Bid No.103123

MADERA UNIFIED SCHOOL DISTRICT

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO 2019 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
2. CHANGE TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY DSA, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
3. A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24, CCR. PROJECT REQUIRES A CLASS 3 INSPECTOR.
4. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
5. 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, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFING THE REQUIRED WORK SHALL SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK. (SECTION 4-317(C), PART 1, TITLE 24, CCR)
6. LAYOUT OF MATERIALS, EQUIPMENT AND SYSTEMS IS GENERALLY DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED. SOME WORK MAY BE SHOWN OFFSET FOR CLARITY. THE ACTUAL LOCATIONS OF ALL MATERIALS, PIPING, DUCTWORK, FIXTURES, EQUIPMENT, SUPPORTS, ETC. SHALL BE CAREFULLY PLANNED, PRIOR TO INSTALLATION OF ANY WORK TO AVOID ALL INTERFERENCE WITH EACH OTHER, OR WITH STRUCTURAL, ELECTRICAL, ARCHITECTURAL, OR OTHER ELEMENTS. ALL DUCT AND PIPE OFFSET ELBOWS FOR COORDINATION BETWEEN TRADES ARE NOT SHOWN. CONTRACTOR SHALL INCLUDE SUFFICIENT FUNDS FOR THE COORDINATION OFFSETS IN THE BID. VERIFY THE PROPER VOLTAGE AND PHASE OF ALL EQUIPMENT WITH THE ELECTRICAL PLANS. ALL CONFLICTS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER PRIOR TO THE INSTALLATION OF ANY WORK OR THE ORDERING OF ANY EQUIPMENT.
7. **MEP COMPONENT ANCHORAGE NOTE**
   ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 13, 26 AND 30.
   1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
   2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
   3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

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

   A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND 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.

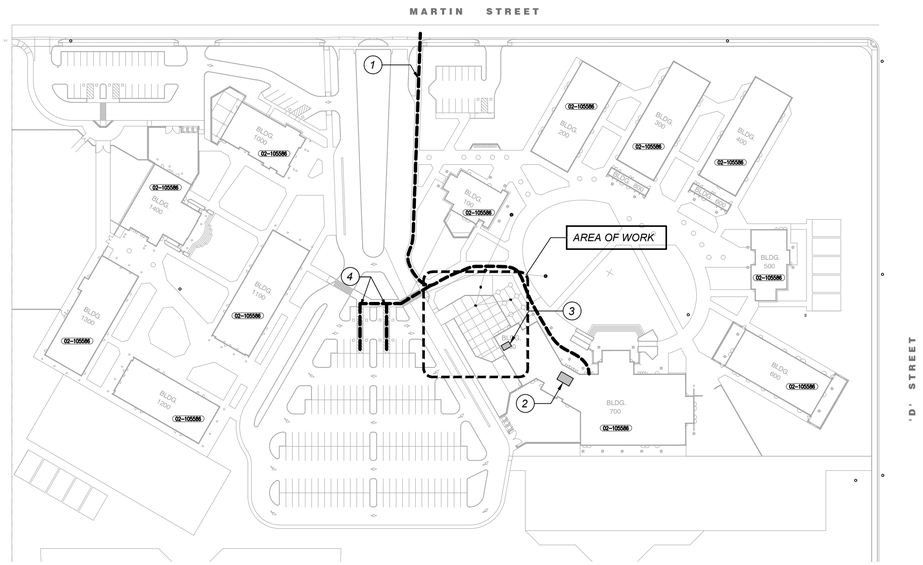
   THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE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

   PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE
   PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8, AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.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 PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

   MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL (E):
   OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL MASON WEST OPM #0043-13.
   MP ☒ MD ☒ PP ☐ E ☐
8. THE CALIFORNIA ENERGY CODE SECTION 1-0103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE. LIGHTING CONTROLS ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT). MECHANICAL SYSTEM ACCEPTANCE TEST MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021. ENVELOPE AND PROCESS EQUIPMENT ACCEPTANCE TEST SHALL BE PERFORMED BY THE INSTALLING CONTRACTOR. ENGINEERING / ARCHITECT OF RECORD OR THE OWNERS AGENT. A LISTING OF CERTIFIED ATT CAN BE FOUND AT :https://www.energy.ca. gov/ programs-and -topics/programs/acceptance-test-technician-certification-provider-program/acceptance. THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS REQUIRED ACCEPTANCE CRITERIA. PROJECT INSPECTORS WILL COLLECT THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED.
9. THIS PROJECT HAS NO DEFERRED SUBMITTALS.
10. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES.
11. SUBSTITUTIONS AFFECTING DSA-REGULATED ITEMS SHALL BE CONSIDERED AS CONSTRUCTION DOCUMENTS (CCD'S) AND SHALL BE APPROVED PRIOR TO FABRICATION AND INSTALLATION PER DSA IR A-6 AND SECTIONS 338 (C) PART 1, TITLE 24 CCR.

OWNER	MECHANICAL ENGINEER	ELECTRICAL ENGINEER	STRUCTURAL ENGINEER
MADERA UNIFIED SCHOOL DISTRICT 769 SOUTH PINE STREET MADERA, CA 93637 (559) 675-4546 CONTACT: ROSALIND COX	LAWRENCE ENGINEERING GROUP 7084 NORTH MAPLE AVE. SUITE 101 FRESNO, CA 93720 (559) 431-0101 CONTACT: RYAN CARLSON	BORELLI & ASSOCIATES, INC. 2032 N. GATEWAY BLVD. FRESNO, CA 93727 (559) 233-4438 CONTACT: JOHN BORELLI	PARRISH HANSEN 418 CLOVIS AVE. CLOVIS, CA 93612 (559) 323-1023 CONTACT: BOB PARRISH



OVERALL SITE PLAN
SCALE: 1"=100'-0"

KEYNOTES: (THIS SHEET ONLY)
1. (E) ACCESS GATE.
2. (E) STUDENT ACCESSIBLE RESTROOM.
3. (E) STAFF ACCESSIBLE RESTROOM.
4. (E) ACCESSIBLE PARKING STALLS.

LEGEND:
--- DSA NUMBER (EXISTING BUILDING)

(E) ACCESSIBLE PATH OF TRAVEL.

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:
THE POT INDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERCATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NON-COMPLIANT WITH CBC HAVE BEEN IDENTIFIED AND THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMLLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE PROTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OR UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS.
DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CBC COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THE ITEMS SHALL BE BROUGHT INTO COMPLIANCE WITH CBC AS PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

APPLICABLE CODES
- 2022 CALIFORNIA ADMINISTRATIVE CODE - CCR TITLE 24, PART 1
- 2019 CALIFORNIA BUILDING CODE - CCR TITLE 24, PART 2
- 2019 CALIFORNIA ELECTRICAL CODE - CCR TITLE 24, PART 3
- 2019 CALIFORNIA MECHANICAL CODE - CCR TITLE 24, PART 4
- 2019 CALIFORNIA PLUMBING CODE - CCR TITLE 24, PART 5
- 2019 CALIFORNIA ENERGY CODE - CCR TITLE 24, PART 6
- 2019 CALIFORNIA FIRE CODE - CCR TITLE 24, PART 9
- 2019 EXISTING BUILDING CODE - CCR TITLE 24, PART 10
- 2019 CALIFORNIA GREEN CODE - CCR TITLE 24 PART 11
- 2019 CALIFORNIA REFERENCE CODE - CCR TITLE 24 PART 12
- TITLE 19 CCR PUBLIC SAFETY, STATE FIRE MARSHALL REGULATIONS
- 2016 NFPA 72 FOR FIRE ALARM SYSTEM. CFC CH 33 FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION

SHEET INDEX

DISTRICT OFFICE BUILDING ANALYSIS

OCCUPANCY	A3, B
EXISTING AREA	7,280 FT
CONSTRUCTION TYPE	TYPE III - 1HR. SPRINKLERED

SCOPE OF WORK

THE SCOPE OF WORK IS AS INDICATED BY THE CONTRACT DRAWINGS AND SPECIFICATION AND IS SUMMARIZED AS FOLLOWS:

- PROVIDE NEW OUTDOOR GRADE-MOUNTED WALK-IN COOLER-FREEZER COMBO COOLER IS STAFF ONLY AND DOES NOT INVOLVE ANY STUDENT PARTICIPATION NOR ARE THEY AVAILABLE TO THE GENERAL PUBLIC.

Statement of General Conformance

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS,
INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER
LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

(Application No. 02-120016 File No. 20-30)

The Architectural, Structural and Electrical Drawings Listed above have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. They have been examined by me for:

1) Design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and
2) Coordination with my plans and specifications and is acceptable for incorporation into the construction of this project.

