ANTELOPE VALLEY COLLEGE
LANCASTER, CALIFORNIA

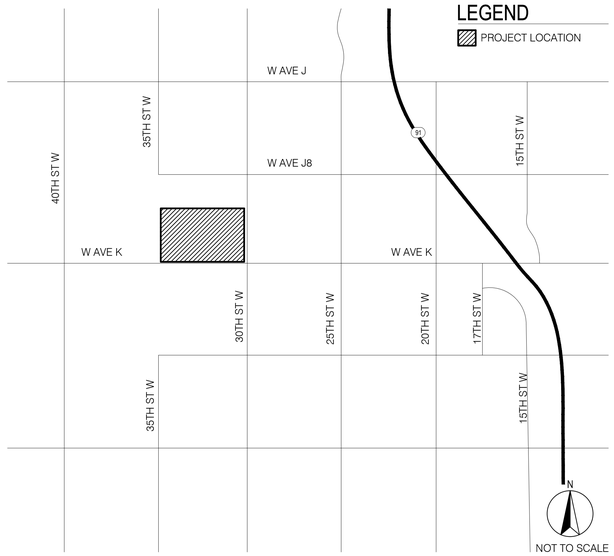
Antelope Valley College
Boiler Replacement Campus Wide

Bid #AVC2017/2018-3 CUPCCAA
Bid and Construction Issue
September 11, 2017

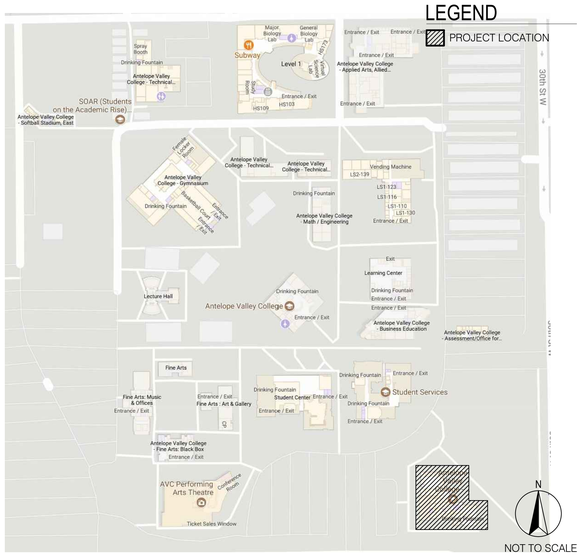
MECHANICAL, ELECTRICAL & PLUMBING
P2S Engineering, Inc
5000 East Spring Street, 8th Floor
Long Beach, CA 90815
562.497.2999

STRUCTURAL
MHP
3900 Cover Street
Long Beach, CA 90808
562-985-3200

VICINITY MAP



SITE MAP



SHEET INDEX

GOVERNING CODES

LIST OF CALIFORNIA CODE OF REGULATIONS (CCR)
APPLICABLE CODES AS OF JANUARY 1, 2017

PART 1	2016 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE, TITLE 24 CCR
PART 2	2016 CALIFORNIA BUILDING CODE (CBC), TITLE 24 CCR (BASED ON 2015 NTERNATIONAL BUILDING CODE OF THE INTERNATIONAL CODE COUNCIL, WITH CALIFORNIA AMENDMENTS)
PART 3	2016 CALIFORNIA ELECTRICAL CODE (CEC), TITLE 24 CCR (BASED ON 2014 NATIONAL ELECTRICAL CODE AND 2013 CALIFORNIA AMENDMENTS)
PART 4	2016 CALIFORNIA MECHANICAL CODE (CMC), TITLE 24, CCR (BASED ON 2015 UNIFORM MECHANICAL CODE)
PART 5	2016 CALIFORNIA PLUMBING CODE (CPC), TITLE 24, CCR (BASED ON 2015 UNIFORM PLUMBING CODE)
PART 6	2016 CALIFORNIA ENERGY CODE (CEC), TITLE 24 CCR
PART 9	2016 CALIFORNIA FIRE CODE, TITLE 24 CCR (BASED ON 2015 INTERNATIONAL FIRE CODE)
PART 11	2016 CALIFORNIA GREEN BUILDING STRANDARDS CODE (CALGREEEN), TITLE 24 CCR
PART 12	2016 CALIFORNIA REFERENCE STANDARDS, TITLE 24 CCR
	TITLE 19, CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	AUTOMATIC SPRINKLER SYSTEMS (2016 EDITION)
NFPA 14	STANDPIPE SYSTEMS (CA AMENDED) (2014 EDITION)
NFPA 24	PRIVATE FIRE MAINS (CA AMENDED) (2016 EDITION)
NFPA 72	NATIONAL FIRE ALARM CODE (CA AMENDED) (2016 EDITION)
NFPA 80	FIRE DOOR AND OTHER OPENING PROTECTIVES (2016 EDITION)

REFERENCE CODE SECTION FOR NFPA STANDARDS - 2016 CBC (SFM) CHAPTER 35.
SEE CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS.

OVERALL PROJECT SCOPE

1 OVERALL SCOPE IS TO REPLACE THE ADMINISTRATION BUILDING'S HEATING HOT WATER BOILER IN-KIND.
2 DEMOLISH HOT WATER BOILER, ASSOCIATE PUMPS, EXPANSION TANK, FLUE VENTING, CHEMICAL FEEDER AND AIR SEPARATOR.
3 DEMOLISH GAS REGULATOR AND GAS LINE TO THE (E)BOILER.
4 DEMOLISH ICW SUPPLY LINE TO THE BOILER
5 PROVIDE BOILER ON CONCRETE EQUIPMENT PAD.
6 PROVIDE HEATING HOT WATER IN-LINE PUMPS.
7 PROVIDE IN-LINE AIR SEPARATOR, EXPANSION TANK AND CHEMICAL TREATMENT FEEDER
8 PROVIDE GAS REGULATOR AND SUPPLY LINE TO BOILER.
9 PROVIDE ELECTRICAL POWER TO BOILER AND PUMPS.
10 CONNECT TO ICW AND PROVIDE REGULATOR
11 CONNECT EQUIPMENT TO (E)BAS, PROVIDE PROGRAMMING AND NEW DDC SENSORS AND DEVICES AS SHOWN ON PLANS.
12 TEST, BALANCE AND ADJUST HEATING HOT WATER SYSTEM.
13 PROVIDE CHEMICAL TREATMENT TO HHW SYSTEM.

P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

www.p2seng.com

Consultant

Project Title

Antelope Valley College
Boiler Replacement Campus
WIde Project #17-019
Bid:
#AVC2017/2018-3CUPCCAA

Owner

ANTELOPE
VALLEY
COLLEGE

Antelope Valley College
3041 W Ave. K, Lancaster Ca 93536

REGISTERED PROFESSIONAL ENGINEER
SIGNED: MM/DD/2017
MECHANICAL
STATE OF CALIFORNIA
[illegible]

Revisions

Number	Description	Date
X	X	XX/XX/XX

Designed	J. Valiensi
Drawn	M. Urfano
Checked	J. Valiensi
Approved	J. Valiensi
Date	September 11, 2017
Submittal	Bid and Construction Issue
Scale	As Noted

Sheet Title

PROJECT SCOPE AND
GOVERNING CODES

Sheet Number

G002

P2S No. 8913

LEGEND

SYMBOL	DESCRIPTION
	NOTE CALLOUT
	DETAIL CALLOUT - NUMBER ON TOP DENOTES DETAIL NUMBER - NUMBER ON BOTTOM DENOTES SHEET DETAIL IS SHOWN
	MECHANICAL EQUIPMENT CALLOUT, SEE MECHANICAL PLANS FOR EXACT LOCATION AND REQUIREMENTS
	POINT OF CONNECTION
	POINT OF DISCONNECTION
	NEW LINEWORK
	EXISTING LINEWORK
	DEMOLITION LINEWORK
4" CHWR	NEW PIPING (SIZE-SERVICE)
	PUMP
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE, SWING
	MULTI-PURPOSE VALVE
	FLOW MEASURING AND BALANCING VALVE
	PLUG VALVE
	PRESSURE REGULATOR
	PRESSURE-REDUCING REGULATOR
	STRAINER, Y-TYPE
	PRESSURE GAUGE WITH SHUTOFF COCK
	PRESSURE GAUGE WITH SNUBBER AND SHUTOFF COCK
	SHUTOFF COCK
	SELF-SEALING PRESSURE AND TEMPERATURE TAP
	THERMOMETER
	THERMOWELL

SYMBOL	DESCRIPTION
	ELBOW FACING AWAY FROM VIEWER
	ELBOW FACING TOWARD VIEWER
	TEE FACING AWAY FROM VIEWER
	TEE FACING TOWARD VIEWER
	PIPE CAP
	TRANSITION, ASYMMETRIC
	TRANSITION, SYMMETRIC
	EXPANSION JOINT (COMPENSATOR)
	PIPE GUIDE
	PIPE ANCHOR
S	AIR SEPARATOR
DCBFP	DOUBLE CHECK BACKFLOW PREVENTER
	AIR VENT, AUTOMATIC
	FLEXIBLE CONNECTION
	SAFETY OR RELIEF VALVE
	UNION, SCREWED
	ANALOG SIGNAL
	DIGITAL SIGNAL
	ELECTRIC LEAD
	DDC INPUT
	DDC OUTPUT
	LOCALLY MOUNTED INSTRUMENT

SYMBOL	DESCRIPTION
	NEW LINEWORK
	EXISTING LINEWORK
	DEMOLISHED LINEWORK
	CONDUIT CONCEALED IN WALL OR ABOVE CEILING
	CONDUIT EXPOSED
	CONDUIT TURNED UP
	CONDUIT TURNED DOWN
	CONDUIT CAPPED
A-1	BRANCH CIRCUIT HOMERUN TO PANELBOARD AND CIRCUITS AS INDICATED
	3/4" CONDUIT, TICK MARKS INDICATE QUANTITY OF #12 AWG WIRES (UNLESS NOTED OTHERWISE, NO MARKS INDICATES 2#12 & 1#12 GND WIRES) - SMALL MARK DENOTES HOT WIRE - LARGE MARK DENOTES NEUTRAL WIRE - DIAGONAL DENOTES GROUND WIRE
	PANELBOARD, 120/208V - SURFACE
	PANELBOARD, 277/480V - SURFACE
	DISTRIBUTION PANEL, 120/208V
	DISTRIBUTION PANEL, 277/480V

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AAV	AUTOMATIC AIR VENT	HD	HEAD
ABV	ABOVE	HP	HEAT PUMP
AC	AIR CONDITIONING UNIT	HP	HORSEPOWER
AD	ACCESS DOOR	HT	HEIGHT
AFF	ABOVE FINISHED FLOOR	HZ	HERTZ
AHU	AIR HANDLING UNIT	IC	MOTOR STATUS
ALUM	ALUMINUM	ICW	INDUSTRIAL COLD WATER
AP	ACCESS PANEL	ID	INSIDE DIAMETER
BD	BLOWDOWN	IN	INCHES
BDD	BACK DRAFT DAMPER	KW	KILOWATTS
BEL	BELOW	LAT	LEAVING AIR TEMPERATURE
BFC	BELOW FINISHED CEILING	LBS	POUNDS
BFP	BACK FLOW PREVENTER	LD	LINEAR DIFFUSER
BHP	BRAKE HORSEPOWER	LF	LINEAR FEET
BLDG	BUILDING	LWT	LEAVING WATER TEMPERATURE
BOB	BOTTOM OF BEAM	MAX	MAXIMUM
BOP	BOTTOM OF PIPE	MBH	THOUSAND BTU PER HOUR
BSMT	BASEMENT	MC	MECHANICAL CONTRACTOR
BTU	BRITISH THERMAL UNIT	MCA	MINIMUM CIRCUIT AMPS
CD	CEILING DIFFUSER	MH	MANHOLE
CFM	CUBIC FEET PER MINUTE	MIN	MINIMUM
CH	CHILLER	MOCP	MAXIMUM OVERLOAD CIRCUIT PROTECTION
CHWP	CHILLED WATER PUMP	MTD	MOUNTED
CHWR	CHILLED WATER RETURN	MUA	MAKE-UP AIR UNIT
CHWS	CHILLED WATER SUPPLY	NFA	NET FREE AREA
CI	CAST IRON	NIC	NOT IN CONTRACT
CL	CENTER LINE	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
CLG	CEILING	OAT	OUTSIDE AIR TEMPERATURE
CO	CLEAN OUT	OBD	OPPOSED BLADE DAMPER
COL	COLUMN	OC	ON CENTER
CP	CONDENSATE PUMP	OD	OUTSIDE DIAMETER
CT	COOLING TOWER	OSA	OUTSIDE AIR
CU	CONDENSING UNIT	PBD	PARALLEL BLADE DAMPER
CV	CONSTANT VOLUME BOX	PD	PRESSURE DROP
CWP	CONDENSER WATER PUMP	PERF	PERFORATED
CWR	CONDENSER WATER RETURN	PH	PHASE
CWS	CONDENSER WATER SUPPLY	POD	POINT OF DISCONNECT
CWFR	CONDENSER WATER FILTER RETURN	PR	PRESSURE RELIEF
CWFS	CONDENSER WATER FILTER SUPPLY	PRV	PRESSURE REDUCING VALVE
D	DRAIN	PSID	POUNDS PER SQUARE INCH DIFFERENTIAL
DB	DRY BULB	PSIG	POUNDS PER SQUARE INCH GAUGE
DEG	DEGREES	PTAC	PACKAGED TERMINAL AIR CONDITIONER
DIA	DIAMETER	PVC	POLYVINYL CHLORIDE
DL	DOOR LOUVER	RA	RETURN AIR
DN	DOWN	RAG	RETURN AIR GRILLE
DS	DUCT SILENCER	RAR	RETURN AIR REGISTER
DWP	DOMESTIC WATER PUMP	RD	ROOF DRAIN
DX	DIRECT EXPANSION	RF	RETURN FAN
(E)	EXISTING	RHC	REHEAT COIL
EA	EACH	RLA	RATED LOAD AMPS
EAT	ENTERING AIR TEMPERATURE	RPM	REVOLUTIONS PER MINUTE
EC	ELECTRICAL CONTRACTOR	SA	SUPPLY AIR
EF	EXHAUST FAN	SAR	SUPPLY AIR REGISTER
EFF	EFFICIENCY	SD	SMOKE DAMPER
EJ	EXPANSION JOINT	SF	SUPPLY FAN
EL	ELEVATION	SMBH	SENSIBLE MBH
EQ	EQUAL	SPEC	SPECIFICATION
ER	EXHAUST REGISTER	SS	STAINLESS STEEL
ESP	EXTERNAL STATIC PRESSURE	STD	STANDARD
ET	EXPANSION TANK	TAD	TRANSFER AIR DUCT
EWC	ELECTRIC WATER COOLER	TDH	TOTAL DYNAMIC HEAD
EWT	ENTERING WATER TEMPERATURE	TEFC	TOTALLY ENCLOSED FAN COOLED
°F	DEGREES FAHRENHEIT	TEMP	TEMPERATURE
FA	FREE AREA	TG	TRANSFER GRILLE
FC	FAN COOL UNIT	TMBH	TOTAL MBH
FD	FIRE DAMPER	TSP	TOTAL STATIC PRESSURE
FG	FILTER GRILLE	TYP	TYPICAL
FLA	FULL LOAD AMPS	UC	UNDERCUT
FLR	FLOOR	TYP	TYPICAL
FOB	FLAT ON BOTTOM	UON	UNLESS OTHERWISE NOTED
FOT	FLAT ON TOP	V	VOLTS
FP	FIRE PUMP	VAV	VARIABLE AIR VOLUME UNIT
FPI	FINS PER INCH	VD	VOLUME DAMPER
FPM	FEET PER MINUTE	VFD	VARIABLE FREQUENCY DRIVE
FT	FEET OR FOOT	VTR	VENT THRU ROOF
FX	FLEXIBLE CONNECTION	W/	WITH
GA	GAUGE	W/O	WITHOUT
GALV	GALVANIZED	WB	WET BULB
GC	GENERAL CONTRACTOR	WC	WATER COLUMN
GPH	GALLONS PER HOUR	WG	WATER GAUGE
GPM	GALLONS PER MINUTE	WT	WEIGHT
HB	HOSE BIBB		

REFERENCE WILL BE MADE TO ANSI Y1.1, MILITARY STANDARD IN THE EVENT ABBREVIATIONS NOT MENTIONED HEREIN ARE USED, ABBREVIATIONS, AND OTHER STANDARD INDUSTRY CONVENTIONS.

