

MECHANICAL NOTES

1. SCOPE OF WORK: WORK INCLUDES THE FOLLOWING: FURNISH AND INSTALL ALL EQUIPMENT AND CONTROLS SHOWN ON THE ARCHITECTURAL, MECHANICAL, AND PLUMBING DRAWINGS AND DESCRIBED IN THESE NOTES, THE BOOK SPECIFICATIONS AND THE CONTRACT DOCUMENTS. WORK INCLUDES BUT IS NOT LIMITED TO: DEMOLITION OF TWO CHILLERS AND INSTALLATION OF TWO NEW CHILLERS. INCLUDED ARE ALL DEVICES NEEDED TO MAKE COMPLETE AND FUNCTIONAL SPACE CONDITIONING SYSTEMS AND CONTROLS. CONTRACTOR SHALL FURNISH AND INSTALL, MAKE OPERABLE, AND TEST ALL SYSTEMS AND MECHANICAL EQUIPMENT SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIFICATIONS AND CONTRACT DOCUMENTS. IN CONNECTION THEREWITH, CONTRACTOR SHALL ALSO FURNISH AND INSTALL ALL NECESSARY DEVICES, HARDWARE, AND SYSTEMS REQUIRED TO MAKE SAID EQUIPMENT PROPERLY AND SAFELY OPERABLE, INCLUDING BUT NOT LIMITED TO, MOUNTING HARDWARE, VIBRATION CONTROL DEVICES, AND CONTROL SYSTEMS.

2. INTERPRETATION OF DRAWINGS, SPECIFICATIONS OR CONTRACT DOCUMENTS. IF ANY BIDDER IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE DRAWINGS, THE SPECIFICATIONS OR OTHER PORTIONS OF THE CONTRACT DOCUMENTS; FINDS DISCREPANCIES, ERRORS OR OMISSIONS THEREIN; OR FINDS VARIANCES IN ANY OF THE CONTRACT DOCUMENTS WITH APPLICABLE RULES, REGULATIONS, ORDINANCES AND/OR LAWS, A WRITTEN REQUEST FOR AN INTERPRETATION OR CORRECTION THEREOF MAY BE SUBMITTED TO THE ENGINEER. IT IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE BIDDER TO SUBMIT SUCH REQUEST IN SUFFICIENT TIME FOR THE PREPARATION OF A RESPONSE THERETO AND DELIVERY OF SUCH RESPONSE TO ALL BIDDERS PRIOR TO THE SCHEDULED CLOSING FOR RECEIPT OF BID PROPOSALS. ANY REQUEST OF ANY BIDDER, PURSUANT TO THE FOREGOING SENTENCE THAT IS MADE LESS THAN SEVEN DAYS PRIOR TO THE SCHEDULED CLOSING DATE FOR THE RECEIPT OF BID PROPOSALS SHALL BE DEEMED UNTIMELY. ANY INTERPRETATION OR CORRECTION OF THE CONTRACT DOCUMENTS WILL BE MADE ONLY BY WRITTEN ADDENDUM DULY ISSUED BY THE OWNER OR THE ENGINEER. A COPY OF ANY SUCH ADDENDUM WILL BE MAILED OR OTHERWISE DELIVERED TO EACH BIDDER RECEIVING A SET OF THE CONTRACT DOCUMENTS. NO PERSON IS AUTHORIZED TO RENDER AN ORAL INTERPRETATION OR CORRECTION OF ANY PORTION OF THE CONTRACT DOCUMENTS TO ANY BIDDER, AND NO BIDDER IS AUTHORIZED TO RELY ON ANY SUCH ORAL INTERPRETATION OR CORRECTION. FAILURE TO REQUEST INTERPRETATION OR CLARIFICATION OF THE DRAWINGS, THE SPECIFICATIONS OR OTHER PORTIONS OF THE CONTRACT DOCUMENTS PURSUANT TO THE FOREGOING SHALL BE DEEMED TO BE A WAIVER OF ANY DISCREPANCY, DEFECT, OR CONFLICT THEREIN.

3. DIMENSIONS. ALL DIMENSIONS SHALL HAVE PREFERENCE OVER SCALE. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN ARCHITECTURAL AND ENGINEERING DRAWINGS BEFORE PROCEEDING WITH WORK. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON WORKING DRAWINGS. ALL SIZES OF EQUIPMENT AND MATERIALS SHALL BE VERIFIED WITH EQUIPMENT MANUFACTURER.

4. CODES AND STANDARDS: ALL WORK SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA), 2013 CALIFORNIA BUILDING CODE, THE 2013 CALIFORNIA MECHANICAL CODE, THE 2013 CALIFORNIA PLUMBING CODE, THE NATIONAL ELECTRIC CODE, THE STATE OF CALIFORNIA, EQUIPMENT MANUFACTURER'S RECOMMENDED PROCEDURES, AND STANDARD CONSTRUCTION PRACTICES. NOTE: WHERE TWO OR MORE CODES CONFLICT, THE MOST RESTRICTIVE SHALL APPLY. NOTHING IN THESE PLANS AND SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO APPLICABLE CODES.

5. SUBMITTALS REQUIRED: PRIOR TO ORDERING EQUIPMENT AND MATERIALS, CONTRACTOR SHALL FURNISH TO ENGINEER / OWNER SUBMITTALS AND SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE IN THIS PROJECT. ORDERING OF EQUIPMENT AND MATERIALS SHALL ONLY PROCEED AFTER SATISFACTORY REVIEW OF ALL SUBMITTALS BY CONTRACTOR / ENGINEER / OWNER. COPIES OF ALL OWNER'S MANUALS, WARRANTIES AND OTHER WRITTEN INFORMATION REGARDING SYSTEMS SHALL BE PRESENTED TO OWNER PRIOR TO THE COMPLETION OF THE PROJECT.

6. CONSTRUCTION OBSERVATION: IN ADDITION TO THE REQUIREMENT FOR OBTAINING INSPECTIONS BY THE LOCAL JURISDICTION, CONTRACTOR SHALL NOTIFY ENGINEER AT APPROPRIATE TIMES DURING THE CONSTRUCTION PROCESS SO THAT ENGINEER CAN VISIT SITE TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF CONTRACTOR'S WORK AND TO DETERMINE IF THE WORK IS PROCEEDING IN GENERAL ACCORDANCE WITH THE CONTRACT DOCUMENTS.

7. UNIT LOCATIONS: EQUIPMENT AND SYSTEM LOCATIONS SHOWN ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL STRUCTURAL MEMBERS AND EXISTING CONDITIONS IN THE FIELD, AND LOCATE UNITS AND DUCTWORK TO AVOID INTERFERENCE. ANY SIGNIFICANT DEVIATIONS FROM THE PLANS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER. ALLOW CLEARANCE FOR DUCTWORK AND PIPING. ALL CLEARANCES REQUIRED BY UNIT MANUFACTURER SHALL BE MAINTAINED. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH CODES AND THE RECOMMENDED INSTALLATION PROCEDURES PUBLISHED BY THE MANUFACTURER.

8. VIBRATION ISOLATION: INSTALL FLEXIBLE CONNECTIONS BETWEEN MECHANICAL EQUIPMENT AND PIPING. INSTALL NEW VIBRATION ISOLATION AT CHILLERS. SEE MECHANICAL DETAILS & SPECIFICATIONS FOR SPECIFIC TYPE.

9. WIRING: ALL WIRING SHALL BE PERFORMED IN ACCORDANCE WITH NEC REQTS. ALL WIRING SHALL BE IN CONDUIT. ALL INTERIOR LOW VOLTAGE AND CONTROL WIRING SHALL BE IN WIREMOLD AND IN FAN ROOMS SHALL BE IN CONDUIT. EXPOSED CONDUIT SHALL BE INSTALLED IN A SQUARE, PLUMB, AND LEVEL MANNER WITH THOUGHT GIVEN TO THE FINAL APPEARANCES. PROVIDE TO ENGINEER SHOP DRAWING FOR CONTROL TRANSFORMER CONFIGURATIONS DETAILING CIRCUITS TO BE USED, LOAD CALCULATIONS, WIRE SIZES, AND LOCATIONS. WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL CODE AND ELECTRICAL SPECIFICATIONS. ALL TRANSFORMERS SHALL BE PROTECTED BY PROPERLY SIZED CIRCUIT BREAKER OR FUSE(S). ALL TRANSFORMERS SHALL HAVE RESETABLE BREAKER ON THE LOAD SIDE. ALL LOW VOLTAGE CONTROL & COMMUNICATIONS WIRING SHALL BE DONE ACCORDING TO MANUFACTURERS INSTALLATION MANUAL. PROVIDE SUBMITTALS ON WIRE AND ENCLOSURES.

10. COORDINATION DURING CONSTRUCTION: THE CONTRACTOR SHALL COORDINATE ANY NECESSARY CHANGES IN WORK SCHEDULING WITH THE SCHOOL TO MINIMIZE THE DISRUPTION. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS WORK TO BUILDING(S) AND EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.

11. CORRECTION OF WORK: THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK THE OWNER FINDS DEFECTIVE OR FAILING TO CONFORM TO THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BEAR ALL COSTS REQUIRED BY THE CONTRACT DOCUMENTS, IF ANY OF THE WORK IS FOUND TO BE DEFECTIVE OR NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL CORRECT IT PROMPTLY AFTER RECEIPT OF A WRITTEN NOTICE FROM THE OWNER TO DO SO.

12. CHILLED & HYDRONIC WATER PIPING SHALL BE U.S. MANUFACTURED SCHEDULE 40 STEEL PIPE WITH WELDED OR GROOVED STYLE CONNECTIONS OR U.S. MANUFACTURED TYPE 'L' COPPER WITH WROT SOLDER TYPE FITTINGS. ALL PIPE SHALL BE COVERED WITH 2" FIBERGLASS INSULATION. ALL EXTERIOR PIPING SHALL HAVE ALUMINUM JACKET WITH FORMED ALUMINUM ELBOWS WITH JOINTS CAULKED TO PREVENT WATER INTRUSION.

13. CONTROLS - DISCONNECT EXISTING CONTROLS. INSTALL NEW BACNET CONNECTION TO NEW CHILLERS AND INTEGRATE INTO EXISTING BUILDING AND CAMPUS AUTOMATED LOGIC GRAPHICS AND PROGRAMMING. ALL WIRE SHALL BE IN CONDUIT. PROVIDE ALL NEEDED WIRE, ROUTERS, CONTROLLERS FOR A COMPLETE SYSTEM.

14. SEE ELECTRIC PLANS FOR RECONNECTION TO POWER.

GENERAL NOTES

1. CUTTING, BORING SAWCUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED ON THE DRAWINGS OR ACCEPTED BY THE MECHANICAL AND STRUCTURAL ENGINEER WITH THE APPROVAL OF DSA REPRESENTATIVE.

2. ALL WELDING SHALL BE SPECIALLY INSPECTED BY AN AWS-CWI QUALIFIED INSPECTOR APPROVED BY DSA/ORS.

3. ALL BRACING OF DUCTS AND PIPINGS SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES AS APPROVED BY DSA/ORS.

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

A COPY OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY DSA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.

4. THE PROVISIONS OF CFC & CBC 33 SHALL BE ENFORCED ON THIS PROJECT.

MEP COMPONENT ANCHORAGE NOTE

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 FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2013 CBC, SECTION 1616A.118 THROUGH 1616A.126 AND ASCE 7-10 CHAPTER 13, 29, AND 30.

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVEABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
- 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 FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THESE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

- 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 SUPPORT THE COMPONENT.
- 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.

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 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.8, 13.6.7, 13.6.5.6, AND 2013 CBC SECTIONS 1616A.123, 1616A.124, 1616A.125. AND 1616A.126.

THE BRACING AND ATTACHMENTS TO THE STRUCTURE SHALL BE DETAILED ON THE APPROVED DRAWINGS OR THEY SHALL COMPLY WITH ONE OF THE DSHPD PRE-APPROVALS (DPM #).

COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR 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.

ABBREVIATIONS

ABRV	ABBREVIATIONS	DWN	DOWN	MIN	MINIMUM
ABV	ABOVE	(E)	EXISTING	(N)	NEW
AFF	ABOVE FINISHED FLOOR	EA	EACH	OC	ON CENTER
APPROX	APPROXIMATELY	EL	ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	ELEC	ELECTRIC	PSI	POUNDS PER SQUARE INCH
BLW	BELOW	ELEV	ELEVATION	RAG	RETURN AIR GRILLE
BOT	BOTTOM	EQ	EQUIPMENT	RAR	RETURN AIR REGISTER
CD	CEILING DIFFUSER	EQUIP	EQUIPMENT	SD	SMOKE DETECTOR
CFM	CUBIC FEET PER MINUTE	EXH	EXHAUST	SHT	SHEET
CL	CENTERLINE	FIN	FINISHED	SOV	SHUT-OFF VALVE
CLG	CEILING	FRM	FROM	SPEC	SPECIFICATIONS
COND	CONDENSATE	FLR	FLOOR	SR	SIDEWALL REGISTER
CONT	CONTINUED	G	GAS	(TYP)	TYPICAL
DIA	DIAMETER	GPM	GALLONS PER MINUTE	UGND	UNDERGROUND
DWG	DRAWING	MAX	MAXIMUM	VTR	VENT TO ROOF



EXISTING UNIT	NEW UNIT	LOCATION
132"Lx89"Wx86"H 8249 LBS	166"Lx88"Wx90"H 6940 LBS	ROOF

CHILLER SCHEDULE

TAG	MANF. & MODEL	EER (ARI)	IPLV (ARI)	CAPACITY @ 105° F	ENT. WATER	LVG WATER	ELECTRICAL DATA				FLOWRATE	PD	(N) UNIT OPER.	(E) UNIT OPER.	VIBRATION ISOLATION	OPTIONS
							VOLTAGE	PHASE	MCA	MOCP			WEIGHT (INCLUDES ISO BASE)	WEIGHT (INCLUDES ISO BASE)		
CH	TRANE CGAM120	10.4	15.3	118 TONS	57 F	45 F	480	3	249	300	235	10.5	7940	9249	MW SAUSSE ISOLATION BASE WEIGHT 1000 LBS	FACTORY START AND TUNE, R-410A, AIR-COOLED SCROLL COMPRESSORS, LOW SOUND FAN SYSTEM, SERVICE ISO VALVES, AND ELECTRONIC THERMAL-DISPERSION FLOW SWITCH. COPPER TUBES W/ COATED ALUMINUM FINS, COMPRESSOR BLANKET, SINGLE POINT POWER SUPPLY, CONTROL TRANSFORMER, BACNET MSTP BUILDING AUTOMATION INTERFACE NEMA 3R ENCLOSURE
CH	TRANE CGAM120	10.4	15.3	118 TONS	57 F	45 F	480	3	249	300	235	10.5	7940	9249	MW SAUSSE ISOLATION BASE WEIGHT 1000 LBS	

APPROVED
DIV. OF THE STATE ARCHITECT
LOS ANGELES REGIONAL OFFICE
SS CL FLS — AC —
DATE 11-21-18
(Add'l 1, 3 SHT'S)

DSA STAMP & SIGNATURE

IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
FILE NUMBER: 58-C1

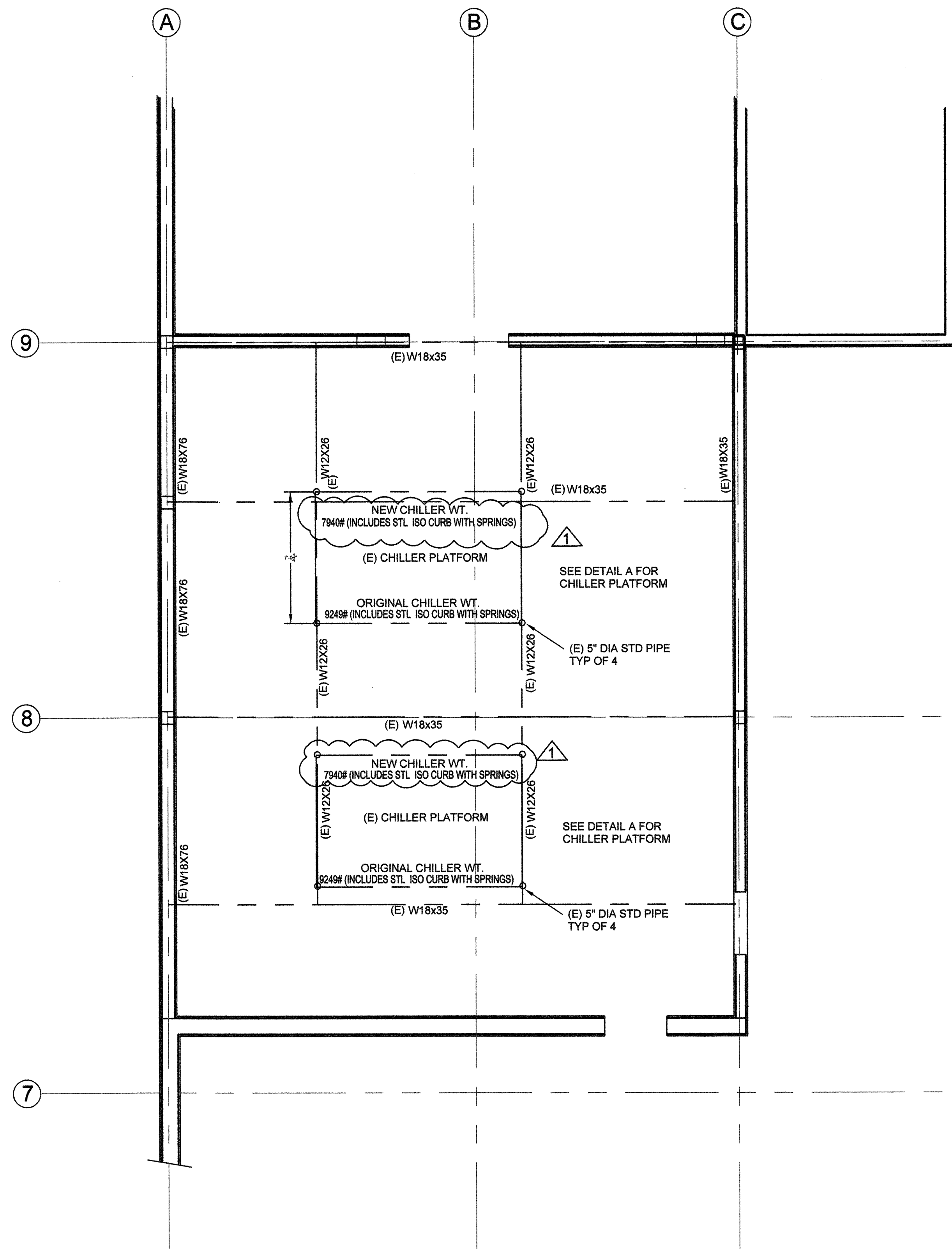
APPL 03-117823

AC _____ FLS _____ SS _____
DATE _____

OPSC/DSA TRACKING NUMBER: 69229-64

As Proposed

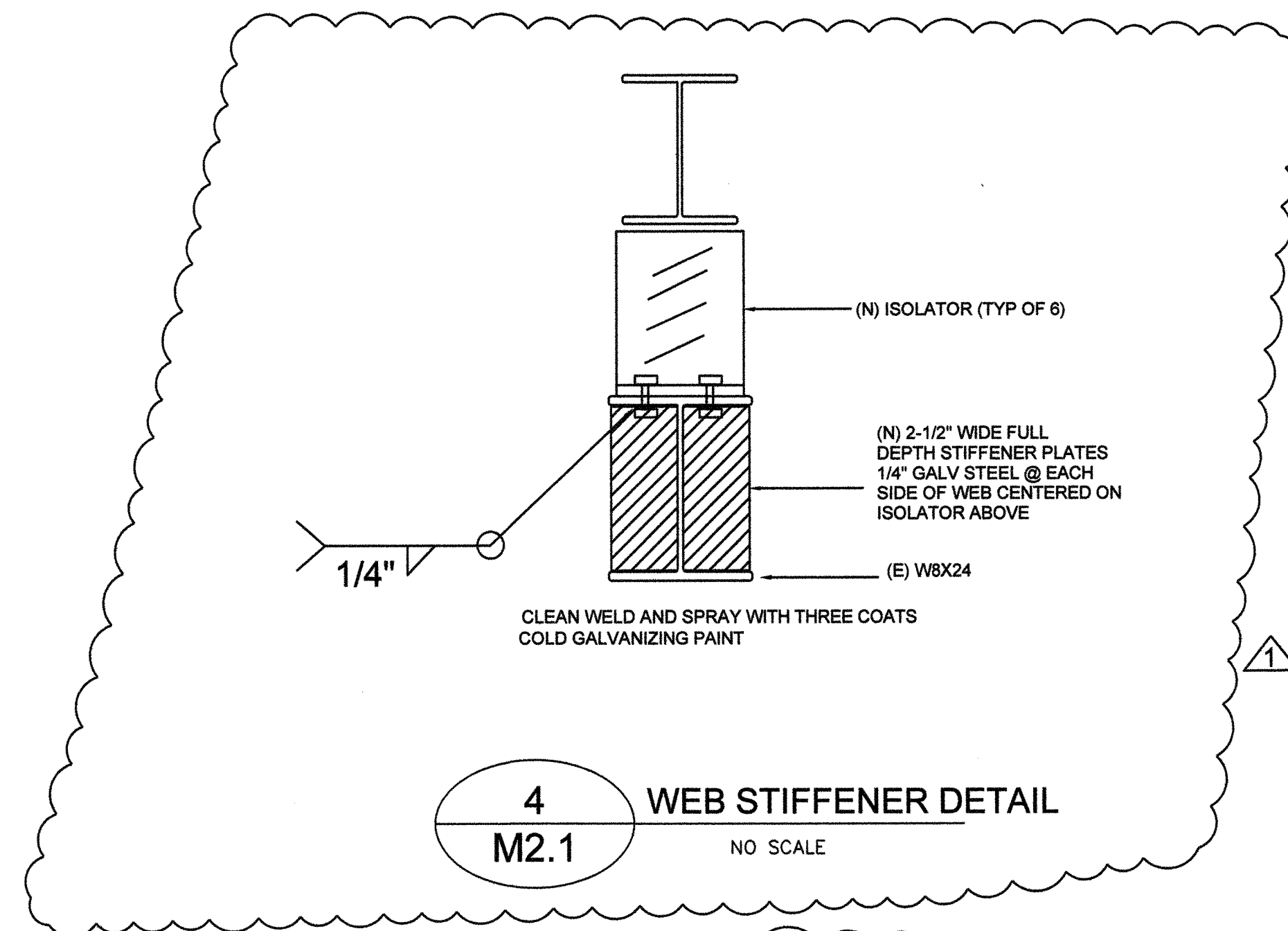
DRAWN BY TP/HAM	DATE 10-21-18	REVISIONS 18 TRANE CHILLER	AE Group Mechanical Engineers, Inc. 838 East Front Street Ventura, California 93001 (805) 653-1722 FAX: (805) 653-7260 hugh@aegroupme.com		V E N T U R A C O L L E G E 4 6 6 7 T E L E G R A P H R O A D , V E N T U R A , C A L I F O R N I A 9 3 0 0 3 V E N T U R A C O U N T Y C O M M U N I T Y C O L L E G E D I S T R I C T	DEPARTMENT OF MAINTENANCE AND OPERATIONS 71 DAY ROAD VENTURA, CALIFORNIA 93003 PHONE: (805) 654-6340 FAX: (805) 648-8953	SCALE: AS SHOWN DATE: 5/6/17 BLDG. NO.	LEARNING RESOURCE CENTER HVAC REPLACEMENT PROJECT NOTES & SCHEDULE	SHEET NO. M1.0
-----------------	---------------	-------------------------------	---	--	--	--	---	--	-------------------