This Statement of General Conformance shall not be construed as relieving me of my rights, duties, and responsibilities under Section 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344 of Title 24, Part 1. *(Title 24, Part 1, Section 4-317 (b))*

RYAN W. CARLSON
LICENSE NUMBER: M34846
EXPIRATION DATE: 6-30-24

APPROVALS:
APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

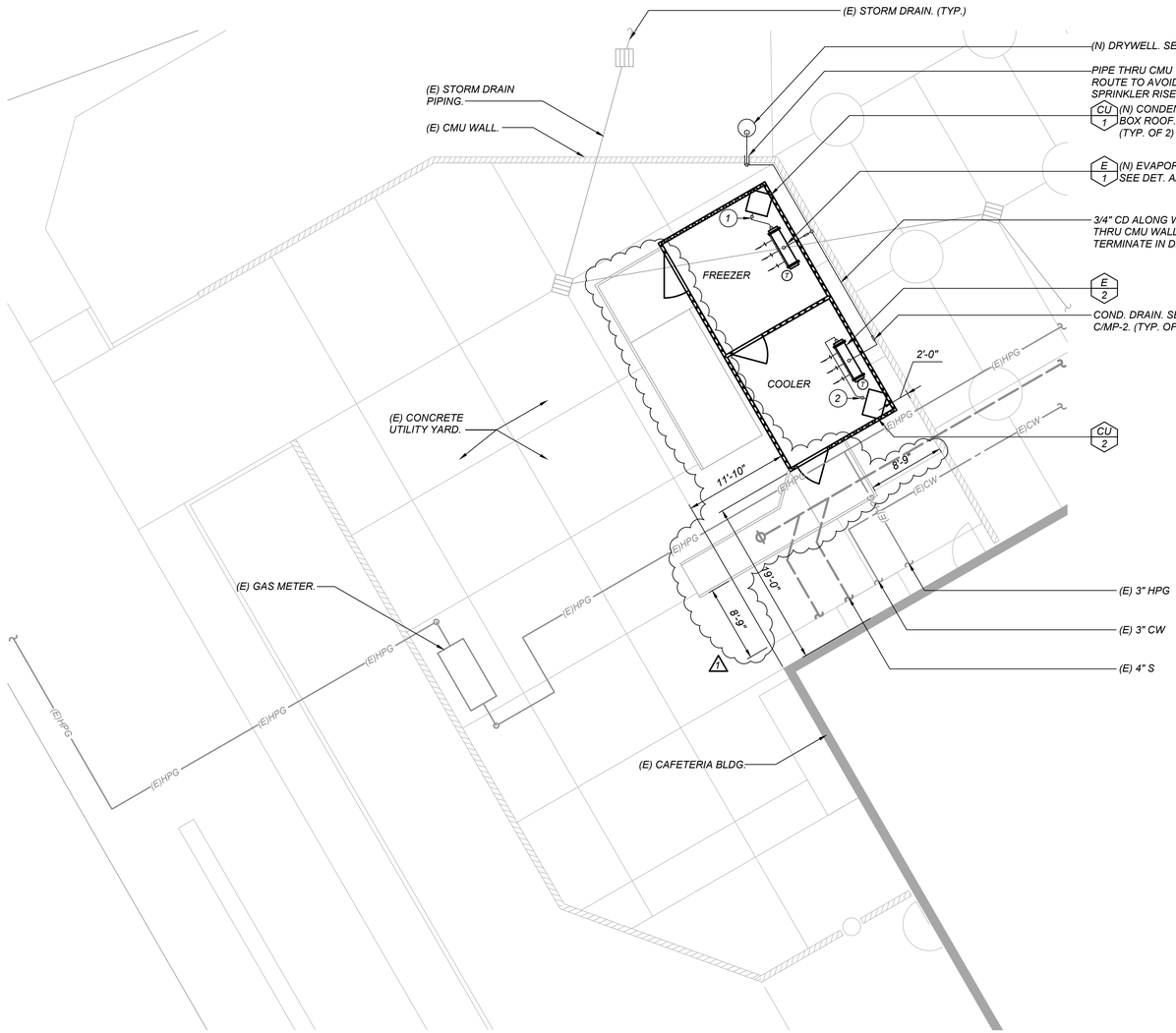
LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1582
4910 E. Clinton Way, Suite 101
(559) 431-0101

TITLE: COVER SHEET

SHEET: G1

PROJECT 21181

10 April 2023 11:29 AM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\4 M\G1 - COVER.dwg anthonyb



LEGEND		
SYMBOL	ITEM	ABBR
—RL—	REFRIGERANT LIQUID	RL
—RS—	REFRIGERANT SUCTION	RS
—CD—	CONDENSATE DRAIN	CD
—⊠—	FLEXIBLE CONNECTION	FLEX
—▷—	REDUCER OR INCREASER	—
—✕—	POINT OF CONNECTION	POC
— — —	EXISTING (DESIGNATED)	(E)
—	NEW (DESIGNATED)	(N)
—	ABOVE GRADE	AG
—	BELOW GRADE	BG
S	SWITCH	-
—EMS—	ENERGY MANAGEMENT SYSTEM CONDUIT	EMS
T	THERMOSTAT	T'STAT
T	EMS TEMPERATURE SENSOR @ +4'-0" TOP OF BOX	—

NOTES:

1. FREEZER/COOLER COMBO BOX TO BE 14'W x 30'L x 10'-2"H AND INCLUDES THE FOLLOWING:

   STUCCO GALV. INT. & EXT. FINISH.
   SMOOTH CEILING FINISH.
   (2) 4' LED LIGHT FIXTURES
   (2) HEATED AIR VENTS
   (8) 1.5"x1.5"x96" 14 GA. ANGLE BRACKET.
   RAIN HOOD & CURTAIN.
   FLAT WHITE MEMBRANE ROOF.

2. COOLER DOOR TO BE 48" WIDE x 78" HIGH. FREEZER DOOR TO BE 60" WIDE x 78" HIGH.

3. SLOPE REFRIG. PIPE 1/4" PER 10' DOWN TOWARD COND. UNITS.

4. SLOPE CD 1/4" PER FOOT DOWN INSIDE FREEZER BOX.

5. SLOPE CD 1/8" PER FOOT DOWN OUTSIDE FREEZER BOX.

KEYNOTES: (THIS VIEW ONLY)

1. 3/8"RL & 1-1/8"RS PIPING DN. THRU FREEZER ROOF. ROUTE ALONG CEILING TO EVAP. E-1.
2. 3/8"RL & 7/8"RS PIPING DN. THRU COOLER ROOF. ROUTE ALONG CEILING TO EVAP. E-2.

MECHANICAL YARD PLAN

SCALE: 1/8"=1'-0"

APPROVALS:

APPLICATION # 02-120016

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

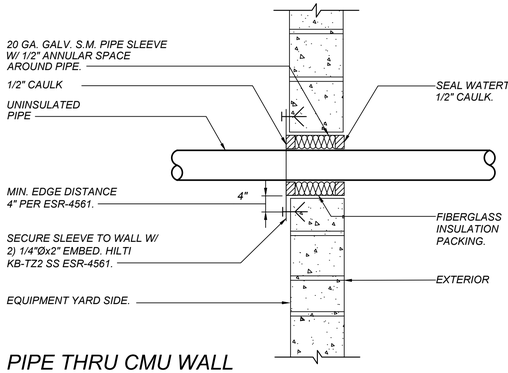
REVISIONS	
10/24/23	CONSULTANT COORDINATION

LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1582
4910 E. Clinton Way, Suite 101
(559) 431-0101

TITLE: MECHANICAL YARD PLAN

SHEET: MP-1

PROJECT 21181

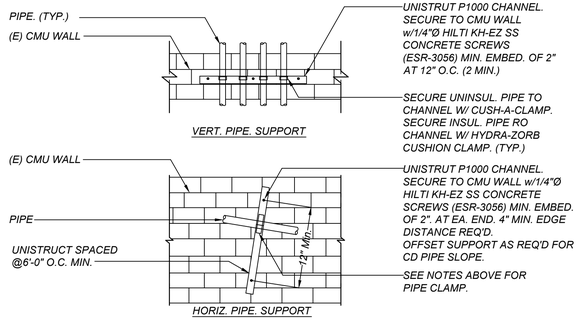


PIPE THRU CMU WALL

K MP-2

SCALE: NONE

MP097



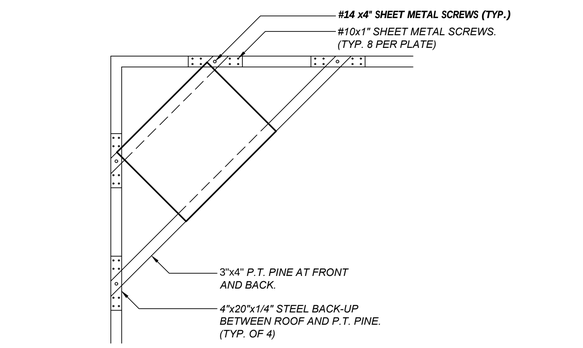
NOTES:

1. TAKE CARE NOT TO DAMAGE OR CUT EXISTING CMU WALL REINFORCING.
2. CONCRETE SCREWS SHALL BE INSTALLED WITH A MIN. EDGE DISTANCE OF 4" PER ESR-3056.

