulkheads in the fiber patch panel. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel up to 144 strands. Additional strands shall be terminated in the largest size required to continue the remaining fibers.

- 2.4.1 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.
- 2.4.2 All fiber cables shall be secured to the patch panel with the Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.
- 2.4.3 All fiber optic feed cables routed to the MDF Room shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the existing racks. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR
- 2.4.4 Provide all other items as detailed on the drawings.

Intermediate Distribution Frame

- 2.5 The Intermediate Distribution Frame shall be a secondary wiring and equipment location for the data networking system. The contractor shall include the following items at this location.
 - 2.5.1 Provide backboard 8'-0" high x ¾" thick, with a minimum 48" width. Refer to the floorplans for the actual layout of the backboard coverage. Plywood mounting backboard shall be flame resistant, painted with fire resistant paint "white" or color to match the room finish. Contractor shall provide minimum one side finish grade plywood. Backboard shall be mounted with finish side out, regardless of location of fire rating stamp. Show proof of fire rating stamp to IOR on Inspector prior to installation.
- 2.6 Provide Fiber Optic Feed Cable Patch Panels Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have a sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel.
 - 2.6.1 Each IDF location shall be furnished with a minimum 24-Port patch panel, fully loaded with bulkheads. Type of connectors in the bulkheads shall be determined by the type of connectors used for termination of the fiber feed cables.
 - 2.6.2 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the

first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.

- 2.6.3 All fiber cables shall be secured to the patch panel with Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.
- All fiber optic feed cables routed to the IDF Room shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the rack.
 Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR.
- 2.7 Provide Category-6 Modular Patch Panels (rack mounted) with RJ45 style connectors, for terminating all new twisted pair cable from each Voice, Data, IP-Page Speaker/Horn and Audio-Visual System outlet served from this location. All UTP patch panels shall be 48-port Fully-Loaded minimum. Confirm colors with IT Department prior to ordering. Provide cable support bars at the rear of each patch panel all cables shall be secured to bars with velcro straps.
- 2.8 Provide all other items as detailed on the drawings.

Fiber Optic Patch Cords

- 2.9 Fiber optic patch cords shall be furnished and installed by the Contractor.
- 2.10 All fiber optic patch cords furnished by the Contractor shall match the grade and glass of the fiber optic feed cable installed for the network infrastructure cabling system. The Contractor shall confirm with the District IT Department the type of connector required at the network equipment prior to ordering or installing the patch cords.
- 2.11 Multimode Fiber Optic Patch Cords Patch cords shall be duplex 50/125um, (OM4) Laser-optimized grade Multimode optical glass. Fiber optic patch cords shall be furnished with "SC"-Type connectors at the Fiber Patch Panel end and "LC"-type connectors at the Network Switch end. All Multimode patch cords shall be Aqua in color. Patch cords shall be 6-feet (2-meters) in length. Provide Four (4) 3-Meter (Approx. 9.5 Feet) Multimode Fiber Optic Patch Cords for the existing fiber optic feed cable from the Building '200' MDF Room to the existing Building 1600 (Kitchen/Cafeteria) IDF Cabinet, Two (2) for each end of the cable run.
- 2.12 Contractor shall be responsible for confirming the network switch connections with the District IT Director prior to ordering or installing the patch cords.

Copper Patch Cables

2.13 Copper Patch cables shall be furnished and installed by the Contractor.

- 2.14 Provide Patch Cables at the equipment rack location in the following colors related to the function of the data drop.
 - 2.14.1 Color; Blue (Data)
 - 2.14.2 Color; Gray (AV/Projector)
 - 2.14.3 Color; White (Phone/Voice Trunk)
 - 2.14.4 Color; Yellow (IP Speakers/Speaker-Clock Combination)
 - 2.14.5 Color; Orange (Wireless Access Point)
 - 2.14.6 Color; Red (Video Surveillance Camera)
- 2.15 Patch cords shall be in compliance with the manufacturer's "Channel" warranty requirements
- 2.16 Provide (Color as Shown) Category-6 (Patch Panel End) Patch Cables with pre-molded boot, provide quantity equal to:
 - 2.16.1 Provide quantity equal to 50% of the total Voice/Data Infrastructure cable drops or ports provided. Allow for 15% of total copper Patch Cables required to be (7) feet in length, and all remaining Patch Cables shall be (4) feet in length.
 - 2.16.2 Provide (color per detail drawings and station insert color) Category-6 (patch panel end) Patch Cables with pre-molded boot, provide quantity equal to 100% of the total IP Clock/Speakers, Wireless Access Points, LCD Projector/Audio-Visual and IP camera cable drops or ports provided. Verify with Customer all ports which will be activated. All Patch Cables to be installed by Contractor. All Patch Cables shall be (4) feet in length, unless otherwise shown in the drawings or specifications.
- 2.17 Provide Category-6 (Workstation End) Patch Cables with pre-molded boot, provide quantity equal to:
 - 2.17.1 Provide quantity equal to 50% of the total Voice/Data Infrastructure cable drops or ports provided. Provide for 10% of total copper patch cords required to be (15) feet in length and all remaining Patch Cables shall be (10) feet in length.
 - 2.17.2 Provide (color per detail drawings and station insert color) Category-6 (Device Location end) Patch Cables with pre-molded boot, provide quantity equal to 100% of the total IP Clock/Speakers, Wireless Access Points, LCD Projector/Audio-Visual and IP camera cable drops or ports provided. Verify with Customer all ports which will be activated. All Patch Cables to be

installed by Contractor. All Patch Cables shall be (2) feet in length, unless otherwise shown in the drawings or specifications.

- 2.18 Requirements for all copper patch cords furnished:
 - 2.18.1 Color of patch cords shall be determined by the color code shown in detail drawings.
 - 2.18.2 Patch cords shall as manufactured by Commscope based on the Approved Network Infrastructure System furnished by the Contractor.
 - 2.18.3 Patch cords furnished must be in compliance with the manufacturer's "Channel" warranty requirements. Patch cords not warranted through the selected manufacturer Channel warranty program will not be approved for use with the network infrastructure.
- 2.19 Provide all other items as detailed on the drawings

Category-6 Station Cable

- 2.20 Provide one Category-6, 4-pair, unshielded twisted pair (UTP) cable from the nearest MDF or IDF to each RJ45 data outlet port indicated on the drawings. Dual port outlets will require two such cables. Four port outlets will require four cables.
- 2.21 Category 6 cables shall be copper wire, individually insulated and color coded. Color for station cabling shall be provided as shown in the drawing details. Confirm color of cable jackets prior to ordering with the District IT Director. Contractor shall be responsible for providing the correct jacket color per the drawings per District Standards.
- 2.22 The cables shall be UL or ETL rated and UL verified in compliance with proposed Category-6.
 - 2.22.1 Commscope CS37R
- 2.23 Manufacturer names and part numbers are shown as a point of reference and do not specifically designate required packaging or color for the cable. Contractor shall verify colors and packaging all options shall be determined by District preferences.
- 2.24 Where data cables are indicated to run underground, contractor shall use a Category-6 flooded cable: Comm Scope Ultra Media Series #6NF4

Category-6 Outlets

2.25 Unshielded twisted pair Category-6 outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the fl oor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration.

- 2.26 Provide Category-6 inserts, wired for EIA 568B. Provide installation kits for all locations furnished with Category-6 UTP cabling.
- 2.27 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering.
- 2.28 Provide the following Category-6 UTP data connector per Network Infrastructure warranty requirements;
 - 2.28.1 Commscope USL Series USL600

Outlet Faceplates

- 2.29 Provide a two-port faceplate for all one and two port outlet locations. Provide blanks for all unused openings.
- 2.30 Provide a four-port faceplate for all three and four port outlet locations. Provide blanks for all unused openings.
- 2.31 All fax/modem locations shall be provided as single port outlets. Requirements shall be the same as a single port data outlet as shown on the Technology Legend.
- 2.32 For single port voice outlet locations intended for wall telephone connections, a wall telephone type faceplate with attachment studs shall be provided. The wall telephone jack shall be 8-pin, RJ45 type and use IDC wire terminations only. Provide Category-6 insert, within stainless steel wall plate faceplate. Provide faceplate from the approved manufacturers listed in the specifications.
- 2.33 Wireless Access Point data connections for ceiling mounted WAPs shall be terminated above the accessible ceiling at the wireless access point (WAP) location. Refer to the drawing details for additional requirements.
- 2.34 Wireless Access Point Provide data connections for WAPs terminated at the WAP location as shown in the drawing details. Provide surface mount box by Commscope Series 2-Port #M102SMB-B-262. Label the cables and faceplate the same as standard data outlets.
- 2.35 IP Clock/Speakers Provide single port, small surface mounted box Commscope Series 1-Port #M101SMB-B-262, in White, for IP Clock/Speaker data outlets. Mount data outlet in back of IP Speaker enclosure. Label the cables and faceplate the same as standard data outlets.
- 2.36 IP Cameras Provide data connections for IP-Based Camera Outlets terminated at the Camera location as shown in the drawing details. Provide surface mount box by

Commscope Series 2-Port #M102SMB-B-262. Label the cables and faceplate the same as standard data outlets. The location shall also be furnished with a blank weather-tight faceplate to protect the data termination until the cameras are installed.

- 2.37 Audio-Visual/Projector Locations Provide data connections for IP-Based Audio-Visual Outlets terminated at the AV/Projector location requiring a surface mount box type connection as shown in the drawing details. Provide surface mount box by Commscope Series 2-Port #M102SMB-B-262. Label the cables and faceplate the same as standard data outlets.
- 2.38 All faceplates and surface mount outlet boxes shall be furnished with label windows. All labeling shall be installed within the label window.
- 2.39 Confirm color of all faceplates prior to ordering. All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Hand written labels are not permitted. All color schemes shall be approved by the customer prior to installation.
- 2.40 Colored inserts are required for this project. Refer to the detail drawings for the exact color scheme to be provided. Inserts submitted that do not follow the color and identification requirements will be rejected. Inserts installed that do not follow the color coding as shown in the detail drawings will be replaced at the Contractor's expense.
- 2.41 All labels will be installed under label windows. Labels adhered to the surface of the faceplate will not be accepted. Contractor must provide clear laminating type of cover material over the surface mounted labels where used.
- 2.42 Reference the drawings for special outlet configurations or plate requirements
- 2.43 All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Refer to the detail drawings for labeling requirements. Hand written labels are not permitted. Faceplates, with the exception of wall telephone outlets, shall include color coded port inserts. All color schemes shall be approved by the District prior to installation.
- 2.44 Reference the drawings for special outlet configurations or plate requirements

Paging Speakers and Horns

- 2.45 Atlas/IED existing Speaker/Horn Standard on Campus (No Approved Equal). The IPbased Interior/Exterior Intercom Speakers and Horns shall be furnished by the District and installed by the Contractor. All Enclosures and Backboxes shall be Furnished and Installed by the Contractor. All programming of the IP-Based speakers shall be completed by the District.
- 2.46 All Analog Exterior Horns shall be furnished and installed by the 27 10 00 Contractor. The Contractor shall furnish and install the IP-Based Zone Controllers and Analog Amplifiers. Install equipment per the detail drawings and specifications.

- 2.47 The Contractor shall install the IP-Based Speaker/Digital Clock combinations in the classrooms where shown on the floor plans.
- 2.48 Data Contractor shall be responsible for providing enclosures for all speakers and horns. Contractor shall provide vandal resistant screws with all enclosures for attachment of the speaker/horn baffle. Exterior locations shall be provided with stainless steel vandal resistant screws.
- 2.49 Flush mount enclosures shall be furnished by the 27 10 00 Contractor and installed by the Division 26 Electrical Contractor as shown in the floor plans. 27 10 00 Contractor shall deliver enclosures to the Electrical Contractor in a timely fashion so as not to adversely impact the project schedule. Coordinate with Electrical Contractor and Construction Manager as long lead times are typical for this product.
- 2.50 Surface mounted enclosures shall be furnished and installed with vandal resistant screws for attachment of the speaker/horn baffle to the enclosure. If enclosure is located on the exterior of the building, the enclosure shall be provided with stainless steel vandal resistant screws.
- 2.51 Contractor responsible for proper paging coverage and tap settings at the speakers/horns.
- 2.52 All exterior loudspeaker circuits shall operate balanced to ground. Bonding shall be provided to assure equal potential measurement between the chassis of all amplifiers, power supplies, etc. Bond to the ground bus bar.
- 2.53 Each Analog Speaker/Horn location cable shall be home run to the IDF rack/cabinet. Provide 1-pair, 18-gauge CMR rated speaker cable to each horn location. Terminate speaker cable on terminal strips only. Punch Blocks will be rejected and are not an acceptable form of terminating the specified cable.
- 2.54 Contractor shall run a speaker cable from the amplifier to the page interrupter for the audio-visual system in each room. The connection will serve to cut off the audio from the AV system when the paging system is engaged. Coordinate the connection with the 27 21 00 Contractor and the 27 20 00 Contractor. Speaker connections to the AV system may be looped, but the Contractor is responsible for insuring that the signal strength is sufficient to allow the interrupter to operate properly.
- 2.55 Recessed flush mount IP Speaker/ Clock combination; Provide flush mount enclosure installed in gypboard wall with District furnished IP clock/speaker. Enclosure shall be as manufactured by Atlas Model #EST-I8SC.
- 2.56 Surface mount IP Speaker/Clock combination; Provide surface mount enclosure installed on gypboard wall with District furnished IP clock/speaker. Enclosure shall be as manufactured by Atlas Model # EA-I8SC.

- 2.57 Surface mount exterior horn; Provide Atlas Sound Part #APF-15T with surface mount vandal resistant enclosure Part # SE161-R6 and Part #VP161-APF baffle grille. Unit must be weather resistant.
- 2.58 Provide a (2) foot long, CAT-6, UTP patch cord, gray in color, for each speaker location to connect to the ethernet drop located in the enclosure. Provide patch cords for 100% of IP Speaker/clock locations. Provide (3) spare patch cords, deliver all Patch cords to the District IT Department.
- 2.59 The District shall be responsible for providing licensing requirements and Informacast software to drive speakers and program tones, bell schedules and announcement controls.
- 2.60 Programming of speakers/clock for page coverage zones, tones, time schedules, pass class bell and VoIP interface to be completed by the District IT Department and is also responsible for providing IP addressing and identification of individual speakers.
- 2.61 Provide Atlas IED IP-ZCM2RMK for even quantities or IP-ZCM1RMK (for single zone needs) at the IDF locations. The quantity of zone controllers to be furnished at each closet location shall be dependent on the number of zones shown on the floor plans and the number of buildings serviced by the IDF closet. Contractor shall coordinate the zoning for the campus with the District IT Director.
- 2.62 Provide amplifiers for the analog paging speakers and horns connected to the zone controllers. Amplifiers shall be rack mounted in the MDF or IDF equipment rack or cabinet. Provide rack mount adapter bracket as required to mount one or two amplifiers in a single rack unit. Provide quantity of amplifiers to service the quantity of horns and speakers as shown on the drawings. A separate amplifier must be provided for each IP zone controller output. Size of amplifier shall be determined by the load, plus 25% expansion capacity. Larger amplifier may be required for a single zone depending on quantity of horns and speakers requiring amplification. Contractor is responsible for providing sufficient power amplifiers to the IP zone controllers and insuring proper operation between the zone controller and amplifiers.
- 2.63 Provide amplifier choice based on load: Approved Models; JBL CSA series, 280Z/2120Z or approved equal by Ashly. Total amplifier wattage on each channel shall allow for 20% headroom with speakers tapped according to the specifications. Contractor MUST submit a line diagram showing all locations and tap values with amp load as part of the Phase II submittals, see section 1 for more information.
- 2.64 Provide rack mount adapter bracket, one bracket for each pair of amplifiers provided. If there is a single amplifier to be installed at the rack, the amplifier would still require the rack mount bracket. Provide optional Level Control Security Covers for all models.
- 2.65 Contractor shall be responsible for testing all paging speakers and horns and insuring the proper volume levels are set on the paging devices and amplifiers. Provide (4) man

hours (not including travel time) for re-adjustment of the paging speakers and horns volume levels per the District's requirements 4 weeks from the final sign-off of the modernization project. Travel time to and from the site shall be included in the service.

PART 3 - INSTALLATION

- 3.1 Upon completion of 10% of the cabling installation, the Contractor shall notify the Project Engineer for an inspection of the methods and types of materials used on the project. The Contractor shall give a minimum of 72 hours notification to the Project Engineer for the scheduling of the inspection. The Contractor will be given a written review of the findings, so if adjustments are required, they can be done before the project proceeds. The Contractor shall be responsible for adhering to the findings and a follow-up inspection will not be provided.
- 3.2 Pull strings shall be provided with all cable runs including but not limited to: conduit stub ups, conduit sleeves, cable trays, open wiring routes, innerduct and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.
- 3.3 Velcro cable management straps are required on all Category-6 cable bundles, the last 20 feet or upon entry into equipment closet, a maximum of 12" apart. Cable bundles shall also be routed through cable managements or "D" rings in the equipment closet.
- 3.4 Data Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for data system cabling. This is to include all conduits installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.
- 3.5 Velcro cable management straps are required on the cabling in the rear section of the vertical managers in the equipment racks. Straps shall be a maximum of 12" apart. At a minimum, Velcro straps shall be provided at each point the cables are routed to the patch panels from the main bundle.
- 3.6 Every fiber in every fiber optic cable must be terminated at both ends of a fiber patch panel in the MDF/IDF closet or cabinet location. Termination shall be accomplished using the correct style of connectors as directed by the specifications with a strain relief boot. All connectors shall be of the same manufacture to ensure compatibility. Polarity of fiber strands must be observed at all times.
- 3.7 Labeling
 - 3.7.1.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each data outlet and patch panel point. A printed label shall be placed at each of the following locations:

- 3.7.1.2 On the cable at the rear of the patch panel or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).
- 3.7.1.3 On each cable in the j-box behind the faceplate location. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).
- 3.7.1.4 On the cable at the terminal strip prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).
- 3.7.1.5 On the face of the patch panel, provide a ¾" by ¾" label with a letter or number identifying the patch panel designation. For special purpose data connections such as WAP, Audio-Visual, IP Page and IP Camera ports, the label shall be designated with colored label icon or marker.
- 3.7.1.6 On the face of the faceplate in the label holder window. The label shall be clearly defined with a minimum #10 font size.
- 3.7.1.7 Handwritten labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.
- 3.7.1.8 Each patch panel port shall be identified with a unique sequential labeling scheme. Port identification labeling pattern shall be consistent throughout the project.
- 3.7.1.9 All faceplates shall be identified with permanent printed labels. Labels must not be subject to removal by incidental contact. Contractor shall be responsible for replacing defective labeling for a period of one year from date of final sign-off of project.
- 3.7.1.10 All fiber optic and UTP feed cables shall be identified with permanent, water resistant, printed labels. Labeling information shall include closet identifications, quantity of conductors (UTP) or strands (fiber) and house pair designations (UTP). Cables shall be labeled in the IDF/MDF closets at the site conduit entrance point, riser conduit entrance point and prior to entering either punch blocks or patch panels. Labels for fiber and copper feeds shall include both the name of the origination point and the destination point, house pair or house fiber strand count, cable composition

(i.e., 12-Strand MM 50/125 LO; 6-Stand SM). See details for additional requirements.

- 3.7.1.11 Labeling will follow recommended EIA/TIA standards or as requested by the customer. Contractor will confirm labeling pattern prior to final identification or testing. All test results will be identified by the final labeling scheme. Contractor shall be required to have the labeling scheme approved in writing by the District IT Director prior to manufacture or installation of the labeling.
- 3.7.1.12 All fiber optic cables and/or innerduct shall be tagged with fiber optic warning tags in every manhole or pullbox. Fiber warning tags shall also be placed at each end of the cable in the termination closets in clear view. A minimum of (3) tags are required at each end, with a label tag on each cable in the service loop. Fiber warning tags shall be placed on fiber optic cable and/or innerduct routed through open ceiling environments at increments no less than 15 feet apart.
- 3.7.1.13 Refer to detail drawings for additional labeling requirements.
- 3.8 Where open wiring cables are run through the ceiling space (only permitted where specifically noted on the drawings), the wire shall be bundled together and supported above the ceiling.
- 3.9 All cables must be fastened to the building structure via "j-hooks" or an approved Category 6 suspension system, and not directly in contact with ceiling system. For "j-hooks" maximum fill capacity is as follows: 1-5/16" hooks 35 cables; 2" hooks 60 cables; 4" hooks 120 cables. For quantities beyond 120 cables, use a sling support system such as "Erico Cable Cat" or equal. Maximum fill capacity 200 cables. D-rings, "Caddy #WMX cable hangar", "Caddy Bridle Rings", drive rings or any other type of wire ring support is not allowed.
- 3.10 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.
 - 3.10.1.1 The 27 10 00 Contractor shall be responsible for fire-stopping all unused conduit sleeves in the ceiling or through rated walls. The Electrical Contractor shall be responsible for fire-stopping around the conduit or sleeve, unless the sleeve is installed by the 27 10 00 Contractor, in which case, the 27 10 00 Contractor shall be responsible for all fire-stopping requirements.
 - 3.10.1.2 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.

- 3.11 Fiber optic feed cables connecting to equipment racks from the MDF Room or from an adjacent IDF location, shall be installed with not less than a 20-foot service loop between the rack and mounted on the backboard. See drawings for fiber optic service loop requirements.
- 3.12 Provide 6 inches of cable slack at computer data system outlets inside conduit box.
- 3.13 In an accessible ceiling area, provide a 10-foot (stored in a Figure-8 configuration) service loop above the all data/voice outlet locations. Service loop must be securely tied up off of ceiling tiles or ceiling surface and supported at two opposite points. Neatly coil cable without exceeding minimum bend radius limitations. Do not provide length in excess of 15 feet, as it may cause improper test results and errors.
- 3.14 Do not provide a service loop in the MDF/IDF Room on the UTP cables, unless otherwise noted. Cables shall be neatly routed around the perimeter of the room to the cable runway from the point of entrance into the room.
- 3.15 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer's recommendations.
- 3.16 Cables installed in manholes and pullboxes shall be supported with Velcro ties or loosely fitted UV rated tie wraps, on wall mounted cable support racks. The cables shall be clearly labeled in the manhole or pullbox.
- 3.17 Provide a full 360-degree loop of slack cable around manhole and pullbox interiors. Cables entering handholes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.
- 3.18 Cable pulling shall use a split mesh grip over the cable jacket. Connection directly to optical fibers and copper wire conductors shall not occur.
- 3.19 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.
- 3.20 Where cables are pulled through or pulled from a center run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.
- 3.21 For each cable pull where a cable direction change is required, flexible feed-in tubes, pullout devices, multi-segmented sheaves, etc., shall be used to ensure proper cable pulling tension and side wall pressures. Cables shall not be pulled directly around a short right-angle bend. Any device or surface the cable comes in contact with when under pull-in tension shall have a minimum radius 50% greater than the final specified minimum installed cable bending radius. The maximum possible size radius sheaves and feed-in tubes, usable in the available working space shall be provided in all situations, to ensure the minimum possible cable sidewall pulling pressure. Do not use devices with multi-segment "roller" type sheaves.

- 3.22 Cable lengths over 250 feet shall be machine pulled, not hand pulled. Cables shall be pulled in a continuous, smooth operation without jerking or stop-start motion after initiation of pull. Maximum cable pulling speed shall be less than 50 feet per minute. Minimum pulling speed shall be greater than 15 feet per minute.
- 3.23 A pull string shall be placed with all UTP and paging station cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as manufactured by Greelee #431 or approved equal. Includes all conduit stubs and cables routed through open ceiling and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pulls string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.
- 3.24 A measuring pull tape shall be placed with all feed cables at the time of installation. Indoor riser and outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½" polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull ropes will not be accepted as a substitute for the polyaramid measuring tape pull string.
- 3.25 When pulling cable through conduit, cables shall be pulled straight into or out of the raceway without bends at the raceway entrance or exit. Pull in cable from the end having the sharpest bend (i.e., bend shall be closest to the reel). Keep pulling tension to minimum by liberal use of lubricant, hand turning of reel, and slack feeding of cable into duct entrance. Employ not less than one man at reel and one at manhole or pullbox during this operation. Cables shall be pulled directly from cable reels.
- 3.26 All cables shall be new and extend continuous from each MDF or IDF backboard or rack to all outlet locations.
- 3.27 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) with 36" or within 12" of line voltage equipment or wiring where crossing.
- 3.28 Where OSP-Rated UTP cables or OSP-Rated fiber optic cables are routed exposed through ceiling for more than 50'-0", Contractor shall install the cable in innerduct or EMT conduit in the ceiling. Innerduct installed in the accessible ceiling space shall be a minimum of riser rated and minimum of 1" in diameter. Innderduct shall be supported minimum of every 3-feet to the structural members.

PART 4 - TESTING

- 4.1 All Category-6 cables shall be point to point (link) tested after installation/termination and verified to operate at minimum 1000Mbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6 wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.
- 4.2 All Category-6A cables shall be point to point (link) tested after installation/termination and verified to operate at minimum 10Gbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6a wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.
- 4.3 Upon completion of testing cable links for both copper and fiber optic cabling, the Contractor shall supply a copy of the original database files downloaded from the tester in original format on a USB Flash Drive. Contractor shall provide with the testing database files, an original copy of the tester's manufacturer software program (included in original cost) for record management and archiving, in a Windows format (i.e., Fluke Linkware software program).
- 4.4 The manufacturer's software program will be used by the Project Engineer to review all test results, and then turned over to the District to keep as their record copy with the final approved test results. Provide (3) copies of tests on USB Flash Drives. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.
 - 4.4.1.1 Contractor will repair or replace cable runs or connecting hardware that do not meet specified criteria.
- 4.5 Multimode fiber optic cables shall be tested bi-directionally at 850nm and 1300nm. All fiber strands shall be tested with an OTDR (Optical Time Domain Reflectometer). All fiber test results shall contain final source and destination information that matches IDF or MDF labeling shown on the fiber optic patch panels and final documentation. OTDR tests results shall be included with the copper test results and submitted with the tester's software for review. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.
 - 4.5.1.1 Test procedures shall comply with EIA/TIA 526-14 Method B. Test results shall meet the minimum following criteria:
- 4.6 Fiber optic test results shall not exceed 2db total attenuation loss in addition to inherent loss published by manufacturer tested at minimum 2000 Mhz for 805nm and 500 Mhz for 1300nm for the fiber optic cable.

- 4.7 End to end attenuation Fiber Optic feed cabling testing shall be performed with a temporary test jumper cable at each end of the installed fiber cable. The test jumper utilized shall be the same fiber core size and grade of glass as the installed cable. The measured attenuation of the test jumpers, test connectors, and test interconnection sleeve between the two test jumpers shall be less than 1dB as calibrated at the time of the test at indicated wave lengths and frequencies. Test jumpers shall be "zeroed out" before testing of fiber stands begins.
- 4.8 Final As-Built Drawing Submittals Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCad (2019 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as the final As-Built drawing submittal. Final As-Builts shall include copies of the floor plan drawings of each building, detailed elevations of each MDF or IDF locating all equipment, quantities outlets and speaker locations, locations of all sleeves and identification of all final cable routes. In addition, the drawings shall include all outlet locations with cable identification numbers.

END OF SECTION

SECTION 27 20 00 SOUND SYSTEM

PART 1 – GENERAL

SUMMARY

- 1.1 The Contractor shall furnish all labor, project management, materials, tools, equipment, and resources necessary for the installation, startup, and testing of the system shown on the plans and described in the specifications.
- 1.2 The Contractor shall furnish and install the system as defined by the plans and specifications. The Contractor must demonstrate to the Owner that the system is complete and complies with all operational requirements set forth in the plans and specifications.
- 1.3 The work covered under this section of the specifications consists of furnishing all labor, equipment, supplies and materials, and in performing all operations necessary for the turnkey and fully completed installation of an audio/ video system in accordance with the specifications and accompanying drawings, except as specifically noted otherwise.
- 1.4 Cables for the system shall be pulled through the conduit systems furnished by the building Contractor. The 27 20 00 Contractor shall be responsible for providing all cables required and for coordinating and supervising the cable installation. The 27 20 00 Contractor shall be responsible for insuring the integrity of the cables before and after installation.
- 1.5 Work Excluded:
 - 1.5.1 Excluded from this work shall be any and all general construction services regarding masonry and general carpentry services. Those services are to be provided and installed by the General Contractor.
 - 1.5.2 Conduit/raceways, sleeves, cable trays, electrical boxes, hand holes, pullboxes, etc. required for the system shall be furnished and installed by the Division 26 Contractor. The conduit/raceways and electrical boxes furnished and installed under Division 26 shall conform with the requirements of the drawings and specifications for the system.
 - 1.5.3 In order to ensure project cohesion a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all labor; cabling; equipment; software; supplies; materials and training. The Contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful Contractor must be factory trained on all aspects of system hardware. The successful Contractor

shall be a California licensed C7 or 10 premise wiring Contractor as defined in this specification. SubContractors may not be utilized in the implementation of the plant wiring installation.

- 1.6 Approval to bid shall not release the Contractor from full specification compliance requirements. Final system acceptance testing shall govern final system acceptance and compliance with the specifications.
- 1.7 Failure to provide a functional equivalent shall result in the removal of the alternate system at the Contractor's expense.
- 1.8 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.
- 1.9 Where the words 'provide' or 'provision' is used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.
- 1.10 Where items are specified in the singular, this division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

DEFINITIONS

- 1.11 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.
- 1.12 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.
- 1.13 Finish Space: Any space ordinarily visible, including exterior areas.

Contractor Qualifications

- 1.14 The successful bidder shall be a California licensed C7 Premise Wiring Contractor or C10 Electrical Contractor, with a specialization in the installation of Audio-Visual Systems as defined in this specification. SubContractors may not be utilized in the implementation of the installation or programming of the Audio-Visual System components.
- 1.15 Be able to demonstrate applicable experience completing at least (3) similar projects in the last 3 years acceptable to the Client's representative. The Contractor's qualified Project Engineer shall be approved by the Client's representative for the project.