CONTROL ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	ALARM	PT	PRESSURE TRANMITTER
AI	ANALOG INPUT	RH	RELATIVE HUMIDITY
AO	ANALOG OUTPUT	S	STATUS
DI	DIGITAL INPUT	SC	SPEED CONTROL
DO	DIGITAL OUTPUT	SI	SPEED INDICATOR
DP	DIFFERENTIAL PRESSURE	SP	SETPOINT
FS	FLOW SWITCH	SS	START/STOP
FM	FLOW METER	T	TEMPERATURE
HOA	HANDS OFF AUTO	TS	TEMPERATURE SET POINT
KW	KILOWATTS	VA	DAMPER/VALVE ACTUATOR
LA	LEVEL ALARM	VP	VELOCITY PRESSURE
MOD	MOTOR OPERATED DAMPER	VSH	VIBRATION SWITCH
NC	NORMALLY CLOSED	ZC	CLOSED END SWITCH
NO	NORMALLY OPEN	ZI	POSITION INDICATOR
PS	PRESSURE SWITCH	ZO	OPEN END SWITCH

REFERENCE WILL BE MADE TO ANSI Y1.1, MILITARY STANDARD IN THE EVENT ABBREVIATIONS NOT MENTIONED HEREIN ARE USED, ABBREVIATIONS, AND OTHER STANDARD INDUSTRY CONVENTIONS.

ELECTRICAL ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
1/C	SINGLE CONDUCTOR	KW	KILOWATT
A OR AMP	AMPERES	LV	LOW VOLTAGE
AWG	AMERICAN WIRE GAUGE	MV	MEDIUM VOLTAGE
C	CONDUIT	NEC	NATIONAL ELECTRICAL CODE
CKT	CIRCUIT	PH OR Ø	PHASE
CU	COPPER	PNL	PANEL
ELEC.	ELECTRICAL	RGS	RIGID GALVANIZED STEEL
EMT	ELECTRICAL METALLIC TUBING	SWBD	SWITCHBOARD
EQUIP	EQUIPMENT	V	VOLTS
FA	FIRE ALARM	VA	VOLT-AMPERES
FACP	FIRE ALARM CONTROL PANEL	W	WATTS
GND	GROUND	VSH	VIBRATION SWITCH
KCMIL	THOUSAND CIRCULAR MILS	ZC	CLOSED END SWITCH
KV	KILOVOLT	ZI	POSITION INDICATOR
KVA	KILOVOLT-AMPERES	ZO	OPEN END SWITCH

REFERENCE WILL BE MADE TO ANSI Y1.1, MILITARY STANDARD IN THE EVENT ABBREVIATIONS NOT MENTIONED HEREIN ARE USED, ABBREVIATIONS, AND OTHER STANDARD INDUSTRY CONVENTIONS.

ELECTRICAL GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE 2016 EDITION OF THE CALIFORNIA ELECTRICAL CODE AND ALL OTHER APPLICABLE FEDERAL AND STATE. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS, THE CONSTRUCTION DOCUMENTS SHALL GOVERN BUT THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE ANY CODE OR REGULATION.
2. OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS OR THE MISDESCRIPTION OF DETAILS OF WORK WHICH ARE MANIFESTLY NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MISDESCRIBED DETAILS OF THE WORK BUT THEY SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.
3. THE CONTRACTOR SHALL CHECK ALL DRAWINGS FURNISHED TO HIM IMMEDIATELY UPON THEIR RECEIPT AND SHALL PROMPTLY NOTIFY THE OWNER OF ANY DISCREPANCIES. FIGURES MARKED ON DRAWINGS SHALL IN GENERAL BE FOLLOWED IN PREFERENCE TO SCALE MEASUREMENTS. LARGE SCALE DRAWINGS SHALL IN GENERAL GOVERN SMALL SCALE DRAWINGS. THE CONTRACTOR SHALL COMPARE ALL DRAWINGS AND VERIFY THE FIGURES BEFORE LAYING OUT THE WORK AND WILL BE RESPONSIBLE FOR ANY ERRORS WHICH MIGHT HAVE BEEN AVOIDED THEREBY.
4. THE CONTRACTOR SHALL NOT BORE, NOTCH OR IN ANY WAY CUT INTO ANY STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE ARCHITECT OR STRUCTURAL ENGINEER.
5. ALL CONDUIT CONNECTIONS TO MACHINES AND EQUIPMENT SUBJECT TO VIBRATION (INCLUDING TRANSFORMERS) SHALL BE MADE WITH SEALTIGHT FLEX CONDUIT. PROVIDE SUFFICIENT SLACK TO ELIMINATE VIBRATION. ARRANGE CONNECTIONS TO PREVENT THE ENTRANCE OF MOISTURE. PROVIDE CONTINUOUS GROUND WIRE THROUGH ALL FLEX TO ASSURE GROUND CONTINUITY.
6. FOR PURPOSES OF CLEARNESS AND LEGIBILITY, THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. THE SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHEREVER POSSIBLE. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS, DATA INFORMATION AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATION SECTIONS WHERE ELECTRICAL WORK INTERFACES WITH OTHER TRADES.
7. ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE CALIFORNIA STATE ACCESSIBILITY LAWS WITH REGARD TO THE FOLLOWING:

   A. MOUNTING HEIGHT OF RECEPTACLES - NO OUTLET SHALL BE MOUNTED ON A WALL AT LESS THAN 18" AFF.

   B. MOUNTING HEIGHT OF SWITCHES AND THERMOSTATS - DEVICES SHALL BE MOUNTED AT NO HIGHER THAN 48" AFF FROM CENTER OF DEVICE, BUT NOT LESS THAN 36" AFF.
8. THE CONTRACTOR SHALL MAINTAIN AS-BUILT DRAWINGS TO REFLECT ALL CHANGES MADE DURING CONSTRUCTION AND ANY DEVIATIONS FROM THE ELECTRICAL DRAWINGS. THIS INCLUDES DEVIATIONS FROM CIRCUIT NUMBERS AND ANY ADDITION, DELETION OR RELOCATION OF OUTLETS SHOWN ON WORKING DRAWINGS.
9. OUTLET BOXES ON OPPOSITE SIDES OF FIRE RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES.
10. 2016 CBC MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT ANCHORAGE NOTES:

    ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCES AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2013 CBC, SECTIONS 1616A.1.23, 1.24, 1.25, 1.26 AND ASCE 7-05 CHAPTER 13.

    A. ALL PERMANENT EQUIPMENT AND COMPONENTS.

    B. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.

    C. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

    THE ATTACHMENT OF THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENT SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

    A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORTS 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.

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTES:

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-05 SECTION 13.3 AS DEFINED IN ASCE 7-05 SECTION 13.6.8, 13.6.7, 13.6.5.6, AND 2013 CBC, SECTIONS 1616A.1.23, 1.24, 1.25, 1.26.

    THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.
11. THE CONTRACTOR SHALL INSTALL ALL CONDUITS AND WIRES WITH A MINIMUM NUMBER OF BENDS AND IN SUCH A MANNER AS TO CONFORM TO THE STRUCTURE. AVOID OBSTRUCTIONS, PRESERVE HEAD ROOM, KEEP OPENINGS AND PASSAGEWAYS CLEAR AND MEET ALL STRUCTURAL CODE REQUIREMENTS.
12. THE CONTRACTOR SHALL PROVIDE SUPPORT FOR ALL FIXTURES AND ELECTRICAL EQUIPMENT TO COMPLY WITH THE SEISMIC REQUIREMENTS OF THE UNIFORM BUILDING CODE AND ALL LOCAL ORDINANCES.
13. PROVIDE TYPEWRITTEN DIRECTORY CARD IN ALL PANELS, IDENTIFY LOAD SERVED BY EACH CIRCUIT BREAKER.
14. ALL EXPOSED CONDUITS SHALL BE RIGID GALVANIZED STEEL (RGS) UON.

SHEET INDEX

SHEET	DESCRIPTION
ME001	MECHANICAL AND ELECTRICAL GENERAL NOTES, LEGEND, ABBREVIATIONS AND SHEET INDEX
M002	SCHEDULES
ME201	MECHANICAL AND ELECTRICAL RENOVATION PARTIAL FLOOR PLAN
M501	PIPE AND INSTRUMENT DIAGRAM
M601	DETAILS
M701	TITLE 24 COMPLIANCE DOCUMENTS
MED201	MECHANICAL AND ELECTRICAL DEMOLITION PARTIAL FLOOR PLAN

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE 2016 EDITIONS OF THE CALIFORNIA BUILDING, MECHANICAL, PLUMBING, AND OTHER APPLICABLE FEDERAL, STATE, OR LOCAL CODES AS ADOPTED AND ENFORCED BY THE LOCAL JURISDICTION. IN CASE THE PLANS SHOW MORE STRINGENT REQUIREMENTS, THE PLANS SHALL GOVERN THE DESIGN, YET NOTHING ON THE DESIGN DOCUMENTS SHALL BE INTERPRETED AS AUTHORITY TO VIOLATE CODE(S) OR REGULATION(S).
2. SUBMISSION OF BID IN CONNECTION WITH THIS WORK SHALL IMPLY THAT THE BIDDER HAS EXAMINED THE JOB SITE UNDER WHICH THE CONTRACTOR WILL BE OBLIGATED TO OPERATE UNDER THIS CONTRACT. NO EXTRA CHARGE WILL BE ALLOWED FOR FAILURE OF ANY BIDDER TO EXAMINE THE SITE PRIOR TO BID.
3. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
4. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON DESIGN PLANS / SPECIFICATIONS WITH CODE REQUIREMENTS, THE MORE STRINGENT STANDARD SHALL PREVAIL.
5. THIS CONTRACTOR SHALL FURNISH LABOR, MATERIALS, EQUIPMENT, AND TRANSPORTATION AS REQUIRED TO PROPERLY INSTALL ALL NEW HVAC SYSTEMS OR RELATED COMPONENTS AS INDICATED ON PLANS AND SPECIFIED HEREIN.
6. ALL NEW EQUIPMENT AND MATERIAL TO BE INSTALLED AS PART OF RENOVATION / NEW CONSTRUCTION SHALL BEAR AN UNDERWRITERS' LABORATORIES LABEL (UL), AND INSTALLED IN SUCH A MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.
7. THIS CONTRACTOR SHALL DOCUMENT AND RELAY ANY MAJOR DEVIATIONS FROM THE DESIGN DOCUMENTS, AND ATTAIN APPROVAL FROM THE MECHANICAL ENGINEER BEFORE PROCEEDING. AS-BUILT COPIES SHALL BE PROVIDED INDICATING ALL CHANGES / DEVIATIONS MADE DURING CONSTRUCTION.
8. ALL WORK SHALL BE PERFORMED IN A CLEAN AND WORKMANLIKE MANNER. CARE SHALL BE EXERCISED TO MINIMIZE ANY INCONVENIENCE OR DISTURBANCE TO OTHER AREAS OF THE BUILDING WHICH ARE TO REMAIN IN OPERATION. ISOLATE WORK AREAS BY MEANS TO KEEP DUST AND DIRT WITHIN THE CONSTRUCTION AREA.
9. NO PIPING, EQUIPMENT, ETC. SHALL BE REMOVED, DISCONNECTED OR SHUT DOWN WITHOUT PRIOR REVIEW WITH THE OWNER TO CONFIRM THAT AREAS TO REMAIN IN OPERATION WILL NOT BE AFFECTED. IF ANY AREAS NOT WITHIN THE SCOPE OF WORK ARE AFFECTED BY ANY SHUTDOWN, REMOVAL OR DISCONNECTION, SUFFICIENT ADVANCE NOTICE MUST BE GIVEN TO THE OWNER INDICATING WHICH AREAS WILL BE AFFECTED, WHEN THE PROPOSED SHUTDOWN WILL OCCUR, AND FOR HOW LONG A PERIOD OF TIME.
10. THE ARRANGEMENT OF EQUIPMENT AND PIPING SHOWN ON THE DRAWINGS IS BASED UPON INFORMATION AVAILABLE TO THE ENGINEER AT THE TIME OF DESIGN AND IS NOT INTENDED TO SHOW EXACT DIMENSIONS PECULIAR TO A SPECIFIC MANUFACTURER. THE DRAWINGS ARE, IN PART, DIAGRAMMATIC AND SOME FEATURES OF THE ILLUSTRATED EQUIPMENT INSTALLATION MAY REQUIRE REVISION TO MEET ACTUAL EQUIPMENT INSTALLATION REQUIREMENTS. STRUCTURAL SUPPORTS, FOUNDATIONS, CONNECTED PIPING, VALVES AND ELECTRICAL CONDUIT SPECIFIED MAY HAVE TO BE ALTERED TO ACCOMMODATE THE EQUIPMENT PROVIDED. NO ADDITIONAL PAYMENT WILL BE MADE FOR SUCH REVISIONS AND ALTERATIONS.
11. THIS CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE SITE MAKING FIELD MEASUREMENTS AND SHOP DRAWINGS NECESSARY FOR FABRICATION OR ERECTION OF HVAC SYSTEMS. MAKE ALLOWANCE FOR BEAMS, PIPES AND OTHER OBSTRUCTIONS IN BUILDING CONSTRUCTION. CHECK DRAWINGS SHOWING WORK OF OTHER TRADES AND CONSULT WITH THE OWNER'S REPRESENTATIVE IN THE EVENT OF POTENTIAL INTERFERENCE. SHOP DRAWINGS SHALL BE MINIMUM 1/4"=1'-0" SCALE, INDICATING FITTINGS, SIZES, WELDS AND CONFIGURATIONS AND SUBMITTED TO ENGINEER FOR REVIEW.
12. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO FABRICATION, PURCHASE AND/OR INSTALLATION OF ALL WORK.
13. BEFORE COMMENCEMENT OF WORK, THIS CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS, AND CHARACTERISTICS OF ALL UTILITIES.
14. CONTRACTOR SHALL SECURE AND PAY ALL FEES AND PERMITS PERTAINING TO THE CONTRACT.
15. EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS, EXCEPT WHERE INDICATED AS BEING RELOCATED.
16. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
17. GALVANIZED SHEET METAL SHALL BE PROVIDED FOR ALL HVAC DUCT SYSTEMS, AND CONSTRUCTED / SUPPORTED / INSTALLED IN ACCORDANCE WITH THE 2016 CALIFORNIA MECHANICAL CODE AND THE LATEST SMACNA STANDARDS.
18. ALL PIPING SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS IN A NEAT WORKMANSHIP-LIKE MANNER AND BE SUPPORTED AS REQUIRED BY CODES. PIPING SHALL BE SET UP AND DOWN AND OFFSET AS REQUIRED TO SUIT FIELD CONDITIONS. DIELECTRIC COUPLINGS SHALL BE USED WHERE DISSIMILAR METALS ARE JOINED.
19. THIS CONTRACTOR SHALL PROVIDE ALL NECESSARY SUPPORTS FOR FIXTURES, DUCTWORK, PIPING, AND MECHANICAL EQUIPMENT, IN ORDER TO COMPLY WITH SEISMIC REQUIREMENTS AS OUTLINED BY THE LATEST EDITION(S) OF THE CALIFORNIA BUILDING CODE, SMACNA INSTALLATION STANDARDS, AND ALL RELATED LOCAL ORDINANCES.
20. PIPING AND DUCT SUPPORTS SHALL BE AS FOLLOWS:

    A. ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES, OR AS DETAILED AND SPECIFIED HEREIN.

    B. WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE MECHANICAL ENGINEER.

    C. A COPY OF THE GUIDELINES PUBLISHED BY SMACNA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.
21. THIS CONTRACTOR SHALL NOT BORE, NOTCH, CUT, OR PENETRATE INTO A STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM A DESIGNATED STRUCTURAL ENGINEER AND THE OWNER.
22. ALL PIPE ELBOWS SHALL BE LONG RADIUS UNLESS OTHERWISE SPECIFICALLY NOTED ON THE DRAWINGS.
23. ISOLATE AND DRAIN EXISTING PIPING SYSTEM AS REQUIRED TO ACCOMMODATE INSTALLATION OF THE WORK.
24. INSTALL MANUAL VOLUME DAMPERS WITHIN DUCT BRANCHES TO BALANCE AIR FLOW CFM. ON INSULATED DUCTS, MOUNT DAMPER REGULATOR ON 2" STAND-OFF BRACKET TO CLEAR INSULATION.
25. PER 2016 CMC 608.1 AUTOMATIC SHUT OFF OF AIR HANDLER SHALL BE DONE UPON THE DETECTION OF SMOKE IN THE MAIN SUPPLY AIR DUCT SERVED BY THE AIR HANDLER.
26. ALL MATERIAL EXPOSED WITHIN RA PLENUMS SHALL BE NON-COMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX NOT GREATER THAN 25 AND SMOKE DEVELOPED INDEX NOT GREATER THAN 50. COMPLY WITH CMC-602.2.
27. 2016 CBC MECHANICAL, ELECTRICAL AND PLUMBING EQUIPMENT ANCHORAGE NOTES:

    ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCES AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2016 CBC, SECTIONS 1616A.1.18-1616A.1.26 AND ASCE 7-10 CHAPTER 13.

    A. ALL PERMANENT EQUIPMENT AND COMPONENTS.

    B. TEMPORARY OR MOVABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.

    C. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

    THE ATTACHMENT OF THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENT SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

    A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORTS 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.

    FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD AND THE DSA DISTRICT STRUCTURAL ENGINEER. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.
28. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTES:

    PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.8.3, 13.6.7, 13.6.5.6, AND 2016 CBC, SECTIONS 1616A.1.23, 1. 24, 1 25, 1. 26.

    THE BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL BE DETAILED ON THE APPROVED DRAWINGS OR THEY SHALL COMPLY WITH ONE OF THE OSHPD PRE-APPROVALS (OPM #) AS MODIFIED TO SATISFY ANCHORAGE REQUIREMENTS OF ACI 318, APPENDIX D.

    COPIES OF THE MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF HANGING AND BRACING OF THE PIPE, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS.

    THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

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P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

www.p2seng.com

Consultant

Project Title

Antelope Valley College
Boiler Replacement Campus
WIde Project #17-019
Bid:
#AVC2017/2018-3CUPCCAA

Owner

ANTELOPE VALLEY COLLEGE

Antelope Valley College
3041 W Ave. K, Lancaster Ca 93536

REGISTERED PROFESSIONAL ENGINEER — SIGNED: MM/DD/2017 — MECHANICAL — STATE OF CALIFORNIA

Revisions

Number	Description	Date
X	X	XX/XX/XX

Designed	J. Valiensi
Drawn	M. Urfano
Checked	J. Valiensi
Approved	J. Valiensi
Date	September 11, 2017
Submittal	Bid and Construction Issue
Scale	As Noted

Sheet Title

Mechanical and Electrical General Notes, Legend, Abbreviations and Sheet Index

Sheet Number

ME001

P2S No. 8913

HOT WATER BOILER

MARK	MANUFACTURER & MODEL	LOCATION	TYPE	SERVICE	CAPACITY		NATURAL GAS		BOILER WATER					CONNECTIONS		EFFICIENCY		ELECTRICAL				SHIPPING WEIGHT LBS.	OPERATING WEIGHT LBS.	REMARKS
					MAX INPUT MBH	OUTPUT MBH	CFH	PRESS IN.W.C.	DESIGN FLOW GPM	MINIMUM FLOW GPM	ΔP FT.HD.	EWT °F	LWT °F	MAX TEMP	GAS INLET INCHES	EXHAUST INCHES	EFF %	NOx PPM	V	PH	HZ	AMP			
B-1	LOCHINVAR FTXL725N	A163 MECHANICAL ROOM	FIRE-TUBE, CONDENSING	BUILDING HEAT	725	580	725	14	58	18	4.9	180	200	210	1	6	85	20	120	1	60	12	575	672	PROVIDE WITH BMS GATEWAY TO BACNET, CONDENSATE NEUTRALIZATION KIT, 100PSI ASME RELIEF SAFETY VALVE

HEATING HOT WATER PUMP

MARK	MANUFACTURER & MODEL	LOCATION	TYPE	SERVICE	PUMP DESIGN POINT					PUMP MOTOR				OPERATING WEIGHT LBS.	REMARKS
					FLOW GPM	HEAD FT. HD.	EFF %	SPEED RPM	NPSHR FT. HD.	V/PH	HP	SPEED RPM	ENCLOSURE		
P-1	BELL & GOSSETT e-90 1.5AB	A163 MECHANICAL ROOM	IN-LINE	B-1	58	50	59.2	1,800	8.63	480/3	2	1,800	ODP	90	PROVIDE W/ SPARE SEAL AND GASKET KIT
P-2	BELL & GOSSETT e-90 1.5AB	A163 MECHANICAL ROOM	IN-LINE	B-1	58	50	59.2	1,800	8.63	480/3	2	1,800	ODP	90	

AIR SEPARATORS

MARK	MANUFACTURER & MODEL	LOCATION	TYPE	SERVICE	WATER FLOW GPM	TANK DIMENSION DIA x HT	SHIPPING WEIGHT LBS.	OPERATING WEIGHT LBS.	REMARKS
AS-1	BELL & GOSSETT IAS-2-1/2	A163 MECHANICAL ROOM	INLINE	HHW	58	5-7/8" X 10-1/8"	23	25	PROVIDE WITH AUTOMATIC AIR VENT

EXPANSION TANK

MARK	MANUFACTURER & MODEL	LOCATION	TYPE	SERVICE	ACCEPTANCE CAPACITY GALLONS	PRECHARGE PRESSURE PSIG	OPERATING PRESSURE PSIG	RELIEF PRESSURE PSIG	TANK DIMENSION DIA x HT	SHIPPING WEIGHT LBS.	OPERATING WEIGHT LBS.	REMARKS
ET-1	WESSLES NLA-130	A163 MECHANICAL ROOM	BLADDER	HHW SYSTEM	35	12	35	75	20" X 37"	125	420	PROVIDE WITH MOUNTING CLIPS

GAS REGULATORS

MARK	MANUFACTURER & MODEL	LOCATION	TYPE	SERVICE	PRESSURE IN P.S.I.	PRESSURE OUT INCH OF WATER	GAS FLOW IN CFH	REMARKS
GR-1	AMERICAN METER 1813C-34	OUTSIDE BOILER ROOM	DIAPHRAGM	B-1	8	14	800	-

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P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

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Sheet Title

Schedules

Sheet Number

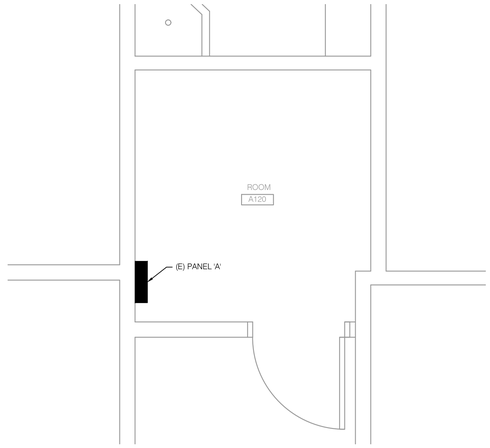
M002

P2S No. 8913

FILE PATH & NAME: P:\8913\MECHANICAL\8913_M002.DWG TRAVIS CUNNINGHAM
PLOT: Tuesday, September 12, 2017 8:59:30 AM

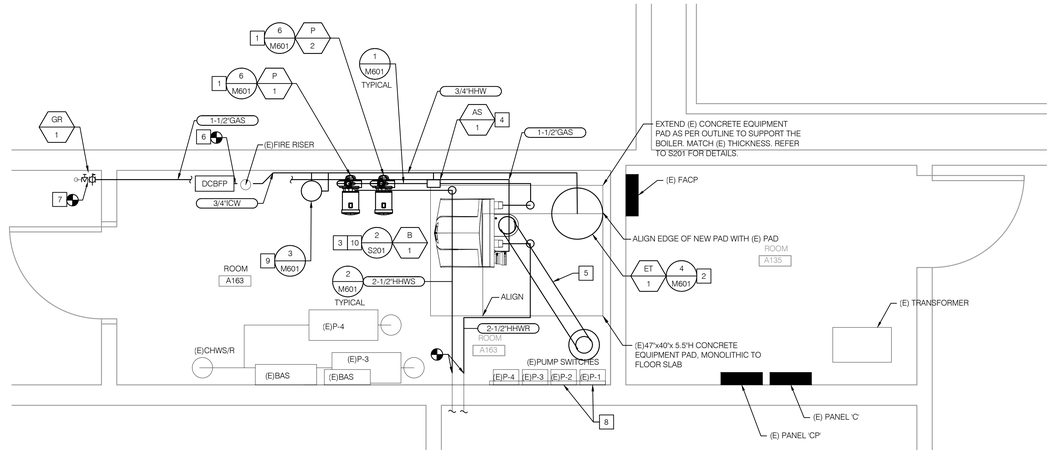
NOTES

1. PROVIDE INLINE HHW PUMPS. MOUNT BOTTOM PUMP FLANGE HIGHER THAN TOP OF BOILER.
2. PROVIDE EXPANSION TANK ON CONCRETE EQUIPMENT PAD. CONNECT TO AS-1.
3. PROVIDE HHW BOILER ON CONCRETE EQUIPMENT PAD. INSTALL BOILER PER MANUFACTURERS RECOMMENDATIONS FOR SERVICE CLEARANCE. ADJUST POSITION AS NEEDED TO MAINTAIN 36" CLEAR IN FRONT OF (E) ELECTRICAL PANELS.
4. PROVIDE INLINE AIR SEPARATOR UPSTREAM OF HHW PUMPS. CONNECT TO ET-1.
5. PROVIDE 6"Ø STAINLESS STEEL GASKETED FLUE VENT, AL29-4C DIRECT VENT FLUE OR EQUAL. ROUTE UP THRU ROOF. USE EXISTING OPENING AND VENT CAP.
6. CONNECT 3/4" ICW LINE TO (E) DOUBLE-CHECK, BACK-FLOW PREVENTOR DEVICE. PROVIDE PRESSURE REGULATOR FOR MAKE-UP WATER. PIPE BYPASS IN PER DETAIL 5/M601.
7. PROVIDE GAS REGULATOR. TIE INTO (E)GAS SERVICE LINE.
8. PROVIDE 3/4"C - 3#10, 1#10G FROM (E) SWITCHES P-1 AND P-2 TO NEW PUMPS P-1 AND P-2.
9. PROVIDE CHEMICAL POT-FEEDER TO SUCTION SIDE OF PUMPS.
10. PROVIDE 2#12, 1#12G FROM EXISTING PANEL C-3 TO NEW BOILER. RE-USE EXISTING CONDUIT AND EXTEND AS NECESSARY TO NEW BOILER TO ALLOW FOR A COMPLETE INSTALLATION.