PIPE ON WALL SUPPORT

E MP-2

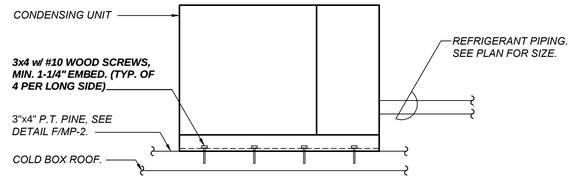
SCALE: NONE



EVAPORATOR MOUNTING DETAIL

A MP-2

SCALE: NONE



CONDENSING UNIT MOUNTING DETAIL

B MP-2

SCALE: NONE

MM098

EVAPORATOR SCHEDULE		
DESIGNATION	E 1	E 2
AIRFLOW (CFM)	-	-
FLA	14.3	2.4
VOLTS/PHASE	230/1	115/1
TOTAL CAP. (MBH)	13,587	14,857
REFRIGERANT	R-448A	R-448A
REFRIG. SAFETY CLASS.	A1	A1
EVAP. TEMP. (°F)	-10	25
BOX TEMP. (°F)	0	35
MANUFACTURER	MASTER-BILT	MASTER-BILT
DEFROST TYPE	ELEC. DEFROST	AIR DEFROST
MODEL NUMBER	E1LD0142B-TE2	E1MD0163A-TA2
LOCATION	FREEZER	COOLER
OPER. WT (LBS)	78	72
ACCESSORIES	1	-

1. INCLUDES DEFROST HEATER.

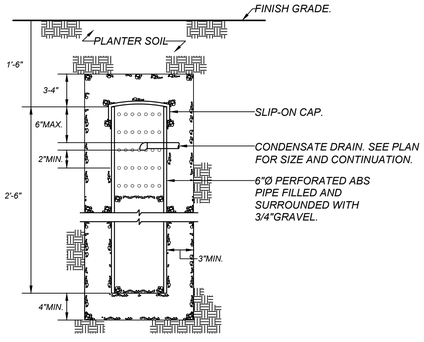
CONDENSING UNIT SCHEDULE		
DESIGNATION	CU 1	CU 2
NAME PLATE AMPS	31.2	23.3
VOLTS/PHASE	230/1	230/1
MCA / MOP (AMPS)	48 / 60	31 / 35
LIQ. / SUCTION (IN.)	1/2 / 7/8	1/2 / 7/8
COOLING CAP (MBH)	13,167	13,184
AMBIENT (°F)	105	105
MANUFACTURER	MASTER-BILT	MASTER-BILT
MODEL NUMBER	MSLD040AB	MSMD020AB
LOCATION	EQUIPMENT YARD	EQUIPMENT YARD
OPER. WT (LBS)	250	240
ACCESSORIES	1,3	2,3

1. SINGLE 4 HP SCROLL COMPRESSOR.
2. SINGLE 2 HP COMPRESSOR.
3. REPLACEABLE CORE SUCTION FILTER, REPLACEABLE CORE LIQUID FILTER, FAN CYCLING CONTROL, SUCTION ACCUMULATOR, MANUAL RESET HIGH PRESSURE SWITCH.

CONDENSING UNIT SUPPORT FRAMING

F MP-2

SCALE: NONE

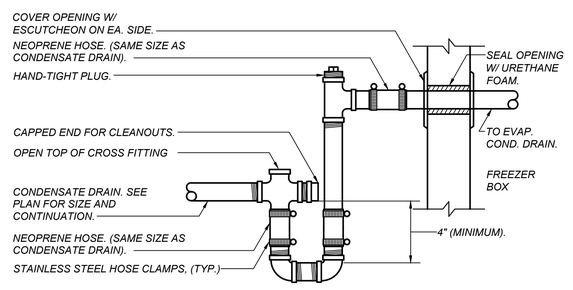


SINGLE CONDENSATE DRAIN DRYWELL

J MP-2

SCALE: NONE

P029

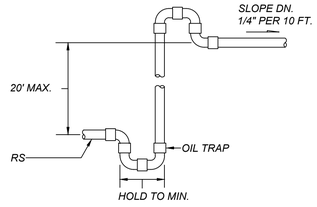


CONDENSATE DRAIN CONNECTION DETAIL

C MP-2

SCALE: NONE

P020



NOTE:
IF LIFT IS HIGHER THAN 20' USE MULTIPLE TRAPS.

RS RISER DETAIL

D MP-2

SCALE: NONE

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
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SS ☑ FLS ☑ ACS ☑
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REVISIONS

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TITLE:
MECHANICAL
DETAILS

SHEET:
MP-2

PROJECT 21181

16 March 2023 5:08 PM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\4 M\MP-2 - MECHANICAL DETAILS.dwg anthonyb

RESINOUS FLOORING SPECIFICATIONS:

1. GENERAL: ALL GENERAL MECHANICAL SPECIFICATIONS APPLY TO THIS SECTION.

   A. REGULATORY REQUIREMENTS:
      a. CARB - MATERIALS AND EQUIPMENT USED FOR THIS PROJECT SHALL COMPLY WITH THE CURRENT APPLICABLE REGULATIONS OF THE CALIFORNIA AIR RESOURCES BOARD (CARB) AND THE ENVIRONMENTAL PROTECTION AGENCY (EPA), IN THE AREA WHERE THE PROJECT IS LOCATED.
      b. CBC - CALIFORNIA BUILDING CODE (CBC 804.1)

2. EXISTING CONDITIONS:

   A. EXAMINE SITE AND COMPARE IT WITH THE DRAWINGS AND SPECIFICATIONS. THOROUGHLY INVESTIGATE AND VERIFY CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. NO ALLOWANCE WILL BE MADE FOR EXTRA WORK RESULTING FROM NEGLIGENCE OR FAILURE TO BE ACQUAINTED WITH ALL AVAILABLE INFORMATION CONCERNING CONDITIONS NECESSARY TO ESTIMATE THE DIFFICULTY OR COST OF THE WORK.

   B. CONCRETE SUBSTRATE SHALL BE PROPERLY CURED FOR A MINIMUM OF 30 DAYS.

   C. RH (RELATIVE HUMIDITY) AND ALKALINITY TEST:
      a. SHALL CONTROL VAPOR TRANSMISSION UP TO AND INCLUDING 100 PERCENT READINGS PER RH TESTING OF ASTM F 2170 "DETERMINING RELATIVE HUMIDITY IN CONCRETE FLOOR SLABS USING IN SITU PROBES".
      b. SHALL CONTROL ALKALINITY FOR A LONG TERM MAXIMUM RESISTANCE OF PH 14 PER PH TESTING OF ASTM F 710 "PREPARING CONCRETE FLOORS TO RECEIVE RESILIENT FLOORING"

   D. JOB AREA TO BE FREE OF OTHER TRADES DURING FLOOR INSTALLATION.

3. MANUFACTURER:
      a. STONHARD, INC. - "STONSHIELD UTS"

4. MATERIALS: STONSHIELD UTS FOR EXTREME TEMPERATURE FLUCTUATIONS :
   A. A NOMINAL 1/4" THICK SYSTEM COMPRISED OF A HIGH PERFORMANCE, FOUR-COMPONENT MORTAR CONSISTING OF URETHANE RESIN, CURING AGENT, SELECTED, MEDIUM GRADED AGGREGATES AND INORGANIC PIGMENTS SEALED WITH A TWO-COMPONENT, 100 PERCENT SOLIDS, URETHANE COATING.

   B. PHYSICAL PROPERTIES: PROVIDE FLOORING SYSTEM IN WHICH PHYSICAL PROPERTIES OF TOPPING INCLUDING AGGREGATE, WHEN TESTED IN ACCORDANCE WITH STANDARDS OR PROCEDURES REFERENCED BELOW, ARE AS FOLLOWS:
      a. COMPRESSIVE STRENGTH (AFTER 7 DAYS): 7,700 PSI.
         1) PER ASTM C 579 "TEST METHODS FOR COMPRESSIVE STRENGTH OF CHEMICAL RESISTANT MORTARS, GROUTS, MONOLITHIC SURFACINGS, AND POLYMER CONCRETES".
      b. TENSILE STRENGTH: 1,000 PSI.
         1) PER ASTM C 307 "TEST METHOD FOR TENSILE STRENGTH OF CHEMICAL-RESISTANT MORTALS, GROUTS, AND MONOLITHIC SURFACINGS".
      c. FLEXURAL STRENGTH: 2,400 PSI.
         1) PER ASTM C 580 "TEST METHOD FOR FLEXURAL STRENGTH AND MODULUS OF ELASTICITY OF CHEMICAL-RESISTANT MORTARS, GROUTS, MONOLITHIC SURFACINGS, AND POLYMER CONCRETES".
      d. FLEXURAL MODULUS OF ELASTICITY: 2.6 X 106 PSI.
         1) PER ASTM C 580 "TEST METHOD FOR FLEXURAL STRENGTH AND MODULUS OF ELASTICITY OF CHEMICAL-RESISTANT MORTALS, GROUTS, MONOLITHIC SURFACINGS, AND POLYMER CONCRETES".
      e. HARDNESS (SHORE D DUROMETER): 80-84.
         1) PER ASTM D 2240 "STANDARD TEST METHOD FOR RUBBER PROPERIY -"DUROMETER HARDNESS".
      f. BOND STRENGTH (100 PERCENT CONCRETE FAILURE): 400 PSI.
         1) PER ASTM D 4541 "STANDARD TEST METHOD FOR PULL-OFF STRENGTH OF COATINGS USING PORTABLE ADHESION TESTERS".
      g. IMPACT RESISTANT: .160 IN.1BS.
         1) PER ASTM D 4226 "TEST METHODS FOR IMPACT RESISTANT OF RIGID POLY VINYL CHLORIDE (PVC) BUILDING PRODUCTS".
      h. ABRASION RESISTANCE (CS-17 WHEEL): 0.05 GM MAX WEIGHT LOSS.
         1) PER ASTM D 4060 "TEST METHOD FOR ABRASION RESISTANCE OF ORGANIC COATINGS BY THE TABER ABRASER".
      i. COEFFICIENT OF FRICTION: DEPENDENT ON TEXTURE SELECTION.
         1) PER ASTM D 2047 "TEST METHOD FOR STATIC COEFFICIENT OF FRICTION OF POLISH-COATED FLOORING SURFACES AS MEASURED BY THE JAMES MACHINE".
      j. FLAMMABILITY (EXTENT OF BURNING 0.25 INCHES MAX): SELF EXTINGUISHING.
         l) PER ASTM D 635 "TEST METHOD FOR RATE OF BURNING AND/OR EXTENT AND TIME OF BURNING OF PLASTICS IN A HORIZONTAL POSITION".
      k. THERMAL COEFFICIENT OF LINEAR EXPANSION: 1.1 X 10-5 IN/INOC.
         1) PER ASTM C 531 "TEST METHOD FOR LINEAR SHRINKAGE AND COEFFICIENT OF THERMAL EXPANSION OF CHEMICAL-RESISTANT MORTALS, GROUTS, MONOLITHIC SURFACINGS AND POLYMER CONCRETES".
      1. WATER ABSORPTION: 0.056 PERCENT.
         1) PER ASTM C 413 "TEST METHOD FOR ABSORPTION OF CHEMICAL-RESISTANT MORTARS, GROUTS, MONOLITHIC SURFACINGS, AND POLYMER CONCRETES".
      m. HEAT RESISTANT LIMITATION:
         1) FOR CONTINUOUS EXPOSURE: 200 DEG. F.
         2) FOR INTERMITTENT SPILLS: 250 DEG. F.
      n. CURE RATE ALLOWANCE (AT 77 DEG. F, 24 HOURS FOR NORMAL OPERATIONS): 6 HOURS FOR FOOT TRAFFIC.