- 1.16 The successful bidder shall have Design Staff with;
 - 1.16.1 BICSI certified (RCDD) Registered Communications Distribution Designer.
 - 1.16.2 CTS-D certification
 - 1.16.3 Extron Advanced A/V Certifications.
 - 1.16.4 Extron XTP Systems Engineer
 - 1.16.5 Extron TLP programming certifications
 - 1.16.6 Extron Global Configurator Plus and Global Configurator Professional Software Configuration certifications
- 1.17 The successful bidder shall have Installation Staff with;
 - 1.17.1 CTS-I certification
 - 1.17.2 Extron Advanced A/V Certifications for a minimum of (4) current installation technicians.
- 1.18 All bidders must provide a listing of three similar size projects having the same scope of work using the proposed information delivery equipment. This listing shall be complete with facility names, completion dates, names of contacts, and their telephone numbers. Referenced projects must have been completed in the past 18 months.
- 1.19 The Contractor shall have a factory-trained service department, on call 24-hours a day, 365 days a year, to arrive and initiate on-site service within 24-hours notice of a service outage by the School District.
- 1.20 The Contractor shall employ factory-trained technical/service personnel for service and maintenance of the system. Their résumés shall be required to be submitted for approval. The factory-trained technical/service personnel shall have a minimum of two-years of experience installing the proposed system or systems installed under this project. The Bidder shall submit the names and copies of the certificates issued by the factory along with training dates. The bidder shall instruct the Owner's technical personnel in the operation, care, and maintenance of the system. Service personnel shall be required to keep training up-to-date with equipment changes.
- 1.21 The Contractor shall employ factory-trained Supervisors or Lead Technicians for management and installation of the Audio-Visual systems. The Supervisor shall be responsible for the day-to-day operations of the on-site installation crew and coordination with other trades on the project job site.
 - 1.21.1 Provide all technical liaisons between the Contractor and the Client (District). This shall include participation in all meetings and conferences. Supervisor

will be required to be present at the job site for final inspection, to prepare the operating and maintenance manuals, and to provide the specified instruction to designated members of the Client's staff.

CODE COMPLIANCE

- 1.22 All material and equipment shall be clearly listed, labeled, or certified by Underwriters Laboratories, Inc. All power supplies and computers shall be clearly UL Listed. Any system which is not UL Listed at time of bid will be rejected.
- 1.23 All acceptable systems shall be approved under Part 15, Subpart B, Section 15.107b of the FCC Rules and Regulations. Bidders must provide the FCC Registration Number of the proposed system. Systems that are not in compliance with the FCC will not be considered. Any system that is not FCC compliant at time of bid will be rejected. All equipment must be clearly labeled with FCC compliance stickers.
- 1.24 The system shall be installed in accordance with local and national electrical codes.
- 1.25 The manufacturer and Contractor shall provide the Owner with a release for use of all copyright materials, corporate logos, and corporate trademarks at time of bid.

SUBMITTALS

- 1.26 General Submittal Requirements
- 1.27 **Group #1 Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:
 - 1.27.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:
 - 1.27.2 Description and quantity of each product.
 - 1.27.3 Manufacturer's Name and Model Number.
 - 1.27.4 Equipment items which have individual components will require that all component parts be listed individually.
 - 1.27.5 Description of any specialty backbox requirements
 - 1.27.6 All wiring types required for installation of this system
 - 1.27.7 Spare parts shall be listed individually to verify proposed quantity

- 1.27.8 Manufacturer's Specification Sheet or Cut Sheet. Material Cut Sheets shall provide detailed product information and shall be original manufacturer product bulletins. Copies of material information from vendor websites shall not be considered equal and will not be excepted.
- 1.27.9 Material Cut Sheet part number provided shall be highlighted or provided with an arrow directed at the corresponding part number.
- 1.27.10 Specification Item Number referenced for each required product or if not shown in the specifications, Drawing Detail Number being referenced. (ie; Spec. 271000 Item 2.1 or DWG E4.15/#1)
- 1.27.11 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.
- 1.28 **Group #2 Submittal** shall be provided within (20) working days after the approval of the Group #1 submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered and drawn on a CAD System. Each submission shall include 'D' or 'E' size print copies to match the contract drawings, and (1) data Flash Drive copy with files in a AutoCAD format. Building floor plan CAD files on disk or Flash Drive, will be made available. Contractor shall make the request for drawings in writing directly to Johnson Consulting Engineers, confirmation of the request and a release form will be forwarded to the contractor to include a signed copy with payment prior to release of files. Detail or riser diagram sheets or any other drawings other than floor or site plans, will not be made available to the contractor. Group #2 Submittal drawings shall include the following:
 - 1.28.1 Furnish complete shop drawings for all systems specified. Each drawing shall have a descriptive title and all sub parts of each drawing shall be completely described. All drawings shall have the name of the project, architect, consultant, and electronics contractor in the title block.
 - 1.28.2 Furnish complete scaled drawings of all equipment racks, consoles, special assemblies, etc. Each drawing shall show all equipment with its manufacturer and model number.
 - 1.28.3 Furnish complete scaled installation drawings detailing locations of all equipment such as control panels, plug panels, video monitors, projectors, equipment racks, speakers, etc. All conduits with cable quantities and types shall be shown also.
 - 1.28.4 Provide complete point-to-point Audio-Visual Line diagrams indicating all audio, video and control connections and cables as well as of all of the equipment/components including, but not limited to; racks, switches, control panels, speaker assemblies, flat panels, projectors, etc. Each drawing shall delineate circuit numbers or type of connection for all cables and terminal

connections at each device. Typical wiring diagram or termination diagrams for devices is not permitted. Each individual system shall be provided with a line diagram.

- 1.28.5 All equipment items referenced by manufacturer name and model number shall be the only approved product to be furnished for use on this project. Where alternate items are acceptable (or approved alternate) will be noted with the product description.
- 1.29 Common submittal mistakes which will result in submittals being rejected:
 - 1.29.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.
 - 1.29.2 Not including all items listed in the above itemized description.
 - 1.29.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.
 - 1.29.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.
 - 1.29.5 Do not provide website sales pages instead of Material Cut Sheets. Printing the entire web page with advertising and non-applicable items or information will not be acceptable.
 - 1.29.6 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" or "to be determined later" statements. The products being submitted must be the products installed.
- 1.30 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:
 - 1.30.1 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e., E1.1, E2.1, E4.1 etc.).
 - 1.30.2 Identify the name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.
 - 1.30.3 Detail or Riser diagram sheets, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.

- 1.30.4 Files will only be provided in the AutoCAD format in which they were created (i.e., version 2018 or version 2019). Files will not be made available in REVIT format.
- 1.31 Requests for files will be processed as soon as possible; a minimum of (7) working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use and delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.
- 1.32 Contractor shall be responsible for the complete provision and installation of all components as specified herein. The Contractor shall provide all tools, equipment, fixtures, appliances, ancillary piece parts and hardware as necessary to complete the assembly and installation as requested. The Owner's Representative may conduct scheduled or unscheduled inspections of the Contractor's work at any time during construction. All work included in the scope assigned to the Contractor that is associated with this project shall be accomplished in a workmanlike manner, installed and assembled plumb, level and square. The product shall be delivered to the Owner finished complete, and ready to operate according to the manufacturer's specifications.
- 1.33 All installation work shall be completed to the standard of the samples approved by the Owner's Representative during the submittal process. Any products not installed to the quality detailed in these specifications and approved in the submittal process shall be reworked by the Installer to the satisfaction of the Owners Representative at no additional cost to the Owner.
- 1.34 Products as manufactured by "Extron" have been specified to coordinate with an existing facility and other contracts to be issued for this project. Alternate products will not be approved.

SEISMIC ANCHORING

1.35 All sound systems, A/V equipment or enclosures shall be anchored to the structure. Where details have not been provided on the drawings, anchorage shall comply with CBC Section1632A and Table 16-A0. The Contractor shall submit drawings signed by the Contractor's registered structural engineer indicating method of compliance prior installation.

CLEANUP

- 1.36 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.
- 1.37 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.

1.38 During the progress of the work, keep the premises clean and free of debris.

GENERAL COORDINATION

- 1.39 The A/V drawings may reference components by manufacturer which conflict with the written specification requirements, where this occurs the written specifications shall be followed.
- 1.40 The 27 20 00 Contractor shall actively coordinate all power requirements for the Audio-Visual Systems with the Division 26 Electrical Contractor. The 27 20 00 Contractor shall coordinate the placement of the electrical outlets and hard-wired power connections at Sound System cabinets and other equipment, with the Division 26 Contractor to determine the exact placement of the power. Outlet placement in many of the applications is critical to the space requirements and power cord length of the equipment or devices being installed
- 1.41 Contractor shall provide a spreadsheet for the District provided asset tags for all newly installed AV equipment. Contractor shall provide the populated tag list at the end of the projector as part of their turn-over documents.
- 1.42 Contractor shall coordinate assignment of ALL installed IP addressable equipment. The District will provide a list of available IP addresses based of Contractors device count. Contractor shall provide a spreadsheet containing the IP and MAC addresses as well as each particular device location. This list shall also contain the Switch Port Number, and Label Description.

								IDF#
								Switch # - (From top to bottom - 1,2,3, use
Room		IP		WallJack	Switch	Switch		A,B,C in label)
#	Device	(Static)	MAC	Label	#	Port		Switch Port - (1 - 48)
2014	Extron	10.63.155.159	0000.0322.a32b	A1-A04	1	4	Example	IDF A1 Top Switch (A) Port 4
123	Extron	10.63.155.152	0000.0322.aabb	C1-B24	2	24	Example	IDF C1 2nd Switch down In stack (B) Port 24
2201	Cisco AP	dhcp	0012.aaaa.12ab	A2-C35	3	35	Example	IDF A2 3rd Switch down in stack (C) Port 35
2202	<device></device>	dhcp	0012.aa4a.12ab	A2-C36	3	36	Example	IDF A2 3rd Switch down in stack (C) Port 36

1.43 See the example below:

PART 2 — PRODUCTS

General Sound System Requirements

2.1 Provide design software plots of the speaker coverage and positioning using EASE software. Show dB sound level speaker coverages for each sound system application as required below. Separate designs must be submitted for each sound system. Contractor

shall show coverage of audience areas on full size drawings, 30"x42" sheets and submit them to the Engineer for approval prior to the installation of the system. Provide elevations of speaker coverage and position on speakers.

- 2.1.1 Provide detailed drawings of the proposed mounting systems for all speakers. The design drawings shall include independent structural calculations to verify compliance with seismic zone 4 requirements.
- 2.2 Contractor will provide test equipment and operator to perform system commissioning. Commissioning will include equalization of speaker systems to compensate for room acoustics and setting, including but not limited to equalization, delay, level, limiting, and crossover frequencies. Test equipment must include a minimum of SmaartLive 4.0 or approved equivalent running on a software manufacturer approved computer, an Earthworks M30 calibrated measurement microphone or approved equivalent, and a Sound Devices USB Pre-microphone preamp or approved equivalent. Contractor's operator must have attended a factory training class for the DSP software used on the project. Operator must also have attended a minimum of one (1) factory training session in the use of SmaartLive software.
- 2.3 Contractor shall provide engraving on the Galaxy Tablets and portable sound systems with the following text- "Property of GUHSD". Engraving shall be clear and legible and shall be professionally applied.
- 2.4 The Contractor shall refer to the Audio Patch Cable section of this specification for the descriptions of the type and style of patch cable to be furnished for the different Audio and data patch cable connections. Patch Cable Section includes the different requirements for cable runs based on length and style of connector. Cables shall be furnished as outlined in this section and based on the length of the cable, the model of cable required will vary. Individual patch cord specifications are not shown in the room system descriptions, only the type of cable required will be shown.
- 2.5 Contractor shall furnish and install Sound System components as shown in the drawing details and these specifications. Refer to the Sound System Diagrams for the different system requirements for additional information. The drawing details and specifications shall be considered as one overall document. Contractor shall provide a complete turn-key operational Sound System as specified.
- 2.6 Provide Sound System with an ADA Assistive Listening System Transmitter. Receivers shall be provided as detailed in the specifications. Provide system components as manufactured by the specified manufacturer (or approved equal).
 - 2.6.1 RF- Based Transmitter System Install the ADA system RF Transmitter in the Sound System Cabinet. Mount antenna for transmitter securely to the wall or outside of the building as shown in the specifications and test for proper coverage of the Stadium. Refer to the manufacturer's installation instructions for additional information. Provide RF-Based transmitter and receivers as shown in the specifications.

- 2.7 Power outlets provided by the Div. 26 Contractor shall be coordinated for placement in the Sound/IDF Cabinet. The power for the Sound System connections shall be placed in the top section of the cabinet, on the backboard in the cabinet backcan. The power for the IDF connections shall be placed in the bottom section of the cabinet, on the backboard in the cabinet backcan. Power for the Sound System and IDF connections shall be separate outlets and separate circuits. Coordinate circuit and outlet requirements.
 - 2.7.1 No IDF Equipment can be plugged into the Sound System Sequencers or Power Strips. The Network Switches must be plugged into the outlets in the bottom section of the cabinet. Coordinate with the District IT Department. The Sequencers will shut down the Network Switches if they are plugged into the power intended for the Sound System.

Football Stadium Sound System

- 2.8 All system equipment shall be rack mounted in a Sound/IDF System Cabinet. Refer to detail drawings for sound system cabinet requirements. Location of cabinet shall be as shown on the floor plans. Refer to site plans and floor plans for additional requirements. Sound system shall be provided with the following components;
- 2.9 Digital Rack Mounted Mixer
 - 2.9.1 19" Rack Mountable
 - 2.9.2 All-in-One rack-style digital mixer
 - 2.9.3 Inputs: 16 mic/line (XLR/TRS combo) + 1 stereo line (RCA pin)
 - 2.9.4 Output: 16 (8 XLR + 8 TRS phone)
 - 2.9.5 Channels: 40 (32 mono + 2 stereo + 2 return)
 - 2.9.6 Aux Buses: 20 (8 mono + 6 stereo)
 - 2.9.7 Stereo Buses: 1
 - 2.9.8 Networked remote control for show setups with on-screen software editor via Ethernet
 - 2.9.9 Provide (1) Audio Interface Card (NY-64D)
 - 2.9.10 Provide Yamaha TF Stage Mix and Monitor Mix Remote Software Package and APP with Android Software interface and Samsung Model "Galaxy Tab S7 11" Screen, Wi-Fi, 256-GB for remote mixing capabilities (color per customer preference). Provide lockable protective wall mounted enclosure with Tablet

mounted at the Announcer's Table in the Press Box. Software shall include all software updates up-to and including the date of final sign-off from the client.

- 2.9.11 Provide highest level of Yamaha TF firmware upgrade available at time of installation of mixer. The Mixer firmware shall be updated prior to any programming of the system. Provide a copy of the latest firmware version on a USB Flash Drive to be included with the Close-Out Package.
- 2.9.12 Contractor shall program Mixer and Tablet APP as a turn-key installation for control of the sound system. In addition to the Android Tablet, the Contractor shall program an additional (5) devices of the District's choosing for the Principal, Coaches, Band Teacher or any other Authorized User of the Sound System.
- 2.9.13 Contractor shall allow for a minimum of 8 hours of additional programming time, above the amount allowed in the Stadium General Requirements, for changes made after the system has been installed and commissioned.
- 2.9.14 All programming shall be set up to disallow any changes to the mixer levels and system pre-sets to be done by an Administrator Level password access only. Standard users may only access live application sound processing and not be able to alter the pre-sets.
- 2.9.15 The 4-Port data outlet shall be furnished by the 27 10 00 Contractor at Sound Cabinet for Mixer and Ethernet connections. Connect mixer to network and coordinate the IP address requirements with the College IT Department.
- 2.9.16 Provide (1) TF-RACK Digital Mixer with apps and all TF Rack Software Packages including TF Stage Mix, TF Monitor Mix and TF Editor.
- 2.9.17 Contractor shall provide Dante Amplifier in Concessions Building for Outdoor Speakers. Provide Dante connection via the LAN to the remote Dante Amplifier. Provide control of the speakers from the Mixer App as a separate zone. Refer to the floor plans and these specifications for additional requirements.
- 2.10 Provide a Wireless Wifi and Bluetooth Audio Streaming Receiver/Pre-Amp at the Sound Cabinet for Local User Input from a handheld device (Smartphone, Tablet, iPod, etc.) or wirelessly from a Laptop Computer, streaming music from the Internet and for Internet Radio station broadcasting. Streaming and Internet functions shall be controlled from a handheld device or computer with the manufacturer's APP for that purpose.
 - 2.10.1 The Wireless Wifi and Bluetooth Audio Streaming Receiver's main unit shall be installed in the Sound Cabinet, on a single 1RU shelf in the cabinet provided by the Contractor. The receiver shall be secured to the shelf using Velcro safety straps. The receiver installed outside the enclosure cabinet insures that

it can clearly receive signals from the local Wi-Fi network and paired User Bluetooth devices.

- 2.10.2 Provide (2) adjustable rack shelf straps to hold the Receiver in place and secure it to the shelf. Strap must be routed around the Receiver on the sides, not on the front/back of the Receiver where they can block any connections or indicators on the equipment. Straps shall be constructed of a nylon material, a minimum of 1" wide, with a plastic snap buckle. Provide Rack Shelf Straps as manufactured by Rack Solutions Part #1USHL-STRAP (or approved equal). Since straps come 72" in length, The Contractor shall trim off all but 12" of slack after securing the equipment to the shelf.
- 2.10.3 Provide a low-profile 1RU Universal Mounting shelf in the cabinet for the Wireless Wifi and Bluetooth Audio Streaming Receiver. Strap the Receiver to the shelf. Shelf may be used for securing power supplies or other ancillary equipment in the cabinet. Provide 11.5" Deep Universal Mounting Shelf by Middle Atlantic Model #UMS1-11.5 (or approved equal).
- 2.10.4 Route the RCA L/R Stereo Audio output on the Receiver to the Stereo Input #1 input terminals on the Rack Mount Mixer. Set the output toggle switch to "Pre-Amp" on the output audio panel on the back of the Receiver. Provide a RCA Stereo (L/R) to ¼" bayonet Stereo (L/R) end cable to the ¼" input connection on the Mixer.
- 2.10.5 Provide IR Control extension cable to the TLC Control Panel. Connect the IR Control cable to the 3.5mm bayonet style "Remote In" port on the rear of the Receiver. The "Remote In" port on the Receiver is specifically provided for remote operations. Connect the IR Control cable to the Port Expansion Adapter on the rear of the TLC Control Panel.
- 2.10.6 Contractor shall extend and mount the Bluetooth Antenna on the outside of the Sound Cabinet. The antenna connection shall be extended with a coaxial cable to the location on the outside of the cabinet. The antenna shall be installed clear of the top of the cabinet. The Contractor shall make the field modification to the cabinet and shall completely seal the penetration through the cabinet.
- 2.10.7 Provide a Category-6 patch cable from the Ethernet Switch in the Sound Cabinet to the Receiver's RJ45 network port. Set the "Wireless Switch" toggle switch on the back of the Receiver to the wired LAN port position for connectivity via the network WAPs and hard-wired connections. Coordinate with the District IT Department to insure that the system will allow for User Access from the APP on their wireless handheld devices. All connections shall be provided through the hard-wired LAN port. Coordinate IP addressing of the Receiver with the District IT Department.

- 2.10.8 Load the "Yamaha MusicCast" APP on the Android Tablet, the TLC Control Panel and the User's Smart Devices and provide training in the use of the MusicCast APP and how it is related to the exact set-up of the system for the Stadium. Load the "Yamaha MusicCast" APP on the Android tablet and provide a page showing the APP's options.
- 2.10.9 Provide Wireless Wifi and Bluetooth Audio Receiver/Pre-Amp by Yamaha with IR Remote Control Model #WXC-50.
- 2.10.10 Sirius Radio via the Internet Radio function on the Wireless Wifi and Bluetooth Audio Receiver/Pre-Amp, shall be furnished with a Sirius Radio Account for full access of Sirius Radio stations and full internet access through Sirius radio's APP. Contract shall include (3) years of Sirius Radio service. Contractor shall provide account information and training for access to the Athletic Staff. The Sound System shall use Sirius Radio account for the Receiver.
 - 2.10.10.1 Contractor shall provide (10) Sirius Radio station presets based on the input from the Administrative and Athletic Staff and test all stations for proper operation.
 - 2.10.10.2 Contractor shall program (10) Internet Radio stations in addition to the Sirius Radio stations based on the input from the Administrative and Athletic Staff and test for proper operation.
- 2.10.11 Provide all outputs to the rack mounted mixer. Set Mixer levels based on outputs from the APPS and reception quality.
- 2.11 The 4-Port data connection shall be provided at the Sound Cabinet by 27 10 00 Contractor for Mixer and other network connections, per the floor plans. Provide a Category-6 UTP patch cable from the mixer to the data port in the Sound Cabinet, length as required.
- 2.12 Contractor shall furnish the Galaxy Android Tablet with the mixer. Tablet shall be furnished with a cover case (Color as chosen by district). The Galaxy Android Tablet shall be furnished with the "Yamaha Mixer Apps" loaded on the tablet and fully programmed. Contractor shall insure that the latest version of the App available at the time, is loaded on the pad device.
 - 2.12.1 Provide an Android-Based Samsung Galaxy Model "Galaxy Tab S7 11" Diagonal Screen, Wi-Fi Only Model, 512-GB Memory, WQXGA 2560 x 1600 Resolution, 500nit Brightness and DCI-P3 Color Range.
 - 2.12.2 Provide a full cover case for the Android Tablet Model #Galaxy Tab S7 Bookcover – Color shall be Black. Case shall be stored with the microphones in the Storage Drawer.

- 2.12.3 Contractor shall be responsible for all programming and set-up of the Android Tablet and the Yamaha TF-RACK Digital Mixer. Contractor shall submit program set-up and pre-sets for approval to Project Engineer and District IT Director prior to completing the full programming of system. Contractor shall program Mixer and Android Tablet as a turn-key installation for control of the sound system.
- 2.12.4 The Galaxy Tablet shall be installed in the Press Box in the Announcer's Booth. The Tablet shall be wall mounted in a key-locked security enclosure inside the Press Box. The Galaxy Tablet shall be charged while mounted in the wall mount enclosure. Provide a remote charging station for the Tablet charging while enclosed in the security mount. Provide enclosure with optional button covers for Home and Power buttons, key locks on enclosure, optional Armored Glass Shield for cover and wall mount bracket in White high-grade aluminum. Provide Maclocks Tablet Enclosure Wall Mount or approved equal. The Galaxy Tablet protective case shall be stored for future use.
- 2.12.5 Provide programming presets for the Galaxy Tablet for 3-5 different preset presentation scenarios (Pep Assembly, Football Game, Presentation, Audio Only, etc.), that will automatically activate the proper settings on the Mixer DSP Software for that application. The Audio Only presets will provide built-in limitations for adjustment of the levels of the audio sources. The mixer shall be programmed with an Administrator level access that allows the Administrator to get into the fine adjustments and control of the programming. In addition, a User level access page will be programmed that will block out all but the volume levels, source selections, Mic level control and speaker output zone control. The Main speakers over the field shall be a separate zone from the Press Box and Concession Stand speakers. Zones shall be programmed to operate independently or in conjunction with each other.
- 2.12.6 Coordinate with the site Athletic Director and the site Principal for additional information concerning presentation modes. The Contractor shall provide an additional (6) hours of programming of Mixer, Galaxy Tablet and TLC Control Panel to be used for extra requirements after the initial set-up has been completed and system is actually in use by the school. The extra hours shall be used after all of the initial programming has been completed and the system has been tested.
- 2.13 Provide Extron TLC PRO 726M LCD Control Panel for Local Control (Symbol "LC" on drawings) location for control of components in the Sound System Cabinet, at the location shown on the drawings. A Presenter shall be able to control the Streaming Receiver from either the TLC Pro panel, Smart devices or a Laptop PC. TLC Control Panel shall be furnished in white with a surface wall mount adapter. The Control Panel and Android Tablet shall use the same conduit for the cabling from the J-Box below the Press Box.

- 2.13.1 Control panel shall be furnished with the Port Expansion Adapter and recessed wall mount backbox Extron Model #RWM 2. Contractor shall install recessed backbox at the location shown on the floor plans. Route the cabling as shown on the Sound System AV Diagram through the J-Box to the wall mount backbox. The cable shall be fished through the wall from the J-Box to the mount.
- 2.13.2 Provide programming and page designs for the TLC Control Panel. Designate buttons on TLC Control Panel for the System Devices. Control Panel shall also be provided with Control Pages for the Streaming Audio Receiver in the Sound Cabinet. All page designs and flow charts shall be submitted for approval to the Project Engineer and the District Project Manager prior to installation.
- 2.13.3 The Control Panel shall also be programmed to allow zoning and volume control of the system speakers. The Control Panel is not intended to take the place of the Touch Pad for the Mixer Control. The Control Panel shall be setup to allow simple speaker and volume control for Basic Users. The (2) Exterior Speakers at the Concession Stand shall be set up to be zoned separately from the Press Box Speakers and the Stadium Speakers. Volume control of the speakers shall be provided on the Control Panel.
- 2.13.4 The Control Panel shall provide Infrared control of the Wifi/Bluetooth Streaming Receiver. The IR Control shall be able to power up/down the Receiver, switch inputs, Search functions and muting. Each page shall be furnished with Volume Up/Down, "Back" and "Home" buttons. Contractor shall contact Extron for the IR Command control sequences for a custom program to control the Yamaha Streaming Receiver.
- 2.13.5 Provide an IR Control cable from the Control Panel to the Wifi/Bluetooth Streaming Receiver. Connect the cable to the Receiver as shown in the specifications item for the Receiver.
- 2.13.6 Contractor shall download and provide the Wifi/Bluetooth Receiver's Yamaha MusiCast User APP on the Control Panel and Coach's Smart Devices (Smart Phones, Pads, ETC.). Provide dedicated pages on the control panel for the APP's functional options. Provide additional User APPs as required by the College Athletic Department.
- 2.13.7 The Contractor shall provide a Category-6 Patch Cable to the TLC PRO 526M Control Panel from the Ethernet Switch in the Sound Cabinet. Connect the Control Panel to a POE powered network port and confirm that the port is activated at the IDF location. Coordinate the installation with the College IT Department.
- 2.13.8 Contractor shall provide contact closure relay control from the TLC Control Panel for Powering Up/Down of the Sound System. The cable from the First CQ-1520 Sequencer in the Sequencer System shall be terminated on the TLC

Control Panel Port Expansion Adapter "Relay" port for remote Power Up/Down of the Sound System from the Control Panel. The Control Panel shall be programmed to have a page with buttons for "Sound System Power On" and "Sound System Power On".

- 2.14 Additional Components:
 - 2.14.1 Storage drawer by Middle Atlantic Model # D2
 - 2.14.2 Blank panel Middle Atlantic # SB1 Fill in all open spaces with blank panels
 - 2.14.3 Vented panel Middle Atlantic # VT1 –Provide vented panels above and below each amplifier.
- 2.15 Provide Ethernet switch in the Audio-Visual Rack exclusively for the AV system component connections. The audio-visual system components shall all be connected to the same switch unless otherwise noted on the drawings and wiring diagrams.
 - 2.15.1 Managed Ethernet switch shall be provided with (12) 10/100/1000 POE network ports, with a minimum of (1) Uplink port and (12) POE powered ports. Each port shall have Gigabit Ethernet network connection capability. Switch shall be rack mounted in the cabinet on a rack mounted adapter panel by the manufacturer. Contractor shall furnish and install rack mount panel. Provide Luminex GigaCore 12 PoE Series Ethernet switch with 180W POE capacity (Max 30W for an individual Port @ POE+).
 - 2.15.2 Provide Category-6 UTP patch cables as required to provide a full turn-key installation for the audio-visual system. See AV Wiring Diagram for additional requirements.
 - 2.15.3 The Ethernet Switch in the AV Cabinet must not be plugged into the power sequencer or any outlet controlled by the sequencers. The Ethernet Switch shall be plugged directly into one of the duplex outlets in the back of the AV cabinet. Provide an extension cord as required to allow the Ethernet Switch to be plugged into the duplex outlet and still be able to pull out and rotate the rack
- 2.16 Enclosed Wall/Floor Mount (Full Height Swing) Sound/IDF Cabinet Requirements:
 - 2.16.1 The Cabinet shall be used for both the Sound System equipment and as the local IDF Cabinet for the Press Box. The 27 20 00 Contractor shall coordinate with the 27 10 00 Contractor for provision of the rackable space within the cabinet. The IDF components (data patch panels, network switches, managers, etc.) shall be mounted in the bottom section of the Cabinet. See the Drawing Details for additional requirements.