1
M2.1

EXISTING STEEL FRAMING @# CHILLERS

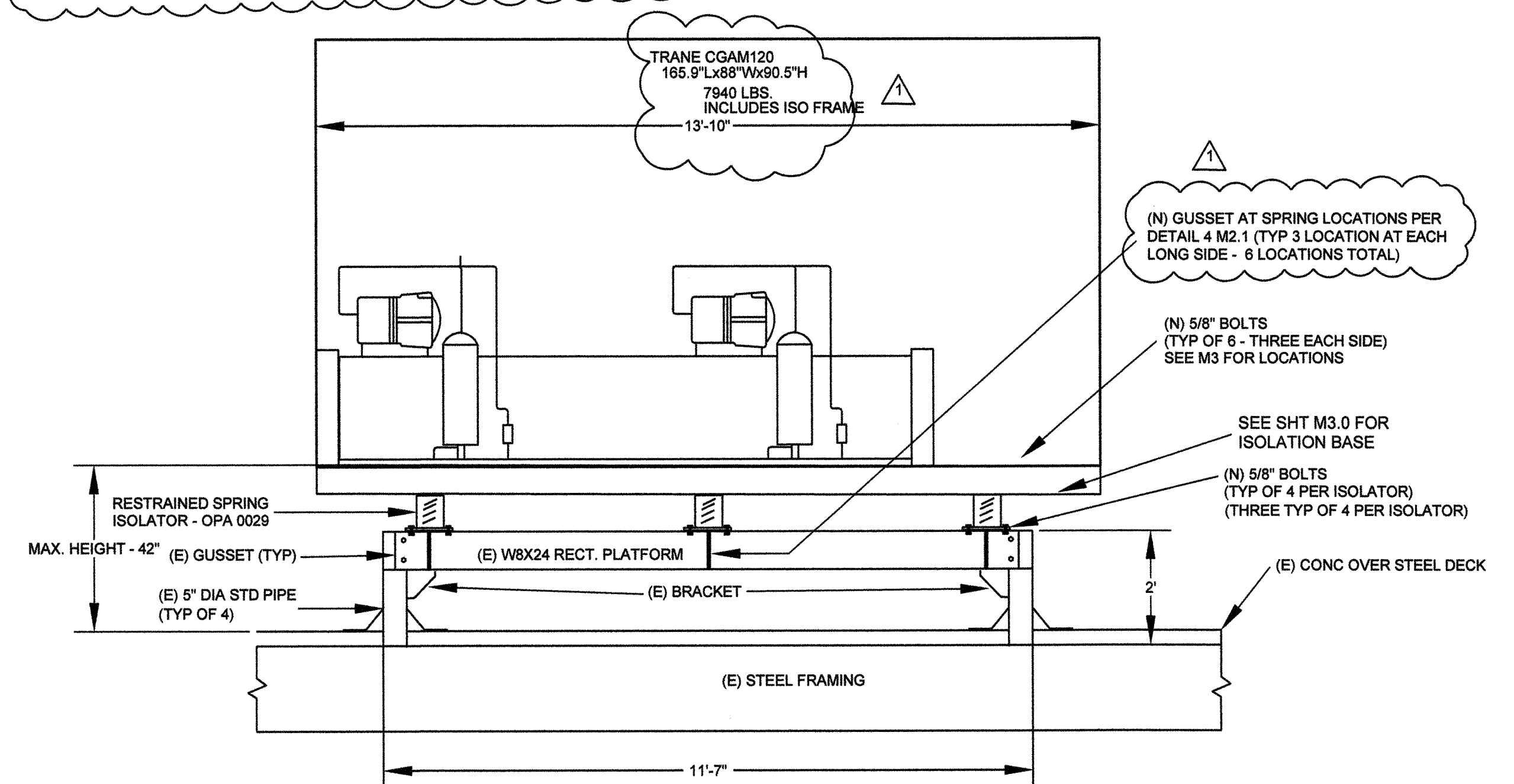
SCALE: 1/4"=1'0"



4
M2.1

WEB STIFFENER DETAIL

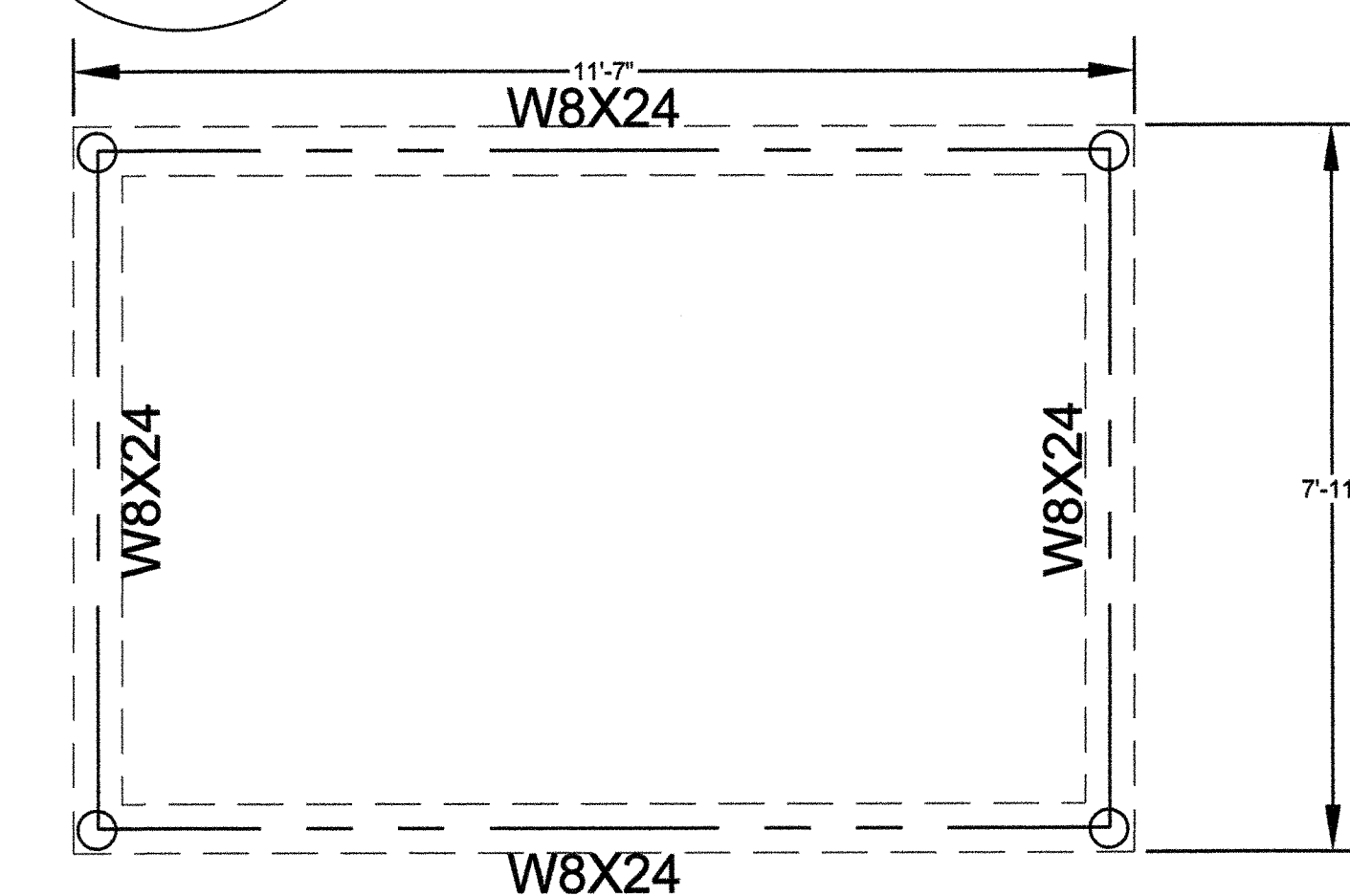
NO SCALE



3
M2.1

CHILLER PLATFORM SIDE ELEVATION

SCALE: 1/2"=1'0"



2
M2.1

EXISTING CHILLER PLATFORM (TYP OF 2)

SCALE: 1/4"=1'0"

AS PROPOSED

APPROVED
DIV. OF THE STATE ARCHITECT
LOS ANGELES REGIONAL OFFICE
SS AC FLS — AG —
DATE 11-21-18

DSA STAMP & SIGNATURE

IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
FILE NUMBER: 58-C1

APPL 03-117823

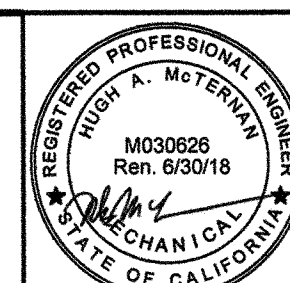
AC — FLS — SS —
DATE —

OPSC/DSA TRACKING NUMBER: 69229-64

DRAWN BY TP/HAM
CHECKED BY PW/HAM
DIRECTOR OF MAINTENANCE
PLAN REVIEWED AND APPROVED
DATE

DATE
10-21-18
TRANE CHILLER

AE Group
Mechanical Engineers, Inc.
838 East Front Street
Ventura, California 93001
(805) 653-1722 FAX: (805) 653-7260
hugh@aegroupme.com



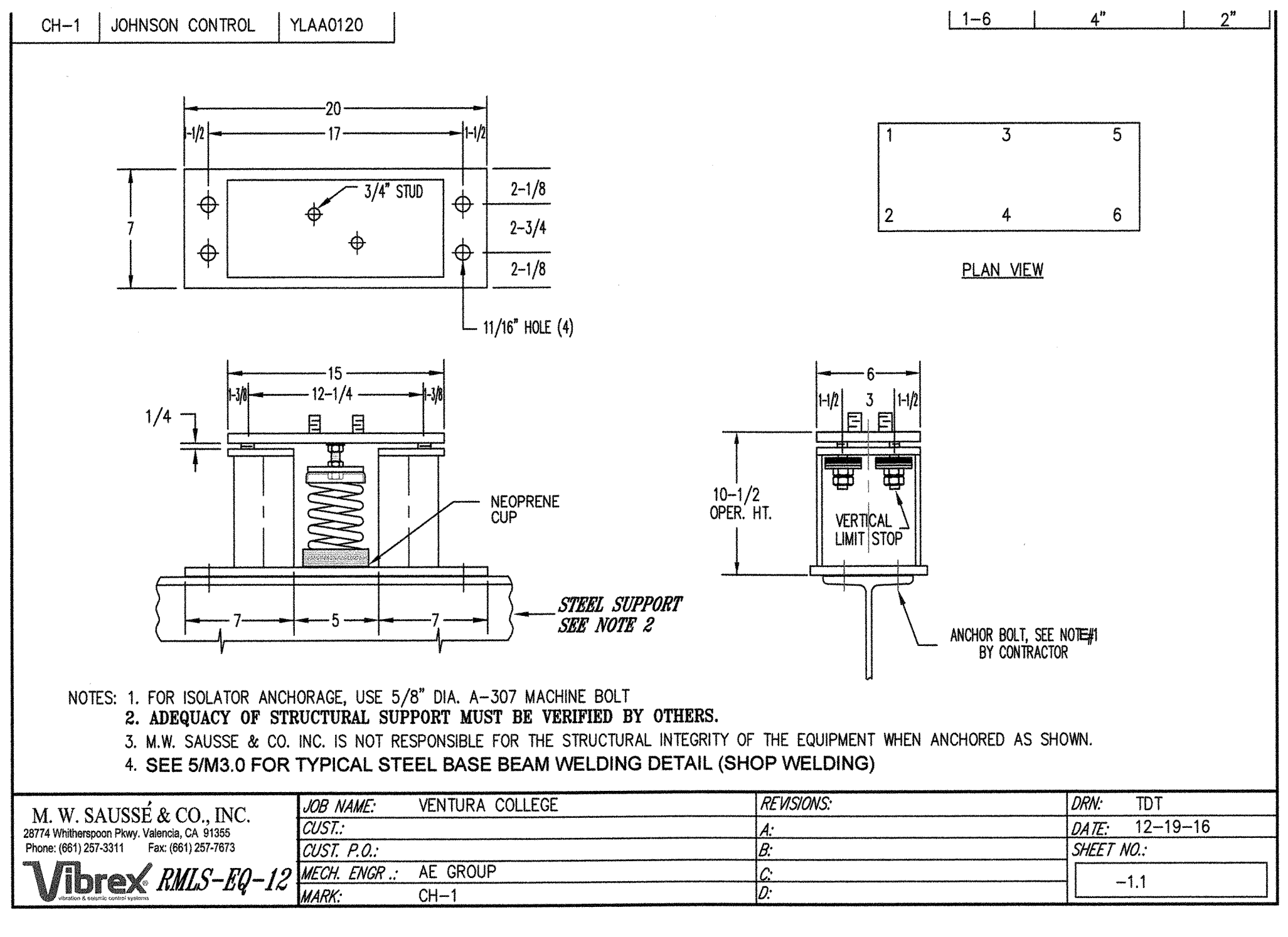
V E N T U R A C O L L E G E
4 6 6 7 T E L E G R A P H R O A D , V E N T U R A , C A L I F O R N I A 9 3 0 0 3
V E N T U R A C O U N T Y C O M M U N I T Y C O L L E G E D I S T R I C T

DEPARTMENT OF
MAINTENANCE AND OPERATIONS
71 DAY ROAD
VENTURA, CALIFORNIA 93003
PHONE: (805) 654-6340 FAX: (805) 648-8953

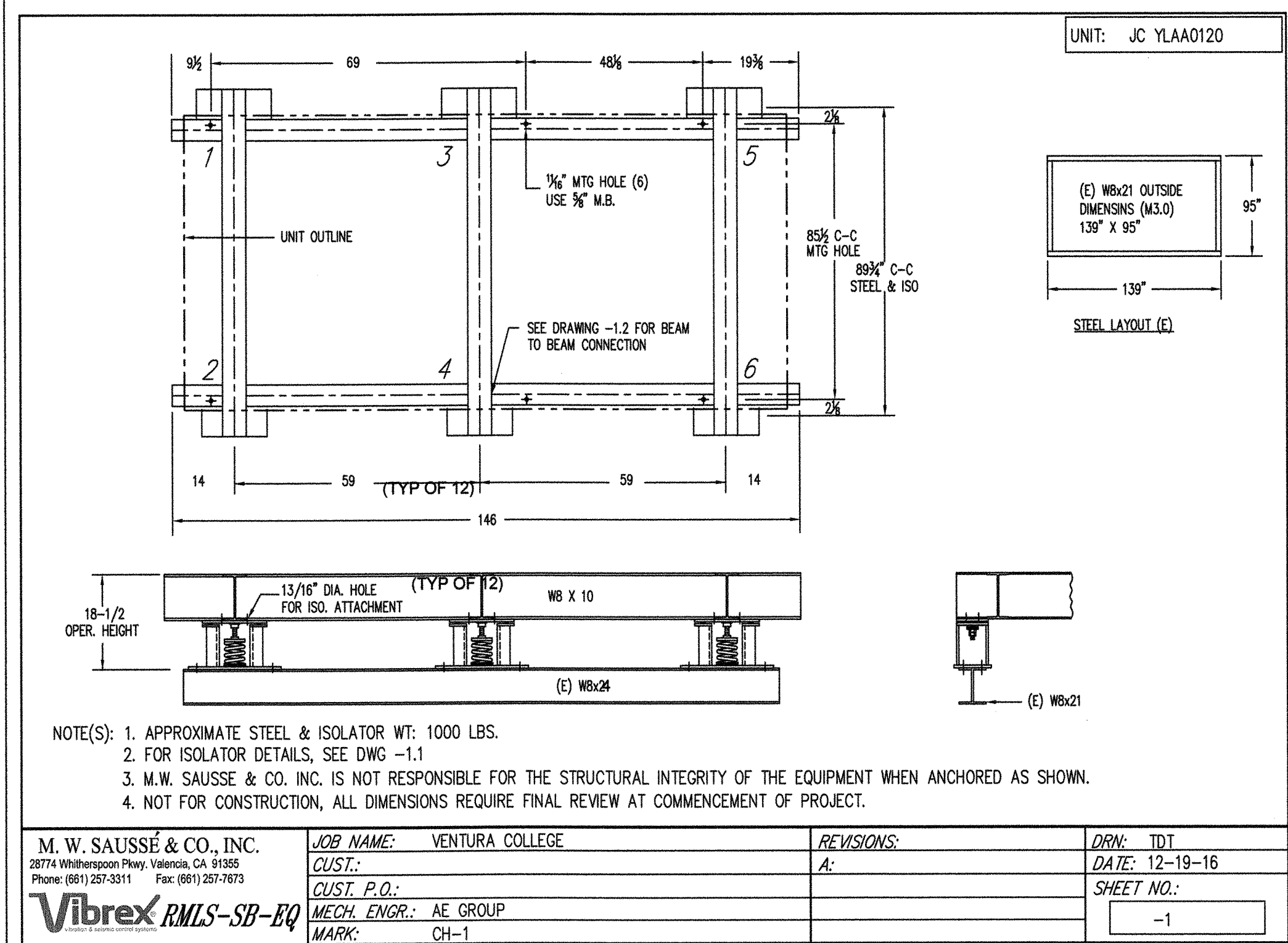
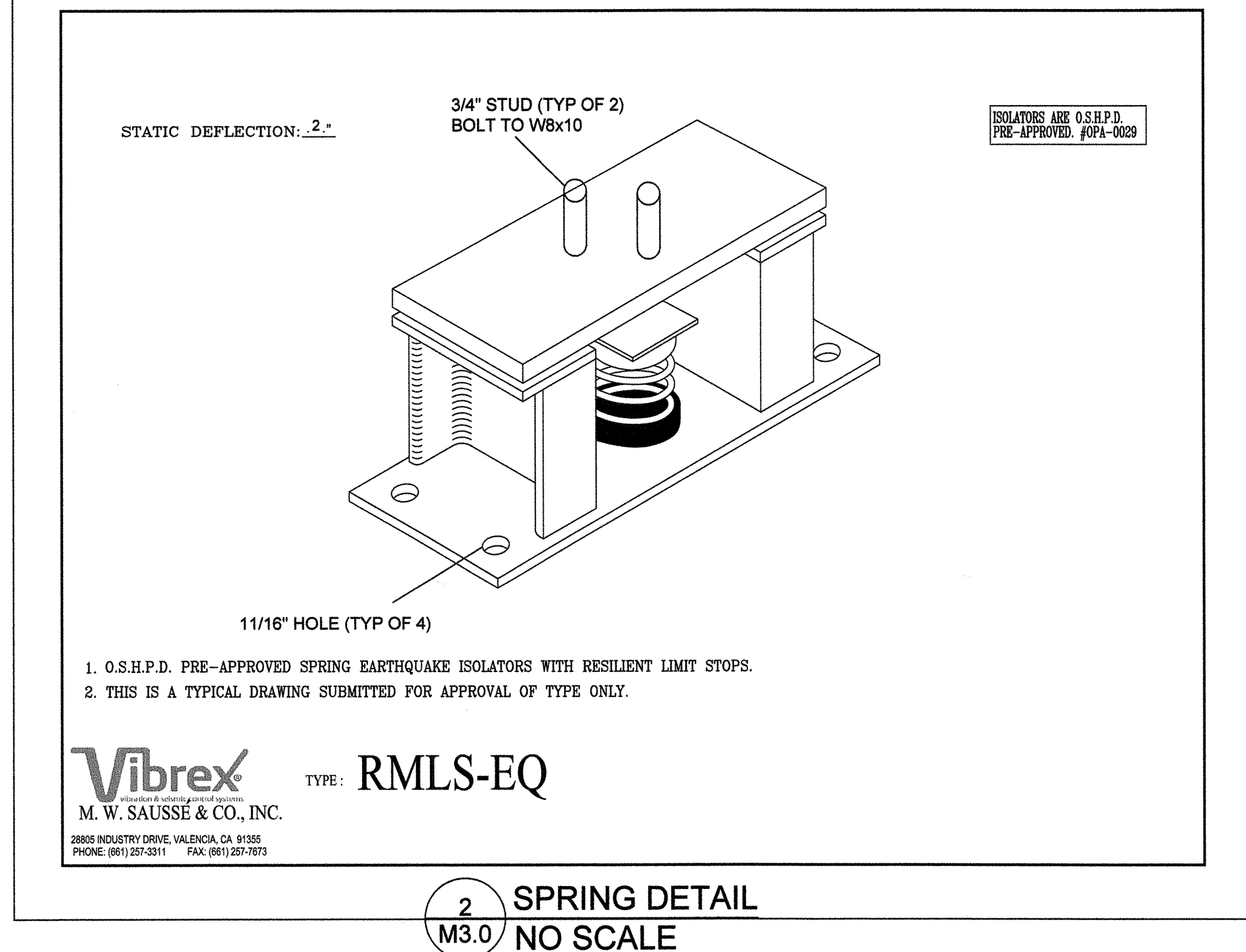
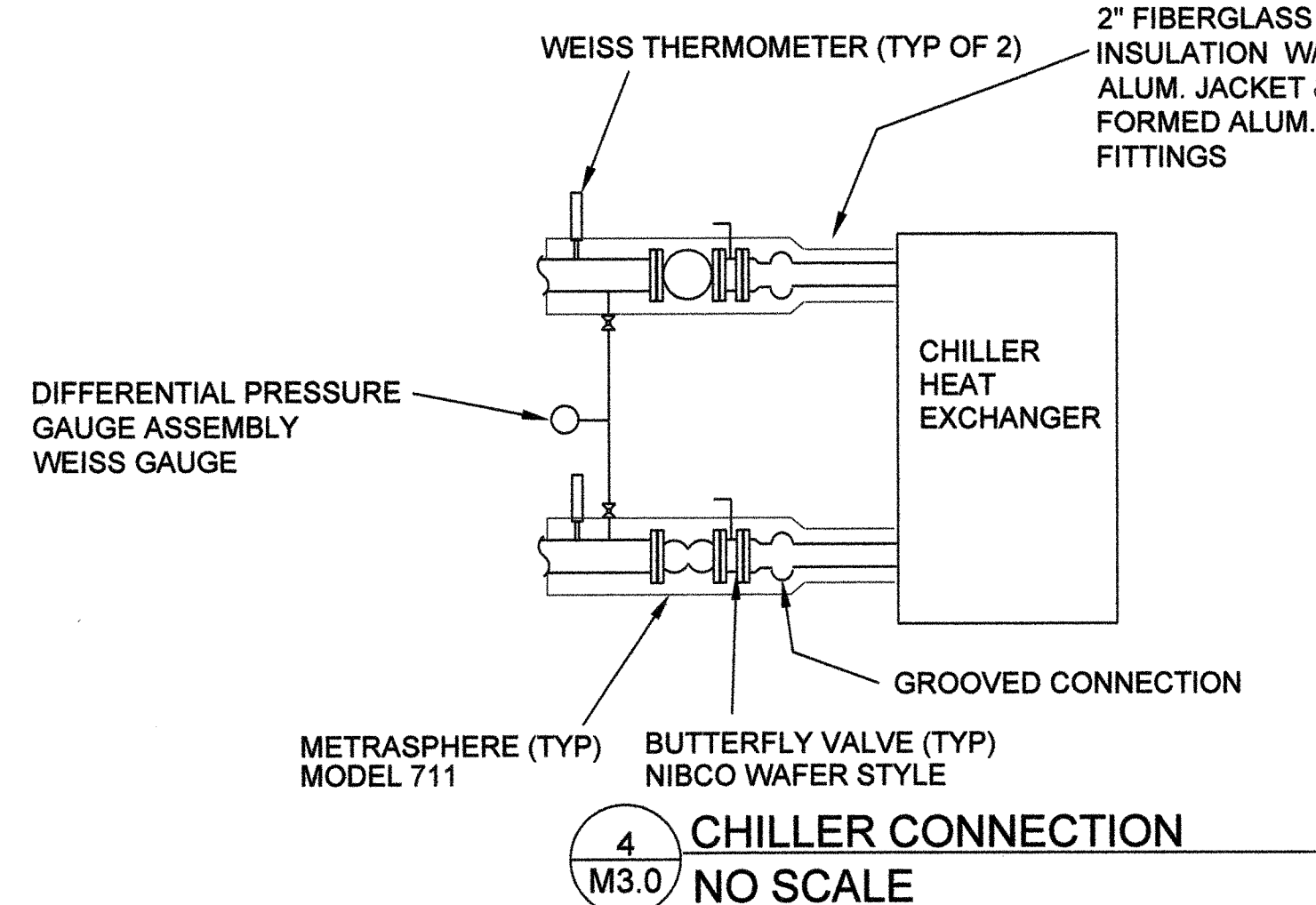
SCALE:
AS SHOWN
DATE:
5/6/17
BLDG. NO.