5. APPLICATION:
   A. GENERAL: IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS UNLESS SPECIFICALLY NOTED OTHERWISE. IN ACCORDANCE WITH APPROVED SHOP DRAWINGS. IN ACCORDANCE WITH REGULATORY REQUIREMENTS. SET PLUMB, LEVEL, AND SQUARE.

   B. APPLICATION: FOLLOW THE DETAILED MANUFACTURER'S PRINTED INSTRUCTIONS MIXING AND APPLYING RESINOUS FLOORING TYPE 2. MATERIAL SHALL BE USED IMMEDIATELY AFTER MIXING. A "SCREED APPLICATOR" SHAH BE USED TO DISTRIBUTE THE MIXED RESINOUS FLOORING TYPE 2 ONTO THE FLOOR. NOTCHED FINISHING TROWELS AND SPIKED ROLLERS AS RECOMMENDED IN WRITING BY THE MANUFACTURER SHALL BE USED TO SMOOTH THE SURFACE OF THE MATERIAL TO THE REQUIRED THICKNESS. TEXTURE AGGREGATE SHAH THEN BE BROADCAST INTO THE WET MORTAR, IN TEXTURE FINISH AS SELECTED BY THE ARCHITECT. ALLOW TO CURE 6 - 8 HOURS AND APPLY SEALER COAT.

MECHANICAL SPECIFICATIONS:

1. GENERAL: ALL GENERAL MECHANICAL SPECIFICATIONS APPLY TO THIS SECTION.

2. PIPE LAYOUT: ROUTE PIPING TO AVOID CUTTING STRUCTURAL MEMBERS. WHERE CUTTING OR NOTCHING IS REQUIRED, THE STRUCTURAL MEMBER SHALL BE REINFORCED IN ACCORDANCE WITH THE CALIFORNIA BUILDING CODE. PIPING SHALL BE INSTALLED TO ENSURE UNRESTRICTED FLOW. ELIMINATE AIR POCKETS, PREVENT UNUSUAL NOISE AND PERMIT COMPLETE DRAINAGE OF THE SYSTEM. PROVIDE INDIVIDUAL SHUT OFF VALVES AT EACH EQUIPMENT ITEM.

3. PIPING MATERIALS:

   A. REFRIGERANT — HARD DRAWN TYPE ACR COPPER. WROUGHT COPPER FITTINGS, SILVER ALLOY BRAZED, 1100°F, SILFOS.

   B. CONDENSATE DRAIN — HARD TEMPER TYPE L COPPER, ASTM B88, 95-5 TIN-ANTIMONY SOLDER, WROUGHT COPPER FITTINGS OR SCHEDULE 40 GALV. STEEL, ASTM A53. GALV. MALLEABLE IRON SCREWED FITTING, ANSI B16.3.

4. VALVES AND FITTINGS:

   A. LINE VALVE: BRONZE BODY, BALL TYPE. TFE LOCKED IN SEALS. BACK SEATED VALVE STEM. CONTROLMATICS C-11.

   B. VIBRATION ISOLATING CONNECTION: SEAMLESS FLEXIBLE BRONZE TUBING, BRAID COVERED. SUITABLE FOR SYSTEM PRESSURE. AMERICAN.

   C. SOLENOID VALVE: FULL LINE SIZE. SPORLAN.

5. PIPE INSULATION: RUBBER BASED ELASTOMERIC PREFORMED PIPE INSULATION. THERMAL CONDUCTIVITY SHALL NOT EXCEED 0.27 BTU-IN/HR-FT -°F AT A MEAN TEMPERATURE OF 70°F. REFRIG. PIPE 1/2" THICK, COND. DRAIN PIPE IN FREEZER 1" THICK. PROVIDE ADHESIVE BY SAME MANUFACTURER. ARMACELL ARMAFLEX. COVER INSUL. PIPE EXPOSED TO WEATHER WITH 0.024" STUCCO EMBOSSED ALUMINUM JACKET AND 0.016" THICK ALUM. FITTING CURVES.

6. PIPE SUPPORT: TO 4" PIPE - STEEL "J" HANGER WITH SIDE BOLT; 5" AND LARGER PIPE - STEEL CLEVIS HANGER. LOAD AND JAM NUTS. SIZE AND MAX. LOAD PER MFGR'S. RECOMMENDATIONS. FELT LINER FOR COPPER PIPING. HANGER AND ROD SHALL HAVE GALV. FINISH. UNISTRUT.

7. SYSTEM IDENTIFICATION: FOR PIPE SYSTEMS OTHER THE DRAIN, MARK FLUID CONVEYED IN PIPE AND DIRECTION OF FLOW. COLORS PER ANSI 13.1. LOCATE AT ENDS OF LINES, MAJOR CONNECTIONS, PENETRATIONS OF WALLS, FLOORS OR CEILING, 50' O.C. MAX. SPACING.

8. CONTROLS:

   A. REFRIGERATOR REFRIGERATION SYSTEM: REFRIGERATOR SYSTEM SHALL RUN ON INTERNAL CONTROLS AT THE CONDENSING UNIT AND THE THERMOSTATS AT THE REFRIGERATOR EVAPORATORS.

   B. FREEZER REFRIGERATION SYSTEM: FREEZE SYSTEM SHALL OPERATE SIMILAR TO THE REFRIGERATOR SYSTEM.

   C. REFRIGERATOR SYSTEM ALARM MONITORING SYSTEM: THE REFRIGERATOR TEMPERATURE SET POINT SHALL BE 35°F (ADJ.).

   E. FREEZER SYSTEM ALARM MONITORING SYSTEM: THE FREEZER TEMPERATURE SET POINT SHALL BE 0°F(ADJ).

9. TESTS: PERFORM ALL TESTS AS REQUIRED BY APPLICABLE CODES IN THE PRESENCE OF INSPECTOR.

GENERAL MECHANICAL SPECIFICATIONS:

1. CODES AND REGULATIONS: ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED AND AMENDED BY THE AUTHORITY HAVING JURISDICTION. THE INTENT OF THE DRAWINGS AND SPECIFICATIONS IS TO CONSTRUCT THE FREEZER IN ACCORDANCE WITH THE 2019 EDITION OF TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY CONDITIONS DEVELOP NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH SAID TITLE 24, CALIFORNIA CODE OF REGULATIONS. NOTHING IN THESE DRAWINGS OR SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

   A. CALIFORNIA BUILDING CODE - CBC - 2019
   B. CALIFORNIA MECHANICAL CODE - CMC - 2019
   C. CALIFORNIA PLUMBING CODE - CPC - 2019
   D. CALIFORNIA FIRE CODE - CFC - 2019
   E. CALIFORNIA ELECTRICAL CODE - CEC - 2019
   F. CALIFORNIA CODE OF REGULATIONS, TITLE 8, INDUSTRIAL RELATIONS
   G. CALIFORNIA CODE OF REGULATIONS, TITLE 24, BUILDING STANDARDS
   H. NFPA 13, STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS, 2019

2. PERMIT CHARGES: OBTAIN ALL PERMITS REQUIRED FOR PERFORMING WORK AND PAY ALL RELATED FEES.

3. WORK BY OTHERS: UNLESS OTHERWISE NOTED, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL POWER WIRING, MOTOR STARTERS IN MOTOR CONTROL CENTERS, DISCONNECTS AND CONDUIT.

4. GUARANTEE: THE CONTRACTOR SHALL REPAIR ANY DEFECTS DUE TO FAULTY MATERIALS OR WORKMANSHIP AND PAY FOR ANY DAMAGE TO OTHER WORK RESULTING THEREFROM WHICH APPEARS WITHIN A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF WORK.

5. EXAMINATION OF SITE: THE CONTRACTOR SHALL EXAMINE THE SITE PRIOR TO ORDERING OR FABRICATING ANY MATERIALS. EXISTING CONDITIONS THAT CONFLICT WITH THE CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ENGINEER. NO ALLOWANCE SHALL BE MADE IN THE CONTRACTOR'S BEHALF FOR ANY EXTRA EXPENSE TO WHICH HE MAY BE PUT DUE TO FAILURE OR NEGLECT ON HIS PART TO MAKE SUCH AN EXAMINATION.