- 2.16.2 Enclosed wall/floor mount cabinet as shown in the Enlarged Press Box Floor Plan. Provide Middle Atlantic Model #SR40-22 "SR" Series pivoting equipment cabinet, 90.75" Overall Height by 23.5" Wide by 23.5" Deep (Usable 70" height and usable 22" depth), black color. (No known alternate)
- 2.16.3 Provide with Solid Front Door Model #FD-40 with keylock. Cabinet shall be provided with the same keylock for both the solid front door and the rear access lock.
- 2.16.4 The cabinet shall be furnished with (1) rack-mounted LED light fixture, mounted at the top of the cabinet to allow for coverage of the front of the Equipment. LED Light must have a power switch to allow use when door is opened. Provide Middle Atlantic Model #LT-CABUTL-SINGLE (Or Approved Equal)
- 2.16.5 Leave 1RU of space at the top of the rack, above the sound equipment to mount the LED Light Bar on the rack rails.
- 2.16.6 Cabinet shall be furnished with the optional mounting base for installation of the UPS in the base of the cabinet, Middle Atlantic Model #SR-UPS-BKT.
- 2.16.7 Provide cabinet with (2) 4-1/2" fans mounted in top of cabinet for ventilation, Middle Atlantic Model #QFAN with protective grilles, with power plug kit Model #FANCORD-2X1 and vent blocker kit Model #VBK-S32. Vent blockers shall be installed on the upper vents on the sides and front of the cabinet. Plug power cord into the thermostatic controller.
- 2.16.8 Provide thermostatic controller Model #FC-2-215-1CA mounted in the backcan of the cabinet. Set the temperature threshold for the fan controller at 80-degrees for fan activation.
- 2.16.9 Provide fire-retardant painted backboard in rear of cabinet, size as required. Backboard shall be furnished and installed by the Low Voltage Systems Contractor. The backboard shall be used for the punch blocks for the voice feed and intercom feed cable terminations.
- 2.16.10 Provide full length vertical lacing bars in the rear of the cabinet for cable management Middle Atlantic Model #LACE-40-OP. Install lacing bars for cable entry and dressing in the cabinet.
- 2.16.11 Provide (1) ground bus bar kit as detailed in the drawings. Ground Bus Bar kit as manufactured by CPI #40158-012 or approved equal. Ground Bus Bar and all bonding conductors to the bus bar shall be labeled as shown in the drawing details.
- 2.17 Rack Mounted Sequenced Power Control System in AV Cabinet

- 2.17.1 Power Switched/Sequenced outlets for complete activation and shut down control via the rack mounted controller. DO NOT PLUG ANY NETWORK ELECTRONICS FOR THE DATA INFRASTRUCTURE MOUNTED IN THE REAR OF THE CABINET INTO ANY OUTLET ON THE SEQUENCING SYSTEM.
- 2.17.2 Connect the rack mounted PDU/Controller to the sequenced power control "Pods" mounted in the rear of the AV Cabinet. See detail drawings for additional information. The Contractor shall be responsible for setting the proper sequencing for all Pods connected to the PDU/Controller and for all of the devices connected to the "Pods".
- 2.17.3 The "Pods" shall be connected to the PDU/Controller with an Eight-wire, RJ45 low voltage patch cable. The patch cable connections do not follow standard EIA/TIA or BICSI standards for the wiring configuration. DO NOT USE CAT-5E or CAT-6 type data patch cables for the connections from the "Pods" to the PDU/Controller. Refer to the manufacturer's installation practices and manual to insure the proper wiring configuration to used.
- 2.17.4 Rack Mounted PDU/Controllers; Provide (2) 19" rack mounted 120V 20-Amp PDU/Controllers with (3) sequenced duplex receptacles and (1) unswitched single receptacle on the rear of the PDU. PDU/Controller shall have a built-in circuit breaker, AC line surge protection, a multi-stage AC line filter and three event sequencing ability. PDU/Controllers shall be furnished with a 120V, 20-Amp, L5-20P input plug with 10-foot single phase power cord connection. Provide PDU/Controllers as manufactured by Juice Goose Model #CQ-1520. Plug PDU/Controllers, one each into the (2) duplex receptacles in the front of the cabinet.
- 2.17.5 Sequenced Power Control Pods; Provide (2) sequenced power control "Pods" in the rear of the AV cabinet to provide a sequenced power connection for the amplifiers. Provide (2) 120V, 30-Amp "Pods" with (1) 30-Amp twist-lock receptacle in a self-contained junction box hard-wired to a 120V, 30-Amp circuit. "Pods" shall be connected to the CPU/Controller with the low voltage control patch cable. Provide sequenced power control "Pods" as manufactured by Juice Goose Model #CQ3000 (NEMA L5-30R).
- 2.17.6 Power Strips; Provide (1) power strip for power to the wireless microphone charging bases. The power strip shall be plugged directly into one of the duplex receptacles so that the chargers can continue to charge, even if the rest of the system is powered down. Power strip must be mounted directly above the rack mounted shelf. The power strip shall be used as the location to plug in the LED Light for Cabinet. Power strip shall be provided with a 3-year warranty. Provide (1) Juice Goose Model #JG11-20A Power Strip. Refer to the detail drawings for additional requirements.

- 2.17.7 Provide (2) 120V, 20-Amp duplex receptacles and (2) 120V, 30-Amp hardwired 120V, 30-Amp circuit in the middle of the AV Cabinet for sound system power connections. Contractor shall coordinate with the 260000 Electrical Contractor for location of duplex receptacle and hard-wired connections to the "Pods" in the rear of the AV cabinet.
- 2.17.8 Amplifiers shall be connected to the Sequenced Power Control Pods, FIRST, then Mixer and other equipment shall be connected to the PDUs and power strip. Contractor shall evenly distribute the power requirements across the PDU circuits. The small, low powered equipment such as the ADA Transmitter, Microphone Receivers, fan controller, etc. shall be connected to the power strip outlets mounted in the rear of the cabinet one the rear rack rails.
- 2.17.9 Contractor shall furnish the Project Engineer with a detailed summary of the electrical connections to the PDU/Controller and sequencing Pods and the proposed outlet sequence to show proper delay for system start-up and shut down.
- 2.17.10 Contractor shall provide a contact closure relay cable from the First CQ-1520 Sequencer in the system to the TLC Control Panel in the Press Box for remote Power Up/Down of the Sound System from the Control Panel. Connect the cable to the Contact Closure connection on the Extron TLC PRO 526M LCD Control Panel to be used as a dry contact closure. Terminate the cable with a RJ45 modular plug, wired per the manufacturer's installation manual instructions to the proper pins on the sequencer port on the CQ-1520. The Control Panel shall be programmed to have a page with buttons for "Sound System Power On" and "Sound System Power On".
- 2.18 A complete Assistive Listening system furnished and installed to meet CBC Section 11B-219 and comply with CBC Section 11B-706 and the ADA requirements for hard-ofhearing. The system shall be integrated into the sound reinforcement system. Mount the transmitter in the portable system equipment rack, adjust as required for total coverage of seating area. Assistive Listening System including:
 - 2.18.1 Per ADA Assistive Listening System CBC Section 11B-706.3 "The minimum number of receivers to be provided shall be equal to 4% of the total number of seats, but in no case less than two. 25% minimum of receivers provided, but no fewer than two, shall be hearing aid compatible."
 - 2.18.2 Per ADA Assistive Listening System CBC Section 11B-219.4 "If the system provided is limited to specific areas or sears, then such areas or sears shall be within a 50-foot viewing distance of, and have a complete view of, the stage of playing area."
 - 2.18.3 (1) Transmitter Listen technologies LT- 803-072-01

- 2.18.4 (36) Receivers with integrated neck loop/lanyard with ear speaker Listen Technologies LR-5200-072-P1
- 2.18.5 (1) Antenna Exterior Wall Mount antenna with cable
- 2.18.6 (1) Transmitter rack mount assembly
- 2.18.7 (4) Carrying and charging cases for receivers LA-311
- 2.18.8 (4) ADA Signs for entrances to the Stadium Model LA-303 To be installed by the 27 20 00 Contractor at locations designated by the District
- 2.18.9 (2) Packs of disinfecting wipes Model #LA-901
- 2.19 Speakers on the home side of the field shall be installed as 8 or 4-ohm connections to the amplifiers.
- 2.20 (1) Amplifiers 8-Channel Power Amplifier for the Stadium Speakers:
 - 2.20.1 Power Output 1250W @ 4-ohms
 - 2.20.2 Power Output 1250W @ 8-ohms
 - 2.20.3 Power Output 2500W @ 4 or 8-ohms bridged per channel pair
 - 2.20.4 Power Output 1250W @ 70-Volts
 - 2.20.5 Community Model R2-474Z speakers shall be connected to Amplifier #1 on a single channel bridged on the amplifier @ 4-Ohms channel limiter set at 800W.
 - 2.20.6 Community Model R.5-94Z and R.5-66Z speakers shall be connected on a single channel @8-Ohms each on Amplifier allowing full-range operation with channel limiter set at 600W.
 - 2.20.7 Frequency Response 7Hz to 30kHz @ 4-Ohms, -2.5dB points
 - 2.20.8 Confirm and coordinate the power receptacle requirements with the Division26 Contractor. The amplifier shall be connected to the power conditioned bythe Goose Juice Power and Sequencer in the Sound Cabinet.
 - 2.20.9 Amplifier shall be provided with built-in DSP capabilities, per channel limiter capabilities and remote access for programming. Connect the amplifiers to the network as shown in the drawing details.
 - 2.20.10 Linea Research Model # 88C10

- 2.20.11 Amplifiers shall be pre-set to limit the output to a maximum of the speaker's Program rating, that is attached to the individual channel on the amplifier. The programming panel shall be furnished with a lockout password to deter alteration by unauthorized users.
- 2.21 (1) Amplifier 4-Channel Power Amplifier for the Press Box Speakers;
 - 2.21.1 Power Output 850W @ 4-ohms
 - 2.21.2 Power Output 450W @ 8-ohms
 - 2.21.3 Power Output 2500W @ 4-ohm or 1600W @ 8-ohms bridged per channel pair
 - 2.21.4 Power Output 1250W @ 70-Volts
 - 2.21.5 JBL HST Speakers shall be connected to a single channel of the amplifier at 200 Watts each. Set channel limiter set at 200W for each speaker connection
 - 2.21.6 Frequency Response 7Hz to 30kHz @ 4-Ohms, -2.5dB points
 - 2.21.7 Confirm and coordinate the power receptacle requirements with the Division 26 Contractor. The amplifier shall be connected to the power conditioned by the Goose Juice Power and Sequencer in the Sound Cabinet.
 - 2.21.8 Linea Research Model # XBi4
 - 2.21.9 Amplifiers shall be pre-set to limit the output to a maximum of the speaker's Program rating, that is attached to the individual channel on the amplifier. The programming panel shall be furnished with a lockout password to deter alteration by unauthorized users.
- 2.22 Provide (2) distributed speakers positioned on the lighting poles designated as "F2" and "F4" on the site lighting drawings, on the "Home" side of the field. Speakers shall be positioned to cover the "Home" bleachers, from the ¼ point towards the center of the bleachers. Position speakers to minimize sound bleeding beyond bleacher area. Speakers shall be mounted to the support arm provided by the Contractor, as shown on the electrical drawings. Provide Speaker Pole Mount Bracket as manufactured by Polar Focus. Contractor shall provide all hardware including mounting hardware, brackets and cables. Provide design drawings of proposed mounting configuration to the Project Engineer prior to installation. The design drawings shall include independent structural calculations to verify compliance with ASCE7. Shown on stadium detail plans as TYPE "A".
 - 2.22.1 Three-way, full range weather resistant loudspeaker system

- 2.22.2 LF 2 X 12" Ferrofluid-cooled woofers treated with moisture repellent on a bass horn
- 2.22.3 MF 1 X 2" exit Ferrofluid-cooled midrange compression driver with a nonmetallic diaphragm
- 2.22.4 HF 1 X 1" exit HF driver with a titanium diaphragm
- 2.22.5 40-70-degree Horizontal x 40-degree Vertical coverage pattern
- 2.22.6 LF Ratings 1200 Watts continuous 2400 Watts program rating @ 8-Ohms power handling
- 2.22.7 HF Ratings 350 Watts continuous 700 Watt program rating @ 8-Ohms power handling
- 2.22.8 Maximum 24.75" high x 24.75" wide x 30.75" deep x 115 Lbs (including yoke)
- 2.22.9 Community R2 Series Medium-Long Throw Speaker Part # R2-474Z No approved alternates
- 2.22.10 Provide Option Code RAL# Provide speakers in custom color to be determined by the District Facilities Director. Confirm available colors with manufacturer.
- 2.23 Provide (2) distributed speakers positioned on the lighting poles designated as "F2" on the site lighting drawings, on the "Home" side of the field. Speakers shall be positioned to cover the "Home" bleachers, from the ¼ point out towards the end of the bleachers. Position speakers to minimize sound bleeding beyond bleacher area. Speakers shall be mounted to the support arm provided by the Contractor, as shown on the electrical drawings. Provide Speaker Pole Mount Bracket as manufactured by Polar Focus. Contractor shall provide all hardware including mounting hardware, brackets and cables. Provide design drawings of proposed mounting configuration to the Project Engineer prior to installation. The design drawings shall include independent structural calculations to verify compliance with ASCE7. Shown on stadium detail plans as TYPE "B".
 - 2.23.1 Two-way, horn loaded coaxial weather resistant loudspeaker system
 - 2.23.2 LF 1 X 12" weather resistant Ferrofluid cooled transducers
 - 2.23.3 HF 1 X 1" exit, titanium diaphragm
 - 2.23.4 90° Horizontal x 40° Vertical coverage pattern
 - 2.23.5 Power Ratings 200 Watt continuous, 500 Watt program rating @ 8-Ohms

- 2.23.6 Maximum 24.75" high x 24.75" wide x 29.75" deep x 56 Lbs (including yoke)
- 2.23.7 Community R.5 Series Short Throw Speaker Part # R.5-94Z No approved alternates
- 2.23.8 Provide Option Code RAL# Provide speakers in custom color to be determined by the District Facilities Director. Confirm available colors with manufacturer.
- 2.23.9 Set 70Hz high pass filter for proper operation of these speakers
- 2.24 Provide (2) distributed speakers positioned on the lighting poles designated as "F2" on the site lighting drawings, on the "Home" side of the field. Speakers shall be positioned to cover the "Home" bleachers, from the ¼ point out towards the end of the bleachers. Position speakers to minimize sound bleeding beyond bleacher area. Speakers shall be mounted to the support arm provided by the Contractor, as shown on the electrical drawings. Provide Speaker Pole Mount Bracket as manufactured by Polar Focus. Contractor shall provide all hardware including mounting hardware, brackets and cables. Provide design drawings of proposed mounting configuration to the Project Engineer prior to installation. The design drawings shall include independent structural calculations to verify compliance with ASCE7. Shown on stadium detail plans as TYPE "C".
 - 2.24.1 Two-way, horn loaded coaxial weather resistant loudspeaker system
 - 2.24.2 LF 1 X 12" weather resistant Ferrofluid cooled transducers
 - 2.24.3 HF 1 X 1" exit, titanium diaphragm
 - 2.24.4 60° Horizontal x 60° Vertical coverage pattern
 - 2.24.5 Power Ratings 200 Watt continuous, 500 Watt program rating @ 8-Ohms
 - 2.24.6 Maximum 24.75" high x 24.75" wide x 29.75" deep x 56 Lbs (including yoke)
 - 2.24.7 Community R.5 Series Short Throw Speaker Part # R.5-66Z No approved alternates
 - 2.24.8 Provide Option Code RAL# Provide speakers in custom color to be determined by the District Facilities Director. Confirm available colors with manufacturer.
 - 2.24.9 Set 70Hz high pass filter for proper operation of these speakers
- 2.25 Provide (3) distributed speakers inside Press Box where shown on drawings. Speakers shall be wall mounted and shall be used to monitor the stadium sound system inside the Press Box. These speakers shall be zoned and controlled separately from the stadium

speakers (all speakers in Press Box in a single zone) to allow them to be turned on and off independent of the stadium speakers. Speakers shall be wall mounted with the wall mount adapter bracket 12" below the ceiling. Contractor shall provide all hardware including brackets, safety cables and mounting hardware. Shown on floor plans as TYPE "C".

- 2.25.1 Full range, passive two-way compact loudspeaker system
- 2.25.2 5.25" low-frequency driver with dual 3/4" HF fluid-cooled tweeters
- 2.25.3 160-degree Horizontal x 150-degree Vertical coverage pattern
- 2.25.4 Power Ratings 100 Watt continuous, 200 Watt program rating @ 8-Ohms
- 2.25.5 Approximate dimensions 10" high x 14.25" wide x 7" deep x 10 Lbs. Color White
- 2.25.6 Speakers shall be furnished from the factory with mounting brackets and installed in the Press Box. Connect each speaker to a dedicated channel on the amplifier.
- 2.25.7 Each room shall be furnished with a separate wall mounted volume control to adjust the speaker volume in each area. Route speaker cable first to volume control and then to the speaker in each room. Each speaker shall be cabled as a home run to the Sound System Cabinet.
- 2.25.8 JBL Control Series Model #Control HST Series
- 2.26 Provide wireless microphone system consisting of the following:
 - 2.26.1 Digital Wireless Combo Quad Channel Systems Package by Shure Model #ULXD4Q (Or approved equal by Sennheiser). Provide Receiver with rack mount kit. All Digital Wireless System components shall be frequency matched.
 - 2.26.1.1 Provide of extension of the Antennas for both Channels "A" & "B" from the Receiver. Provide upsized RG-8 antenna cable to reduce the gain loss for the Antenna extension, length as required. Routes cables from the Receiver to the antenna locations mounted on the exterior of the Press Box, as indicated on the drawings. Provide (2) Model #PA805 Directional Antennas. Antennas shall be placed a minimum of 6-feet apart on the building.
 - 2.26.2 Provide (4) Shure #ULXD1 Digital System Body Packs with ¼ wave antenna and frequency/power lockout. Body Packs shall be furnished with Model #SB900A Lithium-Ion battery with 9-hour battery life.

- 2.26.2.1 Digital System Body Packs shall be furnished with (2) #WL185 cardioid (130° Pickup) lavalier microphones and (2) Model #WCM16 Headworn Electret Condenser Microphones.
- 2.26.3 Provide (4) Shure #ULXD2/SM58 Digital System Handheld Microphones with Cardioid (unidirectional) dynamic pickup pattern, On/Off/Mute Switch and frequency/power lockout. Body Packs shall be furnished with Model #SB900A Lithium-Ion battery with 12-hour battery life. Provide each Microphone with Model #A58WS Microphone Windscreen.
 - 2.26.3.1 Provide Handheld Microphones each with Model #A58WS Microphone Windscreen and Model #WA371 Microphone Clip.
- 2.26.4 Provide (4) Spare Model #SB900A Lithium-Ion batteries
- 2.26.5 Prove (1) Shure Model #SBRC Rack-Mount Battery Charger with (4) #SBC-AX Charging Modules for the Rack-Mount Battery Charger. All Charger Modules shall be provided with power cables.
- 2.26.6 Microphones and Body Packs shall be provided with storage bags.
- 2.27 Provide (4) Hard-Wired Handheld Microphones with minimum frequency response of 50Hz to 18kHz. Microphone shall have on-off switch with lock "on" feature and adjustable swivel adapter.
 - 2.27.1 Provide wind screen for all microphones
 - 2.27.2 Provide (2) Shure Model #SM86 Cardioid Handheld Microphones. (Or approved equal by Sennheiser)
 - 2.27.3 Provide (2) Shure Model #BETA 87A Supercardioid Handheld Microphones. (Or approved equal by Sennheiser)
- 2.28 Provide (4) full height microphone stands with booms and (2) desk height microphone stands
 - 2.28.1 (4) "Ultimate" Pro-T-T with telescoping boom (no approved equal)
 - 2.28.2 (2) Model #JS-MMS1 Desktop Microphone Stands by Ultimate Support (no approved equal)
- 2.29 Microphone cable below grade or installed in underground conduit shall be West Penn #AQC293 or equal, 18AWG outdoor rated, 2-pair cable with shield and ground drain wire and 100% overall shield.

- 2.30 Mic Cables: Provide (2) 15'-0", (2) 25'-0", (2) 50'-0" and (2) 100'-0" long, Quad-AWG 21 gauge, with braided 95% shield cable assemblies. Provide Microphone assemblies as shown in the Audio-Video patch cables section of these specifications.
- 2.31 Microphone Jacks: Provide Switchcraft J3FS (or equal by Neutrik) wall jacks per drawings (Interior)

Football Stadium Portable Sound Systems

- 2.32 Provide portable Cheerleader sound system for Football Field. Portable Sound System as manufactured by Sound Projections, no approved equal, to contain the following;
 - 2.32.1 SM5D-HBM-HBMDLX-Deluxe SM-5 with CD/MP3 player, 2 digital wireless headset systems SM-5 Sound Machine with 2,000 cycle Lithium Iron Phosphate battery and AC powered sound system
 - 2.32.2 OPT-101 CD/MP3 player with USB port
 - 2.32.3 (2) OPT-51D Shure 60-channel Digital body pack wireless system
 - 2.32.4 (2) MIC-HB2a headset boom microphone
 - 2.32.5 SM-5C unpowered companion speaker
 - 2.32.6 SC50-4W speaker cable
 - 2.32.7 (2) SS-1 speaker stands with tote bags
 - 2.32.8 (2) PSC-SM slip covers
 - 2.32.9 Model #SPORT-1 collapsible hand truck with cover
 - 2.32.10 Provide (2) additional Model OPT-41D Shure 60-channel Digital handheld wireless microphones with the system. The additional handheld microphones shall be ordered to work on the same frequency range as the Digital Body Packs for the headset microphones.
 - 2.32.11 Provide a complete Assistive Listening system for portable system, furnished and installed to meet CBC Section 1104B-2 and the ADA requirements for hard-of-hearing. The ADA system shall be connected to the portable sound system. Transmitter shall be connected to the portable sound system audio output. Adjust as required for total coverage of seating area. Assistive Listening System including:
 - 2.32.12 (1) Transmitter Listen Technologies Model #LT-800-072

- 2.32.13 (4) Receivers with ear buds Listen Technologies Model #LR-300-072 with LA-161 Ear Buds
- 2.33 Portable Equipment shall be furnished to the designated representative of the Client, along with complete documentation of the materials provided. Where applicable, deliver portable equipment in the original manufacturer's supplied packaging

PART 3 - Audio Patch Cables

- 3.1 All patch cables must be factory manufactured. All patch cables shall be in a length as required to provide the proper operation of the equipment, unless otherwise noted. Contractor is responsible for confirming all connector gender requirements prior to ordering.
- 3.2 Audio Patch Cables 2-feet to 25-feet in length for Installation Connections; All 3.5mm stereo audio cable assemblies shall be a male to male cable fully shielded cable with 3.5mm bayonet style connectors. Extron Mini Audio Cables Series (Or Approved Equal). Provide minimum length of 2 feet.
- 3.3 Audio Patch Cables 12 feet in length for Input Wallplate Connections; All 3.5mm stereo audio cable assemblies shall be a male to male cable fully shielded cable with 3.5mm bayonet style connectors. Extron Mini Audio Cables Series (Or Approved Equal). See the AV System Diagrams in the drawings and AV Input Wallplate requirements in the specifications for further instructions.
- 3.4 Category-6 Patch Cables 25-feet or Less; Category-6 UTP patch cables shall be as manufactured by Commscope, Panduit, Leviton or Ortronics, (Or Approved Equal).
- 3.5 All patch cables shall be provided for each type of connection required to provide a complete and operational system. All patch cables shall be factory manufactured
- 3.6 XLR patch cables shall be as manufactured by Whirlwind MK4 Series or approved equal.
- 3.7 ¹/₄" TRS patch cables shall be as manufactured by Whirlwind TRS Cable Series (ST+) or approved equal.
- 3.8 Microphone cables, 10-feet or greater in length, shall be constructed with Canare L4E6S cable, 95% braid, shielded cable assemblies. Provide Microphone cable assemblies as manufactured by Whirlwind, Model MKQ Quad (or Approved Equal). Exact lengths shall be as specified for each system.
- 3.9 All patch cables shall be provided for each type of connection required to provide a complete and operational system. All patch cables shall be factory manufactured.

PART 4 - INSTALLATION AND EXECUTION

- 4.1 Verify that all electrical requirements including junction boxes, empty conduit and power circuits and receptacles are in place as shown on the drawings.
- 4.2 Provide lacing bars for cable management in all of the sound systems cabinets. Contractor shall be responsible for providing neatly dressed cable bundles within the sound cabinet. Cables shall be dressed separately for Microphone and line level cables, speaker and monitor cables, control cables and power cables and video cables. All cables shall be neatly labeled with wrap around type written labels.
 - 4.2.1 On the cable at the rear of the patch panel, sound system equipment or termination location. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part # 29689 (NO ACCEPTABLE EQUAL).
- 4.3 All faceplates shall be labeled with type-written permanent labels securely attached to the faceplates identifying all A/V connections. (ie; Doc Cam, PC, DVD, etc.) Cables at the projector and A/V switch shall be also be labeled to match the faceplates
- 4.4 Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.
- 4.5 Installation practices shall follow "standard broadcast wiring" and installation practices, as excerpted from "Recommended Wiring Practices, "Sound System Engineering", (2nd Edition) D. Davis, and Performed to the highest standards of acknowledged industry practices. Upon request the A/V Contractor shall furnish all equipment and labor to verify the compliance with the following:

Audio System:

- 4.5.1 Signal-to-noise ratio (including crosstalk): 55-dB minimum.
- 4.5.2 Total harmonic distortion: 0.1% maximum from 30 Hz to 15,000 Hz.
- 4.5.3 System frequency response: ±1.0 dB, 20 Hz to 20,000 Hz.
- 4.5.4 Program reproduction system with point-source loudspeakers: Flat response from 63 Hz to 2.5 kHz ± 2-dB, decreasing uniformly from a relative level of 0-dB at 2.5 kHz to a relative level of −10-dB at 10 kHz as measured on axis of loudspeaker.
- 4.5.5 Sound output capability: Program levels of not less than 100 dB without objectionable distortion, rattles, or buzzes.

4.5.6 Hum and noise is inaudible (below the background noise level of the space) under normal operation and as observed in normal seat locations.

Radio Frequency (RF) System:

- 4.5.7 Visual Carrier level: +0 dBmV minimum and +16 dBmV maximum at system outlets for utilized channels.
- 4.5.8 Adjacent Channel Visual Carrier: 3-dB maximum differential at system outlets.
- 4.5.9 Non-adjacent Channel Visual Carrier: 0-dB maximum differential at system outlets.
- 4.5.10 Carrier-to-Noise Ratio: 42-dB minimum
- 4.5.11 Amplitude Response: Flat ± 1.0 Db
- 4.5.12 Signal-to-Noise Ratio: 45-dB minimum for the maximum level of the signal and the interference resulting from cross modulation from other signals on the system, after demodulation.
- 4.5.13 Outlet-to-Outlet Isolation: 25-dB minimum.
- 4.6 Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.
- 4.7 Where manufacturer does not provide bending radius information, minimum bending radius shall be 10 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the engineer and the owner.
- 4.8 Attach cables to permanent structure with suitable attachments at intervals of 48 to 60 inches. Support cables installed above removable ceilings. Install adequate support structures for 10 foot cable service loops at each TC.
- 4.9 Mark all cables and patch cords or jumpers with permanent, non-handwritten number or letter cable markers within six inches of both ends. All cables shall be marked. Cable marking codes shall correspond to run sheets.
- 4.10 Furnish screw-type terminal blocks, boards, strips or connectors for cables that interface with racks, cabinets, consoles or equipment modules. Attach wires terminating at screw-type terminals with crimp-on lugs. "Telephone-style" punch down blocks are not acceptable for signal or data wiring.
- 4.11 Group cables according to signals being carried. To reduce signal contamination, form separate groups for the following:
 - 4.11.1 Power cables.

- 4.11.2 Control cables.
- 4.11.3 Video cables.
- 4.11.4 Camera cables.
- 4.11.5 Audio cables for signals less than minus 20 dBm.
- 4.11.6 Audio cables for signals between minus 20 dBm and plus 30 dBm.
- 4.11.7 Audio cables for signals above plus 30 dBm.
- 4.11.8 Broadband RF cables.
- 4.12 Run power cables, control cables, and high level cables on the left side of an equipment rack as viewed from the back. Run other cables on the right side of an equipment rack.
- 4.13 Cut cables (except video, camera and RGBS cables, which must be cut to electrical length) to the length required by the run. All wire and cable shall be continuous and splice-free for the entire length of run. For equipment mounted in drawers or on slides, provide the interconnecting cables with a service loop of appropriate length.
- 4.14 Install no cable with a bend radius less than that recommended by the manufacturer.
- 4.15 Provide strain relief for cables. Provide connectors with metal shell/casings. Provide a minimum of three feet of free cable coiled in a floor pocket. Use spiral wrap to group similar cable types.
- 4.16 All shielded cables shall be insulated. Do not permit shields to contact conduit, raceway, boxes, panels, or equipment enclosures. Tin all terminated shield drain wires and insulate with heat-shrink tubing.
- 4.17 Land all field loudspeaker wiring entering each rack at terminal devices prior to connection to equipment or devices. Land loudspeaker level control cables at screw or tubular clamp type barrier blocks on the left side of the equipment rack as viewed from the rear. Make all connections to screw-type barrier blocks with insulated crimp-on spade lugs. Size all lugs properly to assure low-resistance connections.
- 4.18 Separately dress, route and land microphone and line level cables directly to equipment.
- 4.19 Use only rosin core 60/40 tin/lead solder for all solder connections.
- 4.20 Lace, tie or harness wire or cable in accordance with accepted professional practice. Dress, lace or harness all wire and cable to prevent mechanical stress on electrical connections; no wire or cable shall be supported by a connection point. Provide service

loops where harness of different classes cross or where hinged panels are to be interconnected.

4.21 Speakers must be individually cabled as home runs to the sound system cabinet unless otherwise noted in the specifications or drawings. Speaker cable shall be heavy-duty 2-conductor, unshielded, PVC (indoor) or UV-Resistant PVC (outdoor) jacketed cable. Provide speaker cable (18-12AWG) West Penn Cable Series #224-227 (indoor) or #AQ224-AQ227 (outdoor) or approved equal. Provide speaker cable (10-6AWG) West Penn Large Venue Speaker Cable Series for large gauge cable #HA210 (indoor) or #C208-C210 (outdoor) or approved equal. Provide speaker cable gauge sizes per the following overall run distance chart.

Required Speaker Cable Distance
Provision (1 Ohm Speakers)

Provision (4 Onin Speakers)				
Length	Speaker Cable AWG			
0 - 50 Feet	14 AWG			
51 - 140 Feet	12 AWG			
141 - 225 Feet	10 AWG			
226 - 550 Feet	8 AWG			

Required Speaker Cable Distance

Provision (8 Ohm Speakers)

Length	Speaker Cable AWG
0 - 100 Feet	16 AWG
101 - 175 Feet	14 AWG
176 - 280 Feet	12 AWG
281 - 450 Feet	10 AWG

Required Speaker Cable Distance Provision (16 Ohm Speakers)

Length	Speaker Cable AWG	
0 - 140 Feet	18 AWG	
141 - 220 Feet	16 AWG	
221 - 350 Feet	14 AWG	
350 - 550 Feet	12 AWG	

- 4.22 Patch Panel Assignments: Wire patch panels so that signal "sources" (outputs from) appear on the upper row or a row pair and "loads" (input to) appear on the lower row of a row pair.
- 4.23 Patch Panel Designation Strips: Use alphanumeric identifications and descriptive information on patch panel designation strips. Number the jack positions in each

horizontal row sequentially from left to right. Letter the horizontal jack rows sequentially from top to bottom. Include the alphanumeric identification of each jack on the functional block drawings, and on reproductions of these drawings that shall be mounted in an appropriate location near the patch bays.