LEARNING RESOURCE CENTER
HVAC REPLACEMENT PROJECT
EXISTING FRAMING AND CHILLER
ANCHORAGE

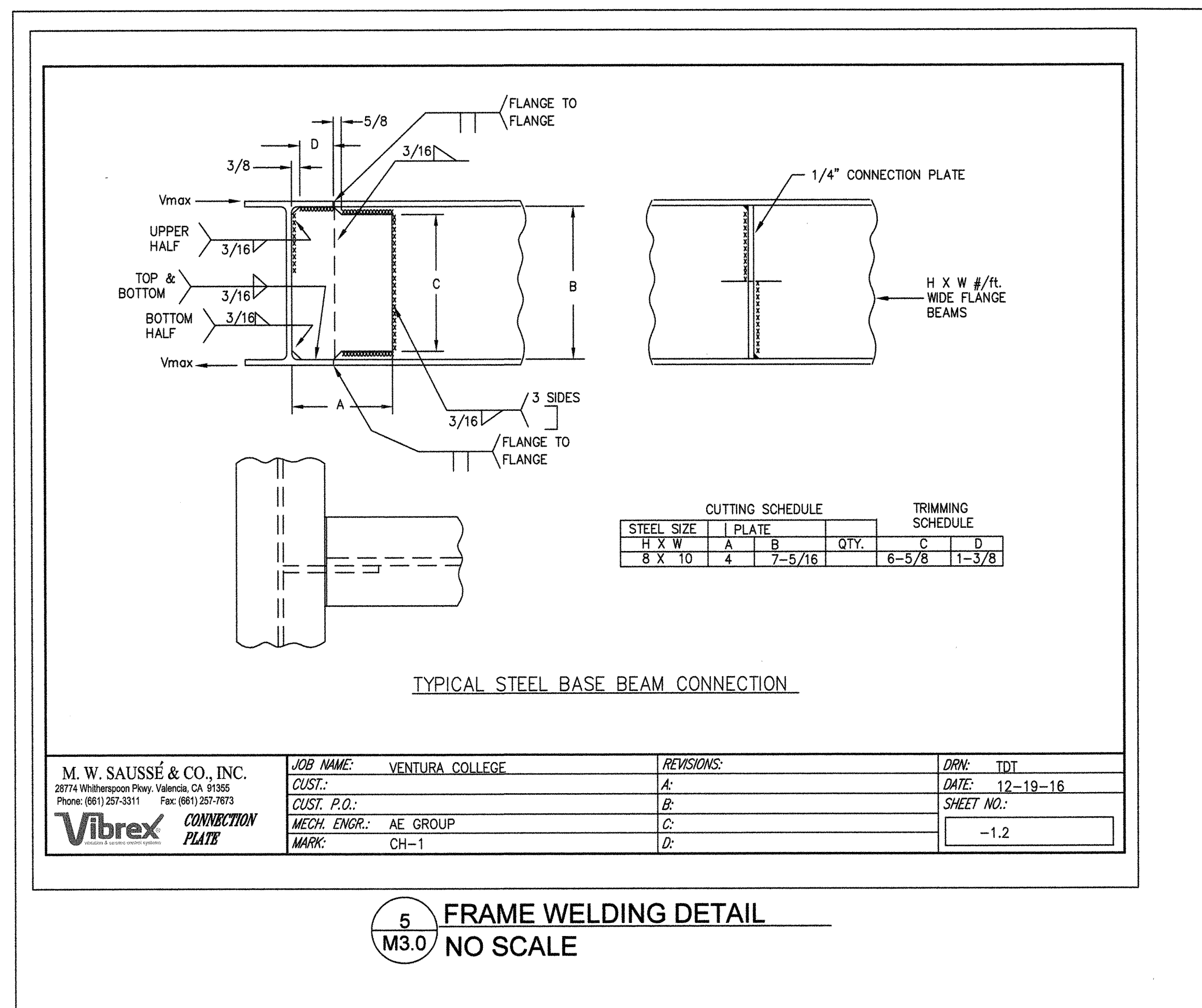
SHEET NO.
M2.1



3 SPRING ISOLATOR
M3.0 NO SCALE



1 CHILLER BASE FRAME
M3.0 NO SCALE



5 FRAME WELDING DETAIL
M3.0 NO SCALE

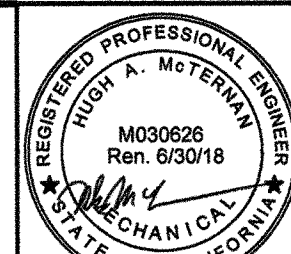
APPROVED
DIV. OF THE STATE ARCHITECT
LOS ANGELES REGIONAL OFFICE
SS. CL FLS. AC
DATE: 11-21-18

DSA STAMP & SIGNATURE
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
FILE NUMBER: 58-C1
APPL 03-117823
AC. _____ FLS. _____ SS. _____
DATE _____
OPSC/DSA TRACKING NUMBER: 69229-64

DRAWN BY TP/HAM
CHECKED BY PW/HAM
DIRECTOR OF MAINTENANCE
PLAN REVIEWED AND APPROVED
DATE

DATE 10-21-18
REVISIONS
A. TRANE CHILLER

AE Group
Mechanical Engineers, Inc.
838 East Front Street
Ventura, California 93001
(805) 653-1722 FAX: (805) 653-7260
hugh@aegroupme.com



VENTURA COLLEGE
4667 TELEGRAPH ROAD, VENTURA, CALIFORNIA 93003
VENTURA COUNTY COMMUNITY COLLEGE DISTRICT

DEPARTMENT OF
MAINTENANCE AND OPERATIONS
71 DAY ROAD
VENTURA, CALIFORNIA 93003
PHONE: (805) 654-6340 FAX: (805) 648-8953

SCALE:
AS SHOWN
DATE: 5/6/17
BLDG. NO.

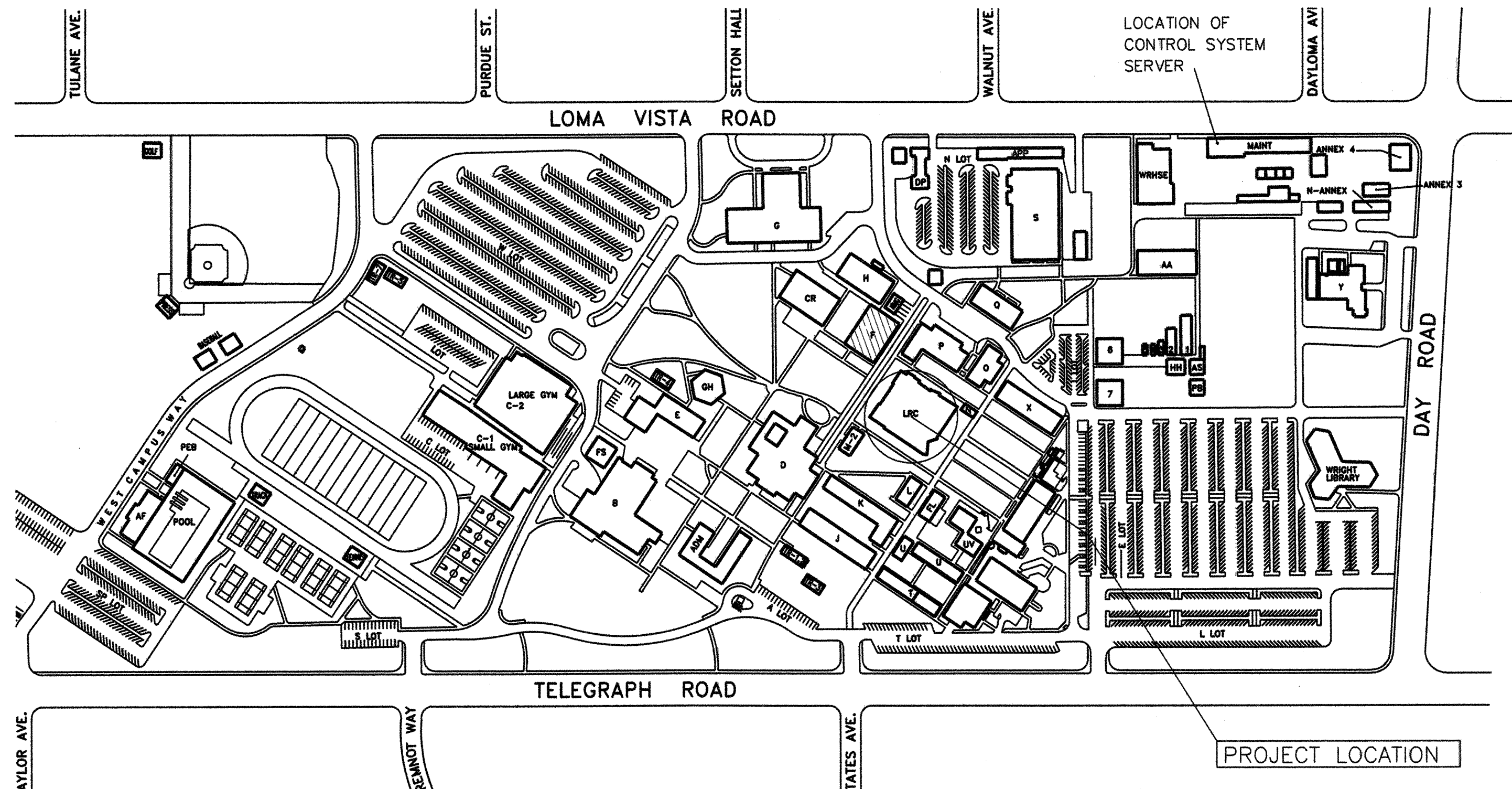
AS PROPOSED

LEARNING RESOURCE CENTER
HVAC REPLACEMENT PROJECT
DETAILS

SHEET NO.
M3.0

VENTURA COLLEGE LEARNING RESOURCE CENTER

CHILLER REPLACEMENT



MEP COMPONENT ANCHORAGE NOTE

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 FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2013 CBC, SECTION 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 29, AND 30.

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY OR MOVEABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
3. 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 FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THESE 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 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.

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.

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 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.8, 13.6.7, 13.6.5.6, AND 2013 CBC SECTIONS 1616A.1.23, 1616A.1.24, 1616A.1.25, AND 1616A.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 PRE-APPROVED INSTALLATION GUIDE (E.G. SMACNA OR OSPHD OPM) COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING 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 (EO)

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

MP MD PP E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSPHD PRE-APPROVAL (OPM#)

MP MD PP E OPTION 3: SHALL COMPLY WITH SMACNA SEISMIC RESTRAINT MANUAL (SRM), OSPHD EDITION (2009) INCLUDING ANY ADDENDA. FASTENERS AND OTHER ATTACHMENTS NOT SPECIFICALLY IDENTIFIED IN THE SMACNA SRM OSPHD EDITION, ARE DETAILED ON THE APPROVED DRAWINGS WITH THE PROJECT SPECIFIC NOTES AND DETAILS. THE DETAILS SHALL ACCOUNT FOR THE APPLICABLE SEISMIC HAZARD LEVEL (AA) AND CONNECTION LEVEL (AA) FOR THE PROJECT AND CONDITIONS.

APPLICABLE CODES

LIST OF CALIFORNIA CODE OF REGULATIONS
APPLICABLE CODES AS OF JAN. 1ST, 2017
ALL WORK SHALL CONFORM TO 2016 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)

2016 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 CCR
2016 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
2016 CALIFORNIA ELECTRIC CODE (CEC), PART 3, TITLE 24 CCR
2016 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
2016 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
2016 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR
PART 7 VACANT
2016 CALIFORNIA HISTORICAL BUILDING CODE (CEC), PART 8, TITLE 24 CCR
2016 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
2015 INTERNATIONAL FIRE CODE OF THE ICC
2016 CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 CCR
2015 INTERNATIONAL EXISTING BUILDING CODE, TITLE 24 CCR
2016 CALIFORNIA GREEN BUILDING STANDARDS CODE, PART 11, TITLE 24 CCR
2016 CALIFORNIA REFERENCED STANDARDS CODE (CRSC), PART 12, TITLE 24 CCR
PARTIAL LIST OF APPLICABLE NFPA STANDARDS
NFPA 13 AUTOMATED FIRE SPRINKLER SYSTEMS CALIF. AMENDED, 2016 EDITION
NFPA 14 STANDPIPE SYSTEMS CALIF. AMENDED, 2013 EDITION
NFPA 17 DRY CHEMICAL EXTINGUISHING, 2013 EDITION
NFPA 17A WET CHEMICAL EXTINGUISHING, 2013 EDITION
NFPA 20 STATIONARY PUMPS, 2016 EDITION
NFPA 24 PRIVATE SERVICE MAINS CALIF. AMENDED, 2016 EDITION
NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODES, 2016 EDITION
NOTE: SEE UL STANDARD 1971 FOR VISUAL DEVICES
NFPA 80 STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES 2016 EDITION
NFPA 253 CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEMS 2015 EDITION
NFPA 2001 CLEAN AGENT FIRE EXTINGUISHING SYSTEMS. CALIF. AMENDED 2015 EDITION

SCOPE OF WORK

DEMOLITION OF TWO CHILLERS WITH INSTALLATION OF TWO NEW CHILLERS WITH CONTROLS AND PIPING.

OWNER CONTACT

DIRECTOR OF FACILITIES, MAINTENANCE, AND OPERATIONS
JAY MOORE
4667 TELEGRAPH RD. VENTURA CA. 93003
805 289-6340 jmoore1@vcccd.edu

CONSULTANTS

MECHANICAL ENGINEER AND ENGINEER OF RECORD
Hugh McTernan
838 E. Front St. Ventura Ca. 93001
805 653-1722 hugh@aegroupme.com

STRUCTURAL ENGINEER
LARRY HAUER
2350 E. MAIN STREET #202, VENTURA, CA. 93003
805 653-1743 lhauer@earthlink.net

ELECTRICAL ENGINEER
KEN LUCCI - LUCCI & ASSOCIATES
3251 Corte Malpaso #511 Camarillo, Ca 93012
805 389-6520 ken@luciland.com

BUILDING CONSTRUCTION TYPE II FIRE RESISTIVE AUTOMATIC FIRE SPRINKLER

BUILDING USE A-3 COMPUTER LAB A-2.1 LIBRARY B OFFICES

LEARNING RESOURCE CENTER ORIGINAL DSA # A03-104498 11/08/01 CERTIFIED TYPE 2 12/19/2014

ORIGINAL CODE USED 1998 CBC

SHEET INDEX

- T1.0 TITLE SHEET & CAMPUS MAP
- M1.0 SCHEDULE & NOTES
- M2.0 ROOF DEMOLITION & MECHANICAL PLAN
- M2.1 EXISTING CHILLER SUPPORT STRUCTURE
- M3.0 DETAILS & EXISTING FRAMING PLAN
- EN1 ENERGY FORMS
- E1.0 GENERAL NOTES
- E2.2 ELECTRICAL SINGLE LINE DIAGRAM
- E4.5 PARTIAL ROOF POWER PLAN

ALL WORK SHALL CONFORM TO THE 2016 EDITION, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).

CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CHANGE CHANGE DOCUMENTS (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT (DSA) AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24 CCR.

A CLASS 3 DSA CERTIFIED INSPECTOR SHALL BE EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE (PART 1, TITLE 24, CCR)

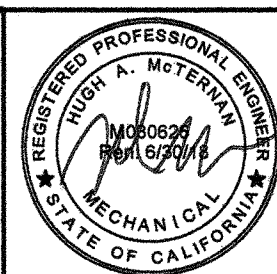
A DSA ACCEPTED LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.

THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24 CALIFORNIA CODE OF REGULATIONS (CCR). SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OF NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN FINISHED WORK WILL NOT COMPLY WITH TITLE 24 CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR SEPARATE SET OF PLANS AND SPECS DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT BEFORE PROCEEDING WITH THE WORK. REF. SEC. 4-317(c) CALIF. BUILDING STANDARDS ADMIN. CODE (PART1, TITLE 24,CCR)

GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS, AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.

DRAWN BY	TP/HAM	DATE	REVISIONS
CHECKED BY	PW/HAM		
DIRECTOR OF MAINTENANCE			
PLAN REVIEWED AND APPROVED			
DATE			

AE Group
Mechanical Engineers, Inc.
838 East Front Street
Ventura, California 93001
(805) 653-1722 FAX: (805) 653-7260
hugh@aegroupme.com



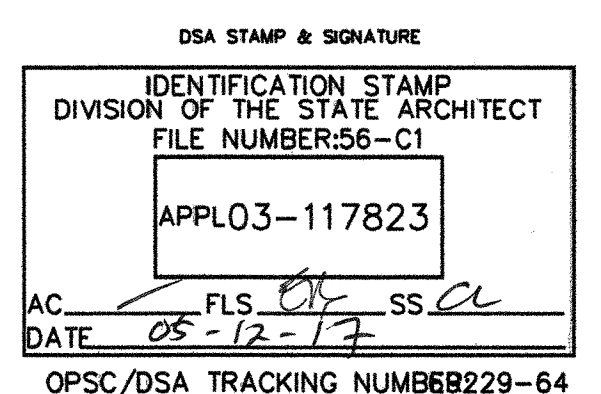
VENTURA COLLEGE
4667 TELEGRAPH ROAD, VENTURA, CALIFORNIA 93003
VENTURA COUNTY COMMUNITY COLLEGE DISTRICT

DEPARTMENT OF
MAINTENANCE AND OPERATIONS
71 DAY ROAD
VENTURA, CALIFORNIA 93003
PHONE: (805) 654-6340 FAX: (805) 648-8953

SCALE:
AS SHOWN
DATE:
5/6/17
BLDG. NO.

LEARNING RESOURCE CENTER
HVAC REPLACEMENT PROJECT
TITLE SHEET

SHEET NO.
T1.0



MECHANICAL NOTES

1. SCOPE OF WORK: WORK INCLUDES THE FOLLOWING: FURNISH AND INSTALL ALL EQUIPMENT AND CONTROLS SHOWN ON THE ARCHITECTURAL, MECHANICAL, AND PLUMBING DRAWINGS AND DESCRIBED IN THESE NOTES, THE BOOK SPECIFICATIONS AND THE CONTRACT DOCUMENTS. WORK INCLUDES BUT IS NOT LIMITED TO: DEMOLITION OF TWO CHILLERS AND INSTALLATION OF TWO NEW CHILLERS. INCLUDED ARE ALL DEVICES NEEDED TO MAKE COMPLETE AND FUNCTIONAL SPACE CONDITIONING SYSTEMS AND CONTROLS. CONTRACTOR SHALL FURNISH AND INSTALL, MAKE OPERABLE, AND TEST ALL SYSTEMS AND MECHANICAL EQUIPMENT SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIFICATIONS AND CONTRACT DOCUMENTS. IN CONNECTION THEREWITH, CONTRACTOR SHALL ALSO FURNISH AND INSTALL ALL NECESSARY DEVICES, HARDWARE, AND SYSTEMS REQUIRED TO MAKE SAID EQUIPMENT PROPERLY AND SAFELY OPERABLE, INCLUDING BUT NOT LIMITED TO, MOUNTING HARDWARE, VIBRATION CONTROL DEVICES, AND CONTROL SYSTEMS.