6. MATERIALS, EQUIPMENT AND INSTALLATION: EACH ITEM REFERRED TO ON THE DRAWINGS AND IN THE SPECIFICATIONS REPRESENTS THE STANDARD OF QUALITY DESIRED FOR MATERIALS, EQUIPMENT AND INSTALLATION. ALL SUBSTITUTIONS MUST BE REVIEWED IN WRITING BY THE ENGINEER. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND FREE FROM DEFECTS. ALL INSTALLATIONS SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND AS SHOWN ON DRAWINGS.

7. SUBMITTALS: WITHIN 30 DAYS OF CONTRACT AWARD, THE CONTRACTOR SHALL SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS FOR ALL MATERIALS, EQUIPMENT, ETC. PROPOSED FOR USE ON THIS PROJECT. SUBMITTALS SHALL BE A SINGLE FILE IN PDF FORMAT, WITH BOOKMARKS FOR TABLE OF CONTENTS AND EACH TAB, AND SUB-BOOKMARKS FOR EACH ITEM. MATERIAL OR EQUIPMENT SHALL NOT BE ORDERED OR INSTALLED UNTIL WRITTEN REVIEW IS PROCESSED BY THE ENGINEER. ANY ITEM OMITTED FROM THE SUBMITTAL SHALL BE PROVIDED AS SPECIFIED WITHOUT SUBSTITUTION.

8. CLOSEOUT DOCUMENTS:

   CONTRACTOR GUARANTEES: ALL CONTRACTORS INVOLVED IN THE PROJECT SHALL SUBMIT WRITTEN GUARANTEES FOR THEIR WORK FOR ONE YEAR FROM THE DATE OF ACCEPTANCE TO THE OWNER THROUGH THE ENGINEER.

   RECORD DRAWINGS: CONTRACTORS SHALL OBTAIN A SET OF PROJECT PRINTS TO KEEP AT THE JOB SITE. CONTRACTORS SHALL MARK ALL CHANGES FROM DESIGN PLANS ON THE PRINTS. WORK UNDERGROUND SHALL SHOW DEPTH AND DISTANCE FROM NEARBY STRUCTURES. SUBMIT THE RECORD DRAWINGS TO THE ENGINEER FOR REVIEW.

   OPERATING AND MAINTENANCE INSTRUCTIONS: TWO COPIES OF ALL EQUIPMENT OPERATION AND MAINTENANCE INSTRUCTIONS AND WIRING DIAGRAMS SHALL BE FURNISHED TO THE OWNER, THROUGH THE ENGINEER..
   O&M MANUAL SHALL INCLUDE COPIES OF ALL INSPECTION REPORTS & VERIFICATIONS REQUIRED BY THE ENFORCING AGENCY.

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS
10/24/23 CONSULTANT COORDINATION

LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1032
4910 E. Clinton Way, Suite 101
(559) 431-0101

TITLE: MECHANICAL SPECIFICATIONS

SHEET: MP-3

PROJECT 21181

1 DESIGN CRITERIA

A. DESIGN CRITERIA:
1. DESIGNED USING 2019 CALIFORNIA BUILDING CODE (CBC)
2. RISK CATEGORY TYPE (TABLE 1604.5) = IV

B. ROOF DESIGN DATA:
1. CEILING ROOF DEAD LOAD: = 3.5 PSF
2. CEILING ROOF LIVE LOAD: = 20 PSF

C. SEISMIC DESIGN DATA:
1. SEISMIC RESPONSE COEFFICIENT, Cs = 0.776 G
2. MAPPED SPECTRAL RESPONSE ACC. FOR SHORT PERIOD, SS = 0.580 G
3. MAPPED SPECTRAL RESPONSE ACC. FOR 1-SEC PERIOD, S1 = 0.230 G
4. DESIGN SPECTRAL RESPONSE ACC. COEFF. AT SHORT PERIOD, SDS = 0.517 G
5. DESIGN SPECTRAL RESPONSE ACC. COEFF. AT 1-SEC PERIOD, SD1 = 0.328 G
6. BUILDING SITE CLASS (TABLE 1613.5.2) = D - DEFAULT
7. SEISMIC DESIGN CATEGORY (TABLE 1613.5.6 (1 & 2)) = D
8. IMPORTANCE FACTOR, I = 1.5
9. RESPONSE MODIFICATION FACTOR,R = 1.0

D. WIND DESIGN DATA:
1. WIND IMPORTANCE FACTOR, IW = 1.00
2. BASIC WIND SPEED (3 SECOND GUST) = 105 MPH
3. HORIZONTAL WIND PRESSURE = 16.00 MPH
4. VERTICAL WIND PRESSURE = -17.67 PSF
5. EXPOSURE CATEGORY = C

2 GENERAL STRUCTURAL NOTES

A. DO NOT SCALE DRAWINGS, CONTACT E.O.R. FOR DIMENSION CLARIFICATIONS PRIOR TO CONSTRUCTION.
B. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THESE PLANS UNLESS SUCH CHANGES ARE AUTHORIZED IN WRITING TO THE STRUCTURAL ENGINEER OF RECORD.
C. IT IS NECESSARY THAT THE STRUCTURAL DRAWINGS BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS TO HAVE A COMPLETE SCOPE OF WORK INVOLVED IN THIS PROJECT.
D. CONTRACTOR TO VERIFY ALL OPENINGS, BUILDING DIMENSIONS, COLUMN LOCATIONS AND DIMENSIONS WITH OWNER PRIOR TO SETTING OF ANY COOLER BOXES OR CONSTRUCTION.
E. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING AND/OR TEMPORARY STRUCTURAL STABILITY FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR FINAL CONFIGURATION.
F. NOTCHING AND/OR CUTTING OF ANY STRUCTURAL MEMBER IN THE FIELD IS PROHIBITED, UNLESS PRIOR CONSENT IS GIVEN BY THE ENGINEER OF RECORD.
G. ALL FUTURE ROOF/CEILING LID MOUNTED & MOUNTED EQUIPMENT NOT CURRENTLY SHOWN ON THE APPROVED SHOP DRAWINGS SHALL BE COORDINATED WITH THE E.O.R. PRIOR TO ANY INSTALLATION, TYP.
H. THE ASSUMED THICKNESS OF EXISTING CONCRETE WILL BE 4" WITH AN F'C OF 2,500 PSI, UNLESS OTHERWISE NOTED IN CALCULATIONS.

3 SPECIAL INSPECTIONS & TESTING (QUALITY ASSURANCE PLAN)

1. GENERAL:
A. INDEPENDENT TESTING LAB SHALL BE RETAINED BY OWNER TO PROVIDE INSPECTIONS AND SPECIAL INSPECTIONS AS DESCRIBED HEREIN.
B. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING AND PROVIDING ON SITE ACCESS TO ALL REQUIRED INSPECTIONS AND NOTIFIES TESTING LAB IN TIME TO PERFORM SUCH INSPECTIONS PRIOR.
C. DO NOT COVER WORK REQUIRED TO BE INSPECTED PRIOR TO INSPECTION BEING MADE. IF WORK IS COVERED, CONTRACTOR WILL BE RESPONSIBLE FOR UNCOVERING AS NECESSARY.
D. THE CONTRACTOR SHALL CORRECT ALL DEFICIENCIES AS NOTED WITHIN THE SPECIAL INSPECTION REPORTS AND/OR THE ENGINEER OF RECORD'S FIELD OBSERVATION (STRUCTURAL OBSERVATIONS) REPORTS TO BRING THE CONSTRUCTION INTO COMPLIANCE WITH THE CONTRACT DOCUMENTS, ADDENDUMS, REVISIONS, RFI'S AND/OR WRITTEN INSTRUCTIONS. THE CONTRACTOR IS RESPONSIBLE TO REQUEST SUMMARY REPORTS FROM THE SPECIAL INSPECTOR AND ENGINEER OF RECORD AT THE TIME OF THE PROJECT SUBSTANTIAL COMPLETION. PRIOR TO REQUESTING THE SUMMARY OF STRUCTURAL OBSERVATION REPORTS FROM THE ENGINEER OF RECORD, THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT AND ENGINEER OF RECORD A LETTER STATING THAT ALL OUTSTANDING ITEMS NOTED ON PREVIOUS STRUCTURAL OBSERVATION REPORTS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, ADDENDUMS, REVISIONS, RFI'S AND/OR WRITTEN INSTRUCTIONS.

2. SPECIAL INSPECTIONS:
A. ALL SPECIAL INSPECTIONS SHALL BE PERFORMED TO MEET THE REQUIREMENTS OF THE GOVERNING CODE AS RECOMMENDED BY THE LOCAL BUILDING JURISDICTION.
B. REQUIRED SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT CERTIFIED TESTING LABORATORY EMPLOYED BY THE OWNER PER SECTION 1701 OF THE GOVERNING CODE FOR THE AREAS INDICATED IN THE SPECIAL INSPECTION PROGRAM.
C. THE INDEPENDENT CERTIFIED TESTING LABORATORY AND INSPECTORS SHALL BE A QUALIFIED PERSON WHO SHALL SHOW COMPETENCE TO THE SATISFACTION OF THE LOCAL BUILDING OFFICIAL, OWNER, ARCHITECT AND ENGINEER OF RECORD FOR THE PARTICULAR OPERATION. ALL SPECIAL INSPECTION REPORTS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT, ARCHITECT AND ENGINEER OF RECORD STATING THE PROJECT NAME AND ADDRESS.
D. THE CONTRACTOR AND SPECIAL INSPECTOR SHALL NOTIFY THE ENGINEER OF RECORD OF ANY ITEMS NOT COMPLYING WITH THE PROJECT SPECIFICATIONS, CONTRACT DOCUMENTS AND/OR APPLICABLE CODES BEFORE PROCEEDING WITH ANY WORK INVOLVING THAT ITEM. THE ENGINEER OF RECORD WILL REVIEW THE ITEM AND DETERMINE ITS ACCEPTABILITY. IF WORK INVOLVING THAT ITEM PROCEEDS WITHOUT PRIOR APPROVAL FROM THE ENGINEER OF RECORD, THEN THE WORK WILL BE CONSIDERED NON-COMPLIANT.