- 4.24 Each major component of equipment shall have the manufacturer's name, address, model number, and rating on a plate securely affixed in a conspicuous place. NEMA code ratings, UL label, or other data which is die-stamped into the surface of the equipment shall be stamped in a location easily visible.
- 4.25 Upon completion of the work, remove all refuse and rubbish from and about the premises, and leave the relevant areas and equipment clean and in an operational state.
- 4.26 During the installation, and up to the date of final acceptance, protect finished and unfinished work against damage and loss. In the event of such damage or loss, replace or repair such work at no cost to the owner.
- 4.27 Prior to final acceptance, provide minimum of three complete sets of drawings showing all cable numbers and construction details in accordance with the actual system installation. Revise the device layout drawings to represent actual installation locations and coordinate these with the electrical Contractor. The operation manual shall contain all instructions necessary for the proper operation of the installed system and manufacturer's instructions. The maintenance manual shall contain all information required for the "proof of performance" as required and all manufacturers' maintenance information.

Inspection and Test upon Completion

- 4.28 Check out and final connections to the system shall be made by a factory-trained technician in the employ of a manufacturer of the products installed. In addition, factory-trained technicians shall demonstrate operation of the complete system and each major component to the Owner.
- 4.29 System field wiring diagrams shall be provided to the owner by the system manufacturer prior to completion of the installation.
- 4.30 All materials and installation shall be guaranteed to be free of defects in material and workmanship for two years after final acceptance of installation and test.
- 4.31 Upon completion of the installation, four (4) copies of complete operational instructions shall be furnished, complete with record drawings. Instructions shall include part numbers and names, addresses, and telephone numbers of parts source. Final payment shall not be made until operational and maintenance manuals have been received.
- 4.32 Upon completion of the installation of the equipment, Contractor shall provide to the owner a signed statement from the equipment manufacturer that the system has been tested and functions properly according to the specifications.

- 4.33 The Contractor shall be responsible to provide service within 24 hours (or by mutual consent) after notification by the Owner or his representative, within the hours of 8:00 AM to 5:00 PM from Monday through Friday. Service request forms shall be supplied by the Contractor and the faxing or mailing of such a request form shall constitute notification by the Owner of a service request.
- 4.34 The Contractor shall provide two "preventative maintenance" service calls, spaced six months apart, for cleaning of all source devices and overall inspection of the system.

Training

- 4.35 Portable Equipment shall be furnished and spares supplied to the designated representative of the Client, along with complete documentation of the materials provided. Where applicable, deliver portable equipment in the original manufacturer's supplied packaging.
- 4.36 **Contractor will provide a minimum of 8 clock hours of on-site training for District Technical staff on all Sound Systems.** Training for personnel shall be provided by certified Audio specialists. The scope of training shall encompass system operation and procedures. Technician training should include an integrated information overview, sound control procedures as well as operation procedures for all equipment in the sound rack. The Contractor shall provide a detailed written outline clearly describing the proposed plan for all training, for approval by the Engineer and Owner's representative. Contractor shall submit at training schedule to the District to coordinate which District Technical staff shall be trained.
 - 4.36.1 Training for Teaching and Technical staff will include basic system concepts. Faculty and staff will need to know how to power on/off the system, control volume, access inputs, attach microphones, replace batteries, and test system for basic operations and all other operational requirements for daily use of the systems. Training should include use and operation of audio devices, techniques and troubleshooting tips. Trainers should incorporate hands-on techniques to maximize staff opportunity to incorporate into their curriculum that is both meaningful and targeted for their student needs. Clearly written support materials should be provided to all training participants. Manual describing operation and use of the system shall also be provided.
- 4.37 Trainers shall provide Site or District Technicians with an in-depth technical overview of sound system equipment. Training should include basic overview of all equipment manuals and troubleshooting concepts. Site and District Technicians will be trained to provide setup, operation and application of sound systems. Technicians shall be instructed in the proper operation to replace all components of the sound systems. Clearly written documentation and support materials must be provided for each system. Provide support materials in a three ring binder clearly for each system. A training manual describing operation and use of the system shall also be provided

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- 4.38 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this division, in accordance with these specifications and as described below.
- 4.39 Equipment Lists and Maintenance Manuals:
 - 4.39.1 Prior to completion of job, Contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this section of the specifications:
 - 4.39.1.1 Name, model, and manufacturer.
 - 4.39.1.2 Complete parts drawings and lists.
 - 4.39.1.3 Local supply for parts and replacement and telephone number.
 - 4.39.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.
- 4.40 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subContractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

RECORD DRAWINGS

- 4.41 The Contractor shall maintain record drawings as specified in accordance with these specifications, and as noted below.
- 4.42 Drawings shall show locations of all concealed and exposed conduit runs, giving the number and size of conduit wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all the actual changes made.
- 4.43 Final As-Built Drawing Submittals Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCAD (2014 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as

the final As-Built drawing submittal. Final As-Builts shall include copies of the floor plan drawings of each building, detailed As-built AV Diagrams including wire and connection type, elevations of all AV Cabinets, quantities of mic outlets and speaker locations, locations of all final cable routes, including conduits. In addition, the drawings shall include all outlet locations with cable identification label information.

END OF SECTION

SECTION 28 01 00

ELECTRONIC SAFETY AND SECURITY GENERAL PROVISIONS

PART 1 - SUMMARY

- 1.1 This Division of the specifications outlines the provisions of the contract work to be performed as a subcontract under the Division 26 scope of work. Reference the Division 26 Electrical General Provisions for scope of work and general requirements.
- 1.2 In addition, work in this Division is governed by the provisions of the bidding requirements, contract forms, general conditions and all sections under Division 1 requirements.

END OF SECTION

SECTION 28 13 00 SECURITY SYSTEM

PART 1 – GENERAL

- 1.1 Furnish all materials, equipment and labor, and perform all operations in connection with systems work as indicated on the drawing, as specified herein and required to complete the work.
- 1.2 Related Specification Sections:
 - 1.2.1 Division 26 05 33 Conduit and Fittings
 - 1.2.2 Division 26 05 19 or 26 05 13 Conductors
 - 1.2.3 Division 26 05 34 Outlet and Junction Boxes
- 1.3 All security system components shall be manufactured by and wiring shall be furnished and installed by a factory authorized contractor and distributor. The Contractor shall hold a license from the State of California for the purpose of installing security systems.
- 1.4 The contractor shall be regularly engaged in the installation and repair of the type of equipment to be installed.
- 1.5 The conduit, outlets, terminal cabinets, device backboxes, etc., which form a part of the rough-in work, shall be furnished and installed complete by the Contractor. Security system components as listed under products shall be furnished and installed by the authorized subcontractor.
- 1.6 The subcontractor shall furnish all equipment, accessories and material required for the complete installation of a security system in accordance with specifications and as shown on the drawings. Any material and/or equipment necessary for the proper operation of the system not specified or described herein shall be deemed part of this specification. The distributor must also provide complete installation of all wiring and devices or equipment. Supervised installation for the wiring and devices shall be permitted with the following conditions:
 - 1.6.1 A letter will be required from the security system manufacturer's representative certifying that the cable installation was completed in compliance with the manufacturer's recommended installation requirements.
 - 1.6.2 The cables shall be tested in the presence of the manufacturer's representative. These tests will then be submitted to the electrical engineer.

- 1.6.3 The security system shall be warranted by the manufacturer's representative per the contract agreement.
- 1.7 General Submittal Requirements
 - 1.7.1 **Phase I Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:
 - 1.7.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:
 - 1.7.1.2 Description and quantity of each product.
 - 1.7.1.3 Manufacturer's Name and Model Number.
 - 1.7.1.4 Material Cut Sheets shall provide detailed product information and shall be original manufacturer product bulletins. Copies of material information from vendor websites shall not be considered equal and will not be accepted.
 - 1.7.1.5 Material Cut Sheet part number provided shall be highlighted or provided with an arrow directed at the corresponding part number.
 - 1.7.1.6 Specification Item Number referenced for each required product or if not shown in the specifications, Drawing Detail Number being referenced. (ie; Spec. 281300 Item 2.1 or DWG E4.15/#1)
 - 1.7.1.7 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.
 - 1.7.2 **Phase II Submittal** shall be provided within (20) working days after the approval of the Phase I submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered in a CAD Software. Submission shall include electronic print copies to match the contract drawings, and Phase II submittals drawings shall include the following.
 - 1.7.2.1 Complete floor plans showing the locations throughout the project of all receptacles, conduits, wireways, tray, pullboxes, junction boxes, equipment locations, and other devices.

- 1.7.2.2 Typical system riser diagrams, specialty equipment or rack elevations will be required to be provided.
- 1.7.2.3 The contractor shall provide as part of this contract additional ceiling motion sensors, wall motion sensors, security door and roof hatch contacts to equal 10% of the total quantity of devices shown on the drawings or a minimum of three (3) for each type, whichever is greater. Installation of conduit, boxes and wiring of these devices shall be included, and required locations coordinated with final approved shop drawings. Any deices not required to be included during construction shall be delivered to the District at the completion of the project. The quantities of these devices shall be listed as a part of the Phase 1 submittals.
- 1.7.3 Common submittal mistakes which will result in submittals being rejected:
 - 1.7.3.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.
 - 1.7.3.2 Not including all items listed in the above itemized description.
 - 1.7.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.
 - 1.7.3.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.
 - 1.7.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.
- 1.7.4 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:
 - 1.7.4.1 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e., E1.1, E2.1, E4.1 etc.).
 - 1.7.4.2 Identify the name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.

- 1.7.4.3 Detail or Riser diagram sheets, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.
- 1.7.4.4 Files will only be provided in the AutoCAD format in which they were created (i.e., version 2015 or version 2016). Files will not be made available in REVIT format.
- 1.7.4.5 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use and delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.

PART 2 – PRODUCTS

Building Security System – Control Panel

- 2.1 Control Panel in the location shown in the specifications and the drawing details. The existing Security System on the campus is as manufactured by **Digital Monitoring Products (DMP)**..
- 2.2 The Control/Communicator panel shall be a multiplex micro processed based system as manufactured by **DMP Model XR550N**. Provide Control Panel in IDF Closets IDF '900" and IDF "400". Control Panels shall be set up to act as an expansion panels for the existing Security System with the existing Main Security Control Panel in the existing MDF Room in MPR Building serving as the Master Security Control Panel. Refer to the floor plans for the location of the panel.
- 2.3 The system must be able to provide the following minimum functions:
 - 2.3.1 Provide capacity for 574 individual zones.
 - 2.3.2 Up to 16 independent Access Control Door locations (Wiegand).
 - 2.3.3 Minimum capacity of (16) Supervised keypads from one control panel.
 - 2.3.4 Up to 500 wired or wireless LX Bus devices
 - 2.3.5 Fully supervised 10/100 Ethernet network and CDMA/HSPA+ cellular communications capabilities.
 - 2.3.5.1 Control Panel shall be provided with 10/100Mbps Ethernet Card Option
 - 2.3.5.2 Provide 263LTE-FN FIRSTNET READY[™] Cellular Communicator Option.

- 2.3.5.3 When using the 263LTE-FN with the XR150/XR550 Series Control Panels, provide a Model #381 cable for connection from the cell module SMA connector to the panel enclosure knockout.
- 2.3.6 Central Station reporting via ethernet connection (IP) and simultaneous digital dialer for multiple central station receivers.
- 2.3.7 Interface with the district central monitoring system to report all addressable devices individually (by site, building and room) and to be remotely programmable from the district central system for maintenance and changes to the system.
- 2.3.8 U.L. listed for Burglary and access control
- 2.3.9 Battery backup included
- 2.3.10 Capability to extend keypad or sensor wiring bus lengths to a minimum of 15,000 ft.
- 2.3.11 Systems or components as manufactured by Bosch, Honeywell, Radionics or any other manufacturer's which are not specifically listed in 2.1, are not approved for use on this project
- 2.4 Provide a complete and operable supervised intrusion detection system including, but not limited to; control panel, keypad stations, motion detectors, door contacts, zone expanders and repeaters and a digital communicator.
 - 2.4.1 The new Security Control Panels shall be tied in with the existing Main Security Control Panel in the existing MDF Room in the MPR Building.
 - 2.4.2 Upon detection of an intruder by initiation of any device in the system, the system shall cause alarm information to be sent by (IP) to the district central station and by digital dialer to an independent alarm monitoring agency. Each motion sensor and or door contact shall have a distinct address and each address shall report to the monitoring agency including the site name, building name, and room number identifications associated with each device. The installing contractor must submit a list of all devices and their reporting identifications to the district for review and approval prior to any programming. Naming and room numbers must be consistent with actual facility identifications, which may vary from identifications included in the bid construction documents. An operational test of each installed system must be able to confirm compliance with the above requirements for each device installed, before the system will be considered complete and operational.
 - 2.4.3 Coordinate with the District Facilities Department for integration with the existing campus security system for access to the Administrative Level software for system programming.

- 2.4.4 Upon detection of an intruder by any initiation device in the system, the system shall cause a prerecorded message to be played over the campus intercom system. The intercom system shall play the message over all INTERIOR only speakers. The message shall repeat (2) times "An unauthorized entry to the facility has been detected, authorities have been contacted "in both English and Spanish.
- 2.5 Systems shall detect the entry and/or the motion of a body taking not more than four steps in an area secured with motion detection equipment where entry doors or windows are possible access.
- 2.6 New Buildings shall be zoned and controlled separately and each sensor individually addressable so that portions of the facility may be secured while others remain unsecured. All zones for the New Buildings shall be able to be armed or disarmed from a new keypads where shown on the drawings.
- 2.7 Existing Master Keypad location in the Administration Building. Program Keypad to add the additional Zones for Universal Arm/Disarm of the campus..
- 2.8 Provide Keypads as shown on the drawings.
 - 2.8.1 When staff arrives, they would present their code to the keypad. This would disarm the building in which the staff works, and the not armed indicator light at the annunciator will be triggered.
 - 2.8.2 When staff is leaving, (and presumably is the last one from their building leaving) they would press the "Command" button, then select "Arm", then select "All". The building would arm, and the armed indicator light at the annunciator will be triggered

Building Security System – System Devices

- 2.9 Provide the Security System Devices as shown on the project floor plans. Every type of device described below may or may not be shown on the floor plans.
- 2.10 Keypads Keypads shall be alpha numeric LCD display series capable of displaying system status and controlling the alarm system. Unit shall receive its operating power from the control panel.
 - 2.10.1 All zones shall have the ability to be controlled by the existing Master Keypad located in the Administration Building.
 - 2.10.2 Provide keypads at locations where on drawings for coverage of the zones as required by District. Each building or zone shall be furnished with a keypad, unless otherwise noted on the drawings or in these specifications. Provide two-line Alphanumeric 32-character LCD display keypad with two-button panic and

four zones by DMP Model # 7073A Aqualite Series Keypads (No Approved Equal).

- 2.11 Motion Sensors Motion sensors shall be passive infrared with microwave Doppler radar detection. Sensor coverage patterns shall be as required for optimum coverage at each individual location. Sensor shall be wall mounted at the locations as shown on the drawings.
 - 2.11.1 Wall Mounted Motion Sensors Classrooms DMP Model #Optex DX-60 Plus (No Approved Equal). Dual Tech PIR and Microwave wall mounted sensor with a minimum coverage pattern capability of 60-feet by 60-feet. Larger nonclassroom spaces shall also be provided with this model of sensor.
 - 2.11.2 Wall Mounted Motion Sensors Offices, Workrooms or other similar smaller rooms DMP Model #Optex DX-40 Plus (No Approved Equal). Dual Tech PIR and Microwave wall mounted sensor with a minimum coverage pattern capability of 40-feet by 40-feet.
 - 2.11.3 Contractor shall furnish and install the wall mount brackets for the wall mounted motion sensors by DMP Optex Model #FA-1W or Model #FA-3 (No Approved Equal). Type of bracket provided shall be based on desired coverage for the sensor.
 - 2.11.4 Ceiling Mounted Motion Sensors in Rooms with Accessible Ceilings DMP Model #Optex FX-360 (No Approved Equal). Rooms with accessible ceiling, between 8-12 feet in height, shown with ceiling mounted sensors shown on the floor plans, shall be furnished with a PIR Technology ceiling mounted sensor with a minimum coverage pattern capability of 25-feet to 40-feet in diameter.
- 2.12 Door Contacts Door contacts shall be provided at all exterior doors and at all roof hatches. Contractor shall refer to the drawings for the locations of the doors and roof hatches. In addition, all roll-up type garage doors or security shutters shall be provided with door contacts.
 - 2.12.1 Door contacts for standard doors at drywall walls or accessible walls shall be installed as recessed contacts. Provide DMP Model #1076C Magnetic Terminal Contacts (No Approved Equal).
 - 2.12.2 Door contacts for standard doors at concrete or CMU walls or non-accessible walls shall be installed as surface mounted contacts. Provide DMP Model #Sentrol 1085TW Magnetic Wide Gap Terminal Contacts (No Approved Equal).
 - 2.12.3 Door contacts for Store Front glass doors shall be installed as miniature size recessed contacts. Provide DMP Model #STB-10 Magnetic Terminal Contacts (No Approved Equal).

- 2.12.4 Door contacts for overhead roll-up garage doors or security shutters shall be surface mounted heavy-duty, industrial wide gap type with 36" armored cable by DMP Model #Sentrol 2505A Magnetic Terminal Contacts (No Approved Equal).
- 2.12.5 Door contacts must be installed using the screws and the adhesive contact sheet provided with the door contact or with the screws alone. Installation using the adhesive contact sheet alone is not allowed.
- 2.12.6 Cable splice connections for the armored cable provided with overhead roll-up garage door contacts shall be provided inside a dual gang junction box in an accessible location for future maintenance. The junction box shall be provided with a blank cover labeled with a permanent type-written label showing the unique device number and any zone information or door number.

Building Security System – System Cable

- 2.13 Wire and Cable Cabling shall be as required for system operation or as shown in the specifications and detail drawings. Refer to the floor plans for additional requirements.
 - 2.13.1 Interior Riser Rated Keypad Cable Provide (4) conductor, 18-AWG, Polypropylene coated stranded bare copper conductors with PVC jacketed, Riser-rated cable for keypad locations within a building. Provide Honeywell Part #2115 or West Penn Part #244.
 - 2.13.2 Exterior Riser Rated Keypad Cable Provide (4) conductor, 18-AWG, stranded bare copper conductors with PVC jacketed, Outdoor-rated, direct burial type cable for keypad locations between buildings. Cable shall be used for all exterior cable runs. Provide Honeywell Part #4157 or West Penn Part #AQ244.
 - 2.13.3 Interior Riser Rated Motion Detector Cable Provide (4) conductor, 22-AWG, Polypropylene coated stranded bare copper conductors with PVC jacketed, Riser-rated cable for motion detector locations within a building. Provide Honeywell Part #2104 or West Penn Part #241.
 - 2.13.4 Interior Riser Rated Door Contact Cable Provide (2) conductor, 22-AWG, Polypropylene coated stranded bare copper conductors with PVC jacketed, Riser-rated cable for door contact locations within a building. Provide Honeywell Part #2102 or West Penn Part #221.
 - 2.13.5 All cables shall be permanently labeled with a permanent type-written label showing a unique cable number a minimum of two locations, one within 6" and one 24" from the point of termination at the end of the cable.
- 2.14 Provide other items as shown in the drawings or specifications.

PART 3 - EXECUTION

- 3.1 All connections throughout the system shall be soldered, crimped by means of AMP lugs, fastened with screw type terminals, made by spring tension clip "punch block" terminals or made by standard plugs and receptacles. All conductors in terminal cabinets shall be neatly routed and dressed with Velcro style cable ties in a workmanlike manner. The cable ties shall not cover any labeling at the ends of the cables.
- 3.2 All security system cabling shall be installed in conduit where indicated on the drawings or where routed exposed and shall be open wiring where routed above accessible ceilings or in walls.
- 3.3 Locate motion sensors on walls to provide optimum coverage of the space and to not conflict with the architectural aesthetics of the building. Locations of motion sensors as shown on the electrical plans are diagrammatic only.
- 3.4 Keypads shall be wired not to exceed 1000 ft cable run from the main control panel and no more than two (2) keypads per 1000-foot cable run. Provide #18AWG minimum. All Cables routed underground shall be suitable for wet location provided with UL listed wet location insulation or flooded type cable construction.
- 3.5 All wet location cables routed through handholes or manholes shall be provided with a service loop inside the handhole or manhole. The cable shall be provided with a minimum of one entire loop around the inside of the perimeter of the handhole.
- 3.6 Pull strings shall be provided with all cable runs including but not limited to; conduit stub ups, conduit sleeves, cable trays, open wiring routes and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.
- 3.7 Velcro cable management straps are required on all Security System cable bundles the last 20 feet or upon entry into equipment closet a maximum of 12" apart. Cable bundles shall also be routed through cable management or "D" rings in the equipment closet to the Security System backboard location shown on the floor plans.
- 3.8 The 28 13 00 Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for the security system cabling. This is to include all conduits installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.
- 3.9 Where open wiring cables are run through the ceiling space the wire shall be bundled together and supported above the ceiling.
- 3.10 The 28 13 00 Contractor may not use the cable suspension system installed by the 27 10 00 Contractor (for data cabling) for the security cabling. The 28 13 00 Contractor shall furnish and install a separate suspension system for the security system cabling.

- 3.10.1 All cables must be fastened to the building structure via "j-hooks" or an approved suspension system, and not directly in contact with ceiling system. For "j-hooks" follow the maximum fill capacity as recommended by the manufacturer based on the outside diameter of the security cables. For large quantities of cables, use a sling support system such as "Erico Cable Cat" or equal. D-rings, "Caddy #WMX cable hangar", "Caddy Bridle Rings", drive rings or any other type of wire ring support is not allowed.
- 3.11 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of the wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.
 - 3.11.1 The 28 13 00 Contractor shall coordinate with the 27 10 00 Contractor, 27 20 00 Contractor, 28 23 00 Contractor and any other Low Voltage Contractor working on the project, for use of the sleeve penetrations shown on the drawings.
 - 3.11.2 The 28 13 00 Contractor shall be responsible for replacing the fire-stopping materials on any sleeve penetration used that was previously sealed. The firestopping material used for the replacement must match the existing materials.
 - 3.11.3 If there are no existing conduit sleeves through the rated walls that must be penetrated, the 28 13 00 Contractor shall be responsible for providing the conduit sleeve and the fire-stopping materials as shown in the drawing details.
 - 3.11.4 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.
- 3.12 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer's recommendations.
- 3.13 Provide a full 360-degree loop of slack cable around pullbox interiors. Cables entering pullboxes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.
- 3.14 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.
- 3.15 Where cables are pulled through or pulled from a center of run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.
- 3.16 A pull string shall be placed with all security device cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as

manufactured by Greenlee #431 or approved equal. Includes all conduit stubs and cables routed through open ceilings and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pull string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.

- 3.17 A measuring pull tape shall be placed with all OSP-Rated Site Security cables at the time of installation. Outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½" polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull string.
- 3.18 All cables shall be new and extend continuous from each MDF Closet Security backboard or IDF Closet Security backboard to all outlet locations.
- 3.19 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) within 36" or within 12" of line voltage equipment or wiring where crossing.
- 3.20 Labeling
 - 3.20.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each security device. A printed label shall be placed at each of the following locations;
 - 3.20.1.1 On the cable at the point of termination or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).
 - 3.20.1.2 On each cable in the j-box behind the device location or on the cable before the point of termination at the device, for devices without a j-box. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).
 - 3.20.1.3 On the cable at the terminal strip or pop-it prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).

- 3.20.1.4 The label shall be clearly defined with a minimum #10 font size.
- 3.20.2 Hand written labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.
- 3.20.3 Labeling will follow recommended identification standards or District Standards as directed by the customer. Contractor will confirm labeling pattern prior to final identification or testing. All device identification designations shall match the final identification information shown on the Final As-Built Drawings. Contractor shall be required to have the labeling scheme approved in writing by the District Facilities Director prior to manufacture or installation of the labeling.
- 3.20.4 All OSP-rated cables routed through underground conduits shall be tagged with waterproof label tags in every manhole or pullbox. Waterproof label tags shall also be placed at each end of the cable in the termination closets or terminal cabinets in clear view at the point where the conduit transitions up out of the slab or where the conduit enters the terminal cabinet. A minimum of (2) tags are required in each handhole or manhole.
- 3.20.5 Refer to detail drawings for additional labeling requirements
- 3.21 Final System Acceptance
 - 3.21.1 The system will be accepted only after a satisfactory test of the entire system has been accomplished by a Factory-Trained Contractor in the presence of the Owner's Representative. This contractor shall provide all personnel, ladders and testing equipment to assist in completing this test. Actuate each device and verify that the system performs as specified.
 - 3.21.2 Once the system has been tested, the contract shall not be considered complete until after District training has been completed. The Contractor shall notify in writing their intent to provide the training for the system. This notification shall be given to the Architect and the Project Engineer a minimum of two weeks prior to the scheduled training session. The 28 13 00 Contractor shall be responsible for notifying the District to confirm that the appropriate District personnel will be made available for this training session. If the District does not receive confirmation that the training session can be performed on the proposed date, than another time shall be provided. The training shall consist of the following:
 - 3.21.2.1 Provide a minimum of one (1) two-to-four-hour training period located at the project site, to instruct District personnel in proper operation of all systems.

PART 4 – CLOSE-OUT DOCUMENTATION

4.1 Final As-Built Drawing Submittals - Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCAD (2019 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as the final As-Built drawing submittal. Final As-Builts shall include copies of the floor plan drawings of each building, detailed elevations of each MDF or IDF locating all equipment, quantities devices and locations, locations of all sleeves and identification of all final cable routes. In addition, the drawings shall include all device locations with unique cable identification numbers.

END OF SECTION

SECTION 28 30 01

FIRE ALARM VOICE EVACUATION SYSTEM

PART 1 – GENERAL

- 1.1 Work Included:
 - 1.1.1 Furnish and install all equipment, accessories, and materials in accordance with these specifications and drawings to provide a complete and operating fire alarm system.
- 1.2 Related Work:
 - 1.2.1 Division 26 01 00: Electrical General Provisions
 - 1.2.2 Division 26 05 33: Conduit and Fittings
 - 1.2.3 Division 26 05 34: Outlet and Junction Boxes
- 1.3 The equipment and installation shall comply with the current applicable provisions of the following standards:

NFPA 72-2016	National Fire Alarm Code with California Amendments.
CBC - 2019	California Building Code (CBC), Part 2, Title 24, CCR.
CEC - 2019	California Electrical Code, (CEC), Part 3, Title 24, CCR.
CFC - 2019	California Fire Code (CFC), Part 9, Title 24, CCR.

1.4 The system and all components shall be listed by Underwriters Laboratories, Inc. for use in Fire Protective Signaling Systems under the following standards as applicable:

UL 38	Manually Actuated Signaling Boxes.
UL 50	Cabinets and Boxes.
UL 268	Smoke Detectors for Fire Protective Signaling Systems.
UL 268A	Smoke Detectors for Duct Applications
UL 346	Waterflow Indicators for Fire Protective Signaling Systems.
UL 464	Audible Signaling Appliances.
UL 521	Heat Detectors for Fire Protective Signaling Systems.
UL 864	Control Units for Fire Protective Signaling Systems.
UL 1481	Power supplies for Fire Protective Signaling Systems.
UL 1971	Visual Signaling Appliances.

- 1.5 Only Fire Alarm Control Panel Equipment and Peripheral Field Devices have been shown on the Contract Bid Single Line Block Diagram. Specific and complete wiring between Control Equipment and Peripheral Equipment has been deleted for clarity.
- 1.6 Submittal shall be made <u>in accordance with Division 26 01 00 Shop Drawings and</u> <u>Submittals.</u> This submittal shall include the following:

- 1.6.1 Complete bills of quantities, including all materials, components, devices, wiring and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:
 - 1.6.1.1 Quantity of each type of equipment item.
 - 1.6.1.2 Quantities of 10% spare devices as per 1.16.
 - 1.6.1.3 Description of each item.
 - 1.6.1.4 Manufacturer's Name and Model Number.
 - 1.6.1.5 Manufacturer's Specification Sheet.
 - 1.6.1.6 Back box type and dimensions per device type.
 - 1.6.1.7 California State Fire Marshall Listing Sheets for all components.
 - 1.6.1.8 Equipment items which have individual components, will require that all component parts be listed individually.
 - 1.6.1.9 Letter indicating the contractor's intent to comply with Phase II submittal drawings.
- 1.7 Phase II Submittal shall be provided <u>within (20) working days</u> after the approval of the Phase I submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered and drawn on a CAD System. Each submission shall include 'D' or 'E' size print copies to match the contract drawings, and one (1) data disk copy with files in an AutoCAD 2000i or 2004 format. Building floor plan CAD files on disk, will be made available via express mail <u>after the receipt of payment</u> of \$50.00 per building floor plan, or \$300.00 minimum which ever is <u>less</u>. Contractor shall make the request for drawings in writing directly to Johnson Consulting Engineers, confirmation of the request and a release form will be forwarded to the contractor to include a signed copy with payment prior to release of files. Detail or riser diagram sheets or any other drawings other than floor or site plans, will not be made available to the contractor.

1.7.1 **Provide complete shop drawings to include the following:**

- 1.7.1.1 Complete floor plans, at scale of contract documents, showing the locations throughout the project of all devices, panels conduits, wireways, tray, pullboxes, junction boxes, number and type of conductors, and other devices.
- 1.7.1.2 Point to point wiring diagrams showing wiring from panel terminals to each device.
- 1.7.1.3 Riser diagram indicating all wiring and circuits.
- 1.7.1.4 Current State Fire Marshal listing sheets for all components and devices.
- 1.7.1.5 Provide battery power supply calculations, indicate point of power supply connection, means of disconnect, over-current protection, etc. for each panel.