2. INTERPRETATION OF DRAWINGS, SPECIFICATIONS OR CONTRACT DOCUMENTS. IF ANY BIDDER IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE DRAWINGS, THE SPECIFICATIONS OR OTHER PORTIONS OF THE CONTRACT DOCUMENTS; FINDS DISCREPANCIES, ERRORS OR OMISSIONS THEREIN; OR FINDS VARIANCES IN ANY OF THE CONTRACT DOCUMENTS WITH APPLICABLE RULES, REGULATIONS, ORDINANCES AND/OR LAWS, A WRITTEN REQUEST FOR AN INTERPRETATION OR CORRECTION THEREOF MAY BE SUBMITTED TO THE ENGINEER. IT IS THE SOLE AND EXCLUSIVE RESPONSIBILITY OF THE BIDDER TO SUBMIT SUCH REQUEST IN SUFFICIENT TIME FOR THE PREPARATION OF A RESPONSE THERETO AND DELIVERY OF SUCH RESPONSE TO ALL BIDDERS PRIOR TO THE SCHEDULED CLOSING FOR RECEIPT OF BID PROPOSALS. ANY REQUEST OF ANY BIDDER, PURSUANT TO THE FOREGOING SENTENCE THAT IS MADE LESS THAN SEVEN DAYS PRIOR TO THE SCHEDULED CLOSING DATE FOR THE RECEIPT OF BID PROPOSALS SHALL BE DEEMED UNTIMELY. ANY INTERPRETATION OR CORRECTION OF THE CONTRACT DOCUMENTS WILL BE MADE ONLY BY WRITTEN ADDENDUM DULY ISSUED BY THE OWNER OR THE ENGINEER. A COPY OF ANY SUCH ADDENDUM WILL BE MAILED OR OTHERWISE DELIVERED TO EACH BIDDER RECEIVING A SET OF THE CONTRACT DOCUMENTS. NO PERSON IS AUTHORIZED TO RENDER AN ORAL INTERPRETATION OR CORRECTION OF ANY PORTION OF THE CONTRACT DOCUMENTS TO ANY BIDDER, AND NO BIDDER IS AUTHORIZED TO RELY ON ANY SUCH ORAL INTERPRETATION OR CORRECTION. FAILURE TO REQUEST INTERPRETATION OR CLARIFICATION OF THE DRAWINGS, THE SPECIFICATIONS OR OTHER PORTIONS OF THE CONTRACT DOCUMENTS PURSUANT TO THE FOREGOING SHALL BE DEEMED TO BE A WAIVER OF ANY DISCREPANCY, DEFECT, OR CONFLICT THEREIN.

3. DIMENSIONS. ALL DIMENSIONS SHALL HAVE PREFERENCE OVER SCALE. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN ARCHITECTURAL AND ENGINEERING DRAWINGS BEFORE PROCEEDING WITH WORK. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON WORKING DRAWINGS. ALL SIZES OF EQUIPMENT AND MATERIALS SHALL BE VERIFIED WITH EQUIPMENT MANUFACTURER.

4. CODES AND STANDARDS: ALL WORK SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA), 2013 CALIFORNIA BUILDING CODE, THE 2013 CALIFORNIA MECHANICAL CODE, THE 2013 CALIFORNIA PLUMBING CODE, THE NATIONAL ELECTRIC CODE, THE STATE OF CALIFORNIA, EQUIPMENT MANUFACTURER'S RECOMMENDED PROCEDURES, AND STANDARD CONSTRUCTION PRACTICES. NOTE: WHERE TWO OR MORE CODES CONFLICT, THE MOST RESTRICTIVE SHALL APPLY. NOTHING IN THESE PLANS AND SPECIFICATIONS SHALL BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO APPLICABLE CODES.

5. SUBMITTALS REQUIRED: PRIOR TO ORDERING EQUIPMENT AND MATERIALS, CONTRACTOR SHALL FURNISH TO ENGINEER / OWNER SUBMITTALS AND SHOP DRAWINGS OF ALL EQUIPMENT AND MATERIALS PROPOSED FOR USE IN THIS PROJECT. ORDERING OF EQUIPMENT AND MATERIALS SHALL ONLY PROCEED AFTER SATISFACTORY REVIEW OF ALL SUBMITTALS BY CONTRACTOR / ENGINEER / OWNER. COPIES OF ALL OWNER'S MANUALS, WARRANTIES AND OTHER WRITTEN INFORMATION REGARDING SYSTEMS SHALL BE PRESENTED TO OWNER PRIOR TO THE COMPLETION OF THE PROJECT.

6. CONSTRUCTION OBSERVATION: IN ADDITION TO THE REQUIREMENT FOR OBTAINING INSPECTIONS BY THE LOCAL JURISDICTION, CONTRACTOR SHALL NOTIFY ENGINEER AT APPROPRIATE TIMES DURING THE CONSTRUCTION PROCESS SO THAT ENGINEER CAN VISIT SITE TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF CONTRACTOR'S WORK AND TO DETERMINE IF THE WORK IS PROCEEDING IN GENERAL ACCORDANCE WITH THE CONTRACT DOCUMENTS.

7. UNIT LOCATIONS: EQUIPMENT AND SYSTEM LOCATIONS SHOWN ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL STRUCTURAL MEMBERS AND EXISTING CONDITIONS IN THE FIELD, AND LOCATE UNITS AND DUCTWORK TO AVOID INTERFERENCE. ANY SIGNIFICANT DEVIATIONS FROM THE PLANS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER. ALLOW CLEARANCE FOR DUCTWORK AND PIPING. ALL CLEARANCES REQUIRED BY UNIT MANUFACTURER SHALL BE MAINTAINED. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH CODES AND THE RECOMMENDED INSTALLATION PROCEDURES PUBLISHED BY THE MANUFACTURER.

8. VIBRATION ISOLATION: INSTALL FLEXIBLE CONNECTIONS BETWEEN MECHANICAL EQUIPMENT AND PIPING. INSTALL NEW VIBRATION ISOLATION AT CHILLERS. SEE MECHANICAL DETAILS & SPECIFICATIONS FOR SPECIFIC TYPE.

9. WIRING: ALL WIRING SHALL BE PERFORMED IN ACCORDANCE WITH NEC REQTS. ALL WIRING SHALL BE IN CONDUIT. ALL INTERIOR LOW VOLTAGE AND CONTROL WIRING SHALL BE IN WIREMOLD AND IN FAN ROOMS SHALL BE IN CONDUIT. EXPOSED CONDUIT SHALL BE INSTALLED IN A SQUARE, PLUMB, AND LEVEL MANNER WITH THOUGHT GIVEN TO THE FINAL APPEARANCES. PROVIDE TO ENGINEER SHOP DRAWING FOR CONTROL TRANSFORMER CONFIGURATIONS DETAILING CIRCUITS TO BE USED, LOAD CALCULATIONS, WIRE SIZES, AND LOCATIONS. WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL CODE AND ELECTRICAL SPECIFICATIONS. ALL TRANSFORMERS SHALL BE PROTECTED BY PROPERLY SIZED CIRCUIT BREAKER OR FUSE(S). ALL TRANSFORMERS SHALL HAVE RESETABLE BREAKER ON THE LOAD SIDE. ALL LOW VOLTAGE CONTROL & COMMUNICATIONS WIRING SHALL BE DONE ACCORDING TO MANUFACTURERS INSTALLATION MANUAL. PROVIDE SUBMITTALS ON WIRE AND ENCLOSURES.

10. COORDINATION DURING CONSTRUCTION: THE CONTRACTOR SHALL COORDINATE ANY NECESSARY CHANGES IN WORK SCHEDULING WITH THE SCHOOL TO MINIMIZE THE DISRUPTION. THE CONTRACTOR SHALL COORDINATE WITH OTHER TRADES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY HIS WORK TO BUILDING(S) AND EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.

11. CORRECTION OF WORK: THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK THE OWNER FINDS DEFECTIVE OR FAILING TO CONFORM TO THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BEAR ALL COSTS REQUIRED BY THE CONTRACT DOCUMENTS, IF ANY OF THE WORK IS FOUND TO BE DEFECTIVE OR NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL CORRECT IT PROMPTLY AFTER RECEIPT OF A WRITTEN NOTICE FROM THE OWNER TO DO SO.

12. CHILLED & HYDRONIC WATER PIPING SHALL BE U.S. MANUFACTURED SCHEDULE 40 STEEL PIPE WITH WELDED OR GROOVED STYLE CONNECTIONS OR U.S. MANUFACTURED TYPE 'L' COPPER WITH WROT SOLDER TYPE FITTINGS. ALL PIPE SHALL BE COVERED WITH 2" FIBERGLASS INSULATION. ALL EXTERIOR PIPING SHALL HAVE ALUMINUM JACKET WITH FORMED ALUMINUM ELBOWS WITH JOINTS CAULKED TO PREVENT WATER INTRUSION.

13. CONTROLS - DISCONNECT EXISTING CONTROLS. INSTALL NEW BACNET CONNECTION TO NEW CHILLERS AND INTEGRATE INTO EXISTING BUILDING AND CAMPUS AUTOMATED LOGIC GRAPHICS AND PROGRAMMING. ALL WIRE SHALL BE IN CONDUIT. PROVIDE ALL NEEDED WIRE, ROUTERS, CONTROLLERS FOR A COMPLETE SYSTEM.

14. SEE ELECTRIC PLANS FOR RECONNECTION TO POWER.

GENERAL NOTES

1. CUTTING, BORING SAWCUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED ON THE DRAWINGS OR ACCEPTED BY THE MECHANICAL AND STRUCTURAL ENGINEER WITH THE APPROVAL OF DSA REPRESENTATIVE.

2. ALL WELDING SHALL BE SPECIALLY INSPECTED BY AN AWS-CWI QUALIFIED INSPECTOR APPROVED BY DSA/ORS.

3. ALL BRACING OF DUCTS AND PIPINGS SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES AS APPROVED BY DSA/ORS.

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

A COPY OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY DSA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.

4. THE PROVISIONS OF CFC & CBC 33 SHALL BE ENFORCED ON THIS PROJECT.

MEP COMPONENT ANCHORAGE NOTE

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 FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2013 CBC, SECTION 1616A.1.18 THROUGH 1616A.1.26 AND ASCE 7-10 CHAPTER 13, 29, AND 30.

- ALL PERMANENT EQUIPMENT AND COMPONENTS.
- TEMPORARY OR MOVEABLE EQUIPMENT THAT IS PERMANENTLY ATTACHED(E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER.
- 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 FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE, BUT NEED NOT BE DETAILED ON THESE PLANS. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT.

- 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 SUPPORT THE COMPONENT.
- 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.

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 7-10 SECTION 13.3 AS DEFINED IN ASCE 7-10 SECTION 13.6.8, 13.6.7, 13.6.5.6, AND 2013 CBC SECTIONS 1616A.1.23, 1616A.1.24, 1616A.1.25. AND 1616A.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 #).

COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR 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.

ABBREVIATIONS

ABRV	ABBREVIATIONS	DWN	DOWN	MIN	MINIMUM
ABV	ABOVE	(E)	EXISTING	(N)	NEW
AFF	ABOVE FINISHED FLOOR	EA	EACH	OC	ON CENTER
APPROX	APPROXIMATELY	EL	ELEVATION	POC	POINT OF CONNECTION
BLDG	BUILDING	ELEC	ELECTRIC	PSI	POUNDS PER SQUARE INCH
BLW	BELOW	ELEV	ELEVATION	RAG	RETURN AIR GRILLE
BOT	BOTTOM	EQ	EQUIPMENT	RAR	RETURN AIR REGISTER
CD	CEILING DIFFUSER	EQUIP	EQUIPMENT	SD	SMOKE DETECTOR
CFM	CUBIC FEET PER MINUTE	EXH	EXHAUST	SHT	SHEET
CL	CENTERLINE	FIN	FINISHED	SOV	SHUT-OFF VALVE
CLG	CEILING	FRM	FROM	SPEC	SPECIFICATIONS
COND	CONDENSATE	FLR	FLOOR	SR	SIDEWALL REGISTER
CONT	CONTINUED	G	GAS	(TYP)	TYPICAL
DIA	DIAMETER	GPM	GALLONS PER MINUTE	UGND	UNDERGROUND
DWG	DRAWING	MAX	MAXIMUM	VTR	VENT TO ROOF

EXISTING UNIT	NEW UNIT	LOCATION
132"Lx89"Wx86"H 8249 LBS	147"Lx89"Wx89"H 5942 LBS	ROOF

CHILLER SCHEDULE

TAG	MANF. & MODEL	EER (ARI)	IPLV (ARI)	CAPACITY @ 105° F	ENT. WATER	LVG WATER	ELECTRICAL DATA				FLOWRATE	PD	(N) UNIT OPER.	(E) UNIT OPER.	VIBRATION ISOLATION	OPTIONS
							VOLTAGE	PHASE	MCA	MOCP			WEIGHT (INCLUDES ISO BASE)	WEIGHT (INCLUDES ISO BASE)		
CH	YORK	9.8	15.0	118 TONS	57 F	43 F	480	3	254	300	300	4.1	6942	9249	MW SAUSSE ISOLATION BASE WEIGHT 1000 LBS	FACTORY START AND TUNE, R-410A, AIR-COOLED SCROLL COMPRESSORS, LOW SOUND FAN SYSTEM, SERVICE ISO VALVES, AND ELECTRONIC THERMAL-DISPERSION FLOW SWITCH. ALUMINUM FINS W LUVATA COATING, COMPRESSOR BLANKET, SINGLE POINT POWER SUPPLY, CONTROL TRANSFORMER, BACNET MSTP BUILDING AUTOMATION INTERFACE NEMA 3R ENCLOSURE
CH	YORK	9.8	15.0	118 TONS	57 F	43 F	480	3	254	300	300	4.1	6942	9249	MW SAUSSE ISOLATION BASE WEIGHT 1000 LBS	
2	YLA4120SE															

DSA STAMP & SIGNATURE

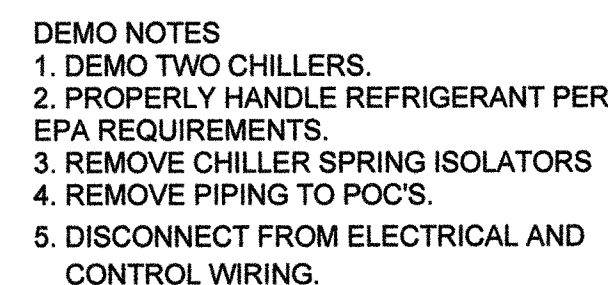
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
FILE NUMBER:56-C1

APPL03-117823

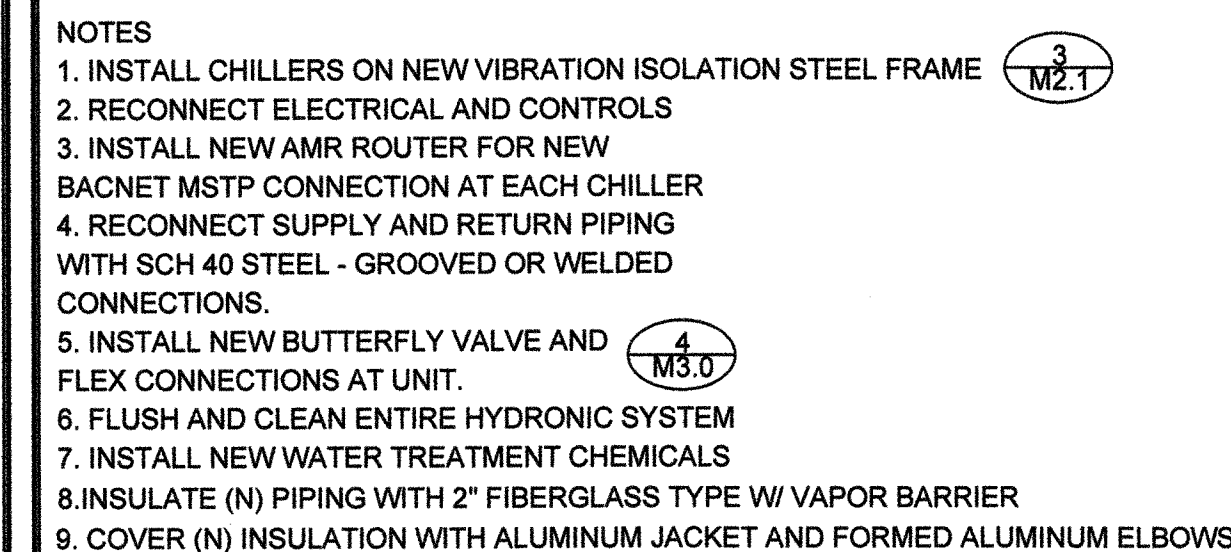
AC. _____ FLS. FLS SS. SS
DATE 05-12-17

OPSC/DSA TRACKING NUMB68229-64

DRAWN BY TP/HAM	DATE	REVISIONS	AE Group Mechanical Engineers, Inc. 838 East Front Street Ventura, California 93001 (805) 653-1722 FAX: (805) 653-7260 hugh@aeengineers.com		V E N T U R A C O L L E G E 4 6 6 7 T E L E G R A P H R O A D , V E N T U R A , C A L I F O R N I A 9 3 0 0 3 V E N T U R A C O U N T Y C O M M U N I T Y C O L L E G E D I S T R I C T	DEPARTMENT OF MAINTENANCE AND OPERATIONS 71 DAY ROAD VENTURA, CALIFORNIA 93003 PHONE: (805) 654-6340 FAX: (805) 648-8953	SCALE: AS SHOWN DATE: 5/6/17 BLDG. NO.	LEARNING RESOURCE CENTER HVAC REPLACEMENT PROJECT NOTES & SCHEDULE		SHEET NO. M1.0
--------------------	------	-----------	---	--	--	--	--	---	--	--------------------------

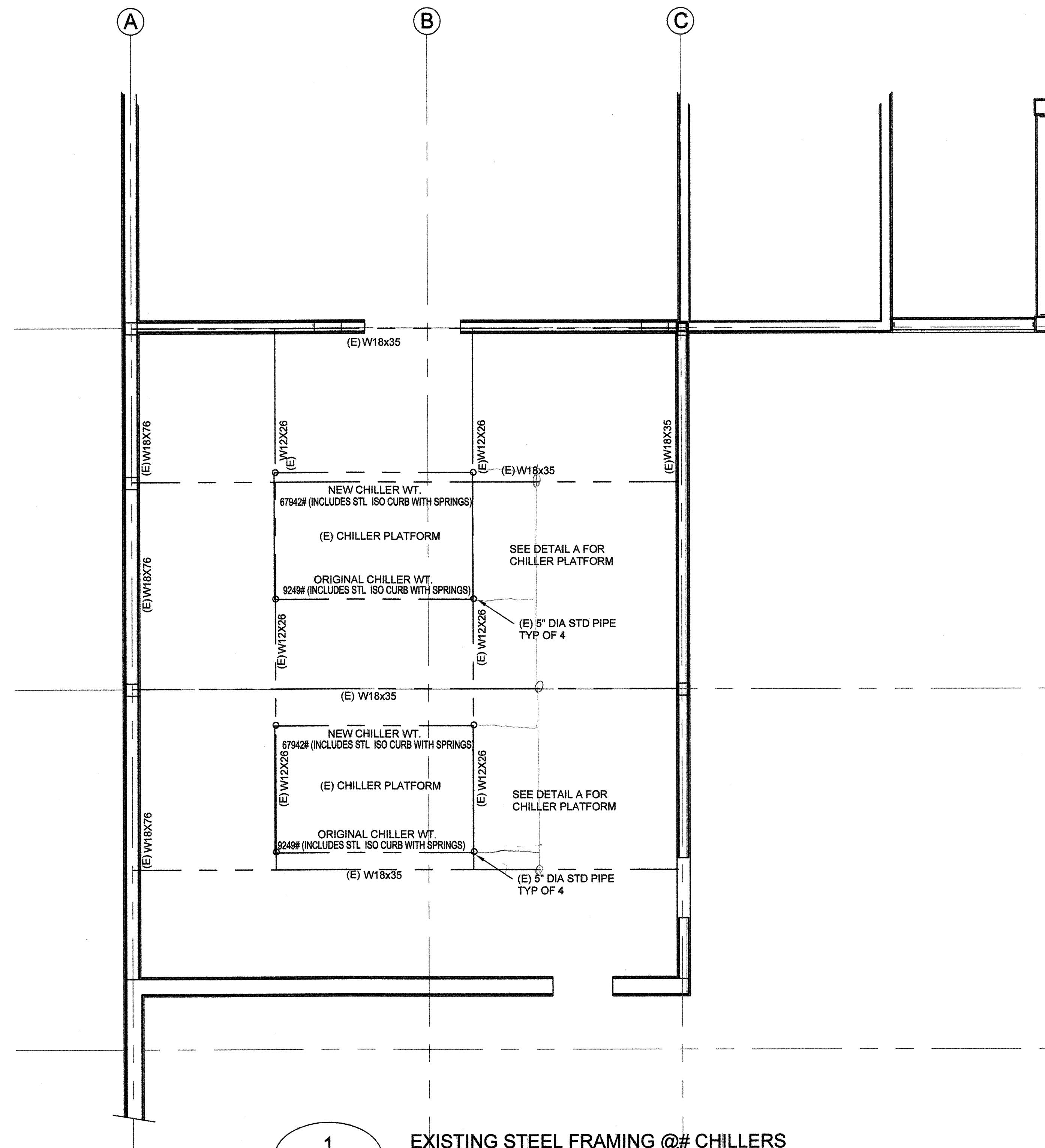


SCALE: 1/4"=1'0'