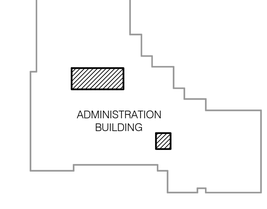
2 ELECTRICAL ROOM A120

1/2" = 1'-0"



1 PARTIAL FLOOR PLAN

1/2" = 1'-0"



KEY PLAN

LEGEND

AREA OF WORK

NOT TO SCALE

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P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

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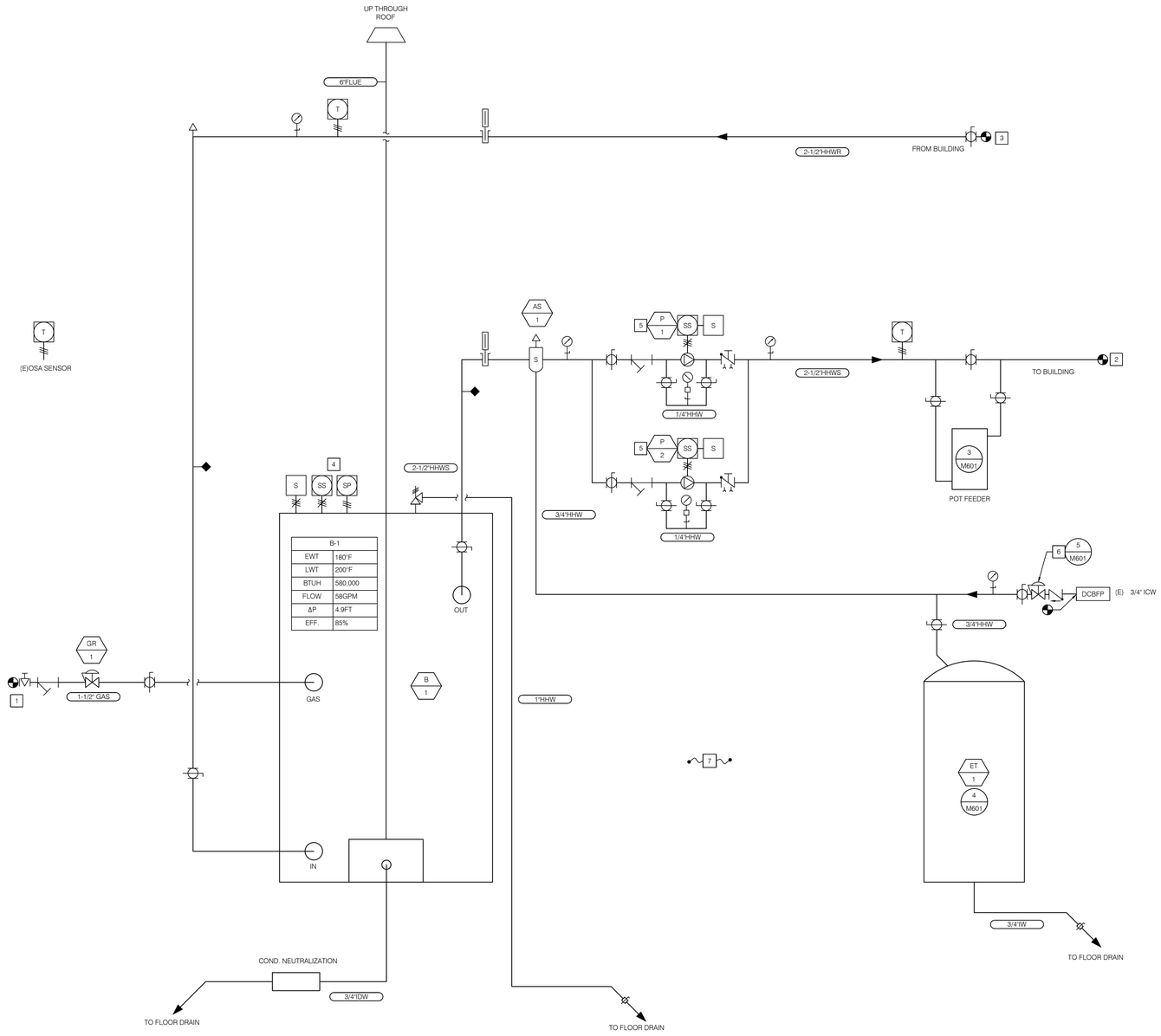
Sheet Title

Renovation Partial Mechanical and Electrical Floor Plan

Sheet Number

ME201

P2S No. 8913



NOTES

1. POC TO GAS MAIN OUTSIDE OF A163 MECHANICAL ROOM. PROVIDE NEW GAS REGULATOR.
2. POC TO BUILDING HHWS LINE
3. POC TO BUILDING HHWR LINE
4. PROVIDE START/STOP, TEMPERATURE RESET AND STATUS CONNECTION TO (E)BAS
5. PROVIDE START/STOP AND STATUS CONNECTION TO BAS
6. PROVIDE PRESSURE REGULATOR FOR MAKE -UP WATER.
7. REFER TO DIVISION 23 0993.11 "SEQUENCE OF OPERATIONS FOR HVAC DDC"

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T 562.497.2999 F 562.497.2990

www.p2seng.com

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Sheet Title

Pipe and Instrument Diagram

Sheet Number

M501

P2S No. 8913

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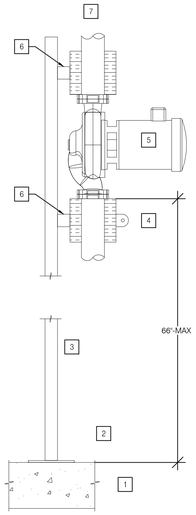
PLOT: Tuesday, September 12, 2017 8:59:39 AM

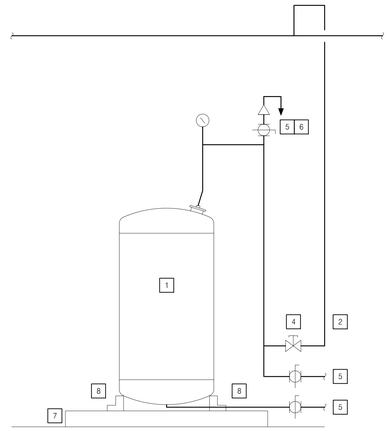


NOTES

1. 6" THICK CONCRETE FLOOR, SLAB ON GRADE.
2. PROVIDE UNISTRUT POST BASE 2072, OR EQUAL, ANCHOR TO CONCRETE W/ 1/2" X 2-1/2" SS HILTI KB TZ, 4-PLCS PER BASE.
3. PROVIDE GALVANIZED 12GA 1-5/8" STRUT FRAMING, UNISTRUT P1000 OR EQUAL
4. PROVIDE PIPE CLAMP AROUND SHIELD, INSERT AND PIPE ON EACH SIDE OF THE PUMPS.
5. PROVIDE HHW PUMPS, P-1 AND P-2 PER EQUIPMENT SCHEDULE.
6. PROVIDE SLOTTED GALVANIZED 12GA 1-5/8" STRUT FRAMING, UNISTRUT P1000T OR EQUAL. ATTACH WITH 1/2" BOLTS AND SPRING NUTS.
7. 2-1/2" HHW PIPING

6 PUMP SUPPORT

NO SCALE

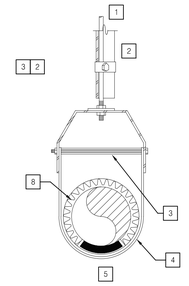


NOTES

1. PROVIDE EXPANSION TANK ON 6" THICK CONCRETE FLOOR.
2. PROVIDE INTERCONNECTING PIPING PER M501.
3. PROVIDE CW SERVICE FROM POC AS PER DETAIL 5/M601 AND M501 TO MAKE-UP WATER STATION.
4. LOCK SHIELD VALVE.
5. EXTEND LINE-SIZED DRAIN TO FLOOR SINK IN VICINITY.
6. HIGH CAPACITY FLOAT TYPE AUTOMATIC AIR VENT.
7. EQUIPMENT PAD ON GRADE SEE STRUCTURAL DRAWINGS.
8. 1/2" HILTI KB-TZ ANCHOR WITH 2-1/2" EMBEDMENT AT EACH CLIP. (TYPICAL 4 CLIPS).

4 EXPANSION TANK

NO SCALE

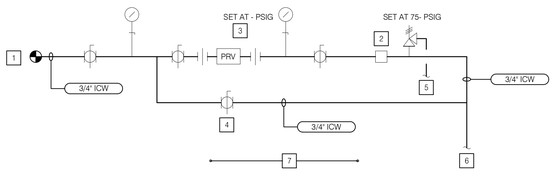


NOTES

1. SUPPORT PIPE HANGER TO STRUCTURE ABOVE. USE BEAM CLAMP, TOLCO B3034 TO STEEL TRUSSES OR BEAMS AND TOLCO B3060 W/ 5/16" LAG SCREW TO WOOD BEAMS.
2. PROVIDE ALL PIPE SUPPORTS WITH HOT DIP GALVANIZED FINISH AND VERTICAL ERTICAL STIFFNER AT ALL LOCATIONS. PROVIDE HANGER ROD AND CLAMP WITH CLEVIS HANGER.
3. PROVIDE PIPE SLEEVE WITH I.D. 1/4" LARGER THAN O.D. OF BOLT.
4. CLEVIS HANGER. REFER TO SPECIFICATION FOR ADDITIONAL REQUIREMENTS. MANUFACTURER SHALL BE "B-LINE B-3100" OR EQUAL.
5. REFER TO SPECIFICATION SECTION 230529 FOR PIPE SUPPORT REQUIREMENTS. PROVIDE CLEVIS HANGER FOR HEATING HOT WATER PIPING.
8. REFER TO SPECIFICATION SECTION 232113 FOR PIPING AND 230719 FOR INSULATION REQUIREMENTS.

2 PIPE SUPPORT

NO SCALE

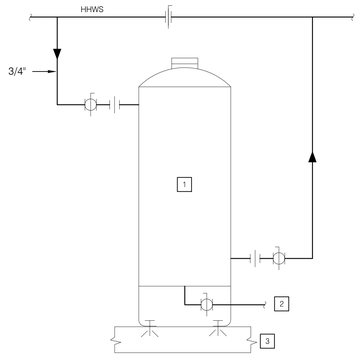


NOTES

1. ICW MAKE-UP TO CHW/HHW SYSTEMS FROM POC AT ICW SERVICE.
2. WATER HAMMER ARRESTOR.
3. PRESSURE REDUCING STATION SET
4. QUICK-FILL BY-PASS TO HHW SYSTEM.
5. LINE SIZE DISCHARGE FROM PRESSURE RELIEF VALVE TO FLOOR SINK
6. ICW SERVICE TO HHW SYSTEM.
7. SECURE MAKE-UP WATER STATION TO WALL WITH TOLCO B3068 BRACKET. ATTACH BRACKET TO 4X STUDS WITH 5/16" LAG BOLTS, 2-PLCS.

5 MAKE-UP WATER CONNECTION

NO SCALE

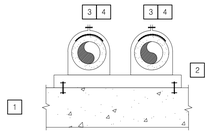


NOTES

1. PROVIDE 5 GALLON CHEMICAL POT FEEDER; SECURE FEEDER TO CONCRETE FLOOR VIA 3/8"Ø HILTI KWIK BOLT II (ICBO #4627) WITH MINIMUM 2-1/2" EMBEDMENT, QTY 3.
2. EXTEND DRAIN SERVICE TO FLOOR SINK IN IMMEDIATE VICINITY.
3. CONCRETE PAD.

3 CHEMICAL POT FEEDER

NO SCALE



NOTES

1. 6" THICK CONCRETE FLOOR, SLAB ON GRADE.
2. PROVIDE GALVANIZED 1-5/8", 12GA STRUT FRAMING, UNISTRUT P1000, OR EQUAL. ANCHOR TO CONCRETE W/ 1/2" X 2-1/2" SS HILTI KB TZ, 2-PLCS PER LOCATION.
3. PROVIDE PIPE CLAMP AROUND SHIELD, INSERT AND PIPE ON EACH SIDE OF THE PUMPS.
4. 2-1/2" HHW PIPING

1 PIPE SUPPORT

NO SCALE

P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

www.p2seng.com

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Details

Sheet Number

M601

P2S No. 8913

FILE PATH & NAME: P:\2013\MECHANICAL\8913_M601 DWG TRAVIS CUNNINGHAM
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STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	Page 1 of 4
Project Name: Antelope Valley College Administration Boiler Replacement	Date Prepared: 08/14/2017

A. MECHANICAL COMPLIANCE DOCUMENTS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2016 Nonresidential Manual

Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

YES	NO	Comp. Doc./Worksheet #	Title
✓		NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
	✓	NRCC-MCH-01-E (Part 2 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-02-A to 11-A). Required on plans for all submittals.
	✓	NRCC-MCH-01-E (Part 3 of 3)	Certificate of Compliance, Required Acceptance Tests (MCH-12-A to 18-A). Required on plans where applicable.
	✓	NRCC-MCH-02-E (Part 1 of 2)	Mechanical Dry Equipment Summary is required for all submittals with Central Air Systems. It is optional on plans.
✓		NRCC-MCH-02-E (Part 2 of 2)	Mechanical Wet Equipment Summary is required for all submittals with chilled water, hot water or condenser water systems. It is optional on plans.
	✓	NRCC-MCH-03-E	Mechanical Ventilation and Reheat is required for all submittals with multiple zone heating and cooling systems. It is optional on plans.
	✓	NRCC-MCH-07-E (Part 1 of 2)	Power Consumption of Fans. Required on plans where applicable
	✓	NRCC-MCH-07-E (Part 2 of 2)	Power Consumption of Fans, Declaration. Required on plans where applicable

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	Page 4 of 4
Project Name: Antelope Valley College Administration Boiler Replacement	Date Prepared: 08/14/2017

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Nate Behning	Documentation Author Signature: [illegible]
Company: P2S Engineering, Inc	Signature Date: 08/14/2017
Address: 5000 E Spring St, 8th Floor	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: Long Beach, CA 90815	Phone: 562-497-2999

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: James Valiensi	Responsible Designer Signature: [illegible]
Company : P2S Engineering, Inc	Date Signed: 08/14/2017
Address: 5000 E Spring St, 8th Floor	License: M34421
City/State/Zip: Long Beach, CA 90815	Phone: 562-497-2999

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

STATE OF CALIFORNIA
HVAC DRY & WET SYSTEM REQUIREMENTS
CEC-NRCC-MCH-02-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Dry & Wet System Requirements	(Page 2 of 3)
Project Name: Antelope Valley College Administration Boiler Replacement	Date Prepared: 08/14/2017

B. Equipment Tags and System Description[1]- Wet Systems		B-1		
MANDATORY MEASURES	***T-24 Sections***	***Reference to the Requirements in the Contract Documents[2]***		
Heating Hot Water Equipment Efficiency[3]	110.1	85% - M002		
Cooling Chilled and Condenser Water Equipment Efficiency[3]	110.1, 140.4(i)	N/A		
Open and Closed Circuit Cooling Towers conductivity or flow-based controls	110.2(e) 1	N/A		
Open and Closed Circuit Cooling Towers Maximum Achievable Cycles of Concentration (LSI)[6]	110.2(e) 2	N/A		
Open and Closed Circuit Cooling Towers Flow Meter with analog output	110.2(e) 3	N/A		
Open and Closed Circuit Cooling Towers Overflow Alarm	110.2(e) 4	N/A		
Open and Closed Circuit Cooling Towers Efficient Drift Eliminators	110.2(e) 5	N/A		
Pipe Insulation	120.3	2" - per table 120.3-A		
PRESCRIPTIVE MEASURES				
Cooling Tower Fan Controls	140.4(h)2, 140.4(h)5	Yes [✓ No]	Yes No	Yes No
Cooling Tower Flow Controls	140.4(h)3	N/A		
Centrifugal Fan Cooling Towers[4]	140.4(h)4	N/A		
Air-Cooled Chiller Limitation[5]	140.4(j)	N/A		
Variable Flow System Design	140.4(k)	N/A		
Chiller and Boiler Isolation	140.4(k)	M501		
CHW and HHW Reset Controls	140.4(k)	M501		
WLHP Isolation Valves	140.4(k)	N/A		
VSD on CHW, CW & WLHP Pumps >5HP	140.4(k)	N/A		
DP Sensor Location	140.4(k)	existing, not in scope		