- 1.7.1.6 Provide detailed information on conductors to be usedmanufacturer, type, size, insulation, etc.
- 1.7.1.7 Provide voltage drop calculations for all conductor run is from each panel (i.e., main FACP, remotes, power extenders, etc.) for each panel.
- 1.7.1.8 Provide written sequence of system operation matrix.
- 1.7.1.9 Provide list of zones. (Every device that is addressable.)
- 1.7.1.10 Provide detailed drawing for annunciator panel indicating all zones and initiating devices.

1.8 **Common submittal mistakes which will result in submittals being rejected:**

- 1.8.1 Not including the qualifications of the installing contractor.
- 1.8.2 Not including all items listed in the above itemized description.
- 1.8.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.
- 1.8.4 Not including actual manufacturer's catalog information of proposed products.
- 1.8.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.
- 1.9 All equipment and material shall be new and unused, and listed by Underwriter's Laboratories for the specific intended purpose. All control panel components and field peripherals shall be designed for continuous duty without degradation of function or performance. All equipment covered by this specification or noted on Installation. Drawings shall be equipment suited for the application and shall be provided by a single manufacturer or be recognized and UL listed as compatible by both manufacturers.
- 1.10 It will be the responsibility of the Contractor to ensure proper specification adherence for system operation, final connection, test, turnover, warranty compliance, and aftermarket service. The distributor of the equipment specified must be factory-trained and certified.
- 1.11 Basic System Functional Operation, upon operation of any automatic, manual or other initiation device the following shall occur:
 - 1.11.1 The system alarm LED shall flash.
 - 1.11.2 A local piezo electric signal in the control panel shall sound.

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- 1.11.3 A backlit 80-character LCD display shall indicate all information associated with the fire alarm condition, including the alarm point and its location within the protected premises.
- 1.11.4 History storage equipment shall log the information associated with each new fire alarm control panel condition, along with time and date of occurrence.
- 1.11.5 All system output programs assigned via control by event equations to be activated by the particular point in alarm shall be executed, and the associated system outputs (alarm notification appliances and/or relays) shall be activated.
- 1.11.6 LED display and audible signaling at the remote annunciator indicating building, fire zone, and type of device. Annunciator shall also provide a separate audible signal for CO detection with a green flashing light, with classroom number indication.
- 1.11.7 Automatic retransmission to a UL central station for fire department notification.
- 1.11.8 Automatic shut down of air conditioning units shall be performed by control modules at each unit when required as part of a complete area coverage design scheme. Each building shall shut down all A/C units and dampers within that building as one zone.
- 1.12 All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approval agency for use as part of a protective signaling system.
- 1.13 All equipment and components shall be installed in strict compliance with manufacturer's recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- 1.14 All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place. Fasteners and supports shall be adequate to support the required load.
- 1.15 All wiring shall be installed in a conduit system.
- 1.16 The contractor shall provide as a part of this contract additional control modules, heat detectors, smoke detectors, CO detector, duct detectors, manual pull stations, strobes, speakers, speaker/strobes exterior speakers devices etc. along with all required programming, to equal 10% of the total quantity of devices shown on the drawings, or a minimum of three (3) for each type, whichever is greater. Installation of 50' of conduit, boxes and all wiring for each of the devices shall be included, and required locations coordinated with CSFM final approved shop drawings. Any devices not required to be included during construction shall be delivered to the District at the completion of the

project. The quantities of these devices shall be listed as a part of the Phase I submittals.

- 1.17 The installing contractor shall provide a copy of current documentation, indicating that the contractor installing the fire alarm systems or devices and wiring, is certified by Underwriters Laboratories (UL) in its product directories under the listing category "PROTECTIVE SIGNALING SERVICES LOCAL, AUXILIARY, REMOTE STATION, AND PROPRIETARY." The contractor shall be certified by the manufacturer to install and program the system. The contractor must also provide complete installation of all wiring and equipment, and software programming. Supervised installation of the wiring, devices and/or any software programming shall not be permitted.
 - 1.17.1 The installing contractor must also be an "authorized dealer" by the equipment manufacturer and must have completed all required training prior to the bid of this project.
 - 1.17.2 The fire alarm system installation shall be warranted by the manufacturer's representative.
 - 1.17.3 The Contractor shall have a current California C-10 or C-7 Contractor's License, and all individuals working on this project shall have passed the Department of Industrial Relations Division of Apprenticeship Standards – "Fire / Life Safety Certification Program."
 - 1.17.4 The installing contractor shall provide, at the time of submittal, a letter of intent to provide an extended service warranty. This warranty shall extend for a total of three (3) years, starting at the completion, testing, and training of this project. The service warranty shall cover all material and labor to keep operational all system devices installed under this project, and shall include two (2) complete U.L. system's tests and cleaning of all devices at year two (2) and year three (3) of the warranty. Routine cleaning of devices, other than at the two (2) specified U.L. system's testing periods, will not be included as a part of this warranty.
 - 1.17.5 The installing contractor shall provide, at the time of submittal, a letter indicating that the installation crew for this project meets the following NICET certifications:
 - 1.17.5.1 25% of the installing field personnel must have completed NICET Level 2 Certification.
 - 1.17.5.2 One of the installing field personnel and /or supervisor must have completed NICET Level 3 Certification.
 - 1.17.5.3 Contractor shop drawings shall be signed by an individual who has completed NICET Level 4 Certification.

- 1.18 All conduit and standard backboxes will be furnished and installed by the Division 26 Contractor. Specialty boxes will be furnished by the equipment supplier to be installed by the Division 26 Contractor.
- 1.19 Equipment and materials shall be the standard product of <u>FCI.</u> <u>To match the existing</u> <u>campus system</u>
- 1.20 Alternate equipment as manufactured by any other manufacturer not specifically listed above will not be approved for use on this project.
- 1.21 D.S.A approved drawings are included as a part of the drawing set.

PART 2 - PRODUCTS

- 2.1 Main Fire Alarm Control Panel:
 - 2.1.1 Fire alarm control panel shall is existing FCI E3
 - 2.1.2 The system shall be controlled and supervised by a microprocessor based monitoring fire alarm control panel. The systems shall be addressable, field configurable, programmable and editable. The system shall continuously scan devices for change of status. Each device shall have its own unique address, but shall also be grouped by building as a separate zone for remote annunciation and alarm report purposes.
 - 2.1.3 The fire alarm control panel shall be housed in a lockable, code gauge steel cabinet with 80character LCD display, master controller operators panel, indicating lamps, silence switch and reset switch mounted on cabinet front. The fire alarm control panel shall be physically and visually located in the general office for monitoring by staff, and shall sound the "Voice Message" in all zones. Signal duration shall be field programmable and initially set at three minutes. Provide all control modules, synchronous modules, etc., to provide a complete working system per all codes that apply.
 - 2.1.4 The fire alarm control panel shall come with standardized software for on-site customization of the system. The unit shall be capable of providing a 600-event historical log with zone or point selectable alarm verification.
 - 2.1.5 Provide a minimum 100 watts of amplification in each FACP with a minimum of 25% spare capacity.
 - 2.1.6 The unit shall support a minimum of 3000 intelligent addressable points and one output point, SPST contact per zone. Provide the number of modules necessary to control and supervise fire alarm devices as shown on the Drawings, as well as to provide 25% spare capacity.

- 2.1.7 The unit shall also provide a minimum of (2) class B strobe circuits with additional circuits as indicated on the drawings.
- 2.1.8 The fire alarm control panel shall be capable of providing a walk test.
- 2.2 The power feed for the FACP shall be 3-wire, 120volt, AC, single phase (20A circuit) permanently labeled "FIRE ALARM CONTROL POWER", terminating at the master fire alarm control and supervisory panel. The label shall be red with 1/4" high white lettering. The source circuit breaker must be provided with a lock-on device.
- 2.3 In addition to the AC circuit, the panel shall be equipped with a DC battery to activate an audible alarm and pilot light in case of a power failure on the AC circuit.
- 2.4 The master fire alarm panel shall be equipped with a manual pull lever type, supervised report station.
- 2.5 With the exception of the manually operated report station required at the master fire alarm panel and large assembly areas, the remainder of the school facility shall be equipped with approved, electronically supervised, automatic fire detection devices, such that every room, space, including concealed spaces, such as the attic spaces above ceilings, etc., is provided with approved coverage.
- 2.6 TRANSPONDER PANELS shall provide voice evacuation/annunciation with a minimum 100 watts of audio amplification to support 70v speaker devices and a minimum of (2) Class B Strobe NAC circuits and be fiber networked to the system. Provide for 25% additional capacity for amplification in each Transponder panel.
- 2.7 REMOTE POWER SUPPLIES shall provide a minimum of (4) Class B NAC circuits.
- 2.8 SPEAKER / STROBE DEVICE shall be of the semi-flush type designed for mounting to a standard 4 11/16" deep electrical back box. Each device shall be provided with a semi-flush accessory plate. Exterior speakers shall be weatherproof. The strobe unit shall have a meantime between failure (MTBF) of 1,000 hours or greater. The strobe section shall have a minimum flash rate of approximately one flash per second, with candela rating as per UL standard 1971. Housing shall be white.
 - 2.8.1 In areas containing two or more audible devices, or three or more visual devices, these devices shall be synchronized, Per NFPA 72, Chapter 18 California Amendments (2016).
- 2.9 SPEAKERS shall operate at 70 VRMS and provide tap setting from 1/8 to 2 watts and provide efficient design for high intelligibility at a minimum wattage across a frequency range of 300 to 8000 HZ and shall be white in color. Speakers shall be ADA, NFPA and ANSI compliant.

- 2.9.1 Speakers for typical classrooms shall be tapped at ¼ watt with exterior speakers tapped at 2 watts. Other areas such as Theaters, Auditoriums, Gymnasiums, Team Rooms, Cafeterias, Kitchens and all shop areas shall be tapped at ½ watt.
- 2.9.2 Contractor shall also include (2) additional site visits within the first year to adjust speaker output on a space by space basis as requested by the owner.
- 2.10 STROBES. The strobe unit shall have a meantime between failure (MTBF) of 1,000 hours or greater. The strobe section shall have a minimum flash rate of approximately one flash per second, with candela rating as per UL standard 1971. Housing shall be white.
 - 2.10.1 In areas containing two or more audible devices, or three or more visual devices, these devices shall be synchronized, per NFPA 72, Chapter 18 California Amendments (2016).
 - 2.10.2 Maximum pulse duration to be 0.20 of a second with an ADAAG 4.28.3(3). Visual alarms maximum duty cycle of 40%.
 - 2.10.3 Capable of providing minimum candela. Intensity as shown on plans (effective strength measured at the source).
 - 2.10.4 The flash rate to be a minimum of 1 Hz and a maximum of 2 Hz per NFPA 18.5.3.1.
- 2.11 HEAT DETECTOR DEVICES shall be analog addressable, fixed temperature x rate of rise, fixed at 200[®]F and a 15[®]F/min rate of rise. In janitor rooms equipped with kilns, devices shall be fixed at 200[®]F.
- 2.12 SMOKE DETECTOR DEVICES shall be analog addressable, photo-electric.
- 2.13 DIGITAL ALARM COMMUNICATOR TRANSMITTER. The control panel shall meet the requirements of UL 864 for central station connections, and shall be UL listed for use with the fire alarm control panel. The communicator shall be connected to supervise two telephone lines, all wiring required for this connection shall be provided by the fire alarm contractor Coordinate interface with District monitoring company as required.

PART 3 - EXECUTION

- 3.1 All wiring shall be (min) #18 AWG copper or as noted on drawings. All underground conductors shall be UL wet location rated for use in wet locations, West Penn "Aquaseal" or equal. There shall be no splices in underground handholes or vaults. A multi-conductor cable rated for use in wet locations will also be acceptable. It must be labeled "FIRE ALARM" in all pull boxes, using a water-tight labeling system.
- 3.2 Interior, dry location wiring for low voltage initiating circuits shall be #18 AWG copper, twisted shielded pair minimum, signaling circuits shall be No. 14 AWG minimum, and wiring for 120 volt circuits shall be No. 12 AWG minimum. All wiring shall be color

coded, solid copper conductor. Use of power limited cable shall be restricted to controls listed for this purpose. Single conductors shall be type THHN/THWN-2 insulated copper.

- 3.3 Wire markers shall be provided for each wire connected to equipment. The marker shall be of the taped bank type, of permanent material, and shall be suitable and permanently stamped with the proper identification. The markers shall be attached in a manner that will not permit accidental detachment. Changing of wire colors within circuits shall be unacceptable.
- 3.4 A terminal cabinet shall be installed in the electric room for the fire alarm systems at each building. All fire alarm wiring shall terminate on UL approved strips in this terminal cabinet. All wiring shall be labeled at each termination strip. Wiring shall be configured such that all end-of-line resistors will be installed at the terminal cabinet.
- 3.5 Fire Sprinkler Activation detecting System(s) shall each be indicated on a separate zone in the fire alarm control panel.
- 3.6 Fire Alarm Control Panel and all other equipment shall be mounted with the center of all operable reset buttons, located a maximum of 48" front approach / 54" side approach above floor level.
- 3.7 Contractor shall provide complete wiring between all equipment.
- 3.8 The Fire Alarm/Life Safety Installation shall comply fully with all Local, State and National Codes, and the Local Authority Having Jurisdiction (AHJ) DSA.
- 3.9 The Fire Alarm Control Panel and power supply shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the Panelboard as FIRE ALARM CIRCUIT.
- 3.10 The Control Panel Cabinet shall be grounded securely to a power system ground conductor. Provide a 1/2-inch conduit and 1#12 grounding conductor to the building electrical service ground bus.
- 3.11 Conduit shall enter into the Fire Alarm Control Panel back box only at those areas of the back box which have factory conduit knockouts.
- 3.12 All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; an audible and visual trouble signal will be activated until the system and its associated field wiring are restored to normal condition.
- 3.13 All cables and wiring shall be listed for Fire Alarm/Life Safety use, and shall be of the type as required by and installed per CEC Article 760.
- 3.14 Final System Acceptance

- 3.14.1 Provide an NFPA Certificate of Compliance to DSA and the engineer of record. Complete fire alarm system shall comply with Chapter 14 of NFPA for testing and inspection and be sound-tested for audibility in all spaces requiring voice evacuation. This testing shall be performed in the presents of the project electrical engineer. Adjust speaker taps or provide additional speakers as required to provide correct audibility.
- 3.14.2 The system will be accepted only after a satisfactory test of the entire system has been accomplished by a Factory-Trained Distributor in the presence of a representative of the authority having jurisdiction and the Owner's representative. This contractor shall provide all personnel, ladders and testing equipment to assist the local authority in completing this test. Actuate each device and verify that the system performs as specified.
- 3.14.3 The Contractor will present a complete set of "as-built" Fire Alarm/Life Safety system drawings, and the factory supplied Operator's Manuals as required by the General Provisions section of this specification.
- 3.14.4 Once the system has been tested and the certificate of compliance completed, the contract shall not be considered complete until after owner training has been completed. The contractor shall notify in writing their intent to provide the training for the system. This notification shall be given to the Division 21 Contractor, Architect and the Project Engineer a minimum of 2 weeks prior to the scheduled training session. The Division 21 Contractor and/or the architect shall be responsible for notifying the owner to confirm that the appropriate District personnel will be made available for this training session. If the Division 21 Contractor does not receive confirmation that the training session can be performed on the proposed date, then another time shall be provided. The training shall consist of the following:
 - 3.14.4.1 Provide a minimum of one (1) four-to-six -hour training period located at the project site, to instruct District personnel in proper operation of all systems.
 - 3.14.4.2 Provide a minimum of three (3) complete owner operation manuals for the District records.
 - 3.14.4.3 Provide a minimum of two (2) complete as built sets of drawings for the District records.
 - 3.14.4.4 Provide all spare parts as described in part 1 of these specifications
 - 3.14.4.5 Provide written confirmation and proposed scheduled dates for follow up training and 1-year complete system test.

END OF SECTION

SECTION 31 10 00 SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing and protection of vegetation.
- B. Grubbing of root systems of trees and shrubs, abandoned utility lines and structures and other below grade obstructions and debris.
- C. Removal of existing debris.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 Summary: Limitations on Contractor's use of site and premises.
- B. Section 01 50 00 Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- C. Section 01 70 00 Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products.
- D. Section 01 74 19 Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
- E. Section 02 41 00 Demolition: Removal of built elements and utilities.
 - 1. Removal of paving and removal if indicated of abandoned utilities.
 - 2. Within building footprint, removal of designated walls, partitions, and other elements; capping and identifying utilities; and removal of concrete foundations.
 - 3. Sitework (Area of Work), removal of designated fences, walls, and other elements; capping and identifying utilities; landscape paving, and removal of concrete foundations.
- F. Section 31 22 00 Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Site Plan: Showing:
 - 1. Areas for temporary construction and field offices.

1.04 QUALITY ASSURANCE

- A. Clearing Firm: Company specializing in the type of work required.
 - 1. Minimum of five years of documented experience.

PART 2 PRODUCTS

A. Fill Material: As specified in Section 31 22 00 - Grading

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PART 3 EXECUTION

3.01 SITE CLEARING

- A. Comply with other requirements specified in Section 01 70 00.
- B. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 SURVEY STAKING IN UNCLEARED EASEMENTS

- A. Flag centerline of utility lines prior to clearing. Contractor shall set offsets for clearing limits to suit the Work.
- B. When the clearing is completed, survey for utility construction in accordance with requirements specified in Section 01 70 00 Execution and Closeout Requirements.
- C. Contractor shall replace all controls and stakes damaged or destroyed, at no change in Contract Time or Contract Price.

3.03 EXISTING UTILITIES AND BUILT ELEMENTS

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Protect existing structures and other elements that are not to be removed.

3.04 CLEARING

A. Perform clearing Work within confines of Project area indicated on Drawings or specified elsewhere herein and with strict adherence to the Contract Documents and Geotechnical recommendations.

3.05 VEGETATION

- A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, lawns, and planting beds.
- B. Do not remove or damage vegetation beyond the limits indicated on drawings.
- C. Install substantial, highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:
 - 1. At vegetation removal limits.
- D. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum disturbance of the subsoil.
- E. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
 - 2. Trees: Sell if marketable; if not, treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.

- 3. Existing Stumps: Treat as specified for other vegetation removed; remove stumps and roots to depth of 18 inches.
- 4. Sod: Re-use on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
- F. Dead Wood: Remove all dead trees (standing or down), limbs, and dry brush on entire site; treat as specified for vegetation removed.
- G. Restoration: If vegetation outside removal limits or within specified protective fences is damaged or destroyed due to subsequent construction operations, replace at no cost to District.

3.06 DAMAGED VEGETATION

- A. Neatly prune damaged branches and severed roots.
- B. Apply wound paint to above-ground cuts and abrasions.
- C. If trees and shrubs indicated to remain are damaged excessively, as determined by DSA, Architect or authorities having jurisdiction, remove and replace damaged plants with comparable plants.

3.07 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Remove logs, rocks and other debris.
- C. Dispose of Debris resulting from clearing and thoroughly clean rights-of-way.
- D. Leave site in clean condition, ready for subsequent work.
- E. Clean up spillage and wind-blown debris from public and private lands.

3.08 DISPOSAL

- A. Debris Disposal: Dispose of all cleared and grubbed materials in a legal manner off site.
- B. Hazardous Materials:
 - 1. Immediately notify the DSA should hazardous materials or suspected hazardous materials be encountered.
 - 2. Dispose of such materials in accordance with all applicable laws and regulations and as directed by authorities having jurisdiction.
 - 3. Unforeseen conditions will be resolved in accordance with the Conditions of the Contract.
- C. Saleable Materials:
 - 1. Unless otherwise indicated, all felled trees from which merchantable lumber or firewood can be produced shall become the property of the Contractor.
 - 2. Unless otherwise indicated, all metallic debris of salvageable value shall become the property of the Contractor.
 - 3. The Contractor shall remove all saleable materials from the site in a timely manner.
 - 4. Sale of salvaged and merchantable materials shall be done on site only with prior approval of the District.

- D. Stockpiling Vegetation: Only if specified or indicated under landscape work, stockpile vegetation for subsequent mulching.
- E. Burial and Burning: Debris shall not be buried or burned on site.

3.09 DUST CONTROL

- A. Refer to requirements of:
 - 1. Section 01 50 00 Temporary Construction Facilities and Controls.
 - 2. Section 31 22 00 Grading.
- B. Minimize dust during clearing and grubbing to protect adjoining property and vehicles parked in the vicinity.
- C. Clean-up: Keep public thoroughfares clear of dust and debris by periodic sweeping and washing down, at least daily at the end of working hours.

END OF SECTION

SECTION 31 22 00 GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Coordinate work of this Section to compliment and coordinate with field conditions and Civil Drawing noted specific referenced requirements. Utilize the most stringent requirements.
- B. Removal of topsoil.
- C. Rough grading and consolidation/compaction the site for site structures.
 - 1. Preparation for excavation, trenching, backfilling and compacting Work.
- D. Excavation of subsoil, stockpiling for later reuse, and removal of excess from the site.
- E. Preparing of subgrade for walks, pavements and site retaining walls.
- F. Excavating, backfilling and compaction for wet utility lines.
- G. Finish grading.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 Quality Requirements.
- B. Section 01 45 33 Code-Required Special Inspections.
- C. Section 01 70 00 Execution and Closeout Requirements.
- D. Section 31 10 00 Site Clearing.
- E. Section 31 23 16 Excavation.
- F. Section 31 23 23 Fill: Filling and compaction.
- G. Section 32 13 13 Site Concrete.

1.03 SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.
 - 1. Accurately record location of all changes in finish elevations and gradients which materially affect drainage.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: For conditions not covered in this Section, refer to applicable provisions of the California Building Code (CBC), Chapter 18A Soils and Foundations, as amended and adopted by authorities having jurisdiction.
- B. Perform Work in accordance with locally adopted {\rs\#1} standards.

1.05 PROTECTION

A. Dust Control: Comply with requirements specified in Section 01 50 00 - Temporary Facilities and Controls.

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- B. Protection:
 - 1. Comply with general requirements specified in Section 01 50 00 Temporary Facilities and Controls.
 - 2. Provide protection for walks, curbs, drains, and trees and boxing around corners of existing buildings to prevent damage.
 - 3. Keep adjacent roads, streets and drives clear of dirt and debris from earthwork operations.
- C. Underground Utilities:
 - 1. Buried utility lines may exist.
 - 2. If such are encountered, notify DSA, Architect and District and for directions to be followed for preservation, relocation or demolition of utilities.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: See Section 31 23 23.
- B. Shoring and Bracing: Provide all materials and services necessary to properly engineer and construct shoring for excavations. Selection of materials and design of shoring, underpinning and bracing of new and existing structures shall be solely the responsibility of the Contractor.
 - 1. Shoring design shall comply with State of California Trenching and Shoring Manual issued by Offices of Structure Construction; 2011.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey bench mark and intended elevations for the Work are as indicated.
- B. Verify the absence of standing or ponding water.
- C. Upon discovery of unknown utility or concealed conditions, discontinue affected Work and notify DSA, Architect and District for direction. Unforeseen conditions shall be resolved in accordance with the General Conditions.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Stake and flag locations of known utilities.
- C. Locate, identify, and protect from damage above- and below-grade utilities to remain.
 - 1. Maintain and protect existing utilities remaining which pass through Project area.
- D. Notify utility company to remove and relocate utilities, as required.
- E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.
- F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading

equipment and vehicular traffic.

- G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.
- H. Protect plants, lawns, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

- A. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, in excess of 1 inch in size.
- B. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.
 - 1. Coordinate topsoil with Section 10 00 Site Clearing and Grubbing.
- C. Do not remove topsoil when wet.
- D. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.
- E. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.
- F. When excavating through roots, perform work by hand and cut roots with sharp axe.
- G. See Section 31 23 23 for filling procedures.
- H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.
- J. Grade top perimeter of excavations to prevent surface water from draining into excavation.
 - 1. Provide dewatering of excavations as required to ensure suitable conditions for concrete and backfilling operations.
- K. Uniformly grade areas as shown on Drawings to tolerances specified in this Section..
 - 1. Evenly grade between points where elevations are shown or between points of Work and existing grades.
- L. Slope rough grade away from building perimeter at gradient indicated.
 - 1. Upaved area slope for a distance of 10 feet from the building: Not less than one unit vertical in 20 units horizontal or 5 percent.
 - a. CBC Section 1804A.4.
 - 2. When supported by soil conditions and climate; slope not less than 1:48 or 2 percent in unpaved areas.
 - a. CBC Section 1804A.4, Exception.
- M. Make grade changes gradual. Blend slopes into level areas.

3.04 SOIL REMOVAL AND STOCKPILING

- A. Stockpile topsoil to be re-used on site; remove remainder from site.
 - 1. Topsoil and vegetation layers, root zones, and similar surface materials should be stripped and stockpiled for either reuse in landscape surface areas or removed from the site.

- B. Stockpile subsoil on site for backfill, if soil is appropriate.
 - 1. Stockpile subsoil to depth not exceeding 8 feet.
- C. Remove all lumped subsoil, boulders and rock in excess of 3 inches in greatest dimension.
- D. Stockpile subsoil to be re-used on site; remove remainder from site.
- E. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; cover to protect from erosion.

3.05 FINISH GRADING

- A. Before Finish Grading:
 - 1. Verify building and trench backfilling have been inspected.
 - 2. Verify subgrade has been contoured and compacted.
- B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
 - 1. Comply with CBC Section 1804A.3.
- C. Where topsoil is to be placed, scarify surface to depth of 6 inches.
- D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 6 inches.
- E. Place topsoil in areas indicated.
- F. Place topsoil where required to level finish grade.
- G. Place topsoil during dry weather.
- H. Remove roots, weeds, rocks, and foreign material while spreading.
- I. Near plants and buildings spread topsoil manually to prevent damage.
- J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.
- K. Lightly compact placed topsoil.
- L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.
- B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).
- C. Athletic Field Final Porous Stone base grade: Utilizing laser guided equipment, fine grade to the required tolerances leaving behind no tire tracks or indentations.
- D. Top Surface Under Paving: Plus or minus 0.04 foot (1/2 inch) from required elevation.

3.07 REPAIR AND RESTORATION

- A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.
- B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.

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C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

- A. See Section 31 23 23 for compaction density testing.
- B. Field Quality Control:
 - 1. Field inspections and testing shall be performed in accordance with requirements specified in Section 01 40 00 and 01 45 33.
 - 2. Make required quality control submittals in accordance with requirements specified.
- C. Non-compliance: Should grade elevations, tests of fill or backfill indicate non-compliance with required elevations or density, Contractor shall over-excavate, recompact and retest until specified grade or density is obtained.
 - 1. Costs and Time associated with remedial Work and retesting shall be in accordance with provisions of the General Conditions.
 - 2. Retesting to demonstrate compliance shall be by a testing laboratory acceptable to District and shall be at Contractor's expense.

3.09 CLEANING

- A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.
- B. Leave site clean and raked, ready to receive landscaping.

3.10 PROTECTION

- A. Protect completed grading from erosion from weather and traffic.
- B. Over-excavate and recompact areas damaged by construction activities and weather.

END OF SECTION

SECTION 31 23 16 EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for footings, paving, and site structures.
- B. Trenching for utilities outside the building to on-site existing utilities.
- C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

- A. Section 01 40 00 Quality Requirements: Inspection of bearing surfaces.
- B. Section 01 50 00 Temporary Facilities and Controls: Dewatering excavations and water control.
- C. Section 01 70 00 Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.
- D. Section 02 41 00 Demolition: Shoring and underpinning existing structures.
- E. Section 31 10 00 Site Clearing: Vegetation and existing debris removal.
- F. Section 31 22 00 Grading: Grading.
- G. Section 31 23 23 Fill: Fill materials, backfilling, and compacting.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction.

1.04 REFERENCE STANDARDS

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Temporary Support and Excavation Protection Plan.
- C. Project Record Documents: Record drawings at project closeout according to 01 70 00 -Execution and Closeout Requirements. Show locations of installed support materials left in place, including referenced locations and depths, on drawings.
- D. Shoring Installer's Qualification Statement.
- E. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

1.06 QUALITY ASSURANCE

A. Temporary Support and Excavation Protection Plan:

- 1. Indicate sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property.
- 2. Include drawings and calculations for bracing and shoring.
- 3. Bracing and shoring design to meet requirements of OSHA's Excavation Standard, 29 CFR 1926, Subpart P.
- B. Designer Qualifications: For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in California.
- C. Shoring Installer Qualifications: Company specializing in performing the shoring and bracing work of this section with minimum five years of documented experience.

1.07 COORDINATION OF SPECIFICATION REQUIREMENTS

- A. Coordinate these Specification Section requirements with specifications included on Drawings. Comply with more stringent requirements and with those requirements of authorities having jurisdiction.
- B. Comply in full with the direction (recommendations) given in the Geotechnical Report.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Bedding and Fill to Correct Over-Excavation:
 - 1. See Section 31 23 23 for bedding and corrective fill materials at general excavations.

PART 3 EXECUTION

3.01 DIG ALERT NOTIFICATION

- A. Before any excavation in or near the public right-of-way, contact the Underground Service Alert of Southern California (Dig Alert) at 811 for information on buried utilities and pipelines.
- B. Delineation of the proposed excavation site is mandatory. Mark the area to be excavated with water soluble or chalk based white paint on paved surfaces or with other suitable markings such as flags or stakes on unpaved areas.
- C. Call at least Two (2) full working days prior to digging.
- D. If the members (utility companies) have facilities within the work area, they will mark them prior to the start of your excavation and if not, they will let you know there is no conflict. A different color is used for each utility type (electricity is marked in red, gas in yellow, water in blue, sewer in green, telephone and cable TV in orange).
- E. The Law requires to hand expose to the point of no conflict 24 inches on either side of the underground facility, to know its exact location before using power equipment.
- F. If caught digging without a Dig Alert ticket fines can be as much as \$50,000 per California government code 4216.

3.02 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

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- B. Survey existing adjacent structures and improvements and establish exact elevations at fixed points to act as benchmarks.
 - 1. Resurvey benchmarks during installation of excavation support and protection systems and notify District if any changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.
- C. Determine the prevailing groundwater level prior to excavation. If the proposed excavation extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by Architect. If the proposed excavation extends more than 1 foot into the prevailing groundwater, control groundwater intrusion with a comprehensive dewatering procedures, or as directed by Geotechnical Engineer.