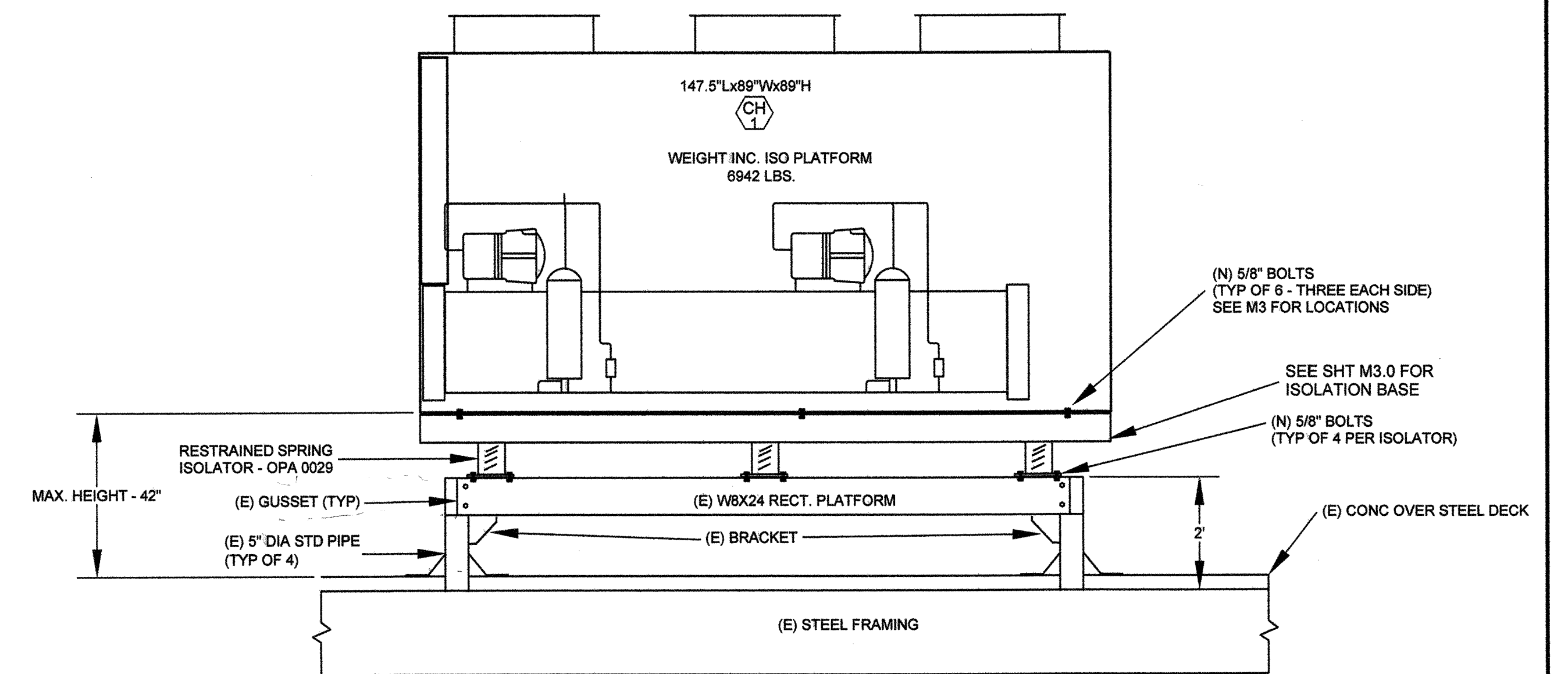


SCALE: 1/4"=1'0"

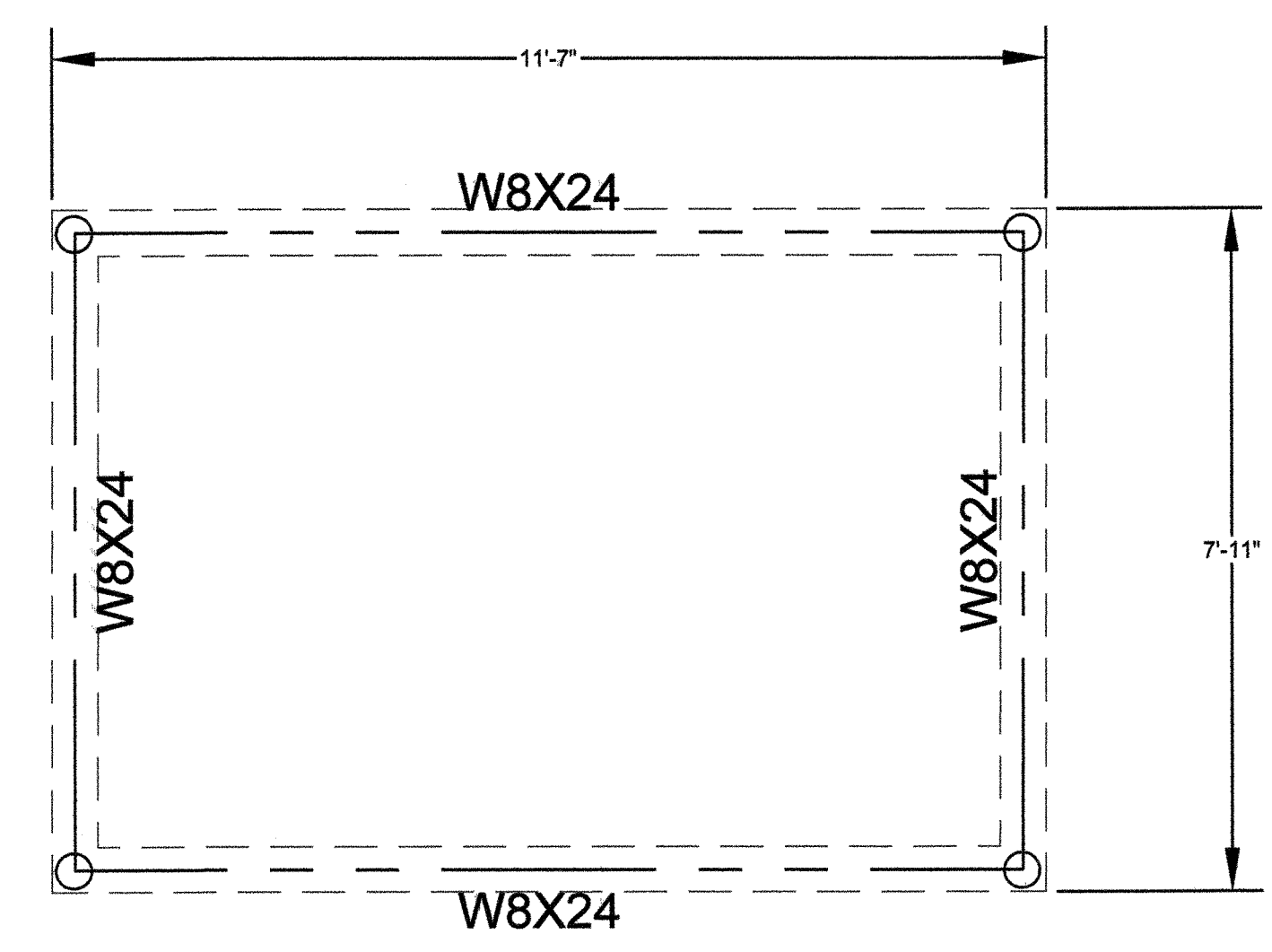
DSA STAMP & SIGNATURE
 IDENTIFICATION STAMP
 DIVISION OF THE STATE ARCHITECT
 FILE NUMBER: 56-C1
 APPL03-117823
 AC _____ FLS *805* SS *CL*
 DATE *05-12-17*
 OPSC/DSA TRACKING NUMBER 68229-64



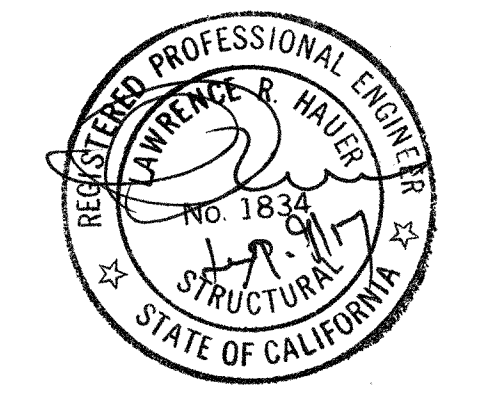
1
M2.1
EXISTING STEEL FRAMING @# CHILLERS
SCALE: 1/4"=1'0"



3
M2.1
CHILLER PLATFORM ELEVATION
SCALE: 1/4"=1'0"



2
M2.1
EXISTING CHILLER PLATFORM (TYP OF 2)
SCALE: 1/4"=1'0"

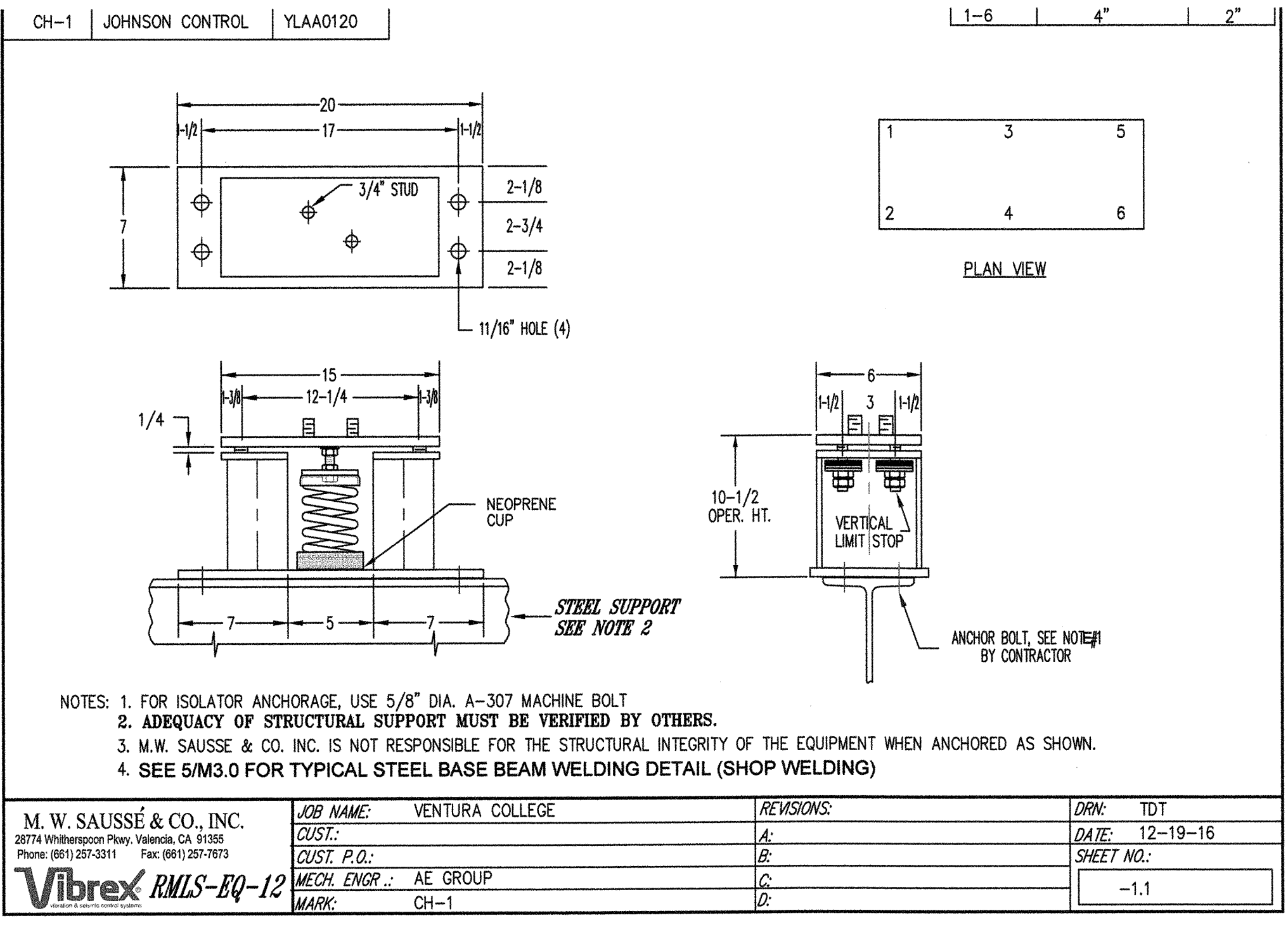


DSA STAMP & SIGNATURE

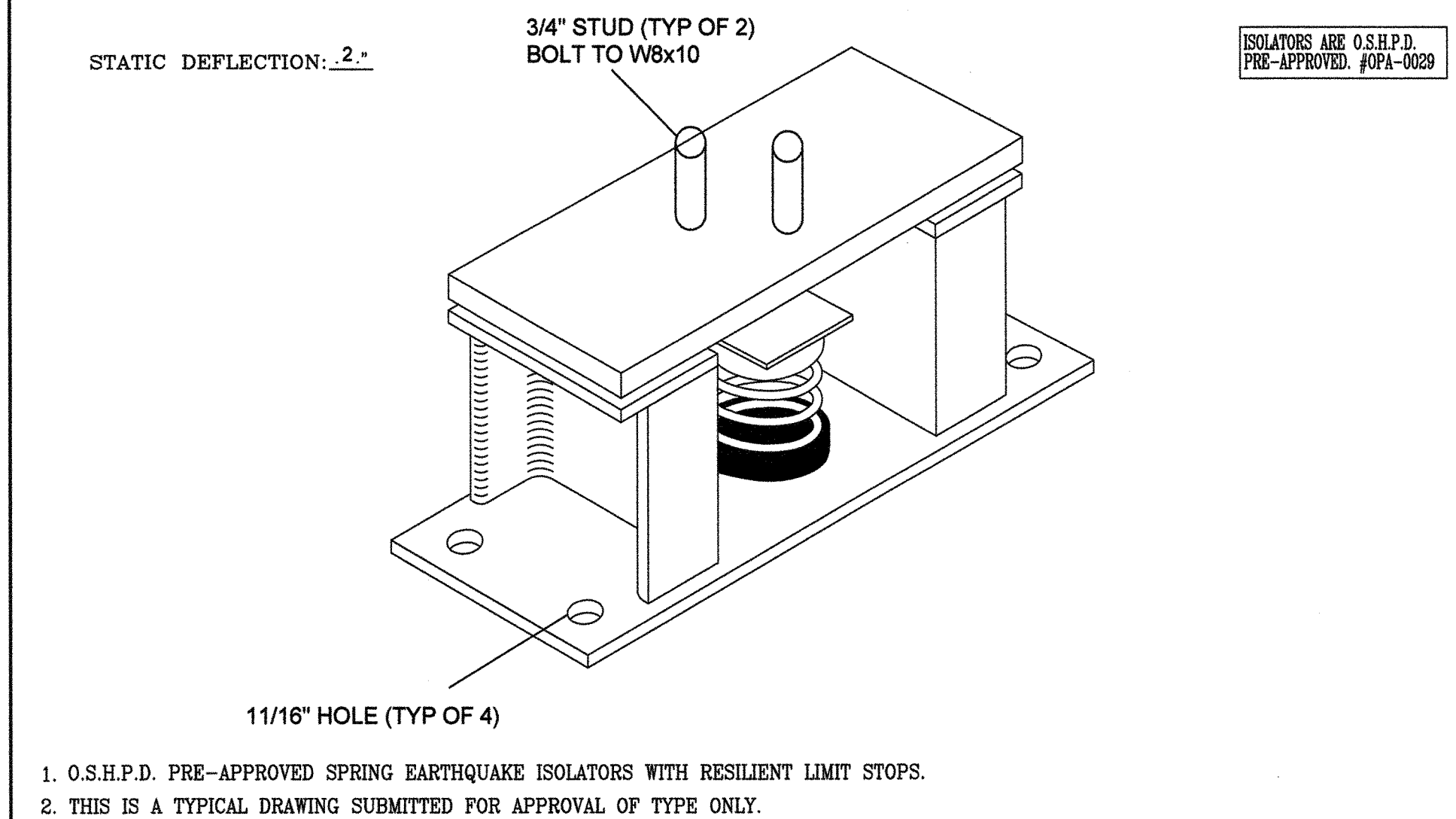
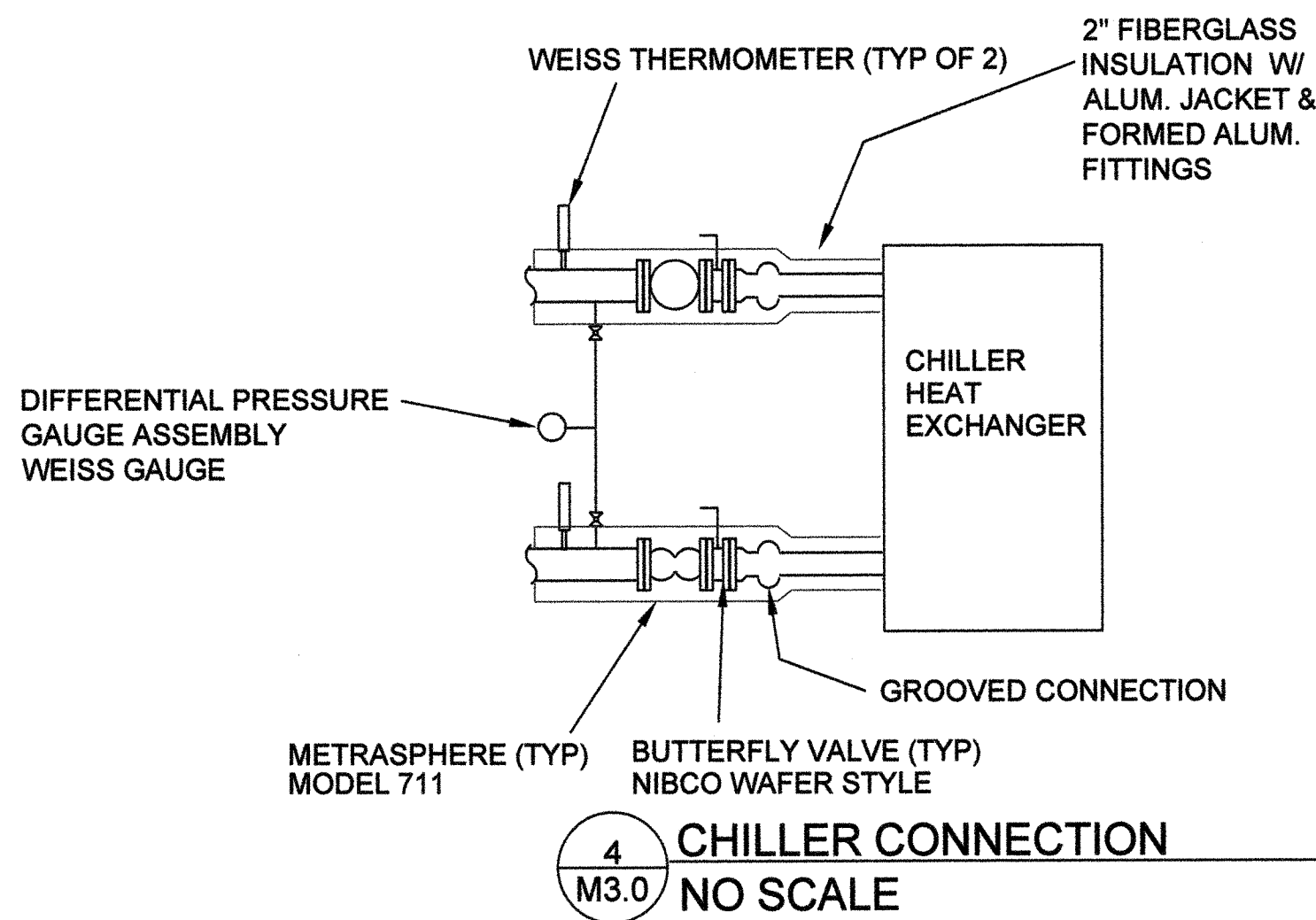
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
FILE NUMBER: 56-C1

APPL03-117823

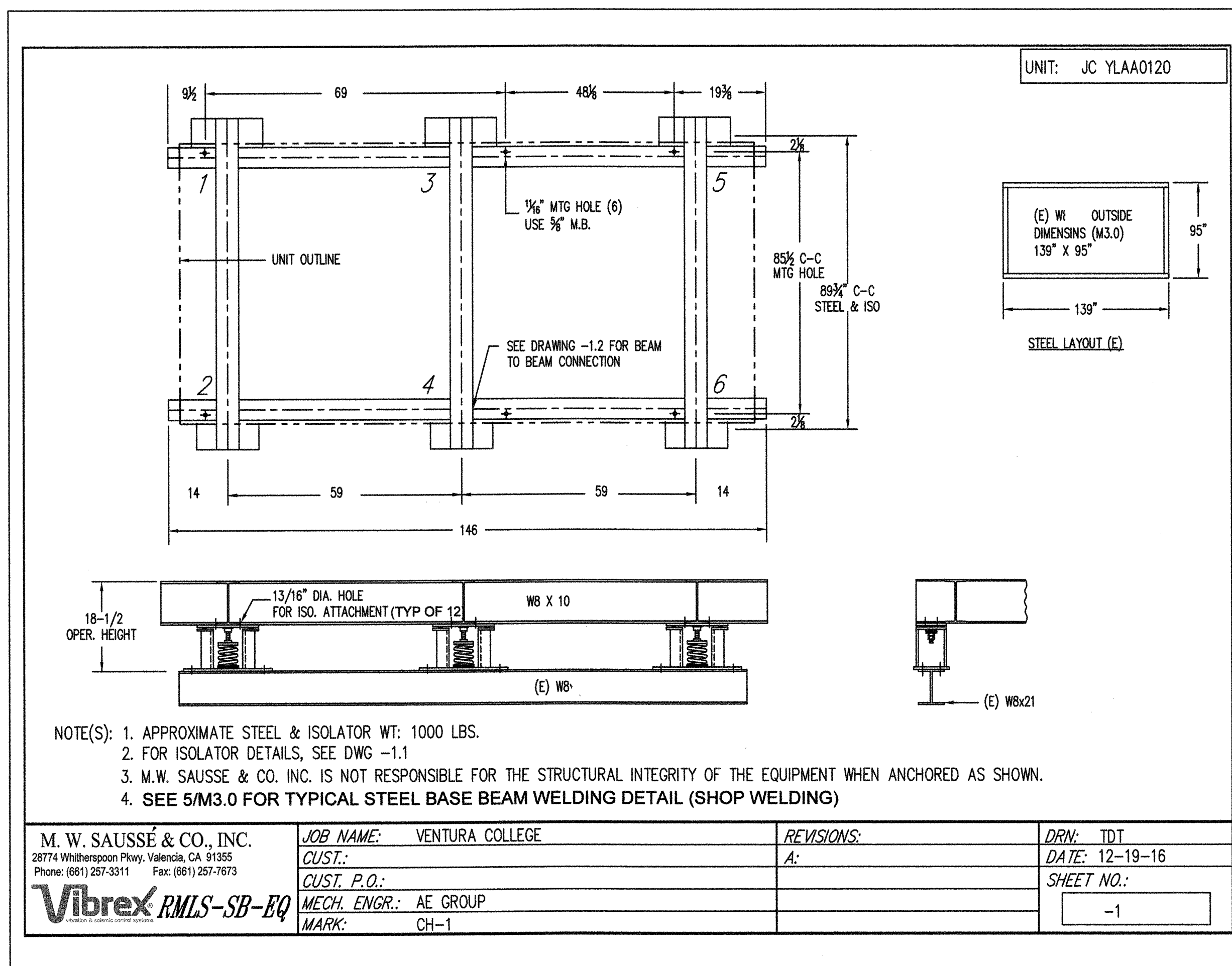
AC: [Signature] FLS: [Signature] SS: [Signature]
DATE: 05-12-17
OPSC/DSA TRACKING NUMBER: 68229-64