Notes:
1. *Provide equipment tags (e.g. CH 1 to 3) or system description (e.g. CHW loop) as appropriate. Multiple units with common requirements can be grouped together.*
2. *Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system.*
3. *The referenced plans and specifications must include all of the following information: equipment tag, equipment nominal capacity, Title 24 minimum efficiency requirements, and actual rated equipment efficiencies. Where multiple efficiency requirements are applicable (e.g. full- and part-load) include all. For chillers operating at non-standard efficiencies provide the Kadj values. For chillers also note whether the efficiencies are Path A or Path B.*
4. *Identify if cooling towers have propeller fans. If towers use centrifugal fans document which exception is used.*
5. *If air-cooled chillers are used, document which exceptions have been used to comply with 140.4(j) and the total installed design capacity of the air-cooled chillers in the chilled water plant.*
6. *Identify the existence of a completed MCH-06-E when open or closed circuit cooling towers are specified to be installed, otherwise enter "N/A".*

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

STATE OF CALIFORNIA
HVAC SYSTEM REQUIREMENTS
CEC-NRCC-MCH-02-E (Revised 01/16)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-02-E
HVAC Wet System Requirements	(Page 3 of 3)
Project Name: Antelope Valley College Administration Boiler Replacement	Date Prepared: 08/14/2017

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Responsible Designer Name: James Valiensi	Responsible Designer Signature: [illegible]
Company : P2S Engineering, Inc	Date Signed: 08/14/2017
Address: 5000 E Spring St, 8th Floor	License: M34421
City/State/Zip: Long Beach, CA 90815	Phone: 562-497-2999

CA Building Energy Efficiency Standards - 2016 Nonresidential Compliance January 2016

P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

www.p2seng.com

Consultant

Project Title

Antelope Valley College
Boiler Replacement Campus
WIde Project #17-019
Bid:
#AVC2017/2018-3CUPCCAA

Owner

Antelope Valley College
3041 W Ave. K, Lancaster Ca 93536

REGISTERED PROFESSIONAL ENGINEER
JAMES P. VALIENSI
No. M34421
SIGNED: MM/DD/2017
MECHANICAL
STATE OF CALIFORNIA

Revisions

Number	Description	Date
X	X	XX/XX/XX

Designed	J. Valiensi
Drawn	M. Urfano
Checked	J. Valiensi
Approved	J. Valiensi

Date September 11, 2017

Submittal Bid and Construction Issue

Scale As Noted

Sheet Title

Title 24 Compliance Documents

Sheet Number

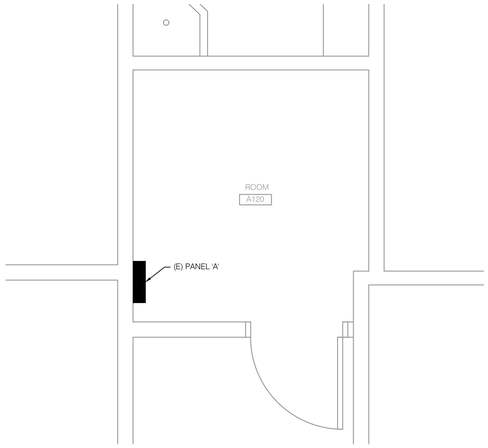
M701

P2S No. 8913

FILE PATH & NAME: R:\J8913\MECHANICAL\J8913_M701.DWG TRAVIS CUNNINGHAM
PLOT: Tuesday, September 12, 2017 8:59:49 AM

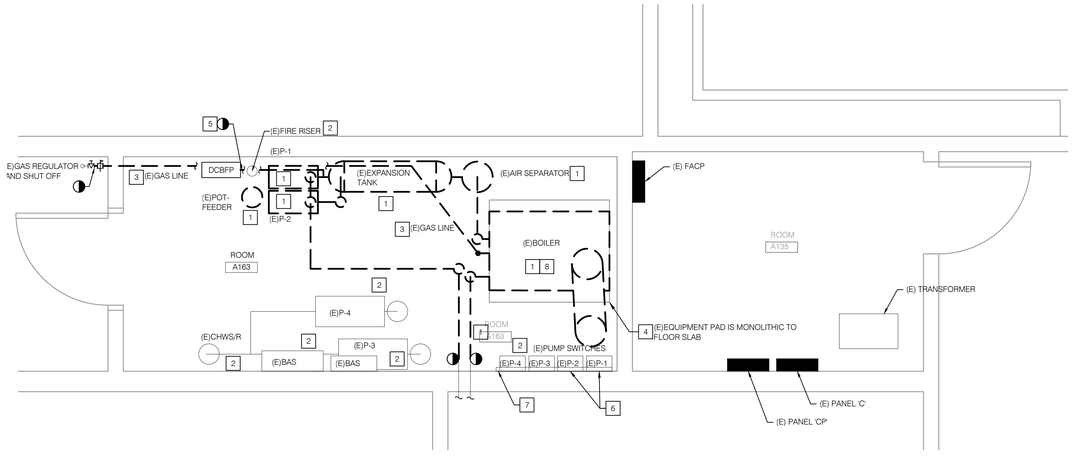
NOTES

1. DEMOLISH AND REMOVE FROM SITE: HHW BOILER, ASSOCIATED HHW PUMPS, EXPANSION TANK, AIR SEPARATOR, POT FEEDER AND PIPE WORK. DEMOLISH HHW PIPE WORK BACK TO POD.
2. PROTECT IN PLACE: CHILLED WATER PUMPS AND ASSOCIATED PIPING, FIRE WATER PIPE AND DEVICES, BAS CABINETS, PUMP SAFETY SWITCHES.
3. DEMO GAS LINE FEED TO BOILER AND GAS REGULATOR.
4. (E) 47" X 40" X 6" CONCRETE BOILER PAD SHALL REMAIN FOR USE WITH NEW EQUIPEMENT.
5. DEMOLISH MAKE-UP, INDUSTRIAL WATER BACK TO DCBFP DEVICE. DCBFP DEVICE SHALL BE LEFT IN PLACE FOR REUSE WITH NEW BOILER SYSTEM.
6. EXISTING SWITCHES P-1, P-2, P-3, AND P-4 FED FROM EXISTING PANEL A-8,10,12, 480V, 40A, 3P BREAKER. EXISTING CONDUIT AND CONDUCTORS FROM EXISTING PANEL A TO EXISTING SWITCHES SHALL REMAIN IN PLACE. EXISTING SWITCHES SHALL REMAIN IN PLACE. DEMO EXISTING CONDUIT AND CONDUCTORS FROM SWITCHES P-1 AND P-2 TO EXISTING PUMPS INDICATED BY NOTE 1, THIS SHEET. REFER TO SHEET M201 FOR NEW CONNECTION.
7. EXISTING ELECTRICAL GUTTER LOCATED UNDER EXISTING SWITCHES SHALL REMAIN IN PLACE.
8. EXISTING BOILER FED FROM EXISTING PANEL C-3, 120V, 20A, 1P BREAKER. DISCONNECT AND REMOVE EXISTING CONDUCTORS BACK TO PANEL C. RETAIN EXISTING CONDUIT TO ALLOW FOR RECONNECTION TO NEW BOILER. FIELD VERIFY EXACT BREAKER PRIOR TO DISCONNECTION. REFER TO SHEET M201 FOR NEW CONNECTION.



2 ELECTRICAL ROOM A120

1/2" = 1'-0"



1 PARTIAL FLOOR PLAN

1/2" = 1'-0"

KEY PLAN

LEGEND

AREA OF WORK

NOT TO SCALE

p2s

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Antelope Valley College
3041 W Ave. K, Lancaster Ca 93536

REGISTERED PROFESSIONAL ENGINEER
SIGNED: MM/DD/2017
MECHANICAL
STATE OF CALIFORNIA

Revisions

Number	Description	Date
1	X	XX/XX/XX

Designed	J. Valiensi
Drawn	M. Urfano
Checked	J. Valiensi
Approved	J. Valiensi
Date	September 11, 2017
Submittal	Bid and Construction Issue
Scale	As Noted

Sheet Title

Mechanical and Electrical Demolition Partial Floor Plan

Sheet Number

MED201

P2S No. 8913

FILE PATH & NAME: P:\JOBS\MECHANICAL\8913_MD201.DWG TRAVIS CUNNINGHAM
PLOT: Tuesday, September 12, 2017 8:59:54 AM

ABBREVIATIONS:

CODES/INSTITUTIONS/ASSOCIATIONS

ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWS	AMERICAN WELDING SOCIETY
CBC	CALIFORNIA BUILDING CODE
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
IBC	INTERNATIONAL BUILDING CODE

SYMBOLS

#	POUND, NUMBER, QUANTITY
@	AT
<	LESS THAN
>	GREATER THAN
±	PLUS OR MINUS
°	DEGREE
Ø	DIAMETER

ABBREVIATIONS

AB	ANCHOR BOLT
ADDL	ADDITIONAL
ADJ	ADJACENT
ALT	ALTERNATE
APPROX	APPROXIMATE, APPROXIMATELY
ARCH	ARCHITECT, ARCHITECTURAL
BM	BEAM
BOT	BOTTOM
BTWN	BETWEEN
CALCS	CALCULATIONS
CG	CENTER OF GRAVITY
CL	CENTERLINE
CLR	CLEAR, CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECT, CONNECTION
CONT	CONTINUOUS
DBL	DOUBLE
DIAG	DIAGONAL
DIM	DIMENSION
DWG	DRAWING
(E)	EXISTING
EA	EACH
EF	EACH FACE
ELEC	ELECTRICAL
EMBED	EMBED, EMBEDDED, EMBEDMENT
EOR	ENGINEER OF RECORD
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EXP	EXPANSION
EXT	EXTERIOR
FDN	FOUNDATION
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZE
HEX	HEXAGONAL
HORIZ	HORIZONTAL
ID	INSIDE DIAMETER
INFO	INFORMATION
IOR	INSPECTOR OF RECORD
K	KIPS (1000#)
KB-TZ	HILTI KWIK BOLT TZ (ANCHOR)
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
LBS	POUNDS
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOCS	LOCATIONS
LONG	LONGITUDINAL
LTWT	LIGHTWEIGHT
MANUF	MANUFACTURER
MAX	MAXIMUM
MECH	MECHANICAL
MHP	MHP STRUCTURAL ENGINEERS
MID	MIDDLE
MIN	MINIMUM
(N)	NEW
N/A	NOT APPLICABLE
NTS	NOT TO SCALE
OC	ON CENTER
OP	OPERATING
PERP	PERPENDICULAR
PL	PLATE, PROPERTY LINE
PLF	POUNDS PER LINEAR FOOT
PSI	POUNDS PER SQUARE INCH
QTY	QUANTITY
REINF	REINFORCING
REQD	REQUIRE, REQUIRED
SCHED	SCHEDULE
SEOR	STRUCTURAL ENGINEER OF RECORD
SIM	SIMILAR
SMS	SHEET METAL SCREW
SQ	SQUARE
SS	STAINLESS STEEL
STAGG	STAGGER
STIFF	STIFFEN, STIFFENER
STIRR	STIRRUP
STRUC	STRUCTURAL
SYM	SYMMETRICAL
T&B	TOP & BOTTOM
THK	THICK, THICKNESS
THRU	THROUGH
TRANS	TRANSVERSE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
W/O	WITHOUT
WP	WORK POINT
WT	WEIGHT

GENERAL STRUCTURAL NOTES:

DESIGN CRITERIA:
CODE OF RECORD: 2016 EDITION, CALIFORNIA BUILDING CODE

DESIGN LOADS:
ANALYSIS PROCEDURE________SEISMIC DESIGN FOR NONSTRUCTURAL COMPONENTS (ASCE 7-10, CHAPTER 13)
RISK CATEGORY________II
SEISMIC SITE CLASS________D
SEISMIC DESIGN CATEGORY________D
SPECTRAL RESPONSE ACCELERATIONS________S_S = 1.525g, S_{DS} = 1.016g
SEISMIC IMPORTANCE FACTOR, I_p________1.0

BOILER:
COMPONENT AMPLIFICATION FACTOR________a_P = 1.0
COMPONENT RESPONSE MODIFICATION FACTOR________R_P = 2.5
OVERSTRENGTH FACTOR________Ω_0 = 2.5

1. GENERAL NOTES AND TYPICAL DETAILS SHALL APPLY TO ALL PARTS OF THE JOB, EXCEPT WHERE THEY MAY DIFFER WITH DETAILS AND NOTES ON OTHER SHEETS, IN WHICH CASE THE DETAILS AND NOTES ON OTHER SHEETS SHALL GOVERN. DETAIL MARKS WITH "SIM" NOTED INDICATES THAT DETAIL CONTAINS MODIFIED INFORMATION APPLICABLE TO THE CONDITION REFERENCED.

2. SEE MECHANICAL, ELECTRICAL OR PLUMBING (MEP) DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS (EXCEPT AS NOTED), INSERTS, FINISHES, ETC., FOR DETAILS (EXCEPT AS SHOWN), AND FOR DIMENSIONS NOT SHOWN ON STRUCTURAL DRAWINGS. WHERE DIMENSIONS DIFFER BETWEEN PLANS, NOTIFY SEOR AND AWAIT DIRECTION PRIOR TO PROCEEDING WITH WORK.

3. DO NOT INSERT MECHANICAL, ELECTRICAL OR PLUMBING (MEP) SLEEVES, PIPES OR CONDUIT IN CONCRETE WITHOUT PRIOR APPROVAL OF THE SEOR, TYPICAL UNLESS NOTED OTHERWISE ON PLAN.

4. OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE WORKING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE SEOR PRIOR TO PROCEEDING WITH ANY WORK INVOLVED.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT AND THE SEOR AND SHALL BE RESOLVED PRIOR TO PROCEEDING WITH THE WORK.

6. ALL INFORMATION SHOWN ON THE DRAWINGS RELATIVE TO EXISTING CONDITIONS IS GIVEN AS THE BEST CURRENT KNOWLEDGE, BUT WITHOUT GUARANTEE OF ACCURACY. WHERE ACTUAL CONDITIONS CONFLICT WITH THE DRAWINGS, THEY SHALL BE REPORTED TO THE SEOR SO THAT THE PROPER REVISION MAY BE MADE. MODIFICATIONS OF CONSTRUCTION DETAILS SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE SEOR.

7. THE CONTRACT DRAWINGS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OR SEQUENCE OF CONSTRUCTION, UNLESS NOTED OTHERWISE. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES, INCLUDING BUT NOT LIMITED TO BRACING, SHORING AND LAYDOWN OF CONSTRUCTION MATERIALS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TEMPORARY CONSTRUCTION LOADING, INCLUDING LOADING FROM EQUIPMENT SUCH AS SKIP LOADERS, SCISSOR LIFTS, ETC., ON ALL PORTIONS OF THE STRUCTURE, WHETHER ELEVATED OR ON-GRADE. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE PATH-OF-TRAVEL FOR MOVING PERMANENT EQUIPMENT TO ITS FINAL LOCATION; INCLUDING THE EFFECTS OF TEMPORARY LOADING AS THE EQUIPMENT IS INSTALLED. THE CONTRACTOR MAY USE THE "DESIGN LOADS" INFORMATION PROVIDED ABOVE WHEN CONSIDERING TEMPORARY CONSTRUCTION LOADING CONDITIONS.