SPECIAL INSPECTIONS PROGRAM
ESTABLISHED PER 2019 CBC

ITEM	CONTINUOUS	PERIODIC	COMMENTS
GENERAL STRUCTURAL INSPECTIONS AS REQUIRED BY SECTION 1704			
CONCRETE CONSTRUCTION: (OSSC)			
EPOXY OR ADHESIVE ANCHOR PLACEMENT		X	BY BUILDING OFFICIAL
EXPANSION OR SCREW ANCHOR PLACEMENT		X	ACI 318: 17.8.2

5 SPECIFICATIONS

PANELS: WALL - 4" THICK, ROOF - 4" THICK ULTRA-SPAN (LARR 25197)
WIDE FLANGE SHAPES (BEAMS & COLUMNS)=ASTM A992
STRUCTURAL WELDS=E70XX
SPECIFICATIONS (D2227842-H QUOTE NUMBER NL222784229-H)
REFRIGERATED SOLUTIONS GROUP
(1) MASTER-BILT OUTDOOR WALK-IN COOLER/FREEZER COMBINATION (2 COMPARTMENTS)
SIZE: 30'0" LONG, 14'0" WIDE, 10'2 5/8" HIGH
FINISHES:
26 GAUGE CORROSION RESISTANT STUCCO EMBOSSED COATED STEEL - INTERIOR WALL, EXTERIOR WALL, INTERIOR CEILING
26 GAUGE SMOOTH GALVANIZED - CEILING TOPSIDE
FEMALE BOTTOM RAIL FOR (1) FREEZER (0.0° F) AND (1) COOLER (35.0° F)

OUTDOOR WALK-IN INCLUDES SLOPED WHITE MEMBRANE ROOF WITH TRIM - 45 LBS./SQ. FT. CEILING LOAD CAPACITY MINIMUM

FREEZER (0.0° F) DETAILS:
(1) 48" X 78" WALK-IN DOOR LEFT-HAND SWING
INCLUDES DOOR CLOSER, CAM LIFT HINGES (ONE SPRING LOADED ON 36" WIDE AND SMALLER DOORS), DEADBOLT KEY/PADLOCK HANDLE WITH INSIDE RELEASE, MAGNETIC GASKET, HEATER WIRE, DOUBLE SWEEP GASKET, LED VAPOR PROOF LIGHT, HEATED AIR VENT (STANDARD ON ALL FREEZER COMPARTMENTS) AND COMBINATION DIGITAL THERMOMETER AND SWITCH W/PILOT LIGHT.
(1) DOORSTOP
(1) ADDITIONAL STANDARD HINGE
(1) 36" DOOR & FRAME-EXTERIOR & INTERIOR KICKPLATES (.080" DIAMOND ALUMINUM)
(1) 12 GAUGE STAINLESS STEEL THRESHOLD

(1) 60" X 78" WALK-IN DOOR LEFT-HAND SWING
INCLUDES DOOR CLOSER, CAM LIFT HINGES (ONE SPRING LOADED ON 36" WIDE AND SMALLER DOORS), DEADBOLT KEY/PADLOCK HANDLE WITH INSIDE RELEASE, MAGNETIC GASKET, HEATER WIRE, DOUBLE SWEEP GASKET, LED VAPOR PROOF LIGHT, HEATED AIR VENT (STANDARD ON ALL FREEZER COMPARTMENTS) AND COMBINATION DIGITAL THERMOMETER AND SWITCH W/PILOT LIGHT.
(1) STANDARD STRIP CURTAIN
(1) ADDITIONAL STANDARD HINGE
(1) 36" DOOR & FRAME-EXTERIOR & INTERIOR KICKPLATES (.080" DIAMOND ALUMINUM)
(1) RAIN HOOD
(1) NL708 HIGH/LOW DIGITAL ALARM AND LIGHT MANAGEMENT SYSTEM (FLUSH MOUNT)
(1) 12 GAUGE STAINLESS STEEL THRESHOLD

ULTRA-SPAN CEILING PANEL REINFORCEMENTS INCLUDED

(1) MSLD040AB*
4HP COND UNIT 208-230/60/1 R-448A/R-449A, OUTDOOR UNIT SCROLL COMPRESSOR, LOW TEMP 0° F, 13587 BTUH SYSTEM CAPACITY. WITH MOUNTED TIMER. SIZED FOR 105° F TEMPERATURE AT CONDENSER. 30" (L) 31" (W) 26" (H) BASE: M3 @ 250#. MCA: 48, MOP: 60, RLA: 27, LRA: 129. CONNECTIONS - LIQUID: 0.5", SUCTION: 0.875".
(1) E1LD01428-TE2*
EVAP 208-230/60/1 R-448A/R-449A, ELEC DEFROST MTD TXV/TEMP CTRL/SOL, LOW TEMP 0° F, 14733 BTUH EVAPORATOR CAPACITY. 60" (L) 16" (W) 17" (H) @ 78#. FAN AMPS: 1.5, DEFROST AMPS: 14.3.
CALCULATED LOAD FOR FREEZER (0.0° F) IS 9967 BTU'S/HOUR CALCULATED FROM 105° F AMBIENT TEMPERATURE, 0' ELEVATION, 105° F FLOOR TEMPERATURE, 9.63 MINUTES OPEN DOOR TIME PER 24 HRS FOR (1) 48" X 78" WALK-IN DOOR OPENING INTO 35° F AMBIENT, 4.45 MINUTES OPEN DOOR TIME PER 24 HRS FOR (1) 60" X 78" WALK-IN DOOR OPENING INTO 105° F AMBIENT, 1.5 WATTS PER SQUARE FOOT LIGHTING OPERATING 10 HOURS PER DAY, 0.09 OCCUPANTS WORKING 10 HOURS PER DAY. ALL CALCULATIONS ARE BASED ON DATA SUPPLIED BY ASHRAE PUBLICATIONS.
(1) 4 YEAR EXTENDED COMPRESSOR WARRANTY, 3.5-5HPS
(1) 18 MONTH LABOR/SERVICE WARRANTY
IF REMOTE REFRIGERATION CONDENSING WILL BE INSTALLED IN AMBIENT CONDITIONS COLDER THAN -10° F, RSG RECOMMENDS AN OUTDOOR HEATER KIT ADDED TO THE REFRIGERATION SYSTEM TO RUN SUFFICIENTLY IN THESE OUTDOOR AMBIENT CONDITIONS. TO ADD THIS SYSTEM ACCESSORY YOUR UPCHARGE WILL BE $600. *STANDARD OUTDOOR CAPSULE PAKS ARE RATED TO -20° F AMBIENT CONDITIONS. THIS ACCESSORY IS NOT REQUIRED.

COOLER (35.0° F) DETAILS:
(1) 48" X 78" WALK-IN DOOR RIGHT-HAND SWING.
INCLUDES DOOR CLOSER, CAM LIFT HINGES (ONE SPRING LOADED ON 36" WIDE AND SMALLER DOORS), DEADBOLT KEY/PADLOCK HANDLE WITH INSIDE RELEASE, MAGNETIC GASKET, HEATER WIRE, DOUBLE SWEEP GASKET, LED VAPOR PROOF LIGHT AND COMBINATION DIGITAL THERMOMETER AND SWITCH W/PILOT LIGHT.
(1) STANDARD STRIP CURTAIN
(1) ADDITIONAL STANDARD HINGE
(1) 36" DOOR & FRAME-EXTERIOR & INTERIOR KICKPLATES (.080" DIAMOND ALUMINUM)
(1) RAIN HOOD
(1) NL708 HIGH/LOW DIGITAL ALARM AND LIGHT MANAGEMENT SYSTEM (FLUSH MOUNT)
(1) 12 GAUGE STAINLESS STEEL THRESHOLD