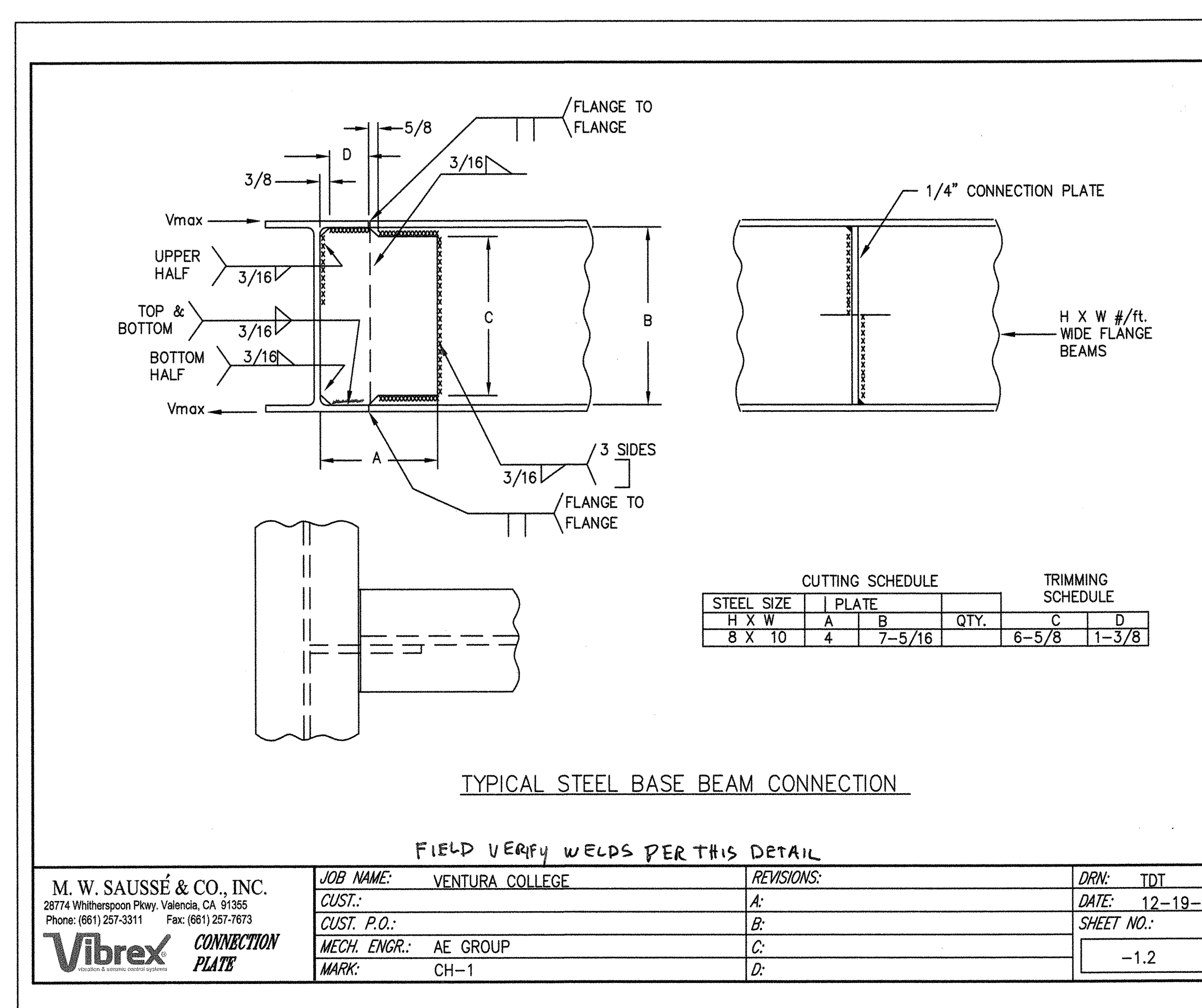
3 SPRING ISOLATOR
M3.0 NO SCALE



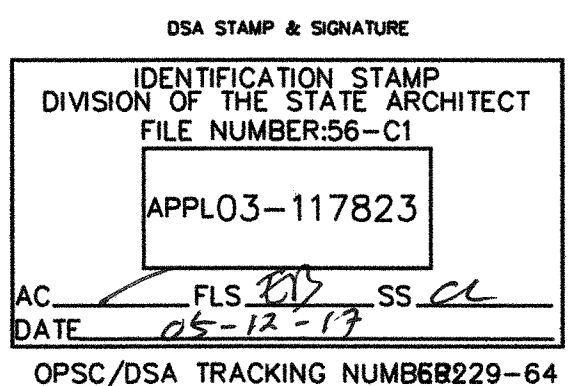
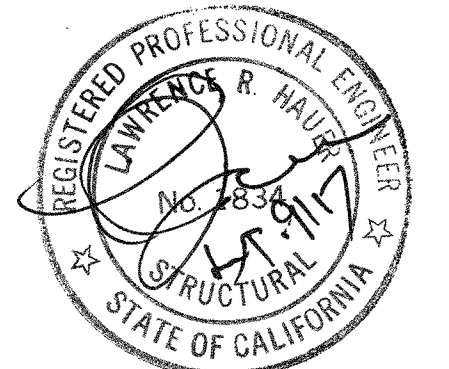
2 SPRING DETAIL
M3.0 NO SCALE



1 CHILLER BASE FRAME
M3.0 NO SCALE



5 FRAME WELDING DETAIL
M3.0 NO SCALE



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: Ventura College LRC HVAC Replacement
Date Prepared: 5/11/2017

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
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NRCC-MCH-01-E (Part 1 of 3)	Certificate of Compliance, Declaration. Required on plans for all submittals.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	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.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	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.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	NRCC-MCH-07-E (Part 1 of 2)	Power Consumption of Fans. Required on plans where applicable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	NRCC-MCH-07-E (Part 2 of 2)	Power Consumption of Fans, Declaration. Required on plans where applicable

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 2 of 4)
Project Name: Ventura College LRC HVAC Replacement
Date Prepared: 5/11/2017

B. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)
Test Performed By:
Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.
Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.
Enforcement Agency:
Plancheck - The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description	MCH-02-A	MCH-03-A	MCH-04-A	MCH-05-A	MCH-06-A	MCH-07-A	MCH-08-A	MCH-09-A	MCH-10-A	MCH-11-A
Equipment Requiring Testing or Verification										
# of Units										
Outdoor Air										
Single Zone Unitary										
Air Distribution Ducts										
Economizer Controls										
Demand Control Ventilation (DCV)										
Supply Fan VAV										
Valve Leakage Test										
Supply Water Temp. Reset										
Hydronic System Variable Flow Control										
Automatic Demand Shed Control										

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 3 of 4)
Project Name: Ventura College LRC HVAC Replacement
Date Prepared: 5/11/2017

C. MECHANICAL HVAC ACCEPTANCE FORMS (check box for required compliance documents)
Test Performed By:
Designer:
This compliance document is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.
Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test themselves or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.
Enforcement Agency:
Plancheck - The NRCC-MCH-01-E compliance document is not considered a completed document and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description	MCH-12-A	MCH-13-A	MCH-14-A	MCH-15-A	MCH-16-A	MCH-17-A	MCH-18-A
Equipment Requiring Testing or Verification							
# of Units							
Fault Detection & Diagnostics for DX Units							
Automatic Fault Detection & Diagnostics for Air & Zone							
Distributed Energy Storage DX AC Systems							
Thermal Energy Storage (TES) Systems							
Supply Air Temperature Reset Controls							
Condenser Water Reset Controls							
ECMS							

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: Ventura College LRC HVAC Replacement
Date Prepared: 5/11/2017

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
1. I certify that this Certificate of Compliance documentation is accurate and complete.
Documentation Author Name: Tony Perez
Signature: Tony Perez
Company: AE Group Mechanical Engineers, Inc.
Address: 838 E. Front St.
City/State/Zip: Ventura, Ca 93001
Phone: (805) 653-1722
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: Hugh McTernan
Signature: Hugh McTernan
Company: AE Group Mechanical Engineers, Inc.
Address: 838 East Front Street
City/State/Zip: Ventura, Ca 93001
Date Signed: 5/11/2017
License: M030626
Phone: 805-653-1722

DSA STAMP & SIGNATURE
IDENTIFICATION STAMP
DIVISION OF THE STATE ARCHITECT
FILE NUMBER: 58-C1
APPL 03-117823
AC: FLS: SS: CC:
DATE: 05-12-17
OPSC/DSA TRACKING NUMBER: 68228-64

TIME: 10:14 am

DATE: 27 April 2017

PATHNAME: G:\16256\EL\Sheets

DRAWING FILENAME: 256E1-0

DRAFTER: Lee Keener

Drawn by: Lee Keener
Checked by: K. L.
Date: 04/26/2017
Job No.: 16256
Sheet Title: GENERAL NOTES, ABBREVIATIONS AND SYMBOLS

GENERAL NOTES

- A. GENERAL**
- SCOPE**
THE DRAWINGS AND THESE GENERAL NOTES DESCRIBE THE SCOPE OF WORK AND SYSTEMS. THE MATERIAL REQUIRED FOR THE WORK SHALL BE CONTRACTOR FURNISHED AND CONTRACTOR INSTALLED, UNLESS SPECIFICALLY NOTED OTHERWISE. THE WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING PRINCIPAL SYSTEMS AND EQUIPMENT.
 - PERMITS AND CHARGES**
OBTAIN AND PAY FOR ALL NECESSARY CONSTRUCTION PERMITS, INSPECTION FEES, AND OTHER CHARGES BY AGENCIES HAVING JURISDICTION.
 - REGULATIONS AND CODES**
PROVIDE AND INSTALL ALL MATERIALS IN CONFORMANCE WITH THE 2013 C.E.C., CALIFORNIA ADMINISTRATIVE CODE TITLE 8, AND OTHER CODES AND REGULATIONS HAVING JURISDICTION. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE REQUIREMENTS OF THE INSPECTING AUTHORITY AND THE MANUFACTURER'S RECOMMENDATIONS.
 - VERIFYING EXISTING CONDITIONS**
BEFORE SUBMITTING BID, BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS AT THE BUILDING. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREINAFTER. BY THE ACT OF SUBMITTING A BID PROPOSAL FOR THE WORK, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT WILL BE CONSIDERED AS VALID, DUE TO FAILURE TO ALLOW FOR CONDITIONS WHICH MAY EXIST.
 - COORDINATION**
COORDINATE ALL WORK WITH OTHER TRADES. OBTAIN ALL DRAWINGS THAT WILL REQUIRE COORDINATION AND PROVIDE ALL ELECTRICAL CONNECTION REQUIRED WHETHER SHOWN ON ELECTRICAL DRAWINGS OR NOT.
ELECTRICAL EQUIPMENT LOCATIONS INDICATED ARE SHOWN DIAGRAMMATICALLY, EXACT LOCATION SHALL BE VERIFIED.
SCALING OFF OF DRAWINGS SHALL BE DONE AT CONTRACTORS RISK. DO NOT SCALE DEVICES, LIGHTING FIXTURES OR ANY EQUIPMENT FROM PLANS.
LIGHTING FIXTURE QUANTITIES AND LENGTHS SHALL BE CONTRACTORS RESPONSIBILITY. FIXTURES ARE SHOWN FOR CIRCUITING ONLY. CONTRACTOR TO VERIFY SIZES & QUANTITIES PRIOR TO BID.
 - SERVICE CONTINUITY**
UNINTERRUPTED EXISTING ELECTRICAL POWER SHALL BE MAINTAINED TO OTHER TRADES FOR TEMPORARY POWER AREAS OF THE SITE DURING CONSTRUCTION. PROVIDE ANY TEMPORARY SERVICES AS MAY BE REQUIRED. IDENTIFY AT BID TIME, ALL WORK TO BE DONE ON PREMIUM TIME AND THE TOTAL OVERTIME MAN-HOURS REQUIRED FOR COMPLETION.
 - AS-BUILT**
PROVIDE RECORD DRAWINGS IN ACCORD TO THE OWNER WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT. RECORD DRAWINGS SHALL BE SIGNED AND DATED BY CONTRACTOR PRIOR TO RELEASE OF FINAL RETENTION OF ALL MONIES.
 - GUARANTEE**
CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIALS ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR.
 - SHOP DRAWINGS**
SUBMIT SHOP DRAWINGS AND MATERIAL LIST FOR REVIEW PRIOR TO COMMENCING ANY WORK. ALL EQUIPMENT TO BEAR U.L. LABELS AND BE APPROVED BY ANOTHER ACCEPTABLE TESTING LABORATORY. SHOP DRAWINGS MUST BE STAMPED BY THE CONTRACTOR FOR CONFORMANCE PRIOR TO SUBMITTAL.
SUBMIT THREE HARD COPY SETS OF SHOP DRAWINGS FOR REVIEW PRIOR TO PURCHASING ALL BREAKER MOUNTING HARDWARE, DISCONNECT SWITCHES, FUSES, CONTROLLERS, LIGHTING FIXTURES, LIGHT SWITCHES, RECEPTACLES, ETC.
 - CONTRACTOR BID**
CONTRACTOR'S BID SHALL BE BASED ON ALL WORK SHOWN ON THE PLANS AND AS SPECIFIED. IF CONTRACTOR PROPOSES TO SUBSTITUTE FOR EQUIPMENT SPECIFIED, HE SHALL SUBMIT HIS REQUEST FOR CONSIDERATION OF THE OWNER AND ENGINEER PRIOR TO BID IN WRITING. ALL SUBSTITUTIONS MUST BE REVIEWED BY THE ENGINEER IN WRITING. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS, AND THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN EXPENSE FOR ANY CHARGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS OWN WORK, THE OWNER, ENGINEER OF RECORD OR THE WORK OF OTHER CONTRACTORS.
- B. MATERIAL AND INSTALLATION**
- ALL WORK AND MATERIAL SHALL CONFORM TO THE LATEST RULES OF THE GOVERNING ELECTRICAL CODE AND INSTALLATION SHALL BE OF THE LATEST INDUSTRY STANDARDS OF WORKMANSHIP.
- ALL MATERIALS SHALL BE NEW AND LISTED FOR THE APPLICATION BY UNDERWRITERS LABORATORY (U.L.).
- CONDUITS**
CONDUIT SHALL BE EMT, PVC, IMC, RIGID OR FLEXIBLE STEEL TYPE. CONDUIT SHALL BE MANUFACTURED IN ACCORDANCE WITH U.L. A GROUND WIRE IS REQUIRED IN ALL FLEXIBLE CONDUIT AND UNDERGROUND CONDUIT. BUSINGS SHALL BE INSTALLED ON ALL COMMUNICATION, TELEPHONE & SPEAKER CONDUITS. PROVIDE 3/16" NYLON PULL STRING IN ALL EMPTY CONDUITS. NO MC, BX OR AC90 SHALL BE PERMITTED. FLEXIBLE STEEL CONDUIT RUNS SHALL BE LIMITED TO A MAXIMUM LENGTH OF 6 FEET.
 - SWITCHES AND RECEPTACLES**
PROVIDE 20AMP NEMA RATED SWITCHES AND RECEPTACLES OF SPECIFICATION GRADE. ALL SWITCHES SHALL BE RATED FOR 120 AND/OR 277 VOLT AND RECEPTACLES SHALL BE NEMA 5-20R. IN ALL OFFICES AND OFFICE AREAS DEVICES SHALL BE DECORA SERIES TYPE WITH COLOR SELECTION BY CONTRACTOR/OWNERS REPRESENTATIVE.
 - FEEDERS AND BRANCH CIRCUIT IDENTIFICATION**
IDENTIFY FEEDERS WITH THE CORRESPONDING CIRCUIT DESIGNATION AT THE OVER-CURRENT DEVICE, LOAD END, AND IN PULL BOXES WITH E-2 CODE OR OTHER APPROVED WIRE MARKER.
IDENTIFY BRANCH CIRCUITS WITH I.D. MARKERS, THE CORRESPONDING CIRCUIT DESIGNATION AT THE OVER-CURRENT DEVICE, AT ALL SPLICES, IN JUNCTION BOXES, AND IN OUTLETS. USE PLASTIC COATED SELF-STICKING MARKERS SUCH AS THOMAS & BETTS E-2 CODE FOR IDENTIFICATION OF CONDUCTORS.
IDENTIFY SIGNAL & COMMUNICATION CABLES AT TERMINAL AND OUTLET UNIQUELY WITH PERMANENT LABELING.
 - CONDUCTORS**
DELIVER ALL CONDUCTORS TO THE JOB SITE IN ORIGINAL UNBROKEN CARTON OR REEL, PROPERLY TAGGED WITH U.L. LABEL, SIZE, TYPE, MANUFACTURER, TRADE NAME AND THE DATE OF MANUFACTURE. (MUST BE MANUFACTURED WITHIN 6 MONTHS)
PROVIDE COPPER CONDUCTORS #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS. PROVIDE STRANDED COPPER CONDUCTORS FOR ALL WIRING. USE CONDUCTORS WITH 90°C THHN/THWN 600 VOLTS INSULATION, UNLESS OTHERWISE NOTED.
 - STRUCTURAL SUPPORT**
EACH SECTION OF FLOOR MOUNTED SWITCHBOARD, DISTRIBUTION BOARD, MCC, ETC. SHALL BE BOLTED TO THE CONCRETE HOUSEKEEPING PAD USING (6) 3/4"-10 GRADE 2 BOLTS AND CONICAL WASHERS TORQUED TO 70LB-FT. PROVIDE MINIMUM 4000 PSI STRENGTH CONCRETE BELOW ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT. TIE THE TOP OF ALL FLOOR MOUNTED ELECTRICAL EQUIPMENT TO THE BUILDING STRUCTURE IN A SEISMICALLY APPROVED MANNER.
 - ELECTRICAL CERTIFICATION**
"ELECTRICIANS" PERFORMING WORK ON THIS PROJECT SHALL BE CURRENTLY CERTIFIED IN ACCORDANCE WITH THE STATE OF CALIFORNIA AB931 AND THE DIVISION OF APPRENTICESHIP STANDARDS SECTION 3099.
- C. DEMOLITION**
- NOTIFY THE OWNER IMMEDIATELY WHEREVER EXISTING EQUIPMENT IS ENCOUNTERED WHICH MUST BE RELOCATED DUE TO THE NEW CONSTRUCTION, AND WHICH IS NOT INDICATED ON THE PLANS.
 - ALL REMOVED MATERIALS AND EQUIPMENT WHICH ARE SALVAGEABLE SHALL REMAIN THE PROPERTY OF THE OWNER. DELIVER SUCH SALVAGEABLE MATERIALS AND EQUIPMENT TO THE PREMISES AS DIRECTED BY OWNER, OR TO A PILE OR STORE THEM AND PROTECT FROM DAMAGE. REMOVE FROM PREMISES AND DISPOSE OF ALL MATERIALS CONSIDERED BY THE OWNER TO BE SCRAP.
 - ALL DEVICES, CIRCUITS CONDUCTORS, FEEDERS ETC., WHEN NOTED TO BE REMOVED, SHALL BE REMOVED TO THE LAST ACTIVE DEVICE. ALL OVER-CURRENT PROTECTION AND DISCONNECT DEVICES NO LONGER UTILIZED BUT REMAINING AS LAST ACTIVE DEVICE SHALL BE LABELED AS "SPARE". COORDINATE ALL OUTGAGES WITH OWNERS REPRESENTATIVE.
 - DISCONNECT AND MAKE SAFE ALL ELECTRICAL SYSTEMS ON SITE AND IN WALL, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.
 - REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.
 - REMOVE ABANDONED WIRING TO SOURCE OF SUPPLY AND RE-LABEL DEVICES AS SPARES.
 - REMOVE ABANDONED CONDUIT, INCLUDING ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT CONDUIT FLUSH WITH WALLS AND FLOOR, AND PATCH SURFACES.
 - DISCONNECT ABANDONED OUTLETS AND REMOVE DEVICES. REMOVE ABANDONED OUTLETS IF CONDUIT SERVICING THEM IS ABANDONED AND REMOVE. PROVIDE BLANK COVER FOR ABANDONED OUTLETS WHICH ARE NOT REMOVED.