3.03 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. See Section 31 10 00 for clearing, grubbing, and removal of existing debris.
- C. See Section 31 22 00 for topsoil removal.
- D. Locate, identify, and protect utilities that remain and protect from damage.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.
- G. See Sections 01 70 00 and 02 41 00 for underpinning and shoring of adjacent structures that could be damaged by excavating work.

3.04 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

- A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.
 - 1. Excavations in stable rock or in less than 5 feet in depth in ground judged as having no cave-in potential do not require excavation support and protection systems.
 - 2. Depending upon excavation depth, time that excavation is open, soil classification, configuration and slope of excavation sidewalls, design and provide an excavation support and protection system that meets the requirements of 29 CFR 1926, Subpart P:
 - a. Sloping and benching systems.
 - b. Support systems, shield systems, and other protective systems.
- B. Shoring Design: Comply with State of California Trenching and Shoring Manual issued by Offices of Structure Construction; 2011.
 - 1. Provide all materials and services necessary to properly engineer and construct shoring for excavations. Selection of materials and design of shoring, underpinning and bracing of new and existing structures shall be solely the responsibility of the Contractor.
- C. Underpin adjacent structures that could be damaged by excavating work, including utilities and pipe chases.
- D. Protect excavations from cave-in and from loose soil and other matter from falling in.

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- E. Leave excavation support and protection systems, used as formwork or within 10 feet of existing foundations, permanently in place, unless otherwise noted.
 - 1. Cut off top 4 feet below grade, abandon remainder.
- F. Excavation support and protection systems not required to remain in place may be removed subject to approval of District or District's Representative.
 - 1. Remove temporary shoring and bracing in a manner to avoid harmful disturbance to underlying soils and damage to buildings, structures, pavements, facilities and utilities.

3.05 EXCAVATING

- A. Excavate to accommodate new structures, paving/site structures, construction operations, and paving/site structures.
 - 1. Excavate to the specified elevations.
 - 2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
 - 3. Cut utility trenches wide enough to allow inspection of installed utilities.
 - 4. Hand trim excavations. Remove loose matter.
 - 5. Excavate subsoil from areas to be filled with structural fill, to construct foundations, footings, slabs on grade, paving and to achieve final finish grades.
 - 6. Over-excavate to working elevations for backfilling and compaction operations.
 - 7. Where excavations are made to a depth greater than that indicated, such additional depth shall be filled with concrete having the same compressive strength as specified for the footing.
 - a. Correct unauthorized and erroneous excavation at no change in Contract Time or Contract Sum.
 - b. All over-excavations should extend to a depth where the project geologist, engineer or his representative has deemed the exposed soils as being suitable for receiving compacted fill. The materials exposed at the bottom of excavations should be observed by a representative of the geotechnical engineer or geologist from our office prior to the placement of any compacted fill soils to verify that all old fill is removed. Additional removals may be required as a result of observation and/or testing of the exposed subgrade subsequent to the required over-excavation.
- B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored, per CalOSHA requirements for Type C Soil.
 - 1. Machine slope banks of excavations to minimum 1 to 1 ratio horizontal to vertical or angle of repose, if less, until shored.
 - a. Exception: If authorized in writing by Geotechnical Engineer.
 - b. Slope must comply with local codes, ordinances and requirements of agencies having jurisdiction.
 - c. See Section 00 31 00 Available Project Information.

- D. Do not interfere with 45 degree influence line of bearing splay of foundations.
 - 1. Avoid interference at footings by providing additional width, depth, and other provisions.
- E. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume.
- F. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.06 SUBGRADE PREPARATION

A. See Section 31 23 23 for subgrade preparation at general excavations.

3.07 FILLING AND BACKFILLING

- A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.
- B. See Section 31 23 23 for fill, backfill, and compaction requirements at general excavations.
- C. See Section 31 22 00 for rough and final grading and topsoil replacement requirements.

3.08 REPAIR

A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 23 23 at no additional cost.

3.09 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements, for general requirements for field inspection and testing.
- B. Provide for visual inspection of load-bearing excavated surfaces by Architect and geotechnical consultant before placement of foundations.
- C. Scarification, over excavation and all other excavations will be subject to the approval of the Geotechnical Engineer.

3.10 CLEANING

- A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 22 00.
- B. Remove excavated material that is unsuitable for re-use from site.
- C. Remove excess excavated material from site.

3.11 PROTECTION

- A. Divert surface flow from rains or water discharges from the excavation.
- B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.
- C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.
- D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

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E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

SECTION 31 23 23 FILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Filling, backfilling, and compacting for footings, paving, site structures, and utilities within the building.
- B. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 Cast-in-Place Concrete.
- B. Section 31 22 00 Grading: Removal and handling of soil to be re-used.
- C. Section 31 22 00 Grading: Site grading.
- D. Section 31 23 16 Excavation: Removal and handling of soil to be re-used.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Indicated on drawings.
- B. Subgrade Elevations: Indicated on drawings.

1.04 REFERENCE STANDARDS

- A. ASTM D4829 Standard Test Method for Expansion Index of Soils.
- B. ASTM D1556/D1556M Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method.
- C. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
- D. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- E. ASTM D6938 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- F. DTSC-Clean Fill California Department of Toxic Substances Control Clean Imported Fill Material.
- G. Greenbook Greenbook: Standard Specifications for Public Works Construction.

1.05 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Soil Samples: 10 pounds sample of each type of fill; submit in air-tight containers to testing laboratory.
 - 1. Submit samples directly to Geotechnical Engineer for testing and analysis copy transmittals to Architect and District.
- C. Materials Sources: Submit name of imported materials source.

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- D. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.
- E. Compaction Density Test Reports.
- F. Manufacturer's Instructions.
- G. Manufacturer's Qualification Statement.
- H. Specimen Warranty.
- I. Provide proof that all imported materials conform to the requirements of DTSC-Clean Fill Imported Fill Materials for School Sites by proper documentation for the imported materials.

1.06 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.
- B. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When fill materials need to be stored on site, locate stockpiles where agreed to.
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

1.08 WARRANTY

- A. See Section 01 78 00 Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. General Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches, rocks larger than 3 inches, and debris.
 - 3. Complying with ASTM D2487 Group Symbol CL.
- B. Structural Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of organic matter, debris, and oversize particles (e.g., cobbles, rubble, etc. that are larger than 3 inches, rocks larger than 3 inches. Fill shall contain at least fifty percent of material smaller than 1/4 inch in size.
 - 3. Imported fill materials: The soil shall be tested for potential contamination in accordance with DTSC-Clean Fill protocols. Submit to Geotechnical Engineer.

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- a. Import sandy soil shall be free of organics, debris and oversize particles (e.g., cobbles, rubble, rocks, etc. that are greater than 3 inches in the largest dimension).
- b. Additionally, import soils shall not have any corrosion impacts to buried concrete; and be non-expansive (Expansion Index less than 21 per ASTM D4829).
- c. Prior to import, geotechnical consultant shall evaluate and test the import soils in order to confirm the quality of the material.
- 4. On-site soils should only be used as specified in the Soils Report.
- 5. Complying with ASTM D2487 Group Symbol CL.
- C. Concrete for Fill: See Section 03 30 00; compressive strength of 2,500 psi.
 - 1. Exception: Concrete used under footings and foundations to correct over-excavation shall be same as for footings and foundation.
- D. Granular Fill- Fill Type GM, GW: Coarse aggregate, conforming to Uniform Standard Specifications for Public Works Construction Off-Site Improvements standard.
- E. Granular Fill Pea Gravel: Natural stone; washed, free of clay, shale, organic matter.
 - 1. Grade in accordance with ASTM D2487 Group Symbol GP.
- F. Sand: Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter.
 - 1. Grade in accordance with ASTM D2487 Group Symbol SP or SW.
- G. Topsoil: Topsoil excavated on-site.
 - 1. Unclassified.
 - a. The soil shall be tested for potential contamination in accordance with DTSC-Clean Fill protocols.
 - 2. Graded.
 - 3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
 - 4. Acidity range (pH) of 5.5 to 7.5.
 - 5. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.
 - 6. Complying with ASTM D2487 Group Symbol OH.
 - 7. Limit decaying matter to 5 percent of total content by volume.
- H. Type F Subsoil: Reused, free of rocks larger than 3 inch size, and debris.
 - 1. Existing fill and alluvium or older alluvium may be considered suitable for re-use as compacted fills provided the recommendations of the geotechnical report and observations of the geotechnical engineer are followed.

2.02 ACCESSORIES

A. Geotextile Fabric: Non-biodegradable, non-woven; Geotex 801 manufactured by Propex Geotextile Systems, geotextile.com.

2.03 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.

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- B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.
- E. Comply with EPA/DTSC-Clean Fill requirements.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify structural or other backfill materials to be reused or imported are acceptable to the satisfaction of the Geotechnical Engineer. Approval shall be obtained in advance of re-use or importation onto the site.
 - 1. Test soil for potential contamination in accordance with DTSC-Clean Fill protocols.
 - 2. Provide imported fill materials compatible with on-site soils in addition to being suitable for its intended use with the following criterion, as allowed by the Geotechnical Engineer.
 - a. Predominantly granular in nature.
 - b. Containing no rocks larger than 3 inches maximum dimension.
 - c. Free of organic material (loss on ignition less-than 2 percent).
 - d. Very low expansion potential (with an Expansion Index less than 21).
 - e. Low corrosion impact to the proposed improvements.
- B. Verify that survey bench marks and intended elevations for the Work are as indicated.
- C. Identify required lines, levels, contours, and datum locations.
- D. See Section 31 22 00 for additional requirements.
- E. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.
- F. Verify structural ability of unsupported walls to support imposed loads by the fill.
- G. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

- A. Scarify and proof roll subgrade surface to a depth of 8 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with AWS D1.4/D1.4M Type II or concrete fill and compact to density equal to or greater than requirements for subsequent backfill material.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Prior to placement of aggregate base course material at paved areas, compact subsoil to 95 percent of its maximum dry density in accordance with ASTM D1557.
- E. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Fill up to subgrade elevations unless otherwise indicated.
 - 1. Place fill soils compacted in horizontal lifts to a relative compaction of 90 percent or more in general accordance with ASTM D1557.
 - 2. Lift thickness for fill soils will vary depending on the type of compaction equipment used but should generally be placed in horizontal lifts not exceeding 8 inches in loose thickness.
 - 3. Place fill soils at slightly above optimum moisture content as evaluated by ASTM D1557.
 - 4. Avoid damage to wet and dry utility lines when compacting fill and subgrade materials.
- C. Employ a placement method that does not disturb or damage other work.
 - 1. Do not disturb or damage foundation perimeter drainage and foundation waterproofing and protective cover utilities in trenches.
- D. Systematically fill and compact per geotechnical report. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- I. Correct areas that are over-excavated.
 - 1. Load-bearing foundation surfaces: Fill with concrete.
 - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 90 or 95 percent of maximum dry density in subgrade zone.
- J. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 90 percent of maximum dry density.
 - 2. At upper 12 inches beneath vehicular pavements: 95 percent of maximum dry density.
 - 3. At other locations: At least 90 percent of maximum dry density.
- K. Reshape and re-compact fills subjected to vehicular traffic.
- L. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- M. Remove surplus fill and backfill materials from site.

3.04 FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

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- B. Structural Fill:
 - 1. Use general fill.
 - 2. Fill up to subgrade elevations.
 - 3. Maximum depth per lift: 6 inches, compacted.
 - 4. Compact to minimum at least 90 percent of maximum dry density.
- C. Over Buried Utility Piping, Conduits, and Duct Bank in Trenches:
 - 1. Bedding: Use general fill.
 - 2. Cover with general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 8 inch lifts to at least 90 percent of maximum dry density. Compact to at least 95 percent in subgrade zone.
- D. Under Monolithic Paving :
 - 1. Compact subsoil to at least 90 percent of its maximum dry density before placing fill.
 - 2. Use general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact to at least 90 percent of maximum dry density; , 95 percent in upper 12 inches.
 - 5. See Section 32 11 23 for aggregate base course placed over fill.

3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Filling Under Paved Areas: Plus or minus 1/2 inch from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements, for general requirements for field inspection and testing.
 - 1. Laboratory Tests and Analyses: Where backfill is required to be compacted to a specified density, tests for compliance shall be made in accordance with requirements specified in Section 01 40 00 Quality Requirements.
- B. Perform compaction density testing on compacted fill in accordance with ASTM D1556 or ASTM D6938.
 - 1. Field inspections and testing shall be performed and submitted in accordance with requirements specified in Section 01 40 00 Quality Requirements.
 - 2. Allow testing service to inspect and approve each subgrade and fill layer before further fill, backfill or construction Work is performed.
 - 3. Alternate Density Test Method:
 - a. Field density tests may also be performed by the nuclear method in accordance with ASTM D6938, providing that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D1556/D1556M.

Fill

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b. In conjunction with each density calibration check, check the calibration curves furnished with the moisture gages in accordance with ASTM D6938.

- c. If field tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of Work, on each different type of material encountered, and at intervals as directed by Architect or District's testing and inspection agency.
- C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 1557 ("modified Proctor") or AASHTO T 180.
- D. Non-compliance: If tests indicate work does not meet specified requirements, remove work, replace and retest.
 - 1. Should tests of fill or backfill indicate non-compliance with required density, Contractor shall over-excavate, recompact and retest until specified density is obtained.
 - 2. Costs and Time associated with remedial Work and retesting shall be in accordance with provisions of the General Conditions.
 - 3. Retesting to demonstrate compliance shall be by a testing laboratory acceptable to District and shall be at Contractor's expense.
- E. Frequency of Tests:
 - 1. Footing Subgrade Testing:
 - a. For each strata of soil on which footings will be placed, perform at least one in-place density test to verify required design bearing capacities.
 - b. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata when acceptable to Geotechnical Engineer.
 - 2. Paved Areas and Building Slab Subgrade Testing:
 - a. Perform at least one field density test of subgrade for every 2,000 sf of paved area or building slab, but in no case fewer than three tests.
 - b. In each compacted fill layer, perform one field density test for every 2,000 sf of overlaying building slab or paved area, but in no case fewer than three tests.
 - 3. Foundation Wall Backfill Testing: Perform at least two field density tests at locations and elevations as directed.
- F. Proof roll compacted fill at surfaces that will be under slabs-on-grade.

3.07 CLEANING

- A. See Section 01 74 19 Construction Waste Management and Disposal, for additional requirements.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 31 63 29 DRILLED CONCRETE PIERS AND SHAFTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Machine drilled shaft.
- B. Concrete and reinforcement.
- C. Shaft liner, if required.

1.02 RELATED REQUIREMENTS

- A. Section 03 20 00 Concrete Reinforcing: Requirements for concrete reinforcement.
- B. Section 03 30 00 Cast-in-Place Concrete: Requirements for concrete.

1.03 DEFINITIONS

- A. Pier Diameter: Diameter of drilling bucket or auger bit or inside diameter of casing.
- B. Pier Length: Total length of caisson from bottom of wall, grade beam or pier cap to bottom of hole as drilled.
- C. Center of Piers: Intersection of two diameters, one taken parallel to the wall, grade beam, or column line direction, the other taken perpendicular to the first diameter.
- D. The term caissons, piles and piers mentioned in reference to this project within the body of these documents shall always mean "drilled concrete piers and shafts"

1.04 REFERENCE STANDARDS

- A. ACI 336.1 Specification for the Construction of Drilled Piers.
- B. ASTM A36/A36M Standard Specification for Carbon Structural Steel.
- C. ASTM A252/A252M Standard Specification for Welded and Seamless Steel Pipe Piles.
- D. ASTM A283/A283M Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
- E. ASTM A929/A929M Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

1.06 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Installer's Qualification Statement.
- C. Project Record Documents: Record actual locations of piers, pier diameter, and pier length. Accurately record the following:

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- 1. Sizes, lengths, and locations of piers.
- 2. Sequence of placement.
- 3. Final base and top elevations.
- 4. Deviation from indicated locations.
- 5. Placement and configuration of reinforcement deviations.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Casing: Temporary casings of steel complying with ASTM A283/A283M, Grade C; ASTM A36/A36M; or ASTM A929/A929M; of sufficient strength to withstand handling and drilling stresses, concrete pressures, and surrounding earth and water pressures.
- B. Shaft Liner: ASTM A252/A252M, Grade 1; single length steel pipe, with plain ends.
- C. Concrete Materials and Mix: Specified in Section 03 30 00.
- D. Reinforcement: Specified in Section 03 20 00.
- E. Equipment: Appropriate for dewatering excavated shaft.

PART 3 EXECUTION

3.01 PREPARATION

- A. Use placement method which will not cause damage to nearby structures.
- B. Notify adjacent and affected land owners and building occupants with 90 days notice before proceeding with the work.
- C. Protect structures near the work from damage.
- D. Prepare to place piers from existing site elevations.
- E. Grade perimeter of pier and shaft area to prevent surface water from draining into soil borings. Provide temporary means and methods, as required, to maintain surface diversion until no longer needed, or as directed by the Architect.

3.02 INSTALLATION

- A. Construct piers in accordance with ACI 336.1.
- B. Drill vertical pier shafts to diameters and depths indicated.
- C. Place steel casings immediately after drilling. Set firmly in place. If casing is to be temporary, install shaft liner with sufficient strength to withstand concrete pressures.
 - 1. Withdrawal of temporary casings is at option of Contractor.
- D. Clean shaft and bottom of loose material. Provide temporary means and methods, as required, to remove all water from soil borings as needed, or until directed by the

Geotechnical Engineer.

- E. Allow inspection of shaft and liner prior to placement of reinforcement and concrete.
- F. Place reinforcing steel in accordance with Section 03 20 00.
- G. Place concrete in single pour, in accordance with Section 03 30 00 with equipment designed for vertical placement of concrete.
- H. Coordinate casing withdrawal with concrete placement so that concrete pressure head exceeds anticipated outside soil and water pressure above bottom of casing at all times during withdrawal.
- I. Extend reinforcement for connection of caps.
- J. Set tops of piers to elevations indicated.

3.03 TOLERANCES

- A. Install piers with maximum variation from location, plumbness, bottom area, diameter, and anchorage locations as specified in ACI 336.1.
- B. Maximum Variation From Vertical: 1 in 48.
- C. Maximum Variation From Design Top Elevation: Plus 3 inches, minus 1 inch.
- D. Maximum Out-of-Position: 2 inches.

3.04 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01 40 00 - Quality Requirements.

3.05 UNACCEPTABLE PIERS

- A. Unacceptable Piers: Piers placed out of position, are below elevations, or are damaged.
- B. Provide additional piers or replace piers failing to comply with specified requirements.

END OF SECTION

SECTION 32 11 23 AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.
- B. Paving aggregates.
- C. Soil sterilization.

1.02 RELATED REQUIREMENTS

- A. Section 31 22 00 Grading: Preparation of site for base course.
- B. Section 32 12 16 Asphalt Paving: Finish and binder asphalt courses.
- Section 32 13 13 Site Concrete: Finish concrete surface course. C.

1.03 REFERENCE STANDARDS

- A. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- B. SSPWC (Greenbook) Standard Specifications for Public Works Construction.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Samples: 10 lb sample of each type of aggregate; submit in air-tight containers to testing laboratory.
- C. Materials Sources: Submit name of imported materials source.
- D. Certificates of Conformance: Aggregate and sterilant materials.
- E. Aggregate Composition Test Reports: Results of laboratory tests on proposed and actual materials used.
- F. Compaction Density Test Reports.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Where reference is made to Standard Specifications, the following shall apply.
 - 1. Perform off-site Work in public rights-of-way in accordance with requirements of authorities having jurisdiction, including SSPWC (Greenbook). For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction.
 - Perform on-site Work as indicated and referenced on Contract Drawings and as specified 2. herein.

The quantity of volatile organic compounds (VOC) used in weed killer, tack coat, primer and Β. other materials shall not exceed limits permitted under current regulations of:

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- 1. Local Air Quality Management District (AQMD).
- C. Source Quality Control: Obtain materials from one source throughout.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.
- B. When aggregate materials need to be stored on site, locate where directed by District.
- C. Aggregate Storage, General:
 - 1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
 - 2. Prevent contamination.
 - 3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Aggregate Type Class II: Coarse or crushed aggregate, conforming to Municipality, ASTM F588 Section 200-2.2.
- B. Coarse Aggregate: Pit run washed stone; free of shale, clay, friable material and debris.
 - 1. Graded in accordance with ASTM D2487 Group Symbol GW.
- C. Herbicide: Comply with all applicable environmental protection and hazardous materials laws and regulations .
 - 1. Comply with current EPA acceptable standard and the California Department of Pesticide Regulations for soils sterilant.
 - 2. Comply with the "Healthy Schools Act" as amended in 2014.
 - 3. Obtain product approval from District, prior to purchase and use.
 - 4. Sterilant: Commercial grade for commercial application.
 - a. Selected as appropriate for the environment in which is it to be placed.
 - 5. Contractor shall be licensed with the State of California to apply sterilant.
 - 6. Sterilant: Commercial grade for commercial application.
 - 7. Payment for soil sterilization: Include full compensation for application and all materials and incidental work required.
 - 8. Application Rate: Follow manufacturer recommendations.
 - 9. Acceptable Manufacturers:
 - a. Dow AgroSciences; Spike 80DF: www.dowagro.com.
 - b. Pro-Serve Inc.; Bare-Spot Monobor-Chlorate: www.pro-serveinc.com.
 - c. Casoron 50W by Uniroyal Chemical Co., Inc.
 - d. Substitutions: See Section 01 60 00 Product Requirements.
- D. Geotextile Fabric: Non-biodegradable, non-woven, placed under base;.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements for general requirements for testing and analysis of aggregate materials.
- B. Where aggregate materials are specified using ASTM D2487 classification, testing of samples for compliance shall be provided before delivery to site.
- C. If tests indicate materials do not meet specified requirements, change material and retest.
- D. Provide materials of each type from same source throughout the Work.

2.03 EXAMINATION

- A. Establishment of Grades
 - 1. Set grade stakes per Section 01 70 00 Execution and Closeout Requirements.
 - 2. All work shall conform to the lines, elevations, and grades shown on the Drawings.
 - a. Use three consecutive points set on the same slope together so that any variation from a straight grade can be detected.
 - b. Report any such variation to the Architect. Contractor shall be responsible for any error in the grade of the finished work.
 - 3. Grade or location stakes lost or disturbed, shall be reset by the Surveyor at no additional expense to District.
 - 4. Areas having drainage gradients of 2 percent or more, provide elevation stakes, set with instrument, at grid intervals of 25 feet.
 - a. Intermediate stakes may be set by using a tightly-drawn string line over the tops of adjacent stakes.
 - b. Grade stakes must be set at all grade breaks, grade changes, etc.
 - 5. Areas having drainage gradients of less than 2 percent; provide elevation stakes, set with instrument, at 10 foot intervals.
 - a. Grade stakes must be set at all grade breaks, grade changes, etc.
- B. Verify that survey bench marks and intended elevations for the work are as indicated.
- C. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

2.04 PREPARATION

- A. Stockpiling:
 - 1. Clear and level storage sites prior to stockpiling of material.
 - 2. Stockpile all materials, including approved material available from excavation and grading, in the manner and at the locations designated.
 - 3. Aggregates shall be stockpiled on the cleared and leveled areas designated by the Construction Manager to prevent segregation.
 - 4. Materials obtained from different sources shall be stockpiled separately.
- B. Soil Sterilant:
 - 1. Sterilize soil areas to receive paving.

- 2. Apply soil sterilant in accordance with manufacturer's instructions and applicable environmental regulations.
- 3. Take care to confine application to the areas to be paved. Sterilant shall not be applied within 2 feet of planting areas.
- C. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and recompacting.
- D. Do not place aggregate on soft, muddy, or frozen surfaces.
- Place and compact aggregate base material in accordance with SSPWC (Greenbook), Subsection 301-2. Place aggregate base below curbs and gutters and paving also, compacted to 95 percent at vehicular traffic and 90 percent at pedestrian-only traffic.
- F. Application of Base Course:
 - 1. After preparing the subgrade, Avoid all vehicular or machine traffic on the subgrade.
 - a. Should it be necessary to haul over the prepared subgrade, drag and roll the traveled way as frequently as may be necessary to remove ruts, cuts, and breaks in the surface.
 - b. Rake and hand tamp all cuts, ruts, and breaks in the surface of the subgrade that are not removed by the above operations.
 - c. Equip with pneumatic tires all equipment used for transporting materials over the prepared subgrade.
 - 2. Do not permit continued use of sections of prepared subgrade for hauling, so as to cut up or deform it from the true cross-section. Protect the prepared subgrade from all traffic.
 - 3. Maintain the surface in its finished condition until the succeeding layer is placed.
- G. Under Bituminous Concrete Paving:
 - 1. The above subgrade preparation recommendations are based on the assumption that soils encountered during field exploration are representative of soils throughout the site.
 - a. However, there can be unforeseen and unanticipated variations in soils between points of subsurface exploration. For this reason, the actual subgrade preparation will have to be determined on the basis of in-grading observations and testing performed by representatives of the project geotechnical consultant.
 - 2. Provide grade stakes and elevations by a California Licensed Surveyor (LS) for the Geotechnical Engineer.
 - a. Verify that the over-excavation depths, shown on the construction drawings for asphalt concrete pavement structural sections, have been achieved prior to re-compaction.
 - 3. Correct irregularities by dressing down or filling as may be required, to bring areas to true subgrade elevations.
 - 4. Where filling is required, scarify the subgrade to bond the new material to the in place material; use additional material as required at no additional cost. Subject to the approval of the Architect.
 - 5. Remove excess material from the site to a legal disposal area.
- H. Under Portland Cement Concrete Paving:

- 1. Compact to 95 percent of maximum dry density and 90 percent at pedestrian-only traffic.
- I. Apply herbicide to finished surface.

2.05 TOLERANCES

- A. Subgrade Tolerances:
 - 1. Subgrade for Pavement: Do not vary more than 0.02 ft..
 - 2. Subgrade for Subbase or Base Material: Do not vary more than 0.04 ft..
 - 3. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met.
- B. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- C. Scheduled Compacted Thickness: Within 1/4 inch.
- D. Variation From Design Elevation: Within 1/2 inch.

2.06 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements for general requirements for field inspection and testing.
- B. Compaction density testing shall be performed on compacted aggregate base course in accordance with ASTM D1556 or ASTM D6938.
- C. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").
- D. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- E. Proof roll compacted aggregate at surfaces that are under slabs-on-grade and paving.

2.07 CLEANING

- A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- B. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

END OF SECTION

SECTION 32 12 16 ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single course bituminous concrete paving.
- B. Double course bituminous concrete paving.
- C. Surface sealer.
- D. This section compliments and shall be coordinated with Civil Drawing specifications / requirements. The most stringent requirements shall be utilized.
- E. Asphaltic concrete paving for vehicular traffic and curbs, including necessary patching and repair of damaged new and existing paving.
- F. Patching and repair of existing asphaltic concrete paving for previous damage, for underground utility work and where damaged by new construction.
 - 1. Bituminous Surfacing Repair: Areas removed for utility trenches, heaved by tree roots, cracked areas, protruding areas where pavement meets hard surfaces, depressed areas, holes and areas around new structures, and raveled bituminous pavement.
 - 2. Areas heaved by tree roots, cracked areas, holes, and trenches.

1.02 RELATED REQUIREMENTS

- A. Section 02 41 00 Demolition: Selective demolition, site demolition, structure removal.
- B. Section 31 22 00 Grading: Preparation of site for paving and base.
- C. Section 32 11 23 Aggregate Base Courses: Aggregate base course.

1.03 REFERENCE STANDARDS

- A. AI MS-2 Asphalt Mix Design Methods.
- B. AI MS-19 Basic Asphalt Emulsion Manual.
- C. ASTM D946 Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
- D. SSPWC (Greenbook) Standard Specifications for Public Works Construction.

1.04 SUBMITTALS

- A. Materials List: List source and quality standard for all asphaltic concrete materials.
- B. Mix Design:
 - 1. Formulate a job-mix formula using the Hveem method in accordance with SSPWC (Greenbook) Section 203-6.2 and submit for approval.
 - 2. Submit designs for asphaltic concrete prepared by a materials laboratory under direct supervision of a Civil Engineer licensed in the State of California or a standard mix design proven in actual performance.

- 3. Resultant Mixture: Hveem properties conforming to SSPWC (Greenbook) Section 203-6.4.3.
- C. Certifications:
 - 1. Weighmaster's Certificates or certified delivery tickets for each truckload of bituminous material delivered to site.
 - 2. Certificates of Conformance: Asphalt, aggregate and sterilant materials.
 - a. 20 days prior to the delivery of aggregates, asphalt materials, and paving mixes to the project site, submit certificates and test results of compliance of such materials with these specifications.
 - b. Submit certificates of compliance from the supplier for bituminous materials for paint binder, asphaltic concrete, and seal coat.
 - c. Submit weigh master's certificates or certified delivery tickets for each truck load of asphaltic material delivered to the project site.
 - d. Upon completion of the weed control treatment, and as a condition for final acceptance, furnish a written certificate stating the brand name of the sterilant and the manufacturer, and that the sterilant used had at least the minimum required concentration, and that the rate and method of application complied in every respect with the conditions and standards contained herein.
- D. Samples:
 - Prior to the delivery of specified aggregate to the site, submit samples of the material for the Inspector's acceptance in accordance with SSPWC (Greenbook) Section 4-1.4. Samples shall be typical of materials to be furnished from the proposed source and in conformance with the specified requirements.
 - 2. Provide aggregate base gradation and quality certifications, dated within 30 days of submittal.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with locally adopted {\rs\#1}.
- B. Mixing Plant: Conform to Locally adopted ASTM F588.
 - 1. Asphaltic Concrete Producers Qualifications: Use only materials furnished by a bulk asphaltic concrete producer regularly engaged in production of hot mix, hot laid bituminous concrete.
 - 2. Applicator Qualifications: Paving machine and roller operators shall be fully trained and experienced in the installation of asphaltic concrete paving on projects of similar size and complexity.
- C. Testing and analysis of granular base material and asphaltic concrete paving mix shall be performed under provisions of Division 01.
- D. Obtain materials from same source throughout.