ULTRA-SPAN CEILING PANEL REINFORCEMENTS INCLUDED

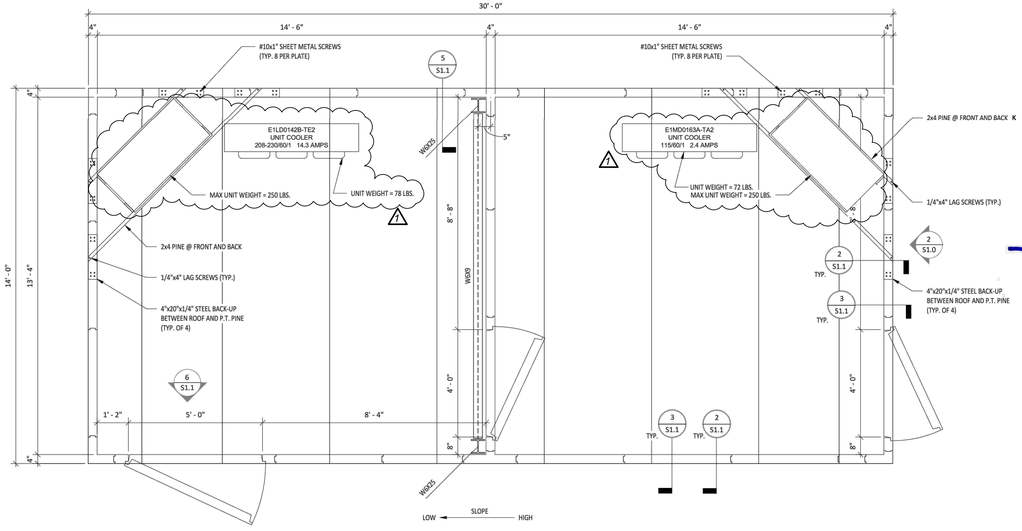
(1) MSMD020AB*
2HP COND UNIT 208-230/60/1 R-448A/R-449A, OUTDOOR UNIT SCROLL COMPRESSOR, MEDIUM TEMP 35° F, 14857 BTUH SYSTEM CAPACITY. WITH MOUNTED TIMER. SIZED FOR 105° F TEMPERATURE AT CONDENSER. 38" (L) 27" (W) 18" (H) BASE: M2 @ 240#. MCA: 31, MOP: 35, RLA: 14, LRA: 68. CONNECTIONS - LIQUID: 0.5", SUCTION: 0.875".
(1) E1MD0163A-TA2*
EVAP 115/60/1 R-448A/R-449A, AIR DEFROST MTD TXV/TEMP CTRL/SOL, MEDIUM TEMP 35° F, 16300 BTUH EVAPORATOR CAPACITY. 60" (L) 16" (W) 17" (H) @ 72#. FAN AMPS: 2.4.
CALCULATED LOAD FOR COOLER (35.0° F) IS 9675 BTU'S/HOUR CALCULATED FROM 105° F AMBIENT TEMPERATURE, 0' ELEVATION, 105° F FLOOR TEMPERATURE, 12.39 MINUTES OPEN DOOR TIME PER 24 HRS FOR (1) 48" X 78" WALK-IN DOOR OPENING INTO 35° F AMBIENT, 8.76 MINUTES OPEN DOOR TIME PER 24 HRS FOR (1) 48" X 78" WALK-IN DOOR OPENING INTO 105° F AMBIENT, 1.5 WATTS PER SQUARE FOOT LIGHTING OPERATING 8 HOURS PER DAY, 0.09 OCCUPANTS WORKING 8 HOURS PER DAY. ALL CALCULATIONS ARE BASED ON DATA SUPPLIED BY ASHRAE PUBLICATIONS.
(1) 4 YEAR EXTENDED COMPRESSOR WARRANTY, 1.5-3HPS
(1) 18 MONTH LABOR/SERVICE WARRANTY
IF REMOTE REFRIGERATION CONDENSING WILL BE INSTALLED IN AMBIENT CONDITIONS COLDER THAN -10° F, RSG RECOMMENDS AN OUTDOOR HEATER KIT ADDED TO THE REFRIGERATION SYSTEM TO RUN SUFFICIENTLY IN THESE OUTDOOR AMBIENT CONDITIONS. TO ADD THIS SYSTEM ACCESSORY YOUR UPCHARGE WILL BE $600. *STANDARD OUTDOOR CAPSULE PAKS ARE RATED TO -20° F AMBIENT CONDITIONS. THIS ACCESSORY IS NOT REQUIRED.

OTHER WALK-IN ACCESSORIES:
(4) 48" LED VAPOR-PROOF ALL TEMPERATURE INTEGRATED LIGHT FIXTURE (SHIPPED LOOSE)
(10) CONTINUOUS ANGLE CONCRETE ATTACHMENT 2"x2"x96" 11GA (1/4" DIA. HILTI KWIK BOLT OR SIMILAR TO BE PROVIDED BY OTHERS)
(13) EMBOSSED ALUMINUM COVE MOLDING, 5" HIGH X 8' LONG WITH ADHESIVE (SHIPPED LOOSE FOR FIELD INSTALLATION)
(15) WALL TO CEILING INTERIOR ATTACHMENT ANGLE (20 GA) 8' LONG WITH SCREWS FOR SEISMIC
(1) SEISMIC ENGINEERING AND CALCULATIONS WITH TIE DOWNS INCLUDED (121 TO 600 SQ. FT.)(REQUIRES CONCRETE PAD TO EXTEND 6" BEYOND THE FACE OF THE WALK-IN)

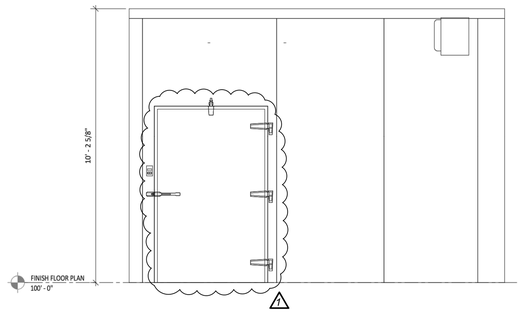
REFRIGERATION IS "SIZED" FOR HOLDING PRODUCT ONLY; THAT IS, OUR CALCULATION IS BASED ON PRODUCT ENTERING AT THE SAME TEMPERATURE AS THE DESIRED TEMPERATURE OF THIS WALK-IN. IF YOU FEEL THAT THIS IS INSUFFICIENT, PLEASE ADVISE.

CONSTRUCTION APPROVALS: NSF APPROVED, CULUS AND CSA ELECTRICAL, UL FLAME SPREAD-25 AND ULC FLAME SPREAD-50 IN ACCORDANCE WITH ASTME-84. TO COMPLY WITH THE US ENERGY INDEPENDENCE & SECURITY ACT OF 2007, ALL WALK-IN DOORS OPENING INTO THE AMBIENT (INDOORS OR OUTDOORS) ARE REQUIRED TO HAVE A METHOD FOR MINIMIZING INFILTRATION WHEN THE DOORS ARE OPEN. ALL MASTER-BILT WALK-IN DOORS WILL INCLUDE A SPRING HINGE TO COMPLY WITH THIS STANDARD BY 1-1-09; HOWEVER, TO FURTHER MINIMIZE INFILTRATION, MASTER-BILT RECOMMENDS THE USE OF A STRIP CURTAIN OR STRIP DOOR FOR ALL EXTERIOR DOORS. NOTE: INDOOR WALK-IN MUST BE IN AN ENVIRONMENTALLY CONTROLLED SPACE. RELATIVE HUMIDITY SHOULD BE KEPT BETWEEN 30%-60%, MAINTAINING A DEW POINT OF 50° F OR LESS.

QUOTATION IS SUBJECT TO CHANGE UPON RECEIPT OF DETAILED SPECIFICATIONS AND/OR REFRIGERATION LOAD INFORMATION.
REFRIGERATION SIZING IS BASED ON MAXIMUM LINE RUNS OF 100 FEET PER SYSTEM.
NOTE: WALK-INS SOLD INTO THE STATE OF CALIFORNIA MAY REQUIRE STRUCTURAL ENGINEERED DRAWINGS FOR SEISMIC REVIEW. IF REQUIRED, MASTER-BILT CAN PROVIDE THE REQUIRED DRAWINGS AND STRUCTURAL SUPPORT. PLEASE CONTACT MASTER-BILT FOR LEAD TIME AND PRICING TO MEET THIS REQUIREMENT.
LOCAL CODES: WALK-INS MAY NEED ENGINEERED DRAWINGS OR SPECIAL CONSTRUCTION TO MEET LOCAL CODE APPROVALS FOR RAIN, WIND, SEISMIC, AND SNOW LOAD APPROVALS. IF REQUIRED, PLEASE CONTACT MASTER-BILT FOR LEAD TIME AND PRICING TO MEET THESE REQUIREMENTS.



1 PLAN
3/8" = 1'-0"



2 ELEVATION
3/8" = 1'-0"

CBX SHEET LIST

SHEET NUMBER	SHEET NAME
S0.0	DESIGN CRITERIA NOTES PLAN AND ELEVATION VIEWS
S1.1	STRUCTURAL DETAILS

MANUFACTURER WALK-IN SPECIFICATIONS
SCALE: NONE

A
MP-4

RSG Refrigerated Solutions Group
MASTER-BILT NORLAKE NORLAKE

APPROVALS:
APPLICATION # 02-120016

REGISTERED PROFESSIONAL ENGINEER RYAN W. CARLSON M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REGISTERED PROFESSIONAL ENGINEER S 4372 EXP. 12/31/23 STRUCTURAL STATE OF CALIFORNIA
07/10/23

TAMARACK GROVE ENGINEERING
812 S. La Cassia Drive
Boise, ID 83705
(208) 345-8941
www.tamarackgrove.com
Firm No.