- DISCONNECT AND REMOVE ABANDONED LUMINAIRES. REMOVE BRACKETS, STEMS, HANGERS, AND OTHER ACCESSORIES.
 - REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK.
 - MAINTAIN ACCESS TO EXISTING ELECTRICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
 - BEGINNING OF DEMOLITION MEANS CONTRACTOR ACCEPTS EXISTING CONDITIONS.
- D. EXECUTION**
- CAREFULLY PROTECT ALL WALLS, TRIM, FLOORS, EQUIPMENT UTILITY LINES AND MATERIALS. WHEN WORKING ON FINISHED SURFACES, LIMIT DAMAGE TO THE CONFINES AS MUCH AS POSSIBLE AND RESTORE TO THE ORIGINAL CONDITION ALL SURFACES WHICH ARE DAMAGED BECAUSE OF THE INSTALLATION OF THIS WORK.
 - EQUIPMENT, MATERIALS AND SUPPLIES REMOVED FOR PROTECTION SHALL BE REPLACED IN ORIGINAL LOCATIONS. ANY MATERIALS DAMAGED SHALL BE REPLACED WITH NEW MATERIALS OF LIKE KIND AND QUALITY.
 - DO ALL DRILLING, CUTTING, CHANNELING AND PATCHING REQUIRED TO INSTALL ELECTRICAL WORK AS INDICATED OR HEREIN SPECIFIED. ALL HOLES, CURBS, ETC., IN FLOORS, CEILINGS AND WALLS SHALL BE PATCHED, UNLESS INDICATED OTHERWISE. PAINT ALL NEW ELECTRICAL RACEWAYS, CABINETS, ENCLOSURES AND FITTINGS PENETRATING INTO FIRE RATED ENVELOPES, SPACES, ETC.
 - ALL CONDUIT RUNS SHALL BE CONCEALED, UNLESS SHOWN OTHERWISE. PROVIDE A PULL WIRE IN ALL EMPTY CONDUITS.
 - EXISTING CONDITION SHOWN IS FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEY AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITION AT SITE.
 - ALL WORK SHOWN IS NEW UNLESS SPECIFICALLY INDICATED AS EXISTING (X). ALL ELECTRICAL EQUIPMENT MOUNTING AND ANCHORAGE MUST CONFORM WITH LOCAL AND STATE SEISMIC CODES.
- E. GROUNDING & BONDING**
- TURN ON AND INSTALL COMPLETE BONDING AND GROUNDING SYSTEM AS REQUIRED BY CODES. CONTINUITY OF GROUNDING SHALL BE MAINTAINED MECHANICALLY AND ELECTRICALLY THROUGHOUT THE SYSTEM. A GREEN GROUNDING CODE SIZED CONDUCTOR SHALL BE CARRIED IN ALL CONDUITS.
- G. INSTALLATION**
- IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS THAT A COMPLETE AND WORKABLE ELECTRICAL INSTALLATION BE PROVIDED FOR ALL THE EQUIPMENT DESCRIBED OR SHOWN AS BEING IN THIS CONTRACT. TOWARD THIS END FURNISH ALL LABOR AND TOOLS NECESSARY AND FURNISH AND INSTALL ALL APPARATUS, MATERIALS AND EQUIPMENT IN A FASHION COMPLYING WITH ALL APPLICABLE CODES, INCLUDING ITEMS REQUIRED BUT NOT NORMALLY SHOWN, SUCH AS LAMPS, DRILLING, HANGERS, BRACKETS, CLAMPS, BOXES, CONNECTORS AND HARDWARE. REFER ALSO TO WRITTEN SPECIFICATIONS FOR GENERAL, MECHANICAL AND ELECTRICAL SECTIONS.
 - PROCURE ALL PERMITS FROM LEGALLY CONSTITUTED AUTHORITIES, ARRANGE FOR ALL INSPECTIONS AND PAY ALL COSTS FOR FEES AND TESTS IN CONNECTION THEREWITH. COMPLY WITH CODES. NOTHING IN THESE PLANS AUTHORIZES DEVIATION FROM APPLICABLE CODES.
 - DETERMINE EXACT ROUTING OF CONCEALED FEEDERS AND BRANCH HOMERUNS IN COOPERATION WITH OTHER TRADES TO SIMPLIFY INSTALLATION WHEREVER POSSIBLE BUT SUBJECT TO APPROVAL OF ARCHITECT FOR VISUAL AND STRUCTURAL REASONS.
 - PROVIDE A CODE APPROVED DISCONNECT SWITCH OR BREAKER WITHIN SIGHT OF EVERY MOTOR AND FEED MOTOR NOT EQUIPPED WITH "BUILT IN" PROTECTION THROUGH A MAGNETIC OR MANUAL STARTER WITH OVERLOAD HEATERS SIZED TO COMPLY WITH MOTOR MANUFACTURER'S RECOMMENDATIONS AND APPLICABLE CODES.
 - FOR CONNECTIONS TO EXHAUST FANS, PUMPS, COMPRESSORS, SPACE HEATERS, WATER HEATERS, AQUASTATS, SOLENOID VALVES AND OTHER MECHANICAL EQUIPMENT AND FOR CONDUITS AND WIRE REQUIRED BUT NOT NECESSARILY SHOWN ON THESE DRAWINGS REFER TO MECHANICAL PLANS AND DETERMINE EXACT LOCATIONS UNDER DIRECTION OF HEATING AND VENTILATING CONTRACTOR.
 - DO NOT RUN ANY CONDUIT IN SLAB IF ITS OUTSIDE DIAMETER EXCEEDS 1/3 THE THICKNESS OF THE SLAB. LOCATE CONDUITS WITHIN THE MIDDLE OF THE SLAB. WHERE CONDUITS ARE GROUPED IN PARALLEL RUNS, SPACE THEM 3" OR MORE APART. WHERE CONDUITS CROSS EACH OTHER, THICKEN SLAB PROPORTIONATELY OVER A HORIZONTAL AREA EQUAL TO TEN TIMES THE DIAMETER OF THE LARGEST CONDUIT. REFER ALSO TO DETAILS SHOWN.
 - FOR CIRCUITS FED THROUGH FLUORESCENT FIXTURE CHANNELS AND FEEDS TO RECESSED INCANDESCENT FIXTURES USE INSULATED WIRE OF 105 DEG. CELSIUS RATING.
 - SIZE OUTLET BOXES IN CONFORMITY WITH CODE FOR NUMBER AND GAUGE OF CONDUCTORS THEREIN, EXCEPT WHERE NOTED TO BE LARGER. MINIMUM BOX SIZE SHALL BE 4" SQUARE BY 1-1/2" DEEP.
 - EXAMINE PLANS TO DISCERN CEILINGS WITH A FIRE RATING OF ONE HOUR OR MORE, PROVIDE A ONE HOUR FIRE-RATED ENCLOSURE OVER EACH LIGHT FIXTURE RECESSED THEREIN.
 - ALL ELECTRICAL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING AND REPAIRING. ALL CONDUIT SHALL BE CONCEALED WHERE POSSIBLE. EXPOSED CONDUIT SHALL BE IN STRAIGHT LINES PARALLEL, WITH, OR AT RIGHT ANGLES TO, COLUMN LINES OR BEAMS AND SEPARATED BY AT LEAST THREE (3) INCHES FROM WATER LINES WHENEVER THEY RUN LONG SIDE OR ACROSS SUCH LINES. CONDUIT SHALL NOT BE RUN BELOW CABLE TRAYS OR LIGHT FIXTURES WITHOUT SPECIFIC APPROVAL OF THE OWNERS REPRESENTATIVE. HANGERS SHALL BE FASTENED TO STEEL, CONCRETE OR MASONRY, BUT NOT TO PIPING, HANGERS AND SUPPORT SYSTEMS ARE AN INTEGRAL PART OF THE VISUAL ENVIRONMENT. ALL HANGERS AND SUPPORTS EXPOSED TO PUBLIC VIEW MUST BE SHOWN IN DETAIL ON PLANS SUBMITTED TO ENGINEER FOR APPROVAL OF APPEARANCE. ALL HANGERS MUST BE UNIFORMLY SPACED AND NEATLY INSTALLED WITH NO EXCESS MATERIAL BEYOND WHAT IS REQUIRED FOR THE SUPPORT FUNCTION. CONTRACTOR SHALL SELECT ACCESSORIES AND HARDWARE WITH A SMOOTH, NEAT FINISHED APPEARANCE AND PAINT ALL EXPOSED CONDUIT HANGERS TO MATCH THE ADJACENT FINISHES.
 - ALL WALL SWITCHES AND RECEPTACLES SHALL BE MOUNTED BETWEEN 18" AND 48" PER ADA REQUIREMENTS UNLESS NOTED OTHERWISE.
 - ALL DISTRIBUTION BOARDS, SWITCHBOARDS AND TRANSFORMERS THAT ARE FLOOR MOUNTED SHALL BE MOUNTED ON 2" THICK HOUSEKEEPING PAD. TRANSFORMER SHALL BE ON VIBRATION ISOLATION PADS AND CONNECTED WITH FLEXIBLE CONDUIT.
 - CONTRACTOR SHALL EXAMINE PLANS AND VERIFY IN FIELD LOCATIONS OF ALL FIRE RATED WALLS, CEILINGS AND FLOORS. CONTRACTOR SHALL SEAL ALL ELECTRICAL SYSTEM PENETRATIONS THROUGH FIRE RATED WALLS, CEILINGS AND FLOORS WITH U.L. LISTED MATERIAL APPROVED BY THE AUTHORITY HAVING JURISDICTION.

COLOR CODE FOR CONDUCTORS

PROVIDE CONDUCTOR COLOR CODE AS FOLLOWS:

120/208V, 3Ø, 4W: BLUE, BLACK, RED FOR PHASE CONDUCTORS
AND WHITE FOR NEUTRAL, GREEN FOR GROUND.

277/480V, 3Ø, 4W: ORANGE, BROWN, YELLOW FOR PHASE CONDUCTORS
AND WHITE FOR NEUTRAL, GREEN FOR GROUND.

SYMBOLS

- RELAY CONTROLLED RECEPTACLE AT 18" AFF, PROVIDE WITHIN 6'-0" OF NON CONTROLLED RECEPTACLE. PROVIDE COVER PLATE WITH ENGRAVED "CONTROLLED".
- WP GFCI RECEPTACLE AT 18" AFF
- GFCI RECEPTACLE AT 42" AFF
- SINGLE RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R U.O.N.
- DUPLEX RECEPTACLE, WALL MOUNTED @ +18" AFF, NEMA 5-20R U.O.N.
- ISOLATED (ORANGE) GROUND DUPLEX RECEPTACLE, WALL MTD @18" AFF, NEMA 5-20R U.O.N.
- DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R, WALL MOUNTED @ +18" AFF
- DUPLEX RECEPTACLE, WALL MOUNTED @ +18" NEMA 5-20R U.O.N.
- TOX RECEPTACLE SWITCHED
- DUPLEX RECEPTACLE, FLOOR MOUNTED, NEMA 5-20R
- CEILING MOUNTED DUPLEX RECEPTACLE, 5-20R
- SPECIAL OUTLET, TYPE AS REQUIRED BY EQUIPMENT.
- JUNCTION BOX (CEILING MTD.) SIZE PER TABLE AND NEC ARTICLE 370
- JUNCTION BOX (WALL MTD.) SIZE PER TABLE AND NEC ARTICLE 370
- THERMOSTAT
- BRANCH CIRCUIT PANELBOARD - 240/120V, 1Ø, 3W OR 3Ø, 3W, 240VAC OR 120/208VAC, 3Ø, 4W.
- BRANCH CIRCUIT PANELBOARD - 480/277V, 1Ø, 3W OR 3Ø, 3 OR 4W
- 4" X8" X3/4" TELEPHONE BACKBOARD, MARINE PLYWOOD AND PAINTED WITH FIRE RESISTANT PAINT, PER OWNERS REPRESENTATIVE.
- CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS.
- CONDUIT RUN CONCEALED BELOW FLOOR OR UNDERGROUND
- EMERGENCY CIRCUIT
- FLEXIBLE CONDUIT (WITH GROUND CONDUCTOR, PROVIDE LIQUID TIGHT CONDUIT IN ALL EXPOSED AREAS)
- CONDUIT STUB UP, CAP AND IDENTIFY
- CONDUIT TURNS UP
- CONDUIT TURNS DOWN
- CONDUIT FITTING SEALED WITH APPROVED COMPOUND FOR ENVIRONMENT SEPARATION
- HASH MARKS INDICATE QUANTITY OF #12 CONDUCTORS. NO HASH MARKS INDICATE (2) #12AWG.
- (PROVIDE GROUND CONDUIT IN ALL CONDUITS.)
- WHERE NUMBER IS INDICATED, THE CONDUCTORS ARE #12AWG(MIN.) CONDUIT SIZE IS AS REQUIRED BY ELECTRICAL CODE. (3/4" CONDUIT MINIMUM).
- INDICATES A HOMERUN TO PNL-2LA, CKTS 1-3-5 WITH SHARED NEUTRAL & CKT 7 WITH DEDICATED NEUTRAL.
- 1-3-5, 7
- 3/4" C-2Ø12 & 1Ø12 GND
- 3/4" C-3Ø12 & 1Ø12 GND
- 3/4" C-4Ø12 & 1Ø12 GND
- 3/4" C-5Ø12 & 1Ø12 GND
- 3/4" C-2Ø10 & 1Ø10 GND
- 3/4" C-3Ø10 & 1Ø10 GND
- 3/4" C-4Ø10 & 1Ø10 GND
- 3/4" C-5Ø10 & 1Ø10 GND
- SEE KEY NOTE #1 AS INDICATED ON DRAWING
- SWITCH WITH PILOT LIGHT @ 42" AFF
- 3-WAY SWITCH, a & b INDICATES LIGHT FIXTURE TO BE SWITCHED (EACH A SWITCH MOUNTED @ 42" AFF
- MOTOR RATED SWITCH
- 3Ø, b, c, d
- CIRCUIT SWITCH LEGS
- DISCONNECT SWITCH, 60AMP SWITCH, 3Ø AMP FUSE, 3 POLE W/ OVERCURRENT PROTECTION U.O.N.
- 100A UTILITY METER (OR AS NOTED)
- FUSED DISCONNECT SWITCH
- 100AMP SWITCH RATING WITH 60 AMP FUSES, 3 POLE
- MOLDED CASE CIRCUIT BREAKER
- 200 AMP FRAME, 150 AMP TRIP RATING, 3 POLE
- CCV-VERIFY MOUNTING LOCATION AND REQUIREMENTS WITH CLIENT/OWNER.

JUNCTION BOX FILL

JUNCTION BOX DIMENSION, INCHES TRADE SIZE OR TYPE	MIN. CU. IN.	MAXIMUM NUMBER OF CONDUCTORS					
		No. 14	No. 12	No. 10	No. 8	No. 6	
4 x 1-1/4 ROUND OR OCTAGONAL	12.5	6	5	5	4	2	
4 x 1-1/2 ROUND OR OCTAGONAL	15.5	7	6	6	5	3	
4 x 2-1/8 ROUND OR OCTAGONAL	21.5	10	9	8	7	4	
4 x 1-1/4 SQUARE	18.0	9	8	7	6	3	
4 x 1-1/2 SQUARE	21.0	10	9	8	7	4	
4 x 2-1/8 SQUARE	30.3	15	13	12	10	6	
4-11/16 x 1-1/4 SQUARE	25.5	12	11	10	8	5	
4-11/16 x 1-1/2 SQUARE	29.5	14	13	11	9	5	
4-11/16 x 2-1/8 SQUARE	42.0	21	18	16	14	8	
3 x 2 x 1-1/2 DEVICE	7.5	3	3	3	2	1	
3 x 2 x 2 DEVICE	10.0	5	4	4	3	2	
3 x 2 x 2-1/4 DEVICE	10.5	5	4	4	3	2	
3 x 2 x 2-1/2 DEVICE	12.5	6	5	5	4	2	
3 x 2 x 3-3/4 DEVICE	14.0	7	6	5	4	2	
3 x 2 x 3-1/2 DEVICE	18.0	9	8	7	6	3	
4 x 2-1/8 x 1-1/2 DEVICE	10.3	5	4	4	3	2	
4 x 2-1/8 x 1-7/8 DEVICE	13.0	6	5	5	4	2	
4 x 2-1/8 x 2-1/8 DEVICE	14.5	7	6	5	4	2	
3-3/4 x 2 x 2-1/2 MASONRY BOX / GANG	14.0	7	6	5	4	2	
3-3/4 x 2 x 3-1/2 MASONRY BOX / GANG	21.0	10	9	8	7	4	
FS - MINIMUM INTERNAL DEPTH 1-3/4 SINGLE COVER / GANG	13.5	6	6	5	4	2	
FD - MINIMUM INTERNAL DEPTH 2-3/8 SINGLE COVER / GANG	18.0	9	8	7	6	3	
FS - MINIMUM INTERNAL DEPTH 1-3/4 MULTIPLE COVER / GANG	18.0	9	8	7	6	3	
FD - MINIMUM INTERNAL DEPTH 2-3/8 MULTIPLE COVER / GANG	24.0	12	10	9	8	4	

(b) MORE THAN ONE CONDUIT, TUBE, OR RACEWAYS SHALL BE MAINTAINED.

LIST OF DRAWINGS

SHEET	DESCRIPTION
E1.0	GENERAL NOTES, ABBREVIATIONS, SYMBOLS & DRAWING LIST
E2.2	ELECTRICAL SINGLE LINE DIAGRAM
E4.5	PARTIAL ROOF POWER PLAN & ELECTRICAL SCHEDULE FOR MECHANICAL EQUIPMENT

SCOPE OF WORK

PROVIDE POWER TO TWO NEW CHILLER UNITS

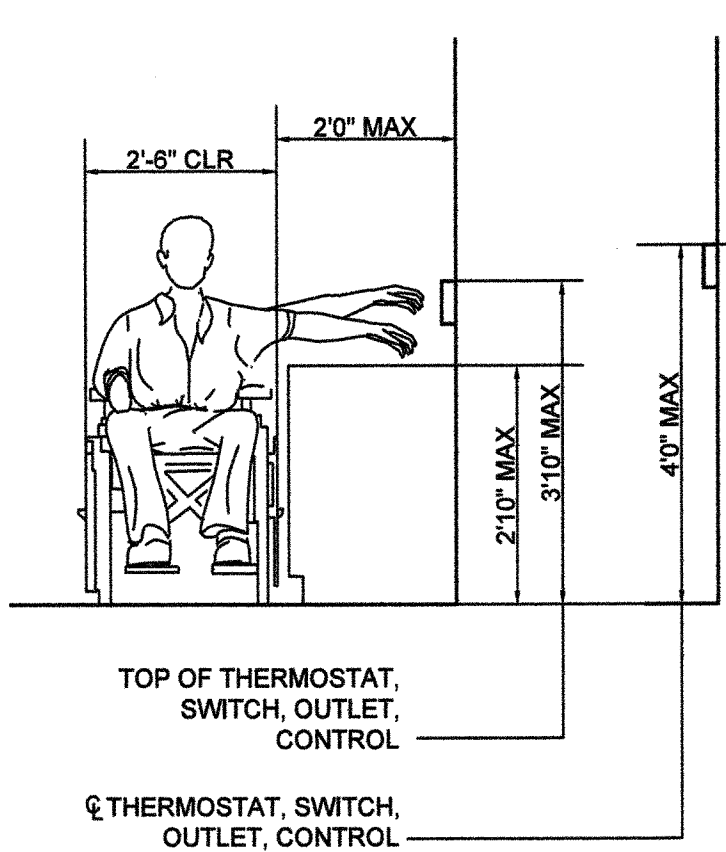
GENERAL STANDARDS

- 2016 CALIFORNIA BUILDING STANDARDS ADMINISTRATIVE CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 1
- 2016 CALIFORNIA BUILDING CODE (CBC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 2
(2014 INTERNATIONAL BUILDING CODE (IBC) W/CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA ELECTRICAL CODE (CEC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 3
(2014 NATIONAL ELECTRICAL CODE (NEC) W/CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA ENERGY CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 6
- 2016 CALIFORNIA FIRE CODE (CFC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 9
(2015 INTERNATIONAL FIRE CODE (IFC) W/CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA REFERENCED STANDARDS CODE
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 12
- AMERICANS WITH DISABILITIES ACT (ADA)
TITLE II - ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAG)
1990 STATE FIRE MARSHAL REGULATIONS AND AMENDMENTS TO-DATE
- CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, CALIFORNIA STATE ACCESSIBILITY STANDARDS
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 19
- 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE
(CAL GREEN), PART II, TITLE 24 C.C.R.
- 2016 CALIFORNIA MECHANICAL CODE (CMC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 4
(2012 UNIFORM MECHANICAL CODE (UMC) W/CALIFORNIA AMENDMENTS)
- 2016 CALIFORNIA PLUMBING CODE (CPC)
CALIFORNIA CODE OF REGULATIONS (CCR) TITLE 24, PART 5
(2012 UNIFORM PLUMBING CODE (UPC) W/CALIFORNIA AMENDMENTS)
- 2013 TITLE 19 CALIFORNIA CODE OF REGULATIONS (CCR)
PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

ABBREVIATIONS

A	AMPERES	MTD	MOUNTED
AF	AMP FRAME/AMP FUSE	MTB	MAIN TELEPHONE BACKBOARD
AF	AVAILABLE FAULT CURRENT	MTG	MERCURY VAPOR
AF	ABOVE FINISHED FLOOR	MV	METAL HALIDE
ARCH	ARCHITECT	MFG	MANUFACTURER
AT	AMP TRIP	NEC	NATIONAL ELECTRICAL CODE
AWG	AMERICAN WIRE GAGE	NEW	NEW
BKBD	BACKBOARD	NIC	NOT IN CONTRACT
C	CONDUIT	NL	NIGHT LIGHT
CB	CIRCUIT BREAKER	N.O.	NORMALLY OPEN
CD	CONTINUATION	N.C.	NORMALLY CLOSED
CKT	CIRCUIT	P	POWER OR POLE
CLG	CEILING	PBO	PROVIDED BY OTHERS
CLG	CONDUIT ONLY	PNL	PANEL
CU	CABLE TELEVISION	(R)	REMOVED
(CU)	COPPER	RG	RIGID GALVANIZED STEEL CONDUIT
DIS	DISCONNECT	RM	ROOM
DIS	DISCONNECT SWITCH	SN	SYSTEM NEUTRAL
DWG	DRAWING	TC	TIME CLOCK
EC	ELECTRICAL CONTRACTOR	TTB	TELEPHONE TERMINAL BOARD
ENG	ENGINEERING LIGHT FEEDER	TR	TRANSFORMER
EOR	ENGINEER OF RECORD	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
(F)	FRONT	TYP	TYPICAL
FS	SHALLOW FLOOR BOX	UN	UNDERGROUND
GF	GENERAL CONTRACTOR	UNSW	UNSWITCHED
GND	GROUND FAULT INTERRUPTER	V	VOLTS/VOLTAGE
HP	HORSEPOWER	W	WATTS/WATTAGE
I.G.	ISOLATED GROUND	WP	WITH THERMOPROOF
KVA	KILO VOLT AMPS=1000VA	W/	WITH
L	LIGHTING CONTRACTOR	(X)	EXISTING
LCL	LONG CONTINUOUS LOAD		
LV	LOW VOLTAGE		

MOUNTING HEIGHT OVER OBSTRUCTION



DERATING TABLE

- NEC #310-8 ADJUSTMENT FACTORS
- (a) MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A RACEWAY OR CABLE. WHERE THE NUMBER OF CURRENT-CARRYING CONDUCTORS IN A RACEWAY OR CABLE EXCEEDS THREE, THE ALLOWABLE AMPACITIES SHALL BE REDUCED AS SHOWN IN THE FOLLOWING TABLE:
- | NUMBER OF CURRENT-CARRYING CONDUCTORS | PERCENT OF VALUES IN TABLES AS ADJUSTED FOR AMBIENT TEMPERATURE IF NECESSARY |
|---------------------------------------|--|
| 4 THROUGH 6 | 80 |
| 7 THROUGH 9 | 70 |
| 10 THROUGH 20 | 50 |
| 21 THROUGH 30 | 45 |
| 31 THROUGH 40 | 40 |
| 41 AND ABOVE | 35 |
- WHERE SINGLE CONDUCTORS OR MULTICONDUCTOR CABLES ARE STACKED OR BUNDLED LONGER THAN 24 INCHES (610 mm) WITHOUT MAINTAINING SPACING AND ARE NOT INSTALLED IN RACEWAYS, THE ALLOWABLE AMPACITY OF EACH CONDUCTOR SHALL BE REDUCED AS SHOWN IN THE ABOVE TABLE.
- EXCEPTION NO. 1: WHERE CONDUCTORS OF DIFFERENT SYSTEMS, AS PROVIDED IN SECTION 300-2, ARE INSTALLED IN A COMMON RACEWAY OR CABLE, THE DERATING FACTORS SHOWN ABOVE SHALL APPLY TO THE NUMBER OF POWER AND LIGHTING (ARTICLES 210, 215, 220, AND 230) CONDUCTORS ONLY.
- EXCEPTION NO. 2: FOR CONDUCTORS INSTALLED IN CABLE TRAYS, THE PROVISIONS OF SECTION 310-11 SHALL APPLY.
- EXCEPTION NO. 3: DERATING FACTORS SHALL NOT APPLY TO CONDUCTORS IN NIPPLES HAVING A LENGTH NOT EXCEEDING 24 INCHES (610mm).
- EXCEPTION NO. 4: DERATING FACTORS SHALL NOT APPLY TO UNDERGROUND CONDUITS ENTERING OR LEAVING AN OUTDOOR TRENCH IF THOSE CONDUITS HAVE PHYSICAL PROTECTION IN THE FORM OF RIGID METAL CONDUIT, INTERMEDIATE METAL CONDUIT, OR RIGID NONMETALLIC CONDUIT HAVING A LENGTH NOT EXCEEDING 10 FEET (3.05m) ABOVE GRADE AND THE NUMBER OF CONDUCTORS DOES NOT EXCEED FOUR.
- EXCEPTION NO. 5: FOR OTHER LOADING CONDITIONS, ADJUSTMENT FACTORS AND AMPACITIES SHALL BE PERMITTED TO BE CALCULATED UNDER SECTION 310-15(b).
- (FNC): SEE APPENDIX B, TABLE B-310-11 FOR ADJUSTMENT FACTORS FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A RACEWAY OR CABLE WITH LOAD DIVERSITY.
- (b) MORE THAN ONE CONDUIT, TUBE, OR RACEWAYS SHALL BE MAINTAINED.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

03 117823

AC FLS SS CL
Date 05-12-17

LUCCI & ASSOCIATES INC.
CONSULTING ELECTRICAL ENGINEERS
2681 CORTE WALPADO, #601
SANTA MONICA, CA 90405-4004
(805) 889-8680 FAX (805) 889-8610

LUCCI & ASSOCIATES, INC. reserves the right to alter the design and/or construction of the project without notice and without liability to the client. The client agrees to indemnify and hold the engineer harmless from all claims, damages, costs and expenses, including reasonable attorney's fees, arising out of or from the project.