9. VISITS TO THE SITE BY FIELD REPRESENTATIVES OF THE ARCHITECT/SEOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OF THE CONSTRUCTION PROCEDURES. ANY SUPPORT SERVICES PERFORMED BY THE ARCHITECT/SEOR DURING THE CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED SPECIAL INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES PERFORMED BY THE ARCHITECT/SEOR, WHETHER OF MATERIAL OR WORK, AND WHETHER PERFORMED PRIOR TO, DURING OR AFTER COMPLETION OF CONSTRUCTION, ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS, BUT DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE, AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.

10. ASTM DESIGNATIONS AND ALL STANDARDS REFER TO THE LATEST AMENDMENTS.

11. WHEN THE ALLOWANCE FOR SUBSTITUTION OF A SPECIFIED MATERIAL OR PRODUCT DESIGNATION IS IMPLIED ON THE DESIGN DRAWINGS BY THE USE OF THE WORDS "OR APPROVED EQUAL", APPROVAL SHALL BE OBTAINED FROM THE SEOR AND THE GOVERNING AGENCY PRIOR TO FABRICATION OR INSTALLATION OF THE SUBSTITUTED MATERIAL OR PRODUCT.

12. DIMENSIONS SHALL GOVERN OVER SCALES SHOWN ON DRAWINGS.

13. THE OWNER SHALL EMPLOY ONE OR MORE SPECIAL INSPECTORS WHO SHALL PROVIDE SPECIAL INSPECTIONS DURING CONSTRUCTION WHEN SO SPECIFIED ON THE CONTRACT DRAWINGS FOR CERTAIN TYPES OF WORK. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE HIS COMPETENCE, TO THE SATISFACTION OF THE GOVERNING AGENCY, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE DESIGN DRAWINGS. THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE SEOR AND TO THE GOVERNING AGENCY. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN, IF UNCORRECTED, TO THE SEOR AND TO THE GOVERNING AGENCY. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF HIS KNOWLEDGE, IN CONFORMANCE WITH THE DESIGN DRAWINGS AND THE APPLICABLE WORKMANSHIP PROVISION OF THE CODE AND OTHER APPLICABLE REGULATIONS IDENTIFIED ON THE PLANS.

14. UNLESS SPECIFICALLY SHOWN ON THESE PLANS, NO STRUCTURAL MEMBER (BEAM, COLUMN, SHEARWALL, GRADE BEAM, ETC.) SHALL BE CUT, DRILLED OR NOTCHED WITHOUT PRIOR AUTHORIZATION FROM THE SEOR AND THE GOVERNING AGENCY.

15. DIMENSIONS OF EQUIPMENT ANCHOR/ MOUNTING LOCATIONS SHOWN ON PLANS AND/OR DETAILS ARE TO BE COORDINATED WITH ACTUAL EQUIPMENT TO BE INSTALLED. CONTRACTOR TO VERIFY THE EXACT SIZE AND LOCATION OF ALL EQUIPMENT ANCHOR/ MOUNTING HOLES PRIOR TO INSTALLATION. WHERE ACTUAL EQUIPMENT DIMENSIONS DO NOT FALL WITHIN THE MINIMUM OR MAXIMUM DIMENSIONS PROVIDED ON PLANS AND/OR DETAILS, NOTIFY SEOR AND AWAIT DIRECTION PRIOR TO PROCEEDING WITH WORK.

REINFORCING STEEL:

1. DETAILING, FABRICATION AND PLACING OF REINFORCING STEEL SHALL CONFORM TO STANDARDS AND RECOMMENDATIONS CONTAINED WITHIN THE CRSI "MANUAL OF STANDARD PRACTICE". DETAILING FABRICATION AND PLACING OF WELDED WIRE REINFORCING SHALL CONFORM TO THE STANDARDS AND RECOMMENDATIONS CONTAINED WITHIN THE WRI "MANUAL OF STANDARD PRACTICE - STRUCTURAL WELDED WIRE REINFORCEMENT".

2. REINFORCING BARS (REBAR), STEEL WELDED WIRE REINFORCING (WWR), AND TIE WIRE USED TO SECURE REBAR AND WWR SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS, UNO:
   A. REINFORCING, (ALL BAR SIZES, UNO):________ASTM A-615, GR 60
   B. REINFORCING BARS TO BE WELDED (ALL BAR SIZES UNO):________ASTM A-706
   C. WELD WIRE REINFORCING:________ASTM A-185
   D. TIE WIRE:________ASTM A-82

3. ALL REINFORCING STEEL SHALL BE BENT COLD. GRADE 60 BARS MAY ONLY BE BENT ONCE, STRAIGHTENING AND/OR RE-BENDING IS NOT ALLOWED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SEQUENCE PLACEMENT OF REINFORCING SUCH THAT INCIDENTAL BENDING DOES NOT OCCUR.

4. PRIOR TO PLACING CONCRETE; REINFORCING STEEL, INCLUDING WWR, AND OTHER EMBEDDED ITEMS SHALL BE WELL-SECURED IN POSITION AND SHALL BE CLEAN OF RUST, GREASE OR OTHER MATERIAL LIKELY TO IMPAIR BOND. WHERE TWO LAYERS OF REINFORCING STEEL ARE REQUIRED (I.E. FOOTING PADS OR SLABS) PROVIDE APPROPRIATE CHAIRS TIED TO AND SUPPORTED BY LOWER MAT OF REINFORCING TO SUPPORT THE UPPER MAT OF REINFORCING. "HOOK AND PULL" METHODS SHALL NOT BE ALLOWED.

5. CONCRETE PROTECTION FOR REINFORCING BARS SHALL BE AT LEAST EQUAL TO THE DIAMETER OF THE BAR. MINIMUM COVER FOR CAST IN PLACE CONCRETE SHALL BE AS FOLLOWS:
   A. CAST AGAINST AND PERMANENTLY IN CONTACT WITH GROUND:
      - ALL MEMBERS, ALL REINFORCEMENT:________3"
   B. EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
      - ALL MEMBERS, #6 THROUGH #18 BARS:________2"
      - ALL MEMBERS, #5, W31 OR D31 WIRE AND SMALLER________1 1/2"
   C. NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
      - SLABS, JOISTS, WALLS; #14 AND #18 BARS:________1 1/2"
      - SLABS, JOISTS, WALLS; #11 BARS AND SMALLER:________3/4"
      - BEAMS, COLUMNS;
        PRIMARY REINF, STIRRUPS, TIES, SPIRALS AND HOOPS:________1 1/2"

6. MINIMUM CLEAR SPACING BETWEEN PARALLEL BARS IN A SINGLE LAYER SHALL NOT BE LESS THAN 1 1/2", 4/3 TIMES LARGEST AGGREGATE, 1 1/2 TIMES DIAMETER OF THE LARGER BAR, WHICHEVER IS GREATER. WHERE PARALLEL REINFORCING IS PLACED IN TWO OR MORE LAYERS, BARS IN THE UPPER LAYERS SHALL BE PLACED DIRECTLY ABOVE THE BARS IN LOWER LAYERS WITH NOT LESS THAN 1" CLEAR SPACE BETWEEN LAYERS.

7. DO NOT LAP SPLICE REINFORCING STEEL UNLESS CALLED FOR ON PLANS.

8. CONTRACTOR SHALL SCHEDULE SPECIAL INSPECTIONS SO THAT BAR SIZE, SPACING, LAP SPLICE AND EMBEDMENT LENGTH OF REINFORCING BARS, AND THE LOCATION OF CONDUIT, SLEEVES AND EMBEDDED ITEMS, MAY BE CORRECTED, IF NECESSARY, PRIOR TO PLACEMENT OF OVERLYING GRIDS OF REINFORCING STEEL AND/OR PLACEMENT OF CONCRETE.

CONCRETE:

1. ALL CONCRETE WORK SHALL CONFORM TO THE STANDARDS OF THE AMERICAN CONCRETE INSTITUTE (ACI), "ACI MANUAL OF CONCRETE PRACTICE" CURRENT EDITION, "SPECIFICATIONS FOR STRUCTURAL CONCRETE" (ACI 301), AND BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318).

2. NORMAL WEIGHT (NWT) CONCRETE SHALL HAVE A DRY UNIT WEIGHT OF 150 ± 3 PCF. AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33.

3. CEMENT SHALL CONFORM TO PORTLAND CEMENT ASTM C-150 (TYPE II) UNLESS NOTED OTHERWISE. WHEN USED IN THE CONCRETE MIX, FLY ASH SHALL CONFORM TO ASTM C618 CLASS C OR F.

4. MIXING WATER SHALL CONFORM TO ASTM C1602.

5. ADMIXTURES SHALL CONFORM TO THE FOLLOWING:
   A. WATER REDUCTION AND SETTING TIME MODIFICATION:________ASTM C494
   B. PRODUCING FLOWING CONCRETE:________ASTM C1017
   C. AIR ENTRAINMENT:________ASTM C260
   D. INHIBITING CHLORIDE-INDUCED CORROSION:________ASTM C1582

6. CONCRETE SHALL ATTAIN THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH (f'c) AT 28 DAYS AND SHALL MEET THE OTHER REQUIREMENTS INDICATED BELOW:
   A. HOUSE KEEPING PADS:________3,000 PSI, NWT, 1 1/2" AGGREGATE, 0.45 W/C

7. MAXIMUM SLUMP FOR CONCRETE MIXES SHALL BE 5" TYPICALLY AND 4" FOR ALL FLATWORK, WHETHER ON GRADE OR ELEVATED, UNLESS A HIGH RANGE WATER REDUCING ADMIXTURE IS SPECIFIED FOR USE IN THE CONCRETE MIX DESIGN.

8. CONCRETE MIX PROPORTIONING SHALL BE IN ACCORDANCE WITH ARTICLE 4.2.3 OF ACI 301, AND BASED ON FIELD EXPERIENCE AND/OR TRIAL MIXTURES. STRENGTH TEST RECORDS USED FOR ESTABLISHING AND DOCUMENTING CONCRETE MIXTURE PROPORTIONS SHALL BE NO MORE THAN 24 MONTHS OLD. A CONCRETE MIX DESIGN SHALL BE PROVIDED FOR EACH TYPE AND COMPRESSIVE STRENGTH OF CONCRETE TO BE USED ON THE PROJECT. THE CONCRETE MIX DESIGN SHALL BE PREPARED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER AND TESTING SHALL BE BY AN APPROVED TESTING LABORATORY. ALL CONCRETE MIX DESIGNS SHALL BE STAMPED AND SIGNED BY THE REGISTERED PROFESSIONAL ENGINEER RESPONSIBLE FOR THE MIX PROPORTIONING AND SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD (SEOR) FOR REVIEW.

9. CONCRETE MIX DESIGN SHALL BE PREPARED BY AN APPROVED TESTING LAB AND A REGISTERED CIVIL ENGINEER AND SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD (SEOR) FOR REVIEW. CONCRETE MIX DESIGN SUBMITTALS SHALL BE STAMPED AND SIGNED BY THE LICENSED ENGINEER RESPONSIBLE FOR THE MIX DESIGN.

10. ALL FURNISHED CONCRETE MIX DESIGNS SHALL REFLECT PROVEN CONCRETE SHRINKAGE CHARACTERISTICS OF 0.0006 IN/IN (0.06%) FINAL SHRINKAGE STRAIN OR LESS AS DETERMINED IN ACCORDANCE WITH ASTM C157.

11. CONCRETE SHALL BE CONVEYED TO FINAL LOCATION BY METHODS THAT PREVENT SEGREGATION OR LOSS OF CONSTITUENTS AND ENSURE THE REQUIRED CONCRETE QUALITY.

12. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR COORDINATING WITH ALL TRADES TO VERIFY THE LOCATION OF ALL ITEMS SUCH AS, BUT NOT LIMITED TO, SLEEVES, ANCHORS, ANCHOR BOLTS, CONDUITS, EMBED PLATES ETC. TO BE INSTALLED WITHIN CONCRETE ELEMENTS. EMBEDDED ITEMS NOT SPECIFICALLY SHOWN IN THE STRUCTURAL DRAWINGS SHALL BE LOCATED BY THE TRADES/SUB-CONTRACTORS INVOLVED, AND SHALL BE REVIEWED BY THE SEOR PRIOR TO PLACEMENT OF CONCRETE. IN COORDINATING THE LOCATION OF EMBEDDED ITEMS NOT OTHERWISE LOCATED IN THE STRUCTURAL DRAWINGS, PRIORITY SHALL BE GIVEN TO MAINTAIN SPACING AND CONTINUITY OF ALL REINFORCING. EMBEDDED ITEMS SHALL BE WELL DISTRIBUTED TO AVOID CLUSTERING IN SUCH A MANNER AS TO REQUIRE CUTTING OR RELOCATION OF REINFORCING STEEL.

13. UNLESS OTHERWISE NOTED, BOLTS EMBEDDED IN CONCRETE SHALL BE ASTM F-1554 GR 36. ALL EMBEDDED ANCHOR BOLTS SHALL BE HEADED-TYPE. DO NOT USE J-TYPE BOLTS.

14. UNLESS OTHERWISE NOTED, A 3/4" CHAMFER SHALL BE PROVIDED AT EXPOSED EDGES OF CONCRETE BEAMS AND COLUMNS.

15. PRIOR TO PLACING CONCRETE, ALL EMBEDDED ITEMS, INCLUDING REINFORCING STEEL, SHALL BE WELL SECURED IN POSITION. CONCRETE SHALL NOT BE POURED UNTIL ALL FORMS AND REINFORCING HAVE BEEN INSPECTED, ALL PREPARATIONS FOR THE PLACEMENT HAVE BEEN COMPLETED, AND THE PREPARATIONS HAVE BEEN REVIEWED BY THE PROJECT INSPECTOR.

16. ONLY ONE GRADE OF CONCRETE SHALL BE ALLOWED AT THE JOB SITE AT ANY ONE TIME.

17. CONCRETE TO BE PLACED DURING COLD WEATHER SHALL COMPLY WITH ACI 306R, "GUIDE TO COLD WEATHER CONCRETING" AND ACI 306.1, "STANDARD SPECIFICATION FOR COLD WEATHER CONCRETING".

18. CONCRETE TO BE PLACED DURING HOT WEATHER SHALL COMPLY WITH ACI 305R, "GUIDE TO HOT WEATHER CONCRETING" AND ACI 305.1, "STANDARD SPECIFICATION FOR HOT WEATHER CONCRETING".

19. CONCRETE SHALL BE MAINTAINED IN A CONTINUOUSLY MOIST CONDITION ABOVE 50F FOR A MINIMUM OF SEVEN (7) DAYS AFTER PLACEMENT. THE 7-DAY REQUIREMENT MAY BE REDUCED TO 3 DAYS FOR HIGH-EARLY-STRENGTH CONCRETE. ALTERNATE ACCELERATED CURING METHODS MAY BE APPROVED BY THE SEOR IF SATISFACTORY PERFORMANCE CAN BE ASSURED.