1.06 FIELD CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen; or when rain is imminent.

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- 1. Tack Coats: Minimum surface temperature of 60 deg F.
- 2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
- 3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.
- B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with applicable code for paving work on public property.
- B. Where reference is made to SSPWC (Greenbook), the following shall apply.
 - 1. For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction, including Standard Details for Public Works Construction, as amended and adopted by those authorities.
 - 2. Perform on-site Work as indicated and referenced on Contract Drawings and as specified herein.
- C. The quantity of volatile organic compounds (VOC) used in weed killer, seal coat, tack coat, primer, and other materials shall not exceed limits permitted under current regulations of local Air Quality Management District (AQMD).

2.02 MATERIALS

- A. General: Aggregate base, prime coat paint binder, bituminous surface course and other materials shall be as noted on the Contract Drawings and shall comply with requirements of authorities having jurisdiction.
- B. Asphalt Cement: ASTM D 946.
- C. Asphalt Concrete Materials: SSPWC (Greenbook), Subsection 203-6.
- D. Aggregate for Base Course: See Section 32 11 23 Aggregate Base Course.
- E. Aggregate for Binder Course : Angular crushed washed stone; free of shale, clay, friable material and debris.
 - 1. Graded in accordance with ASTM D2487 Group Symbol GW.
- F. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
- G. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/2 inch length.
- H. Geotextile Fabric: Non-biodegradable, non-wovenPetromat Enviro manufactured by Propex Operating Company, LLC.
 - 1. Geotextile Construction: Needle-punched nonwoven geotextile composed of 100% polypropylene or polypropylene / recycled polyester blend, staple fiber and heat calendered on one side.
- I. Crack Filler:

- 1. Cracks less than 1/2 inch in width: GuardTop Crackfiller or equal.
- 2. Cracks 1/2 inch or greater in width: #4 Sheet mix asphalt.
- J. Primer: In accordance with locally adopted {\rs\#1}.
- K. Tack Coat: Homogeneous, medium curing, liquid asphalt.
- L. Seal Coat: AI MS-19, slurry type.
 - 1. Asphalt Emulsion, www.aema.org, SS1-h, per SSPWC (Greenbook) Section 203-9.
 - 2. Acceptable Manufacturers:
 - a. Blue Diamond Asphalt; Satin Seal: www.bluediamondasphalt.com.
 - b. Diversified Asphalt Product; Over Kote: www.diversifiedasphalt.com.
 - c. Gold Star Asphalt Products: goldstarsphalt.com
 - d. SealMaster Pavement Products & Equipment; MasterSeal: sealmaster.net.
 - e. Vulcan Materials Company; GuardTop: www.vulcanmaterials.com.
 - f. Western Colloid Products; Park Top: www.westerncolloid.com.
 - g. Substitutions: See Section 01 60 00 Product Requirements.

2.03 ASPHALT PAVING MIXES AND MIX DESIGN

- A. Asphalt Surfacing Materials: Provide asphalt surfacing meeting the following requirement, furnished from a commercial asphalt central mixing plant.
- B. Use dry material to avoid foaming. Mix uniformly.
- C. Base Course: 4.5 to 5.8 percent of asphalt cement by weight in mixture in accordance with ASTM F588 Section 203-6.4.3, Type B.
- D. Binder Course: 4.5 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.
 - 1. CSS-1 h and conform to the requirements of SSPWC (Greenbook), Section 203-3 Emulsified Asphalt.
- E. Parking Lot Wearing Course: 4.6 to 6.0 percent of asphalt cement by weight in mixture in accordance with {\rs\#1} Section 203-6.4.3, Type C2.
 - 1. Provide at least two courses of asphalt when Type C2 asphalt pavement is greater than 3 inches.
 - 2. Surface Course Minimum Thickness: 1 inch and a maximum of 2 inches.
- F. Submit proposed mix design of each class of mix for review prior to beginning of work.

2.04 SOURCE QUALITY CONTROL

- A. Test mix design and samples in accordance with AI MS-2.
- B. Submit asphaltic concrete mix design proposed by the Contractor to the Engineer for review.
- C. Proposed mix to be tested for conformance with the specifications, including grading, asphalt content and stability.

2.05 ACCESSORIES

A. Headers and Stakes:

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- 1. 2 x 6 inch nominal Redwood, Construction Heart Grade, or preservative treated douglas fir (PTDF), except at curves provide laminated 1 x 6 inch nominal PTD., unless indicated otherwise on Drawings
- 2. Stakes: 2 x 4 x 18 inch long Redwood, or 2 x 3 x 18 inch long PTDF; at 48 inch on center maximum.
- 3. Nails: Common, use hot dipped galvanized only, 12d minimum.
- B. Pavement Reinforcing Fabric: Non-woven polypropylene fabric conforming to SSPWC (Greenbook), Subsection 213-1.
 - 1. Basis of Design Product: Petromat as manufactured by Propex Fabrics inc.; www.geotextile.com, or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that compacted subgrade and granular base is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Fine grading, checking, shaping, and compacting of subgrade shall be complete before start of asphaltic concrete Work.
- D. Soil Sterilant: Sterilize soil areas to receive asphaltic concrete paving. Apply soil sterilant in accordance with manufacturer's instructions and applicable environmental regulations. Take care to confine application to the areas to be paved. See Section 32 11 23 Aggregate Base Courses for product information.
- E. Curbs and Gutters: Gutters shall be in place and cured prior to start of asphaltic concrete Work. Provide lumber ramping at all locations where rolling equipment or vehicles cross new concrete paving, curbs and gutters.
- F. Headers: Place headers with tops flush with finish asphaltic concrete surfaces. Back headers with stakes.
 - 1. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.
 - 2. Install headers so the bottom surface has continuous bearing on solid grade. Where excavation for headers is undercut, thoroughly tamp soil under the header. Compact backfill on both sides of header to the density of adjacent undisturbed earth.
 - 3. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid grade a minimum of 12 inches. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header. Provide a minimum of 2-12d galvanized common nails through each stake.
 - 4. Remove existing headers where new surfacing is installed adjacent to existing surfacing.
 - 5. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.
 - 6. Provide additional stakes and anchorage as required to fasten headers in place

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- G. Do not asphalt concrete on any surface, which contains ponded water or excessive moisture in the opinion of the Architect or consulting engineer.
 - 1. If paving operations are in progress and rain or fog forces a shut down, loaded trucks in transit shall return to the plant, and no compensation will be allowed therefore.
 - 2. Provide canvas tarpaulins to cover all loads of asphalt from the time that the mixture is loaded until it is discharged from the delivery vehicle, unless otherwise directed in writing.

3.02 PAVEMENT REPAIR REMOVAL

- A. Remove bituminous and concrete pavement in accordance with applicable provisions of SSPWC (Greenbook) Section 300 Earthwork.
- B. Pavement Heaved By Roots:
 - 1. Remove pavement to limits of distortion and expose roots.
 - 2. Trim roots to provide at least 12 inch clearance to pavement.
- C. Remove protruding bituminous surfaces flush with the surrounding grade using a suitable tool or equipment so that adjacent finishes are not blackened.
- D. Remove raveled and depressed bituminous pavement to limits indicated or required.
- E. Saw cut existing improvements, trim holes and trenches in bituminous and concrete pavement to permit mechanical hand tampers to compact the fill.
- F. Remove broken concrete by saw cutting. If the required cut line is within 30 inches of a score or joint line or edge, cut and remove to the score, joint line, or edge.

3.03 EXCAVATING, BACKFILLING AND COMPACTING FOR REPAIR

A. Where subgrade or base is deemed to be unstable or otherwise unsuitable, excavate such materials to firm earth, and replace with a required material. Install and compact fill materials in accordance with the requirements of related Specification sections.

3.04 HEADERS

- A. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.
- B. Install headers so the bottom surface has continuous bearing on solid grade.
 - 1. Where excavation for headers is undercut, thoroughly tamp soil under the header.
 - 2. Compact backfill on both sides of header to the density of the adjacent undisturbed grade.
- C. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid earth a minimum of 12 inches.
 - 1. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers.
 - 2. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header.
 - 3. Provide a minimum of two 12d galvanized common nails through each stake.
- D. Remove existing headers where new surfacing is installed adjacent to existing surfacing.

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- E. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.
- F. Provide additional stakes and devices as required to fasten headers.

3.05 BASE COURSE

- A. See Section 32 11 23.
- B. Unless otherwise indicated, base course shall be crushed aggregate base, fine grade, 3 inches thick or equal to thickness of the existing base, whichever is greater.
- C. Inspector will examine the base before the paving has begun. Correct any deficiencies before the paving is started.
- D. Wherever asphaltic pavement does not terminate against a curb, gutter, or another pavement, provide and install a redwood or pressure treated Douglas fir header at the line of termination.

3.06 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Apply primer on aggregate base or subbase at uniform rate of 0.25 gal/sq yd.
- C. Apply primer to contact surfaces of curbs, gutters.
- D. Use clean sand to blot excess primer.

3.07 PREPARATION - TACK COAT

- A. Apply tack coat in accordance with ASTM F588 Section 302-5.4.
- B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 0.10 gal/sq yd.
- C. Apply tack coat to contact surfaces of curbs, gutters and previously placed or existing paving.
- D. Joining Pavement: Expose, cut and clean edges of existing pavement to straight, vertical surfaces for full depth of existing pavement.
 - 1. Paint edge with asphalt emulsion before placing new asphaltic concrete.
 - 2. Joints in New Paving: In accordance with SSPWC (Greenbook).

3.08 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with {\rs\#1} Subsection 302-5.
- B. Asphalt concrete of the class indicated in Part 2 shall be laid in courses conforming to SSPWC (Greenbook) Table 302-5.5(A), unless otherwise stated herein.
- C. Place asphalt within 24 hours of applying primer or tack coat.
- D. Place thickness as indicated on Civil Drawings to minimum 1 inch compacted thickness.
 - 1. Asphalt concrete work shall include full depth patching and variable thick asphalt concrete transition areas.
 - 2. Provide daily the Inspector, with copies of certificates of weight for all materials delivered to the job site and/or incorporated in the work.

- 3. At no time shall the coarse aggregate that has segregated from the mix be scattered across the paved mat.
- E. Install gutter drainage grilles and frames and manhole frames in correct position and elevation.
- F. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position.
 - 1. Compact (roll) asphaltic concrete in accordance with SSPWC (Greenbook), Subsection 302-5.6, using machine rollers.
 - a. Compaction by vehicular traffic is prohibited.
 - b. Compact areas inaccessible to rolling equipment with machine-powered tamper.
- G. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.09 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

- A. Provide at least two courses of asphalt when Type D2 asphalt pavement is greater then 1-1/2 inches. The surface course shall be a minimum thickness of 1 inch and a maximum of 1-1/2 inches.
- B. Provide at least two courses of asphalt when Type C2 asphalt pavement is greater then 3 inches. The surface course shall be a minimum thickness of 1 inch and a maximum of 2 inches.
- C. Install Work in accordance with ASTM F588 Subsection 302-5.
- D. Place asphalt binder course within 24 hours of applying primer or tack coat.
- E. Place binder course to thickness as indicated on Civil Drawings, minimum 1 inch compacted thickness.
- F. Place wearing course within two hours of placing and compacting binder course.
- G. Place wearing course to thickness as indicated on Civil Drawings, minimum 1 inch compacted thickness.
- H. Install gutter drainage grilles and frames and manhole frames in correct position and elevation.
- I. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position.
 - 1. Compact (roll) asphaltic concrete in accordance with SSPWC (Greenbook), Subsection 302-5.6, using machine rollers.
 - a. Compaction by vehicular traffic is prohibited.
 - b. Compact areas inaccessible to rolling equipment with machine-powered tamper.
- J. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.10 SEAL COAT

A. Apply seal coat after surface course application, in accordance with manufacturer's recommendations.

- B. Apply seal coat to surface course and asphalt curbs in accordance with {\rs\#1}, Subsection 302-8.2.
- C. Add water to specified seal coat material. When air temperatures of 90 degrees F or more are encountered during application, consult manufacturer for recommendations.
- D. If pavement surface exhibits imperfections of roller marks, rock pockets, ridges or depressions as determined by the Architectt, the addition of sand aggregate to seal coat, and amounts thereof, shall be as recommended by the manufacturer.
- E. A second application shall be made after first coat has dried to the touch. When sand is added to the first seal coat, two additional coats without extra sand shall be applied.
- F. Allow seal coat to dry before permitting traffic or striping.

3.11 PAVEMENT REPAIR AND PAVING

- A. Preparation of existing pavement: Where indicated, remove loose asphaltic concrete, cleanout "pot holes" and cracks, remove dirt, oil and other foreign materials.
- B. Repair holes with full paving section as specified. Repair "alligatoring" with asphalt "skinpatch". Fill all cracks larger than 1/4 inch wide with asphalt emulsion slurry.
- C. Repair of Existing Surfacing:
 - 1. Fill cracks 1/2 inch wide and less with RS-1 emulsion and silica sand or other required material.
 - 2. Cracks larger than 1/2 inch wide shall be filled with Type C2 Asphalt Concrete as specified.
 - a. Cracks shall be filled to the level of adjacent surfacing.
 - 3. Where low areas, holes, or depressions occur in existing surfacing, repair with emulsified asphalt.
 - a. Install material, strike off the emulsified asphalt with a straightedge flush with adjoining surfacing.
 - b. Finish with a steel trowel, and after dehydration, compact by rolling or tamping.
- D. Tack Coat: Apply asphalt oil AR-4000 or AR-8000, as required for jobsite condition, at metered application rate of no less than a range from 0.2 to 0.3 gallons per square yard of fabric or as directed by manufacturer and to provide 100 percent fabric saturation and ample bonding for paving section.
- E. Fabric Reinforcement: Place fabric smooth side up in tack coat with 2 to 4 inch overlap. Handbroom to remove wrinkles. Apply addition tack coat to joints and between overlapped fabric layers.
- F. Overlay Asphalt: Place single course asphalt, 1-1/2 inch compacted thickness, in conformance with specified standards in this section.

3.12 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.
- C. Variation from True Elevation: Within 1/2 inch.

3.13 FIELD QUALITY CONTROL

- A. See Section 01 40 00 Quality Requirements, for general requirements for quality control.
- B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.
 - 1. Flood test entire area in presence of the Project Inspector.
 - 2. Entire area tested to be free of standing water or puddles.
- C. Pavement at all longitudinal joints shall have a Field Density of 95%, as described in SSPWC (Greenbook), Section 302-5.6.2.
 - 1. When the test results of the field cores are less than 95% Relative Compaction, remove a 1 foot wide section on each side of the longitudinal joint.
 - 2. Replace the removed pavement with an asphalt mix that meets the job specification at no additional cost to the District.
- D. Test: Flood test all paving to demonstrate positive drainage.
 - 1. Before acceptance, water test all pavements to ensure proper drainage as directed by the Inspector.
 - 2. The Contractor shall provide water for this purpose.
 - 3. Flooding Method: By water tank truck.
 - 4. Fill depressions where the water ponds to a depth of more than 1/8 inch; or the slope corrected to provide proper drainage.
 - 5. The edges of the fill shall be feathered and smoothed so that the joint between the fill and the original surface is invisible.
 - 6. No standing water shall remain 1-hour after test.
 - 7. Full compensation for complying with this requirement shall be considered as included in the Contract Unit Price for Asphalt Paving.

3.14 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 2 days or until surface temperature is less than 140 degrees F.
 - 1. After final rolling, prohibit all traffic on asphaltic concrete until mix has fully cooled and set. Minimum time, in all cases shall be 6 hours.

3.15 CLEANING

- A. After completion of paving operations, clean all existing and new improvements that have been soiled, especially by oil tracking from asphalt tanks or placement in general.
- B. For Substantial Completion review, broom clean and wash paving with hoses. Clean residue from landscaping installation.

END OF SECTION

SECTION 32 13 13 SITE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks, integral curbs, and general site applications.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 Joint Sealants: Sealing joints.
- B. Section 31 22 00 Grading: Preparation of site for paving.

1.03 REFERENCE STANDARDS

- A. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
- B. ACI 301 Specifications for Concrete Construction.
- C. ACI 305R Guide to Hot Weather Concreting.
- D. ACI 306R Guide to Cold Weather Concreting.
- E. ACI 318 Building Code Requirements for Structural Concrete.
- F. ADA Standards Americans with Disabilities Act (ADA) Standards for Accessible Design.
- G. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
- H. ASTM C1315 Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
- I. ASTM C33/C33M Standard Specification for Concrete Aggregates.
- J. ASTM C39/C39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- K. ASTM C94/C94M Standard Specification for Ready-Mixed Concrete.
- L. ASTM C150/C150M Standard Specification for Portland Cement.
- M. ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- N. ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete.
- O. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
- P. SSPWC (Greenbook) Standard Specifications for Public Works Construction.

1.04 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on joint filler, admixtures, and curing compound.

1.05 QUALITY ASSURANCE

- A. Lines and Levels: Established by State of California licensed Surveyor or registered Civil Engineer. Costs of surveying services shall be included in the Contract Sum.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

- A. Comply with applicable requirements of ACI 301.
- B. Concrete Sidewalks: 4,000 psi 28 day concrete, thickness as indicated on Drawings, minimum 4 inches, natural grey color Portland cement.
- C. SIte Concrete: 4,000 psi 28 day concrete, thickness as indicated on Drawings, minimum 4 inches, natural grey color Portland cement.

2.02 REGULATORY REQUIREMENTS:

- A. Conform to California Code of Regulations (CCR), Volume 2, Part 2, Chapters 18 and 19.
- B. Conform to California Building Code (CBC), Chapter 11B and ADA Standards for accessibility requirements.
 - 1. Portland cement concrete paving shall be stable, firm, and slip resistant and shall comply with CBC Sections 11B-302 and 11B-403.
 - 2. Concrete paving and concrete finishes along accessible routes of travel shall be at least as slip-resistant as that described as a medium salted finish for slopes of less than 6%, and slip resistant at slopes of 6% or greater; CBC 11B-403.2.
 - 3. Accessible routes of travel, walks, paving, and sidewalks, shall have a continuous common surface with minimum width of 48 inches per CBC 11B-403.5.1, not interrupted by steps or by abrupt changes in level.
 - a. CBC 11B-303.2 Vertical: Changes in level exceeding 1/4 inch high maximum shall be permitted to be vertical and without edge treatment.
 - b. CBC 11B-303.3 Beveled: Changes in level between 1/4 inch high minimum and 1/2 inch high maximum shall be beveled with a slope not steeper than 1:2.
 - 4. Surface cross slopes shall not exceed 2 percent on any accessible path of travel.
- C. Albedo Reflectance of Finish Concrete: 0.30, minimum.

2.03 FORM MATERIALS

- A. Wood form material, profiled to suit conditions.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
 - 1. Thickness: 1/2 inch.

2.04 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength; deformed billet steel bars; unfinished.
- B. Dowels: ASTM A615/A615M, Grade 60 60,000 psi yield strength; deformed billet steel bars; unfinished finish.
- C. Provide supports for reinforcement to position the bars at mid depth of the concrete. Plastic and/or steel chairs, and dobies are acceptable.

2.05 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Cement: ASTM C150/C150M, Sulfate Resistant Type V Portland cement, gray color.
- C. Fine and Coarse Mix Aggregates: ASTM C33/C33M.
- D. Water: Clean, and not detrimental to concrete.
- E. Chemical Admixtures: ASTM C494/C494M, Type A Water Reducing, Type C Accelerating, and Type G Water Reducing, High Range and Retarding.
 - 1. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

2.06 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1-D, Class A.
 - 1. Comply with all applicable air pollution requirements.
- B. Liquid Surface Sealer: <>
 - 1. Pentrating High solids, acrylic curing and sealing compound: Minimum 25% nonyellowing, acrylic solids curing compound; shall conform to ASTM C309 and/or ASTM C1315, Type I, Class A, VOC compliant.
 - a. Products:
 - 1) Laticrete International, Inc.; L&M Aquapel Plus: www.lmcc.com.
 - 2) L.M. Scofield Company (Sika Brand); Cureseal-W: www.scofield.com.
 - 3) W. R. Meadows Company; Intraguard: www.wrmeadows.com.
 - 4) Substitutions: See Section 01 6000 Product Requirements.
- C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
 - 1. Material: Closed-cell, non-absorbent, compressible polymer foam in sheet form.

2.07 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.

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- D. Concrete Properties:
 - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; As indicated on drawings.
 - 2. Water-Cement Ratio: Maximum 40 percent by weight, or according to indicated concrete strength..
 - 3. Maximum Slump: 4 inches.

2.08 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

A. See Section 32 11 23 for construction of base course for work of this Section, where indicated on Drawings.

3.03 PREPARATION

- A. Project Conditions:
 - 1. Water and Dust Control: Maintain control of concrete dust and water at all times. Do not allow adjacent planting areas to be contaminated.
- B. Moisten base to minimize absorption of water from fresh concrete.
- C. Notify Architect minimum 24 hours prior to commencement of concreting operations.

3.04 COORDINATION WITH EXISTING CONSTRUCTION

- A. Connection to Existing Construction: Where new concrete is doweled to existing construction, drill holes in existing concrete, insert steel dowels and pack with non-shrinking grout.
- B. Preparation of Existing Concrete: Prepare previously placed concrete by cleaning with steel brush and apply bonding agent in accordance with manufacturer's instructions.

3.05 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.06 REINFORCEMENT

- A. Place reinforcement at midheight of slabs-on-grade.
 - 1. Locate reinforcement to provide required cover by concrete. If not otherwise indicated on Drawings, provide concrete cover in compliance with ACI 318.

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- 2. Reinforcement Spacing: Space reinforcement as indicated on Drawings or in Standard Specifications, whichever is more stringent. If not indicated, maintain clear spacing of two times bar diameter but not less than 1-1/2 inch nor less than 1-1/3 times maximum size aggregate.
- 3. Reinforcement Supports: Provide load bearing pads under supports or provide precast concrete block bar supports.
- B. Interrupt reinforcement at contraction and expansion joints.
- C. Place dowels to achieve pavement and curb alignment as detailed.
 - 1. Secure tie dowels in place before depositing concrete.
 - 2. Provide No. 3 bars, 18 inch long at 24 inches O.C. for securing dowels where no other reinforcement is provided.

3.07 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.08 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
 - 1. Mixing: If batch plant is within travel time not exceeding maximum limits, transit mix concrete in accordance with ASTM C94/C94M. If travel time exceeds limits, provide alternative means for mixing and submit for review and approval.
- B. Do not place concrete when base surface is wet.
- C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.09 JOINTS

- A. Align curb, gutter, and sidewalk joints.
- B. Place 1/2 inch wide expansion joints at 20 foot intervals and to separate paving from vertical surfaces and other components and in pattern indicated.
 - 1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
 - 2. Secure to resist movement by wet concrete.
 - 3. If expansion joints are not indicated, conform to SSPWC (Greenbook) and standard details and specifications of authorities having jurisdiction.
- C. Provide scored joints.
 - 1. Tooled Joints: 1-inch deep by 3/16-inch wide tooled joints with 1/8-inch radius corners.
 - 2. At 5 feet intervals for pedestrian paving.

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- 3. Between sidewalks and curbs.
- 4. Between curbs and pavement.
- D. Provide keyed joints as indicated.
- E. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.
- F. Refer to Architectural, Landscape and Civil Drawings for additional information and joint locations.

3.10 FINISHING

- A. Sidewalk Paving: Medium broom, texture perpendicular to pavement direction with troweled and radiused edge.
- B. Curbs and Gutters: Light broom, texture parallel to pavement direction.
- C. Specific Finishes: Where indicated on Drawings.
 - 1. Concrete Paving Finish: ACI 301, two-step trowel finish, followed after surface has achieved initial set by flooding of surface and light rubbing with bristle brush so that concrete fines are exposed slightly.
 - a. Finish surface less than 6 percent shall receive medium broom finish resembling medium grit sandpaper. CBC 11B-403 and 11B-302.1.
 - b. Finish surface greater than 6 percent shall receive heavy broom finish. CBC 11B-403 and 11B-302.1.
 - c. Surfaces shall have static coefficients of friction of 1.3 to 1.6 (dry) and 1.2 to 1.4 (wet) when field tested in accordance with ASTM D2047.
- D. Place sealer on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.11 TOLERANCES

- A. ACI 301, Class B, except paving in public rights-of-way shall conform to SSPWC (Greenbook).
- B. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- C. Maximum Variation From True Position: 1/4 inch.
- D. Control-joint grooves and other conspicuous lines:
 - 1. 1/4 inch maximum in any 20 feet.
 - 2. 1/2 inch maximum in any 40 feet.
- E. Variation in Cross-Sectional Thickness of Slabs:
 - 1. Minus 1/4 inch.
 - 2. Plus 1/2 inch.
- F. Coefficient of Friction for Finish Surface:
 - 1. Pedestrian Vehicular Finish Surface: Minimum 0.6 static coefficient of friction is required for all concrete paving finish surface. All concrete paving surfaces to be broom finish.
 - 2. Ramps: Minimum 0.8 static coefficient of friction is required for all concrete paving finish surfaces on ramps. All concrete paving surfaces on ramps to be broom finish.

3.12 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 Quality Requirements.
 - 1. Provide free access to concrete operations at project site and cooperate with appointed firm.
 - 2. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
 - 3. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
- B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 75 cu yd or less of each class of concrete placed.
 - 1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
 - 2. Perform one slump test for each set of test cylinders taken.
- C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.13 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
 - 1. Provide lumber ramping and plywood covering where curbs and gutters are subject to vehicular and equipment traffic during construction.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION

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2019 CBC

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A (2019 CBC).

****NOTE:** Undefined section and table references found in this document are from the CBC, or California Building Code.

1. TYPE	2. PERFORMED BY
Continuous – Indicates that a continuous special inspection is required	GE – Indicates that the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative.
Periodic – Indicates that a periodic special inspection is required	LOR – Indicates that the test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335.
	PI – Indicates that the special inspection may be performed by a project inspector when specifically approved by DSA.
Test – Indicates that a test is required	SI – Indicates that the special inspection shall be performed by an appropriately qualified/approved special inspector.

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Geotechnical Reports: Project has a geotechnical report, or CDs indicate soils special inspection is required by GE

	1. GENERAL:	Table 1705A.6		
	Test or Special Inspection	Туре	Performed By	Code References and Notes
V	 a. Verify that: Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations. Foundation excavations are extended to proper depth and have reached proper material. Materials below footings are adequate to achieve the design bearing capacity. 	Periodic	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)

2. SOIL COMPACTION AND FILL:	Table 1705A.6		
Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Perform classification and testing of fill materials.	Test	LOR*	* Under the supervision of the geotechnical engineer.
b . Verify use of proper materials, densities and inspect lift thicknesses, placement and compaction during placement of fill.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (Refer to specific items identified in the Appendix for exemptions where soils SI and testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil SI and test reporting requirements for the exempt items.)

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	c. Compaction testing.	Test		* Under the supervision of the geotechnical engineer. (Refer to specific items identified in the Appendix for exemptions where soils testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil test reporting requirements for the exempt items.)
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3. DRIVEN DEEP FOUNDATIONS (PILES):	Table 1705A.7		
Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Verify pile materials, sizes and lengths comply with the requirements.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
b. Determine capacities of test piles and conduct additional load tests as required.	Test	LOR*	* Under the supervision of the geotechnical engineer.
c. Inspect driving operations and maintain complete and accurate records for each pile.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
d. Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
e. Steel piles.	Provide tests and inspections per STEEL section below.		
f. Concrete piles and concrete filled piles.	Provide tests and inspections per CONCRETE section below.		

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	g. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	*	*	* As defined on drawings or specifications.
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4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):	Table 1705A.8	Table 1705A.8			
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)		
b. Verify pier locations, diameters, plumbness, bell diameters (if applicable), lengths and embedment into bedrock (if applicable); record concrete or grout volumes.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)		
c. Confirm adequate end strata bearing capacity.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)		
d. Concrete piers.	Provide tests and inspections per CONCRETE section below.				

5. RETAINING WALLS:					
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a. Placement, compaction and inspection of backfill.	Continuous		1705A.6.1. * By geotechnical engineer or his or her qualified representative. (See Section 2 above).		

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b. Placement of soil reinforcement and/or drainage devices.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
c. Segmental retaining walls; inspect placement of units, dowels, connectors, etc.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. See DSA IR 16-3.
d. Concrete retaining walls.	Provide tests and inspections per CONCRETE section below.		
e. Masonry retaining walls.	Provide tests and inspections per MASONRY section below.		

6. OTHER SOILS:			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Soil Improvements	Test	GE*	Submit a comprehensive report documenting final soil improvements constructed, construction observation and the results of the confirmation testing and analysis to CGS for final acceptance. * By geotechnical engineer or his or her qualified representative.
b. Inspection of Soil Improvements	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
C.			

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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	7. CAST-IN-PLACE CONCRETE				
	Test or Special Inspection	Туре	Performed By	Code References and Notes	
Mate	rial Verification and Testing:				
V	a. Verify use of required design mix.	Periodic	SI	Table 1705A.3 Item 5, 1910A.1.	
V	b. Identifiy, sample, and test reinforcing steel.	Test	LOR	1910A.2; ACI 318-14 Section 26.6.1.2; DSA IR 17-10. (See Appendix for exemptions.)	
	c. During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	Table 1705A.3 Item 6; ACI 318-14 Sections 26.5 & 26.12.	
V	d. Test concrete (f'c).	Test	LOR	1905A.1.15 ; ACI 318-14 Section 26.12.	
Inspe	ction:				
	e. Batch plant inspection: Eliminated	See Notes	SI	Default of 'Continuous' per 1705A.3.3 . If approved by DSA, batch plant inspection may be reduced to ' Periodic' subject to requirements in Section 1705A.3.3.1 , or eliminated per 1705A.3.3.2 . (See Appendix for exemptions.)	
	f. Welding of reinforcing steel.	Provide spec	Provide special inspection per STEEL, Category 19.1(d) & (e) and/or 19.2(g) & (h) below.		