VENTURA COLLEGE
LEARNING RESOURCES CENTER

Ventura County Community College District
Ventura, CA 93003
4667 Telegraph Road

ENGINEER'S STAMP	ARCHITECT'S STAMP
------------------	-------------------

NO.	DESCRIPTION	DATE	BY
REVISION			

DRAWN	
CHECKED	K. L.
DATE	04/26/2017
JOB NO.	16256
SHEET TITLE	

GENERAL NOTES,
ABBREVIATIONS
AND SYMBOLS

SHEET

E1.0

EMERGENCY POWER LOAD SUMMARY		
PANEL	KVA	AMPS 480V 3Ø
'E'	45	54

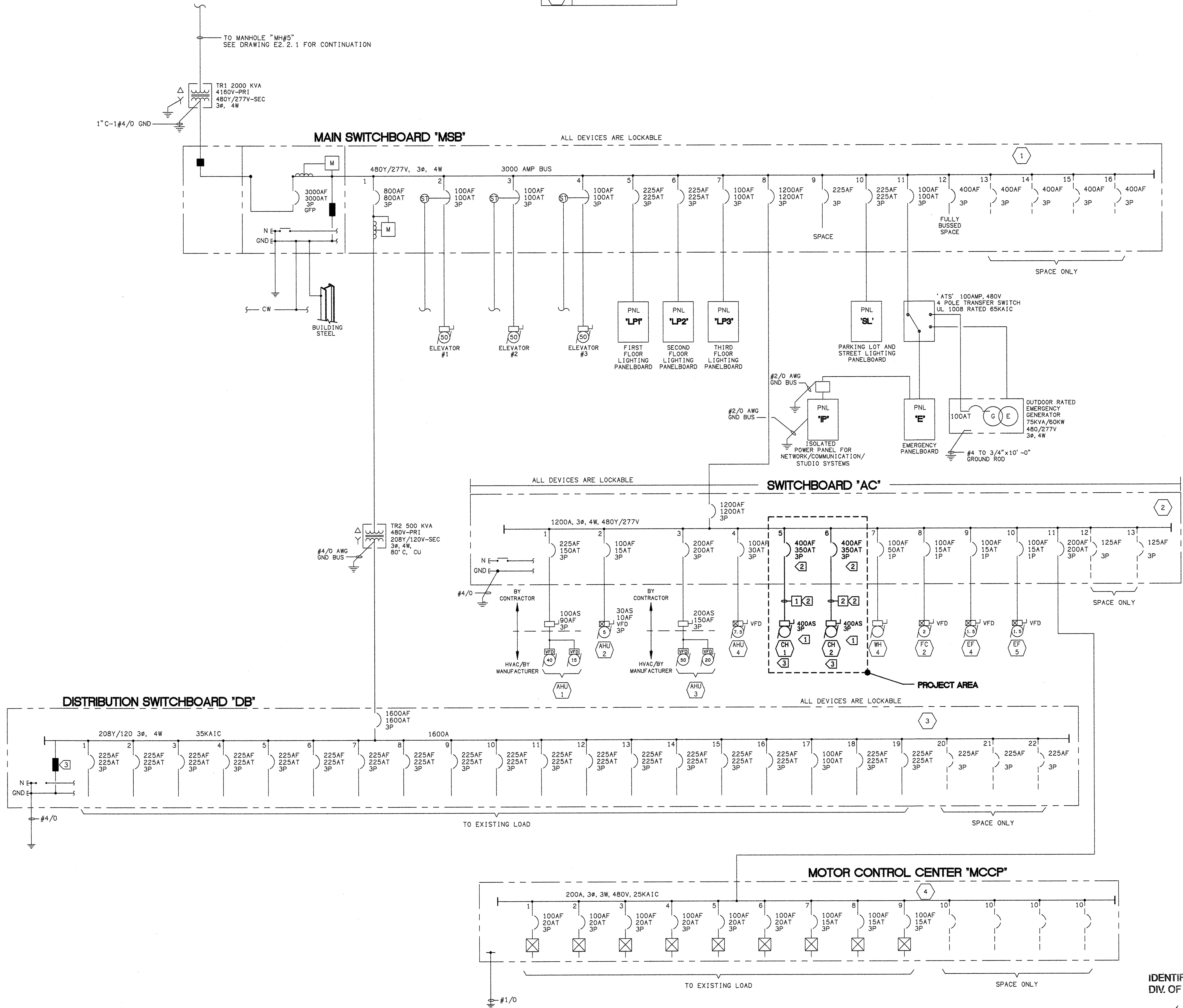
TRANSFORMER SCHEDULE				
TAG	SIZE KVA	PRIMARY VOLTAGE	SECONDARY VOLTAGE	REMARKS
TR1	2000	4160	480/277	
TR2	500	480	208Y/120	

FAULT ANALYSIS	
BUS	AFC
1	65,000
2	42,000
3	35,000
4	22,000

LOAD SUMMARY CALCULATIONS	
BUILDING = 90300 SQUARE FEET	LOAD
MSB-1 (DB)	= 449.2 KVA
MSB-2 (ELEVATOR 1)	= 50.0 KVA
MSB-3 (ELEVATOR 2)	= 50.0 KVA
MSB-4 (ELEVATOR 3)	= 50.0 KVA
MSB-5 (LP1)	= 58.9 KVA
MSB-6 (LP2)	= 68.2 KVA
MSB-7 (LP3)	= 17.2 KVA
MSB-8 (AC)	= 662.0 KVA
MSB-10 (SL)	= 20.0 KVA
MSB-11 (E)	= 33.7 KVA
TOTAL ON MSB = 1459.2 KVA	
IN AMPS AT 480 VAC 3Ø = 1756 AMPS	

FEEDER SCHEDULE (EXISTING TO REMAIN)				
TAG	CONDUIT/CONDUCTOR	FROM	TO	APPROX. LENGTH
1	4"C-3#500MCM & 1#2 GND	AC	CH-1	
2	4"C-3#500MCM & 1#2 GND	AC	CH-2	

- KEY NOTES:
- CHANGE FUSE TO 300A FRS-RK.
 - EXISTING TO REMAIN.
 - REPLACE CHILLER PER MECHANICAL PLANS.

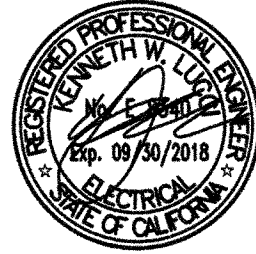


ELECTRICAL SINGLE LINE DIAGRAM
SCALE: NONE

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

L 03 117823
AC - FLS
Date 05-12-17

LUCCI & ASSOCIATES INC.
CONSULTING ELECTRICAL ENGINEERS
3251 CORTES MALPASO, 6011
CAMARILLO, CA 93015-6094
(805) 388-6520 FAX (805) 388-6519



VENTURA COLLEGE LEARNING RESOURCES CENTER

Ventura County Community College District

4667 Telegraph Road Ventura, CA 93003

ENGINEER'S STAMP ARCHITECT'S STAMP

NO.	DESCRIPTION	DATE	BY
REVISION			

DRAWN	K. L.
CHECKED	K. L.
DATE	04/26/2017
JOB NO.	16256
SHEET TITLE	
ELECTRICAL SINGLE LINE DIAGRAM	
SHEET	
E2.2	

TIME: 10:14 am

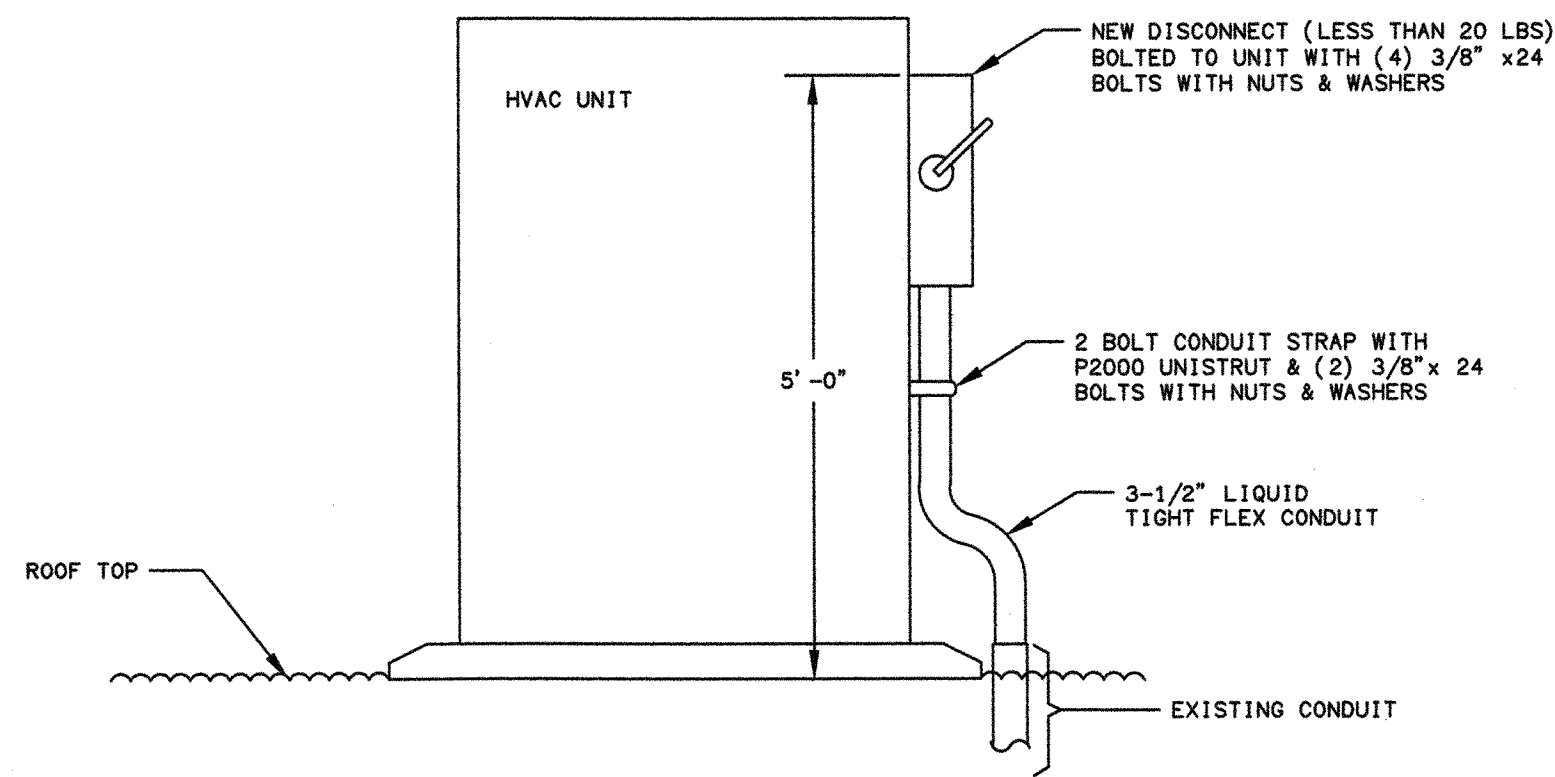
DATE: 27 April 2017

PATHNAME: G:\10256\EL\Sheets

DRAWING FILENAME: 256E4.5

DRAFTER: Lee Keener

Printed On: 04/28/2017 10:14 AM
Plotter: HP DesignJet T1100e
Plot Size: 24" x 36"
Scale: 1/4" = 1'-0"
Sheet: 1 of 1
Job No: 16256
Drawing Title: PARTIAL ROOF POWER PLAN & ELECTRICAL SCHEDULE FOR MECHANICAL EQUIPMENT
Drawing Path: G:\10256\EL\Sheets\256E4.5.dwg
User: lee.keener
Title: Electrical Engineer
Firm: Lucci & Associates, Inc.



CONDUIT MOUNTED TO HVAC UNIT
SCALE: NONE

SCHEDULE NOTES:

1. FIELD VERIFY MECHANICAL EQUIPMENT LOCATIONS.
2. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES.
3. PROVIDE WEATHERPROOF AND EXTERIOR RATED DEVICES IN ALL EXTERIOR AREAS.
4. PROVIDE ALL ELECTRICAL DEVICES AS REQUIRED ON MECHANICAL CONTRACTOR SHOP DRAWINGS AND APPROVED SUBMITTALS.
5. FOR EACH DISCONNECT, SPARE SET OF FUSES SHALL BE CONTRACTOR PROVIDED.

SCHEDULE KEY NOTES:

- 1 SEE "MCCP" MOTOR CONTROL SCHEDULE FOR STARTER, OCP AND FEEDER REQUIREMENTS.

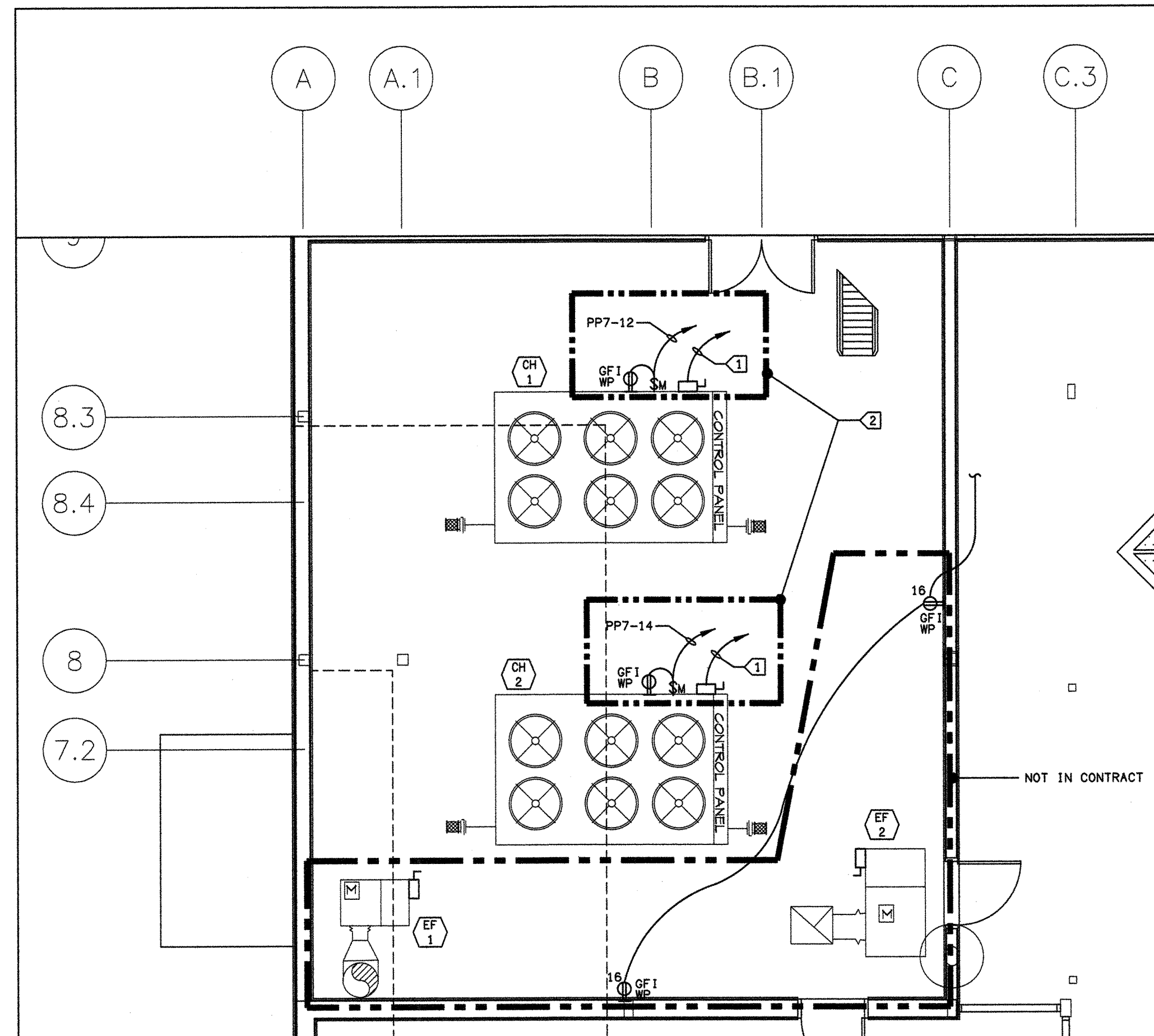
ELECTRICAL SCHEDULE FOR MECHANICAL EQUIPMENT										
TAG #	DESCRIPTION	HP	MCA	MOCP	VOLTAGE	PHASE	CONTR. STARTER SIZE	DISCONNECT	RECOMMENDED FUSE SIZE/TYPE *	REMARKS
CH 1	CHILLER #1		254	300	480	3	BY MANUFACTURER	400A	300A FRS-RK	VERIFY & PROVIDE CONNECTION PER MANUFACTURERS SHOP DRAWINGS CONTROL POWER IS 115V, 16, 30MCA, 30MOCP
CH 2	CHILLER #2		254	300	480	3	BY MANUFACTURER	400A	300A FRS-RK	VERIFY & PROVIDE CONNECTION PER MANUFACTURERS SHOP DRAWINGS CONTROL POWER IS 115V, 16, 30MCA, 30MOCP

SHEET NOTES:

1. FIELD VERIFY MECHANICAL EQUIPMENT LOCATIONS.
2. SEE ELECTRICAL SCHEDULE FOR MECHANICAL EQUIPMENT FOR ELECTRICAL REQUIREMENTS.
3. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES.
4. THE LOCATION OF ALL ROOF PENETRATIONS SHALL BE COORDINATED WITH THE ARCHITECTURAL, MECHANICAL, AND STRUCTURAL DRAWINGS.
5. PROVIDE ROOF JACKS AND PROPERLY SEAL ALL ROOF PENETRATIONS TO A LEAK FREE CONDITION.
6. THE FINAL CONNECTIONS TO EQUIPMENT SHALL BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT. INSTALL WITH ENOUGH SLACK TO PRECLUDE VIBRATION TRANSMISSION. SUPPORT SHALL BE PER N.E.C. ARTICLE 351-8.
7. PROVIDE WEATHERPROOF AND EXTERIOR RATED DEVICES IN ALL EXTERIOR AREAS.
8. PROVIDE ALL DEVICES AS REQUIRED ON MECHANICAL CONTRACTOR SHOP DRAWINGS AND APPROVED SUBMITTALS.
9. ALL DISCONNECTS SHALL BE MOUNTED ON UNISTRUT ON AH UNIT.
10. PROVIDE FOR EACH DISCONNECT, SPARE SET OF FUSES SHALL BE CONTRACTOR PROVIDED.

KEY NOTES:

- 1 FOR HVAC EQUIPMENT FEEDER AND DISCONNECT INFORMATION SEE MECHANICAL EQUIPMENT SCHEDULE.
- 2 REMOVE DURING DEMOLITION & REINSTALL AFTER NEW CHILLERS ARE INSTALLED, CONNECT TO CONTROL POWER AS REQUIRED, PROVIDE POWER TO NEW AC UNIT, EXTEND CONDUCTORS AS REQUIRED.



IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT

4 03 117823
AC FLS SS CL
Date 05-12-17

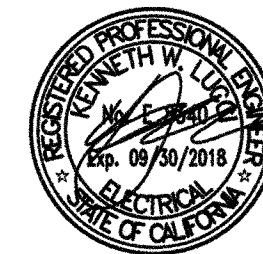
MECH. RM. 332 / CHILLER ENCLOSURE POWER PLAN
SCALE: 1/4"=1'-0"

1
E4.5



LUCCI & ASSOCIATES, INC.
CONSULTING ELECTRICAL ENGINEERS
3331 CORTE MALPASO, #601
CARMELITE, CA 93016-8094
(805) 888-6520 FAX (805) 388-6619

LUCCI & ASSOCIATES, INC. reserves the right to make any changes to these plans and drawings without notice. These plans and drawings are not to be used for construction without the express written permission of the engineer. No part of these plans and drawings may be reproduced or transmitted in any form or by any means electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without written permission of the engineer.



VENTURA COLLEGE
LEARNING RESOURCES CENTER

Ventura County Community College District

Ventura, CA 93003

4667 Telegraph Road

ENGINEER'S STAMP ARCHITECT'S STAMP

NO. DESCRIPTION DATE BY
REVISION

DRAWN
CHECKED K. L.
DATE 04/26/2017
JOB NO. 16256

SHEET TITLE
PARTIAL ROOF POWER
PLAN & ELECTRICAL
SCHEDULE FOR
MECHANICAL EQUIPMENT

SHEET
E4.5