20. THE CONTRACTOR SHALL DEVELOP A PROCEDURE AND SCHEDULE FOR REMOVAL OF SHORES AND INSTALLATION OF RE-SHORES, AS REQUIRED. NO CONSTRUCTION LOADS SHALL BE SUPPORTED ON, NOR ANY SHORING REMOVED FROM, ANY PART OF THE STRUCTURE UNDER CONSTRUCTION EXCEPT WHEN THE CONTRACTOR'S ANALYSIS, PROCEDURES AND SCHEDULE INDICATE THAT THE SUBJECT PART OF THE STRUCTURE HAS SUFFICIENT STRENGTH AND STIFFNESS TO SUPPORT ITS WEIGHT AND LOAD PLACED THEREON WITHOUT ADVERSE EFFECT. AT A MINIMUM, ALL ELEVATED STRUCTURAL MEMBERS SHALL BE SHORED UNTIL CONCRETE HAS REACHED DESIGN STRENGTH AND ORIGINAL SHORING OR RE-SHORING SHALL REMAIN IN PLACE FOR A MINIMUM OF 28 DAYS.

21. ALL CONCRETE SHALL BE TESTED AND INSPECTED AS REQUIRED PER THE SPECIAL INSPECTION SECTION OF THESE GENERAL NOTES.

STRUCTURAL AND MISCELLANEOUS STEEL:

1. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION. ALL STRUCTURAL AND MISCELLANEOUS STEEL SHALL CONFORM TO THE FOLLOWING SPECIFICATION (UNLESS NOTED OTHERWISE):
   A. CHANNELS AND MISC SHAPES (C,MC,S,M)________ASTM A-36________FY=36KSI
   B. ANGLES AND PLATES________ASTM A-36________FY=36KSI
   C. HSS TUBE (SQ,RECTANG)________ASTM A-500, GR C________FY=50KSI

2. ALL STEEL EXPOSED TO MOISTURE OR WEATHER SHALL BE HOT-DIPPED GALVANIZED, UNLESS NOTED OTHERWISE.

3. WHERE CARBON STEEL IS IN CONTACT WITH STAINLESS STEEL OR WHERE EITHER CARBON OR STAINLESS STEEL IS IN CONTACT WITH ALUMINUM, A BITUMINOUS COATING SHALL BE APPLIED TO THE COMPLETE CONTACT AREA.

4. BOLTS SHALL CONFORM TO ASTM A-307 OR A-325, UNLESS NOTED OTHERWISE. THREADED RODS SHALL CONFORM TO ASTM A-36.

5. UNLESS NOTED OTHERWISE, ALL BOLTS SHALL BE INSTALLED "SNUG TIGHT". THE SNUG TIGHT CONDITION IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN ALL PLIES OF THE JOINT ARE IN FIRM CONTACT.

6. ALL WELDING SHALL COMPLY WITH AWS SPECIFICATIONS AND SHALL BE PERFORMED BY WELDERS CERTIFIED FOR THE TYPE OF WELDING TO BE PERFORMED. WELDING PROCEDURE SPECIFICATIONS (WPS) SHALL BE PROVIDED FOR EACH WELD TYPE SHOWN ON THE DRAWINGS IN CONFORMANCE WITH AWS D1.1 AND D1.4. EACH WPS SHALL BE REVIEWED BY AN AWS SCWI CERTIFIED INSPECTOR AND SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD (SEOR) FOR REVIEW. IF A WELD ASSEMBLY NOTED ON PLANS DOES NOT FALL WITHIN THE PREQUALIFIED CRITERIA, CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A QUALIFICATION RECORD FOR THE SPECIFIED WELD AS PART OF THE WPS SUBMITTAL.

7. ALL WELDING SHALL BE DONE BY ELECTRIC ARC PROCESS WITH E70XX ELECTRODES.

8. ALL STRUCTURAL FIELD WELDING SHALL REQUIRE SPECIAL INSPECTION BY AN AWS CERTIFIED INSPECTOR APPROVED BY THE GOVERNING AGENCY (WELDING OF MISCELLANEOUS LIGHT-GAUGE MATERIALS SUCH AS METAL STUDS, FURRING CHANNELS, ETC., DOES NOT REQUIRE SPECIAL INSPECTION).

9. ALL SHOP WELDING SHALL BE DONE IN THE SHOP OF A LICENSED STEEL FABRICATOR APPROVED BY THE GOVERNING AGENCY OR SHALL REQUIRE SPECIAL INSPECTION BY AN AWS CERTIFIED INSPECTOR APPROVED BY THE GOVERNING AGENCY.

POST-INSTALLED ANCHORS:

1. POST INSTALLED ANCHOR NOTES IN THIS SECTION SHALL APPLY TO ALL ANCHORS INSTALLED INTO HARDENED CONCRETE OR MASONRY EXCEPT FOR POWDER DRIVEN FASTENERS AS APPLICABLE.

2. INSTALLATION SHALL CONFORM TO THE MANUFACTURER'S INSTRUCTIONS AND THE APPLICABLE EVALUATION REPORT, AND SHALL BE INSTALLED BY PERSONNEL TRAINED TO INSTALL THE TYPE OF POST-INSTALLED ANCHOR BEING INSTALLED.

3. LOCATE EXISTING REINFORCING BY NON-DESTRUCTIVE METHODS PRIOR TO DRILLING. EXISTING REINFORCING SHALL NOT BE CUT OR DAMAGED.

   HOLES FOR INSTALLATION OF THE POST-INSTALLED ANCHOR SHALL BE DRILLED USING A DRILL THAT HAS A CARBIDE-TIPPED BIT THAT COMPLIES WITH ANSI B212.15. A REBAR CUTTING DRILL BIT IS NOT ALLOWED.

4. CONTRACTOR SHALL USE APPROPRIATE EQUIPMENT AND METHODS AS REQUIRED TO PROVIDE DRILLED HOLES FOR POST-INSTALLED ANCHORS IN ACCORDANCE WITH APPLICABLE STANDARDS, MANUFACTURER'S RECOMMENDATIONS, AND QUALIFYING (ICC) TEST REPORTS. CARE SHALL BE TAKEN TO PREVENT OVERSIZING, OVALING, AND/OR BLOW-OUT THROUGH THE BACK FACE OF THE DRILLED MEMBER. IF OVERSIZING, OVALING, AND/OR BLOW-OUT OCCURS, THE EMPLOYED EQUIPMENT AND METHODS SHALL BE DISCONTINUED. ADDITIONAL DRILLING SHALL NOT BE RESUMED UNTIL THE SEOR HAS PROVIDED APPROVED REPAIR PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ALL SUCH REPAIRS. WHEN RESUMING DRILLING, THE CONTRACTOR SHALL MODIFY THE PROCEDURES AS NECESSARY TO PREVENT FURTHER DAMAGE.

5. HOLES SHALL BE CLEANED OF DUST AND DEBRIS, USING A WIRE BRUSH AND COMPRESSED AIR OR MANUFACTURER'S BLOW-OUT BULB (AS PER MANUFACTURER'S RECOMMENDATIONS) AS REQUIRED TO REMOVE PARTICULATE DEBRIS AND TO ACHIEVE A RELATIVELY DUST-FREE SURFACE.

6. OIL, SCALE, AND RUST SHALL BE REMOVED FROM THE POST-INSTALLED ANCHOR AND HOLES SHALL BE DRY, PRIOR TO INSTALLATION.

   THE EFFECTIVE EMBEDMENT DEPTH FOR POST INSTALLED ANCHORS SHALL BE AS NOTED ON THE DETAILS. FOR EXPANSION ANCHORS, REFER TO THE APPLICABLE EVALUATION REPORT FOR THE CORRESPONDING MINIMUM HOLE DEPTH AND NOMINAL EMBEDMENT.

7. APPROVED ADHESIVE ANCHOR SYSTEMS (AND THREADED ROD) AND EVALUATION REPORTS ARE AS FOLLOWS:

   A. CONCRETE:
      - HILTI HIT-RE 500 V3 (ISO 898 CLASS 5.8)________ESR-3814
      - HILTI HIT-HY 200 (ISO 898 CLASS 5.8)________ESR-3187

10. APPROVED EXPANSION ANCHORS AND EVALUATION REPORTS ARE AS FOLLOWS:

   A. CONCRETE:
      - STAINLESS STEEL HILTI KWIK BOLT-TZ ANCHORS________ESR-1917
      - DEWALT/POWERS POWER-STUD+ SD4 OR SD6________ESR-2502
      - STAINLESS STEEL SIMPSON STRONG-TIE STRONG-BOLT 2 WEDGE ANCHOR________ESR-3037

11. WHERE APPLICABLE, EXPANSION ANCHORS SHALL BE INSTALLED WITH THE MINIMUM TORQUE, USING A CALIBRATED TORQUE WRENCH. WEDGE OR SLEEVE TYPE ANCHORS MUST ATTAIN THE SPECIFIED TORQUE WITHIN ONE HALF TURN OF THE NUT, EXCEPT 3/8" DIAMETER WEDGE OR SLEEVE TYPE ANCHORS MUST ATTAIN SPECIFIED TORQUE WITHIN ONE QUARTER TURN OF THE NUT.

12. INSTALLATION TORQUES SHALL BE AS NOTED BELOW:

HILTI KB-TZ INSTALLATION TORQUE LOADS

NOMINAL ANCHOR DIAMETER	REQUIRED TORQUE (FT-LB) IN CONCRETE	REQUIRED TORQUE (FT-LB) IN MASONRY
3/8"	25	15
1/2"	40	25
5/8"	60	35
3/4"	110	70

DEWALT/POWERS+ SD2, SD4, OR SD6 INSTALLATION TORQUE LOADS

NOMINAL ANCHOR DIAMETER	REQUIRED TORQUE (FT-LB) IN CONCRETE
3/8"	20
1/2"	40
5/8"	60
3/4"	110

SIMPSON STRONG BOLT 2 INSTALLATION TORQUE LOADS

NOMINAL ANCHOR DIAMETER	REQUIRED TORQUE (FT-LB) IN CONCRETE
3/8"	30
1/2"	60
5/8"	90
3/4"	150

13. PERIODIC SPECIAL INSPECTION IS REQUIRED FOR INSTALLATION OF ALL POST-INSTALLED ANCHORS.

p2s

P2S Engineering, Inc.
5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990
www.p2seng.com

Consultant
MHP STRUCTURAL ENGINEERS
3900 Cover Street
Long Beach, CA 90808
562.985.3200 P
562.985.1011 F
MHP JN 17-0445-00

Project Title
Antelope Valley College
Boiler Replacement Campus
WIde Project #17-019
Bid:
#AVC2017/2018-3CUPCCAA

Owner
ANTELOPE VALLEY COLLEGE
Antelope Valley College
3041 W Ave. K, Lancaster Ca 93536

REGISTERED PROFESSIONAL ENGINEER
TERRY FERNANDEZ
No.3256
Exp 03-31-19
STRUCTURAL
STATE OF CALIFORNIA

Revisions
Number Description Date

Designed	C Stone
Drawn	J Arciaga
Checked	K B. Rantowich
Approved	T L. Fernandez
Date	September 11, 2017
Submittal	Bid and Construction Issue
Scale	As Noted