8. PRESTRESSED / POST-TENSIONED CONCRETE (in addition to Cast-in-Place Concrete tests and inspections):

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Sample and test prestressing tendons and anchorages.	Test	LOR	1705A.3.4, 1910A.3
b. Inspect placement of prestressing tendons.	Periodic	SI	1705A.3.4, Table 1705A.3 Items 1 & 9.
c. Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	Periodic	SI	Table 1705A.3 Item 11. Special inspector to verify specified concretestrength test prior to stressing.
d. Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	Continuous	SI	1705A.3.4, Table 1705A.3 Item 9; ACI 318-14 Section 26.13

9. PRECAST CONCRETE (in addition to Cast-in-Place Concrete tests and inspections):					
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a. Inspect fabrication of precast concrete members.	Continuous	SI	ACI 318-14 Section 26.13.		
b. Inspect erection of precast concrete members.	Periodic	SI*	Table 1705A.3 Item 10. * May be performed by PI when specifically approved by DSA.		

10. SHOTCRETE (in addition to Cast-in-Place Concrete tests and inspections):				
Test or Special Inspection	Туре	Performed By	Code References and Notes	

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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a. Inspect shotcrete placement for proper application techniques.	Continuous	SI	1705A.19, Table 1705A.3 Item 7, 1908A.6, 1908A.7, 1908A.8, 1908A.9, 1908A.11, 1908A.12. See ACI 506.2-13 Section 3.4, ACI 506R-16.
b. Sample and test shotcrete (f ^r c).	Test	LOR	1908A.5, 1908A.10.

	11. POST-INSTALLED ANCHORS:			
	Test or Special Inspection	Туре	Performed By	Code References and Notes
	a . Inspect installation of post-installed anchors	See Notes	SI*	1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic) , 1705A.3.8 (See Appendix for exemptions). ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA.
V	b. Test post-installed anchors.	Test	LOR	1910A.5. (See Appendix for exemptions.)

12. OTHER CONCRETE:			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a.			

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	17. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES					
Material Verification and Testing:						
	Test or Special Inspection	Туре	Performed By	Code References and Notes		
	 a. Verify identification of all materials and: Mill certificates indicate material properties that comply with requirements. Material sizes, types and grades comply with requirements. 	Periodic	*	Table 1705A.2.1 Item 3a3c. 2202A.1; AISI S100-16 Section A3.1 & A3.2,AISI S240-15 Section A3 & A5, AISI S220-15 Sections A4 & A6. * By specialinspector or qualified technician when performed off-site.		
\checkmark	b. Test unidentified materials	Test	LOR	2202A.1.		
\checkmark	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.		
Inspe	ection:					
\checkmark	d . Verify and document steel fabrication per DSA-approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (1705A.2.4).		

	18. HIGH-STRENGTH BOLTS: RCSC 2014				
Material Verification and Testing of High-Strength Bolts, Nuts and Washers:					
	Test or Special Inspection	Туре	Performed By	Code References and Notes	
	a . Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	Periodic	SI	Table 1705A.2.1 Items 1a & 1b, 2202A.1; AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.	

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16

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V	b. Test high-strength bolts, nuts and washers.	Test	LOR	Table 1705A.2.1 Item 1c, 2213A.1; RCSC 2014 Section 7.2; DSA IR 17-8.
Inspe	ction of High-Strength Bolt Installation:			
7	c. Bearing-type ("snug tight") connections.	Periodic	SI	Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.
	d. Pretensioned and slip-critical connections.	*	SI	Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9. * "Continuous" or "Periodic" depends on the tightening method used.

19. WELDING:	1705A.2.5, Table 1705A.2.1 Items 4 & 5; AWS D1.1 and AWS D1.8 for structural steel; AWS			
	D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-			
	3 (See Appendix for exemptions.)			

Verification of Materials, Equipment, Welders, etc.:

	Test or Special Inspection	Туре	Performed By	Code References and Notes
V	a. Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	Periodic	SI	DSA IR 17-3.
V	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
V	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.

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	19.1 SHOP WELDING:				
	Test or Special Inspection	Туре	Performed By	Code References and Notes	
\checkmark	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1 4; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.	
V	b. Inspect single-pass fillet welds $\leq 5/16^{"}$, floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6 ; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.	
	c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.1 ; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.	
	d . Verification of reinforcing steel weldability other than ASTM A706.	Periodic	SI	1705A.3.1 ; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.	
	e. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.	

19.2 FIELD WELDING:				
Test or Special Inspection Type Performed By Code References and Notes				
a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1 4; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.	
b. Inspect single-pass fillet welds $\leq 5/16''$.	Periodic	SI	Table 1705A.2.1 Item 5a.5; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.	

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c. Inspect end-welded studs (ASTM A-108) installation (including bend test).	Periodic	SI	2213A.2 ; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
d. Inspect floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.6; AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
e. Inspect welding of structural cold-formed steel.	Periodic	SI*	1705A.2.5; AWS D1.3; DSA IR 17-3. The quality control provisions of AISI S240-15 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
f. Inspect welding of stairs and railing systems.	Periodic	SI*	1705A.2.1 ; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
g . Verification of reinforcing steel weldability.	Periodic	SI	1705A.3.1 ; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
h. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

20. NONDESTRUCTIVE TESTING: 1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16				
Test or Special Inspection	Туре	Performed By	Code References and Notes	
a. Ultrasonic	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.	

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b . Magnetic Particle	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
C.	Test	LOR	

21. STEEL JOISTS AND TRUSSES: 1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	Continuous	SI	1705A.2.3, Table 1705A.2.3; AWS D1.1; DSA IR 22-3 for steel joists only. 1705A.2.4; AWS D1.3 for cold-formed steel trusses.

22. SPRAY APPLIED FIRE-PROOFING: 1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16				
Test or Special Inspection	Туре	Performed By	Code References and Notes	
a. Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	Periodic	SI	1705A.14.	
b. Test bond strength.	Test	LOR	1705A.14.6.	

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Image: C. Test density. Test LOR 1705A.14.5.	
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	23. ANCHOR BOLTS AND ANCHOR RODS:			
	Test or Special Inspection	Туре	Performed By	Code References and Notes
V	a. Anchor Bolts and Anchor Rods	Test	LOR	Sample and test anchor bolts and anchor rods not readily identifiable per procedures noted in DSA IR 17-11.
V	b. Threaded rod not used for foundation anchorage.	Test	LOR	Sample and test threaded rods not readily identifiable per procedures noted in DSA IR 17-11.

Other Steel			
Test or Special Inspection	51	Performed By	Code References and Notes
a.			

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Exempt items given in DSA IR A-22 or the 2019 CBC (including DSA amendments) and those items identified below with a check mark by the design professional are NOT subject to DSA requirements for the structural tests / special inspections noted. Items marked as exempt shall be identified on the approved construction documents. The project inspector shall verify all construction complies with the approved construction documents.

SOILS:
1. Deep foundations acting as a cantilever footing designed based on minimum allowable pressures per CBC Table 1806A.2 and having no geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

CONCRETE/MASONRY:
1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding") given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."
2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.

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	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1.16. Refer to construction documents for specific exemptions accordingly for each applicable wall condition.
	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.
	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

Welding:
1. Solid-clad and open-mesh gates with maximum leaf span or rolling section for rolling gates of 10' and apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections 19, 19.1 and/or 19.2 of listing above).
5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections 19, 19.1 and/or 19.2 of listing above).

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6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 located in the Steel/Aluminum category).
7. Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) \leq 4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

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Name of Architect or Engineer in general responsible charge:		
Name of Structural Engineer (When structural design has bee	n delegated).	
	n delegated).	
Brian T. Dean		
Signature of Architect or Structural Engineer:	Date:	
Brian Deam	07/14/2022	

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.

DSA STAMP						
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT						
APP: 04-121019 INC: REVIEWED FOR						
SS 🗹 FLS 🗹 ACS 🗹						
DATE: 07/15/2022						

DSA 103-19: LIST OF REQUIRED VERIFIED REPORTS, CBC 2019

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1. Soils Testing and Inspection: Geotechnical Verified Report Form DSA 293

2. Structural Testing and Inspection: Laboratory Verified Report Form DSA 291

3. Post-installed Anchors: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

4. DSA 292

5. High-Strength Bolt Installation Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

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2019 CBC

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A (2019 CBC).

**NOTE: Undefined section and table references found in this document are from the CBC, or California Building Code.

1. TYPE	2. PERFORMED BY
Continuous – Indicates that a continuous special inspection is required	GE – Indicates that the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative.
Periodic – Indicates that a periodic special inspection is required	LOR – Indicates that the test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335.
	PI – Indicates that the special inspection may be performed by a project inspector when specifically approved by DSA.
Test – Indicates that a test is required	SI – Indicates that the special inspection shall be performed by an appropriately qualified/approved special inspector.

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Geotechnical Reports: Project has a geotechnical report, or CDs indicate soils special inspection is required by GE

	1. GENERAL:	Table 1705A.	6	
	Test or Special Inspection	Туре	Performed By	Code References and Notes
V	 a. Verify that: Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations. Foundation excavations are extended to proper depth and have reached proper material. Materials below footings are adequate to achieve the design bearing capacity. 	Periodic	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)

	2. SOIL COMPACTION AND FILL:	Table 1705A.6		
	Test or Special Inspection	Туре	Performed By	Code References and Notes
7	a. Perform classification and testing of fill materials.	Test	LOR*	* Under the supervision of the geotechnical engineer.
	b. Verify use of proper materials, densities and inspect lift thicknesses, placement and compaction during placement of fill.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (Refer to specific items identified in the Appendix for exemptions where soils SI and testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil SI and test reporting requirements for the exempt items.)

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C. Compa	ction testing.	Test		* Under the supervision of the geotechnical engineer. (Refer to specific items identified in the Appendix for exemptions where soils testing may be conducted under the supervision of a geotechnical engineer or LOR's engineering manager. In such cases, the LOR's form DSA 291 shall satisfy the soil test reporting requirements for the exempt items.)
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3. DRIVEN DEEP FOUNDATIONS (PILES):	Table 1705A.7		
Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Verify pile materials, sizes and lengths comply with the requirements.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
b. Determine capacities of test piles and conduct additional load tests as required.	Test	LOR*	* Under the supervision of the geotechnical engineer.
c. Inspect driving operations and maintain complete and accurate records for each pile.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
d . Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	Continuous GE* * By geotechnical engineer or his or her qualified representative.		
e. Steel piles.	Provide tests and inspections per STEEL section below.		
f. Concrete piles and concrete filled piles.	Provide tests and inspections per CONCRETE section below.		

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	g. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	*	*	* As defined on drawings or specifications.
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	4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):	Table 1705A.8			Table 1705A.8	
	Test or Special Inspection	Туре	Performed By	Code References and Notes		
V	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)		
	b. Verify pier locations, diameters, plumbness, bell diameters (if applicable), lengths and embedment into bedrock (if applicable); record concrete or grout volumes.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)		
V	c. Confirm adequate end strata bearing capacity.	Continuous GE* * By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)				
V	d. Concrete piers.	Provide tests and inspections per CONCRETE section below.				

5. RETAINING WALLS:						
Test or Special Inspection	Туре	Performed By	Code References and Notes			
a. Placement, compaction and inspection of backfill.	Continuous	GE*	1705A.6.1. * By geotechnical engineer or his or her qualified representative. (See Section 2 above).			

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b. Placement of soil reinforcement and/or drainage devices.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
c. Segmental retaining walls; inspect placement of units, dowels, connectors, etc.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. See DSA IR 16-3.
d. Concrete retaining walls.	Provide tests and inspections per CONCRETE section below.		
e. Masonry retaining walls.	Provide tests and inspections per MASONRY section below.		

6. OTHER SOILS:			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Soil Improvements	Test	GE*	Submit a comprehensive report documenting final soil improvements constructed, construction observation and the results of the confirmation testing and analysis to CGS for final acceptance. * By geotechnical engineer or his or her qualified representative.
b. Inspection of Soil Improvements	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
C.			

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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	7. CAST-IN-PLACE CONCRETE				
	Test or Special Inspection	Туре	Performed By	Code References and Notes	
Mate	rial Verification and Testing:				
V	a . Verify use of required design mix.	Periodic	SI	Table 1705A.3 Item 5, 1910A.1.	
V	b. Identifiy, sample, and test reinforcing steel.	Test	LOR	1910A.2; ACI 318-14 Section 26.6.1.2; DSA IR 17-10. (See Appendix for exemptions.)	
	c. During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	Table 1705A.3 Item 6; ACI 318-14 Sections 26.5 & 26.12.	
V	d. Test concrete (f'c).	Test	LOR	1905A.1.15 ; ACI 318-14 Section 26.12.	
Inspe	ction:				
	e. Batch plant inspection: Continuous	See Notes	SI	Default of 'Continuous' per 1705A.3.3 . If approved by DSA, batch plant inspection may be reduced to ' Periodic' subject to requirements in Section 1705A.3.3.1 , or eliminated per 1705A.3.3.2 . (See Appendix for exemptions.)	
	f. Welding of reinforcing steel.	Provide spec	Provide special inspection per STEEL, Category 19.1(d) & (e) and/or 19.2(g) & (h) below.		

8. PRESTRESSED / POST-TENSIONED CONCRETE (in addition to Cast-in-Place Concrete tests and inspections):

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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Test or Special Inspection	Туре	Performed By	Code References and Notes
a. Sample and test prestressing tendons and anchorages.	Test	LOR	1705A.3.4, 1910A.3
b. Inspect placement of prestressing tendons.	Periodic	SI	1705A.3.4, Table 1705A.3 Items 1 & 9.
c. Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	Periodic	SI	Table 1705A.3 Item 11. Special inspector to verify specified concrete strength test prior to stressing.
d. Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	Continuous	SI	1705A.3.4, Table 1705A.3 Item 9; ACI 318-14 Section 26.13

	9. PRECAST CONCRETE (in addition to Cast-in-Place Concrete tests and inspections):						
Test or Special Inspection Type Performed By Code References and Notes							
	a. Inspect fabrication of precast concrete members.	Continuous	SI	ACI 318-14 Section 26.13.			
	b. Inspect erection of precast concrete members.	Periodic	SI*	Table 1705A.3 Item 10. * May be performed by PI when specifically approved by DSA.			

10. SHOTCRETE (in addition to Cast-in-Place Concrete tests and inspections):					
Test or Special Inspection	Туре	Performed By	Code References and Notes		

Table 1705A.3; ACI 318-14 Sections 26.12 & 26.13

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a. Inspect shotcrete placement for proper application techniques.	Continuous		1705A.19, Table 1705A.3 Item 7, 1908A.6, 1908A.7, 1908A.8, 1908A.9, 1908A.11, 1908A.12. See ACI 506.2-13 Section 3.4, ACI 506R-16.
b. Sample and test shotcrete (f ^r c).	Test	LOR	1908A.5, 1908A.10.

	11. POST-INSTALLED ANCHORS:			
	Test or Special Inspection	Туре	Performed By	Code References and Notes
	a . Inspect installation of post-installed anchors	See Notes	SI*	1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic) , 1705A.3.8 (See Appendix for exemptions). ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA.
V	b. Test post-installed anchors.	Test	LOR	1910A.5. (See Appendix for exemptions.)

12. OTHER CONCRETE:			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a.			

1705A.4; TMS 602-16, Tables 3 and 4.

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	13. STRUCTURAL MASONRY: 2000 psi					
	Test or Special Inspection	Туре	Performed By	Code References and Notes		
Mater	rial Verification and Testing: (See Appendix for exemptions.)	•				
	a. Mill certificate indicatescompliance with requirements forreinforcement, anchors, ties, fasteners and metal accessories. See item 7b for identification, sampling and testing of reinforcing steel.	Periodic	SI*	2103A.4 ; TMS 602-13 Article 1.5B.2 & 2.4. * To be performed by qualified LOR representative. Applicable testing by LOR. See IR 17-10.16 for unidentified reinforcing steel.		
✓	b. Producer's certificate of compliance for masonry units, mortar and grout materials.	Test	LOR	1705A.4, 2103A.2.1, 2103A.3, 2103A.5 ; TMS 602-16 Articles 2.1, 2.2,2.6A and 2.6B, and Table 6 footnote 3.		
	c. Test masonry (f'm).	Test	LOR	1705A.4. For Unit Strength: 2105A.3 (2114.6.1+); TMS 602-16 Articles 1.4B.2 ,1.5B.1 & 1.5B.2. For Prism (required when f'm > 2000 psi):2105A.2 ; TMS 602-16 Articles 1.4B.3, 1.4B.4, 1.5B.1 & 1.5B.2.		
V	d. Verify proportions of siteprepared, premixed or preblended mortar and grout.	Periodic	SI	TMS 602-16 Table 3 Item 5, Table 4 Item 1a & 2d.		
\checkmark	e. Test core-drilled samples.	Test	LOR	2105A.4. (See Appendix for exemptions.)		
Inspe	ction: (See Appendix for exemptions.)	1	1			
	f. Inspect preparation of prisms.	Continuous	SI	TMS 602-16 Articles 1.4.B.3 & 1.4.B.4 & Table 4 Item 4.		
	g. Verify size, location and condition of all dowels, construction supporting masonry, etc.	Periodic	SI			

1705A.4; TMS 602-16, Tables 3 and 4.

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✓	h. Verify size, grade and type of reinforcement and anchor bolts.	Periodic	SI	TMS 602-16 Table 4 Item 1c.
	i. Welding of reinforcing steel.	TMS 602-16 Tal & (h) below.	ole 4 Item 3e.	Provide special inspection per STEEL, Category 19.1(d) & (e) and/or 19.2(g)
V	j. Inspect placement of reinforcement and connectors.	Continuous	SI	TMS 602-16 Table 4 Item 2c.
V	k. Inspect placement of masonry units and construction of mortar joints.	Periodic	SI	TMS 602-16 Table 4 Item 3b.
	 I. Verify preparation, construction and protection of masonry during cold weather (temperature below 40° F) or hot weather (temperature above 90° F). 	Periodic	SI*	TMS 602-16 Table 4 Item 3f. * May be performed by the project inspector when specifically approved by DSA.
V	m. Inspect type, size and location of anchors and all other items to embedded in masonry including other details of anchorage of masonry to structural members, frames and other construction.	Continuous	SI	TMS 602-16 Table 4 Item 3d.
\checkmark	n. Inspect grout space prior to placement of grout.	Continuous	SI	TMS 602-16 Table 4 Item 2a.

14. VENEER OR GLASS BLOCK PARTITIONS: 1705A.4.1; TMS 602-16 Tables 3 and 4.				
Test or Special Inspection	Туре	Performed By	Code References and Notes	
a. Verify proportions of siteprepared mortar and grout and/or verify certification of premixed mortar.	Periodic	SI	TMS 602-16 Table 3 Item 5 and Table 4 Items 1a & 2d.	

1705A.4; TMS 602-16, Tables 3 and 4.

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b. Inspect placement of units and construction of mortar joints.	Periodic	SI	TMS 602-16 Table 4 Item 3b.
c. Inspect placement of reinforcement, connectors and anchors.	Periodic	SI	TMS 602-16 Table 4 Item 2c.
d. Inspect type, size and location of anchors and all other items to be embedded in masonry including details of anchorage of masonry to structural members, frames and other construction.	Periodic	SI	TMS 602-16 Table 4 Item 3d.
e. Verify preparation, construction and protection of masonry during cold weather (temperature below 40° F) or hot weather (above 90° F).	Periodic	SI*	TMS 602-16 Table 4 Item 3f. * May be performed by the project inspector when specifically approved by DSA.
f. Test veneer bond strength	Test	LOR	1410.2.1 ; TMS 402 Article 12.3.2.4. (Field constructed mock-up laboratory tested in accordance with ASTM C482).

	15. POST-INSTALLED ANCHORS IN MASONRY:				
	Test or Special Inspection	Туре	Performed By	Code References and Notes	
	a. Inspect installation of postinstalled anchors	See Notes	SI*	1617A.1.19, 1705A.4, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic) ; ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA. (See Appendix for exemptions.)	
V	b. Test post-installed anchors.	Test	LOR	1705A.4, 1910A.5. (See Appendix for exemptions.)	

1705A.4; TMS 602-16, Tables 3 and 4.

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16. OTHER MASONRY:			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a.			

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	17. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES						
Mate	Material Verification and Testing:						
	Test or Special Inspection	Туре	Performed By	Code References and Notes			
	 a. Verify identification of all materials and: Mill certificates indicate material properties that comply with requirements. Material sizes, types and grades comply with requirements. 	Periodic	*	Table 1705A.2.1 Item 3a3c. 2202A.1; AISI S100-16 Section A3.1 & A3.2,AISI S240-15 Section A3 & A5, AISI S220-15 Sections A4 & A6. * By specialinspector or qualified technician when performed off-site.			
\checkmark	b. Test unidentified materials	Test	LOR	2202A.1.			
\checkmark	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.			
Inspe	ection:						
\checkmark	d . Verify and document steel fabrication per DSA-approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (1705A.2.4).			

	18. HIGH-STRENGTH BOLTS: RCSC 2014					
Mate	Material Verification and Testing of High-Strength Bolts, Nuts and Washers:					
	Test or Special Inspection	Туре	Performed By	Code References and Notes		
V	a. Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	Periodic	SI	Table 1705A.2.1 Items 1a & 1b, 2202A.1; AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.		

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16

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\checkmark	b. Test high-strength bolts, nuts and washers.	Test	LOR	Table 1705A.2.1 Item 1c, 2213A.1; RCSC 2014 Section 7.2; DSA IR 17-8.			
Inspe	Inspection of High-Strength Bolt Installation:						
√	c. Bearing-type ("snug tight") connections.	Periodic	SI	Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.			
	d. Pretensioned and slip-critical connections.	*	SI	Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9. * "Continuous" or "Periodic" depends on the tightening method used.			

19. WELDING:	1705A.2.5, Table 1705A.2.1 Items 4 & 5; AWS D1.1 and AWS D1.8 for structural steel; AWS		
	D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-		
	3 (See Appendix for exemptions.)		

Verification of Materials, Equipment, Welders, etc.:

	Test or Special Inspection	Туре	Performed By	Code References and Notes
V	a. Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	Periodic	SI	DSA IR 17-3.
V	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
V	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.

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19.1 SHOP WELDING:				
Test or Special Inspection	Туре	Performed By	Code References and Notes	
a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1 4; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.	
b. Inspect single-pass fillet welds $\leq 5/16^{"}$, floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6 ; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.	
c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.1 ; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.	
d. Verification of reinforcing steel weldability other than ASTM A706.	Periodic	SI	1705A.3.1 ; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.	
e. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.	

	19.2 FIELD WELDING:				
	Test or Special Inspection Type		e Performed Code References and Notes By		
V	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1 4; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.	
V	b. Inspect single-pass fillet welds $\leq 5/16''$.	Periodic	SI	Table 1705A.2.1 Item 5a.5 ; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.	

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c. Inspect end-welded studs (ASTM A-108) installation (including bend test).	Periodic	SI	2213A.2 ; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
d. Inspect floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.6; AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
e. Inspect welding of structural cold-formed steel.	Periodic	SI*	1705A.2.5; AWS D1.3; DSA IR 17-3. The quality control provisions of AISI S240-15 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
f. Inspect welding of stairs and railing systems.	Periodic	SI*	1705A.2.1 ; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
g. Verification of reinforcing steel weldability.	Periodic	SI	1705A.3.1 ; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
h. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

20. NONDESTRUCTIVE TESTING: 1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16						
Test or Special Inspection	Туре	Performed By	Code References and Notes			
a. Ultrasonic	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.			

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b. Magnetic Particle	Test		1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; ANSI/ ASNT CP-189, SNT-TC-1A; AWS D1.1, AWS D1.8; DSA IR 17-2.
C.	Test	LOR	

21. STEEL JOISTS AND TRUSSES: 1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16					
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a. Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	Continuous	SI	1705A.2.3, Table 1705A.2.3; AWS D1.1; DSA IR 22-3 for steel joists only. 1705A.2.4; AWS D1.3 for cold-formed steel trusses.		

22. SPRAY APPLIED FIRE-PROOFING: 1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-16					
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a. Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	Periodic	SI	1705A.14.		
b. Test bond strength.	Test	LOR	1705A.14.6.		

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c. Test density.	Test	LOR	1705A.14.5.
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	23. ANCHOR BOLTS AND ANCHOR RODS:					
	Test or Special Inspection	Туре	Performed By	Code References and Notes		
V	a. Anchor Bolts and Anchor Rods	Test	LOR	Sample and test anchor bolts and anchor rods not readily identifiable per procedures noted in DSA IR 17-11.		
V	b. Threaded rod not used for foundation anchorage.	Test	LOR	Sample and test threaded rods not readily identifiable per procedures noted in DSA IR 17-11.		

Other Steel					
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a.					

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	24. PREFABRICATED WOOD STRUCTURAL ELEMENTS: Section 1705A.5						
	Test or Special Inspection	Туре	Performed By	Code References and Notes			
V	a. Inspect fabrication of structural glued-laminated timber.*	Continuous	SI	* See 1705A.5.4 for exceptions			
	b. Inspect fabrication of manufactured open-web trusses.	Continuous	SI	1705A.5.5 ; DSA IR 23-8.			
	c. Inspect fabrication of manufactured metal-plate- connected trusses.	Continuous	SI	1705A.5, 1705A.5.2 ; DSA IR 23-4.			

25. OTHER Wood:			
Test or Special Inspection	Туре	Performed By	Code References and Notes
a.			

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26. OTHER:					
Test or Special Inspection	Туре	Performed By	Code References and Notes		
a. Load test for identified product(s):	Test	LOR	1709A.2, 1709A.3 . Testing is not required for: 1) a product with a valid evaluation service report per DSA IR A-5, or 2) a product that can be justified by structural calculation.		
b. Installation torque for non-HS bolts	Continuous	SI*	Applicable to communication towers identified as Essential Service Facility Projects (ESFP). Calibrated wrench use required, verified by SI during installation. DSA Policy PL 18-01: Communication Towers, Poles and Buildings Utilized by State Agencies for Essential Services Communications.*EXCEPTION: Non-ESFP may use PI without need for notification to DSA.		
C.					

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Exempt items given in DSA IR A-22 or the 2019 CBC (including DSA amendments) and those items identified below with a check mark by the design professional are NOT subject to DSA requirements for the structural tests / special inspections noted. Items marked as exempt shall be identified on the approved construction documents. The project inspector shall verify all construction complies with the approved construction documents.

SOILS:
1. Deep foundations acting as a cantilever footing designed based on minimum allowable pressures per CBC Table 1806A.2 and having no geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill.

CONCRETE/MASONRY:
1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding") given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding."
2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.

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	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1.16. Refer to construction documents for specific exemptions accordingly for each applicable wall condition.
	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.
	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

Welding:
1. Solid-clad and open-mesh gates with maximum leaf span or rolling section for rolling gates of 10' and apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections 19, 19.1 and/or 19.2 of listing above).
5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections 19, 19.1 and/or 19.2 of listing above).

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6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for section 19, 19.1 and/or 19.2 located in the Steel/Aluminum category).
7. Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) \leq 4' above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

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Name of Architect or Engineer in general responsible charge	:				
Name of Structural Engineer (When structural design has been delegated):					
Larry R. Kaprielian (KNA Structural Eng	ineers) S-2795				
Signature of Architect or Structural Engineer:	Date:	02/24/2022			

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.

DSA STAMP			
IDENTIFICATION STAMP DIV. OF THE STATE ARCHITECT			
APP: 04-120895 INC: REVIEWED FOR SS ☑ FLS ☑ ACS ☑ DATE: 06/27/2022			

DSA 103-19: LIST OF REQUIRED VERIFIED REPORTS, CBC 2019

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1. Soils Testing and Inspection: Geotechnical Verified Report Form DSA 293

2. Structural Testing and Inspection: Laboratory Verified Report Form DSA 291

3. Concrete Batch Plant Inspection: Laboratory Verified Report Form DSA 291

Post-installed Anchors: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

5. Masonry Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

6. Shop Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

7. Field Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

8. High-Strength Bolt Installation Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

9. Glu-Lam Wood Fabrication Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

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Official Proof of Publication (COPY OF ADVERTISEMENT)

C. W. Driver, LLC Requesting Bid Submissions From DVBE Subcontractors, Suppliers and Vendors

Project: Grossmont HS Kitchen and Weight Room

Bid Date: August 25, 2022 at 2:00 pm

Project consists of: Demolition of the existing cafeteria, weight room buildings, stadium bleachers and select site hardscape. The new work features a new cafeteria building and weight room building. The weight room building includes a new weight room, sports medicine room, office space, restrooms, classroom space and storage. In addition to the featured new buildings, the project includes new home bleachers and press box, a new ticket booth, underground utility improvements and site work upgrades. Project is located at Grossmont High School, 1100 Murray Dr., El Cajon, CA, 92020.

To obtain bid documents please contact: Leanne Loera, <u>lloera@cwdriver.com</u> Phone 619-696-5100 Fax 619-696-5110

Contracting Agency: Grossmont Union High School District Bid Bonds, Payment and Performance Bonds are required Prevailing Wage C.W. Driver, LLC is an equal opportunity employer

The Date(s) of Publication Tuesday, July 19th, 2022 through Friday, July 29th, 2022

I certify (declare) under penalty of perjury that the foregoing is true and correct. The above advertisement was published statewide in W/M/S/DVBE CONTRACT & CONSTRUCTION NEWS

T Gieseman, Editor W/M/S/DVBE CONTRACT & CONSTRUCTION NEWS

the *THOMAS* BID REGISTER A BI-WEEKLY TRADE PUBLICATION

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I certify (declare) under penalty of perjury that the foregoing is true and correct. The above advertisement to be published statewide in **the** *THOMAS* **BID REGISTER.**

T Gieseman, Editor the THOMAS BID REGISTER

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Grossmont HS Kitchen and Weight Room Issue Date: 7/20/22

RFI #	Question	Response	
	The license listed for the food service bids do not have C43. Kitcor holds a C43 license		
I.	for food service equipment contractor. Can contractors with a C43 license bid the CN-	Yes contractors with a C43 license can bid the CN-2987 package	
	2987 package		
	End RFIs		
Substitution Requests			
Ι			
	End Substitution Requests		
Other Open Issues (ADD TO RFI LOG IF NEEDED)			

END OF BID ADDENDUM 01