Sheet Title
Structural Notes and Abbreviations

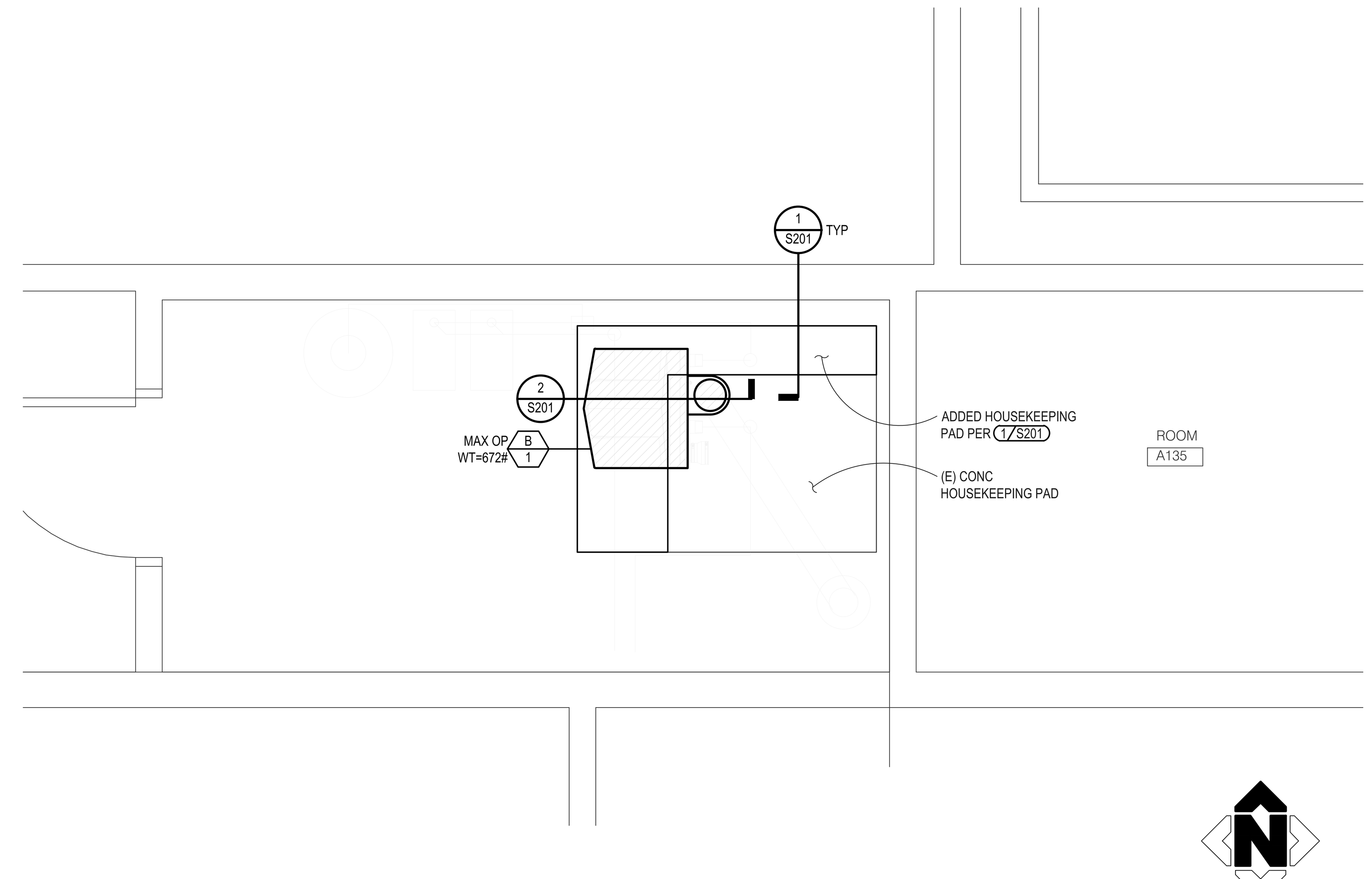
Sheet Number
S001

P2S No. 8913

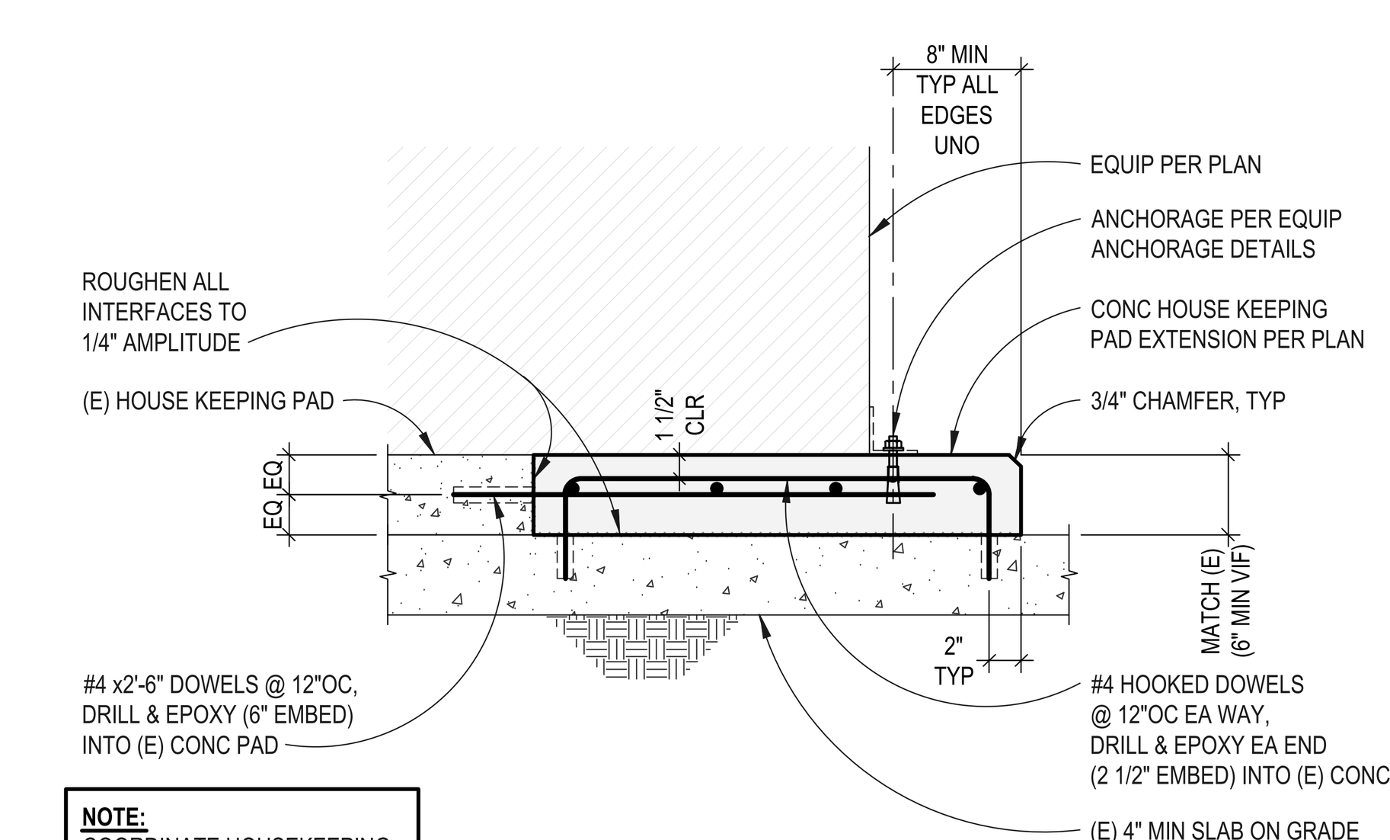
FILE PATH & NAME: H:\2017\170445\3_DRAWINGS\DWGS-00\17-0445-00_S001 (STRUCTURAL NOTES AND ABBREVIATIONS).DWG SHAWN ALVIRA
PLOT: Tuesday, September 12, 2017 3:26:11 PM

PARTIAL PLAN NOTES

1. EXISTING CONSTRUCTION IS SHOWN FADED AND IS LABELED AS EXISTING OR (E). NEW CONSTRUCTION IS SHOWN SOLID AND IS SPECIFICALLY REFERENCED BY DETAILS AND NOTES.
2. EXISTING CONDITIONS ARE SHOWN TO THE BEST OF OUR KNOWLEDGE. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ACTUAL CONDITIONS. DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND THOSE SHOWN ON THESE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PROCEEDING.
3. SEE GENERAL NOTES SHEET S1.0 FOR APPLICABLE NOTES REGARDING THE VARIOUS CONSTRUCTION ELEMENTS SHOWN ON PLAN. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.
4. SEE MECHANICAL DRAWINGS FOR LOCATION OF **ALL** EQUIPMENT.
5. DIMENSIONS OF EQUIPMENT ANCHOR/ MOUNTING LOCATIONS SHOWN ON PLANS AND/OR DETAILS ARE TO BE COORDINATED WITH ACTUAL EQUIPMENT TO BE INSTALLED.
6. CONTRACTOR TO VERIFY THE EXACT SIZE AND LOCATION OF **ALL** EQUIPMENT ANCHOR/ MOUNTING HOLES PRIOR TO INSTALLATION. WHERE ACTUAL EQUIPMENT DIMENSIONS DO NOT FALL WITHIN THE MINIMUM OR MAXIMUM DIMENSIONS PROVIDED ON PLANS AND/OR DETAILS, NOTIFY SEOR AND AWAIT DIRECTION PRIOR TO PROCEEDING WITH WORK.



PARTIAL FOUNDATION PLAN
SCALE: 1/2" = 1'-0"
A
S201



NOTE:
COORDINATE HOUSEKEEPING PAD SIZES AND LOCATIONS WITH MECHANICAL DRAWINGS.

HOUSEKEEPING PAD EXTENSION
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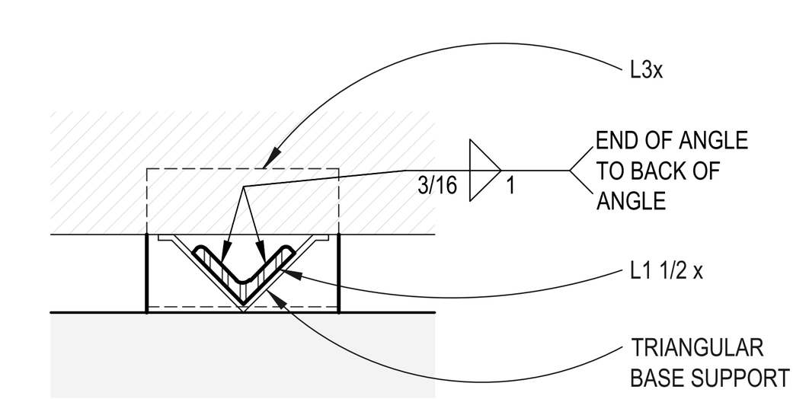
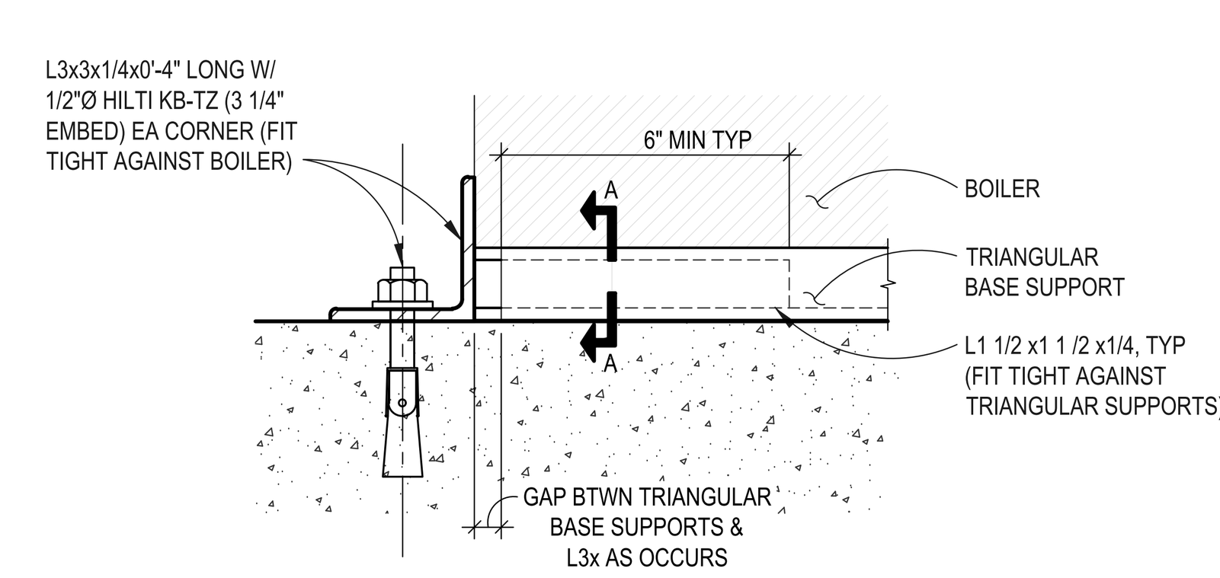


SECTION A-A



ANCHOR BRACKET
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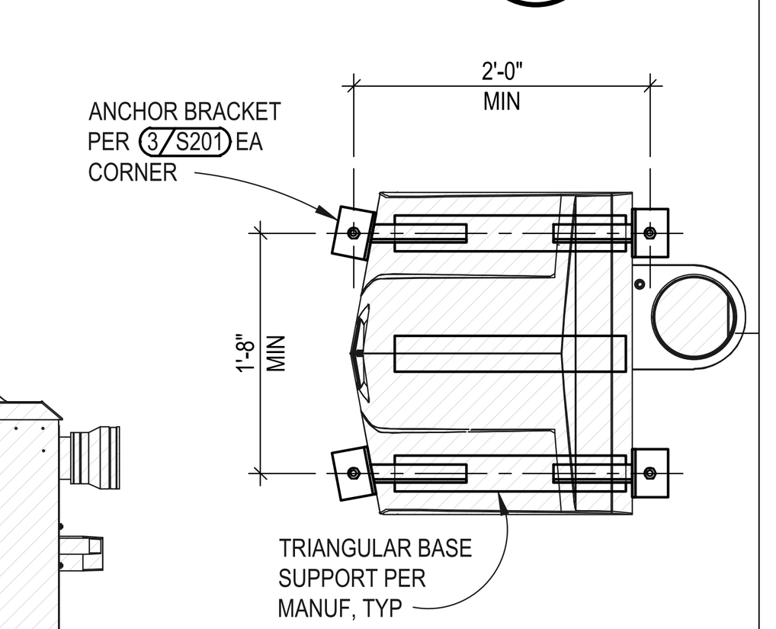
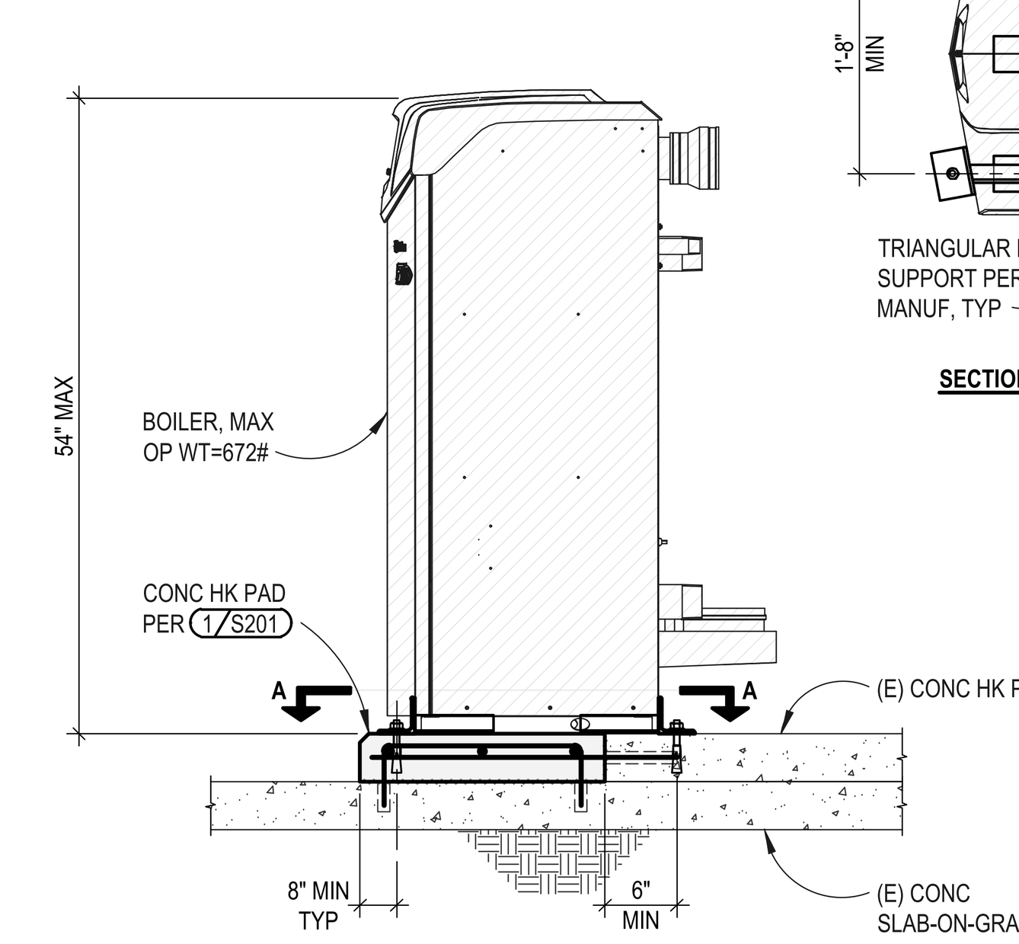


SECTION A-A AT BASE



BOILER ANCHORAGE
SCALE: 3/4" = 1'-0"
2
S201

P2S Engineering, Inc.

5000 East Spring Street, 8th Floor
Long Beach, CA 90815-5218
T 562.497.2999 F 562.497.2990

www.p2seng.com

Consultant

MHP STRUCTURAL ENGINEERS
3900 Cover Street
Long Beach, CA 90808
562.985.3200 P
562.985.1011 F
MHP JN 17-0445-00

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Owner

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Antelope Valley College
3041 W Ave. K, Lancaster Ca 93536

REGISTERED PROFESSIONAL ENGINEER
TERRY FERNANDEZ
No.3256
Exp 03-31-19
STRUCTURAL
STATE OF CALIFORNIA

[illegible]

Revisions

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Sheet Title

Partial Foundation Plan and Anchorage Details

Sheet Number

S201

P2S No. 8913

FILE PATH & NAME: H:\2017\170445\3_DRAWINGS\DWGS-00\17-0445-00_S201 (PARTIAL FOUNDATION PLAN AND ANCHORAGE DETAILS).DWG SHAWN ALVIRA
PLOT: Tuesday, September 12, 2017 3:26:05 PM