symbol	revision	date
1		

REVISIONS
1 10/24/23 CONSULTANT COORDINATION

Desmond Middle School
26490 Martin St.
Madera, CA 93638

sheet title:
DESIGN CRITERIA NOTES

Job No:	22-20651
Dwg Date:	11-23-22
Drawn By:	AJB
Checked By:	DDH

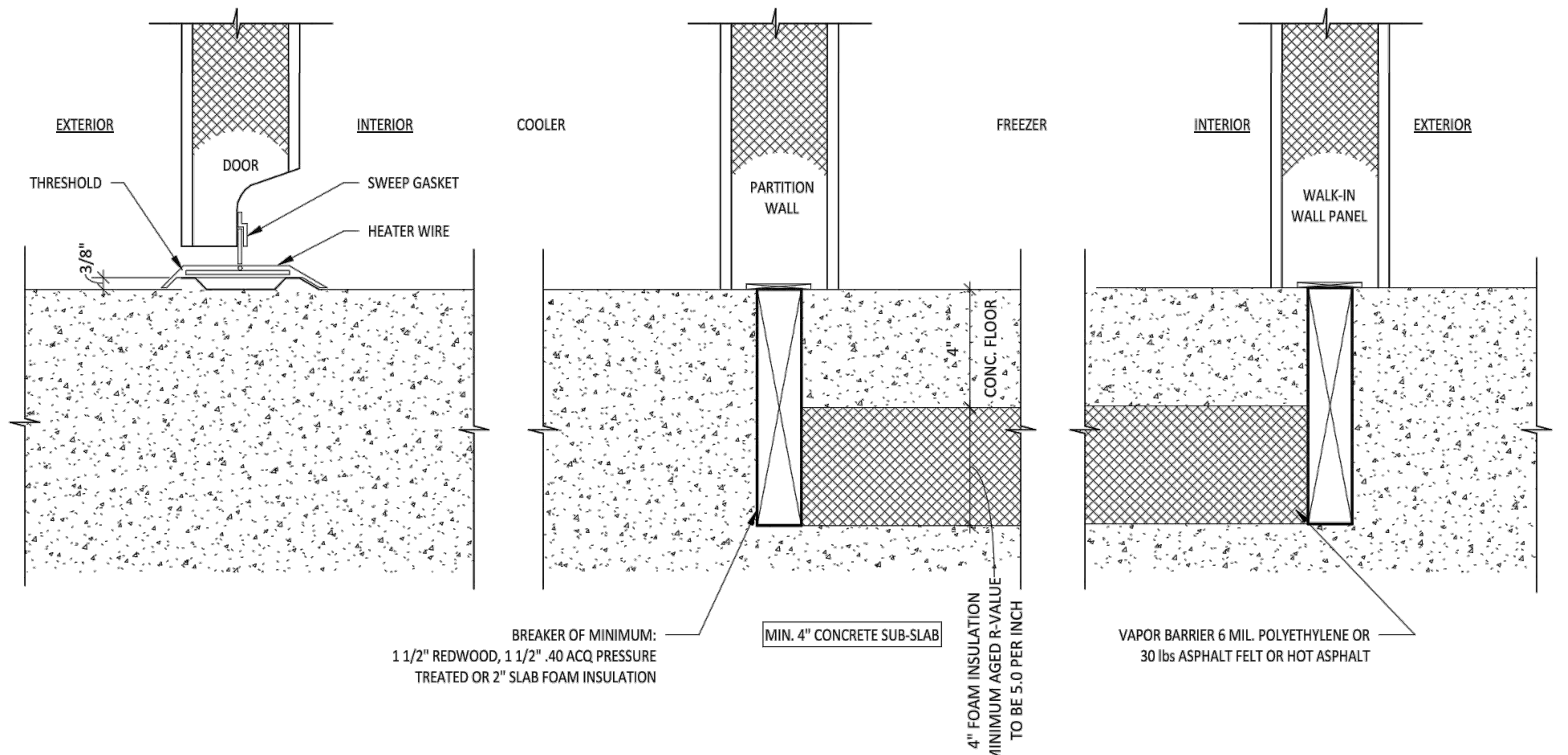
S0.0

LAWRENCE ENGINEERING GROUP
4710 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-9010
FAX (697) 431-1502

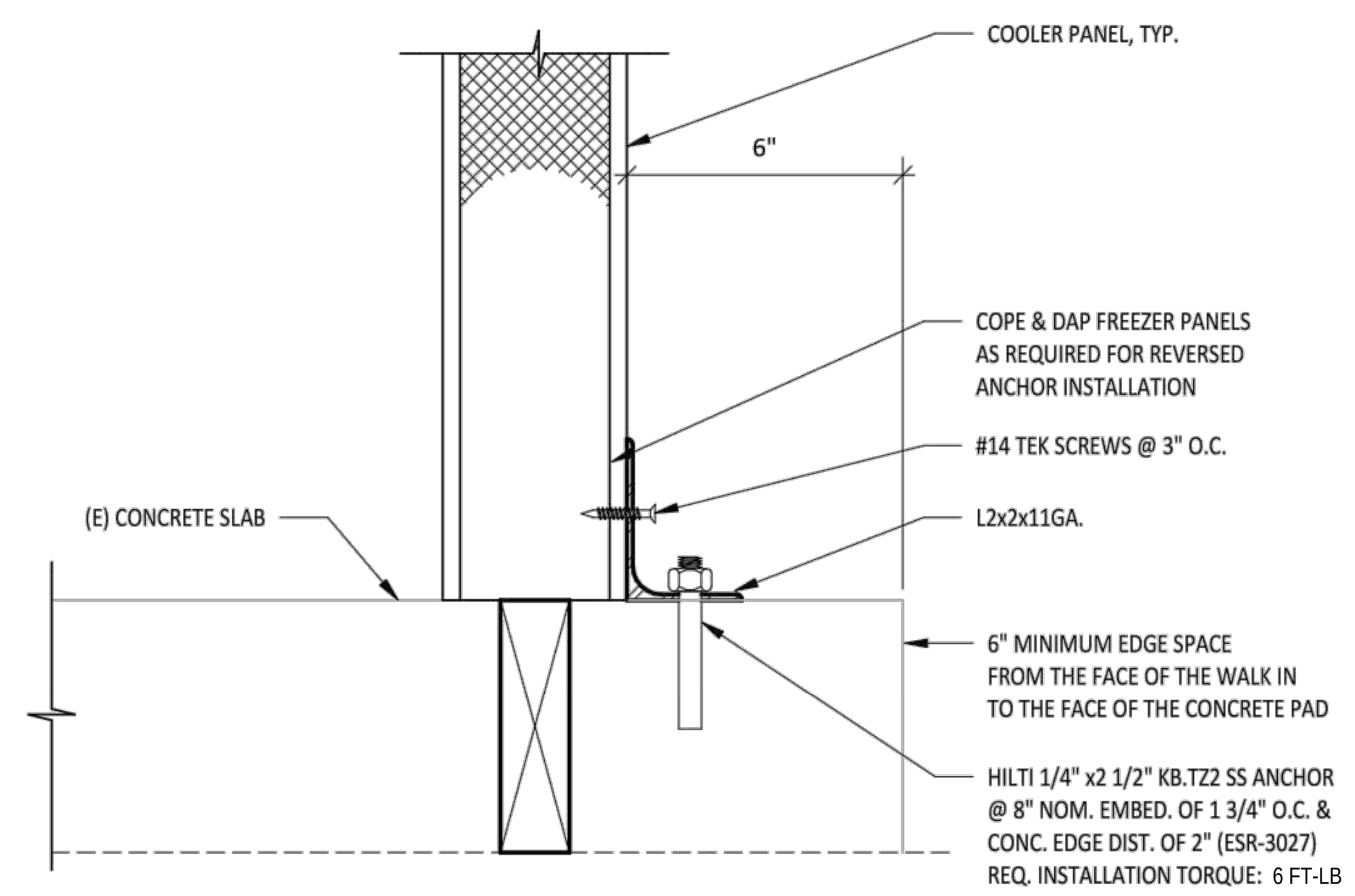
TITLE: MECHANICAL SPECIFICATIONS

SHEET: MP-4
PROJECT 21181

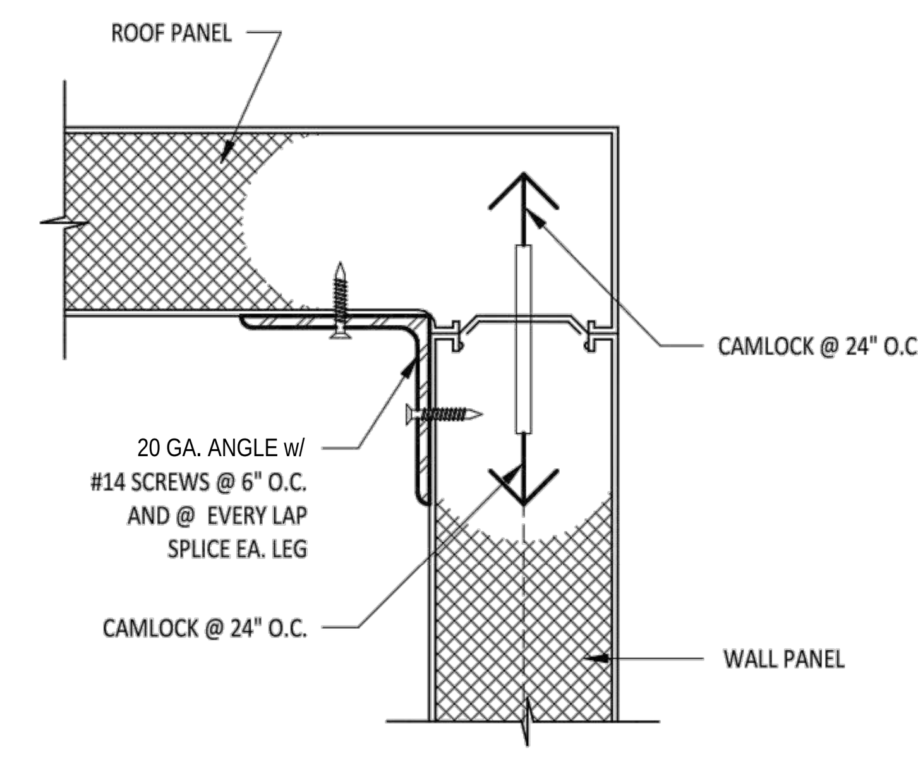
24 October 2023 10:48 AM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\4 M\MP-4 - MECHANICAL SPECS.dwg anthonyb



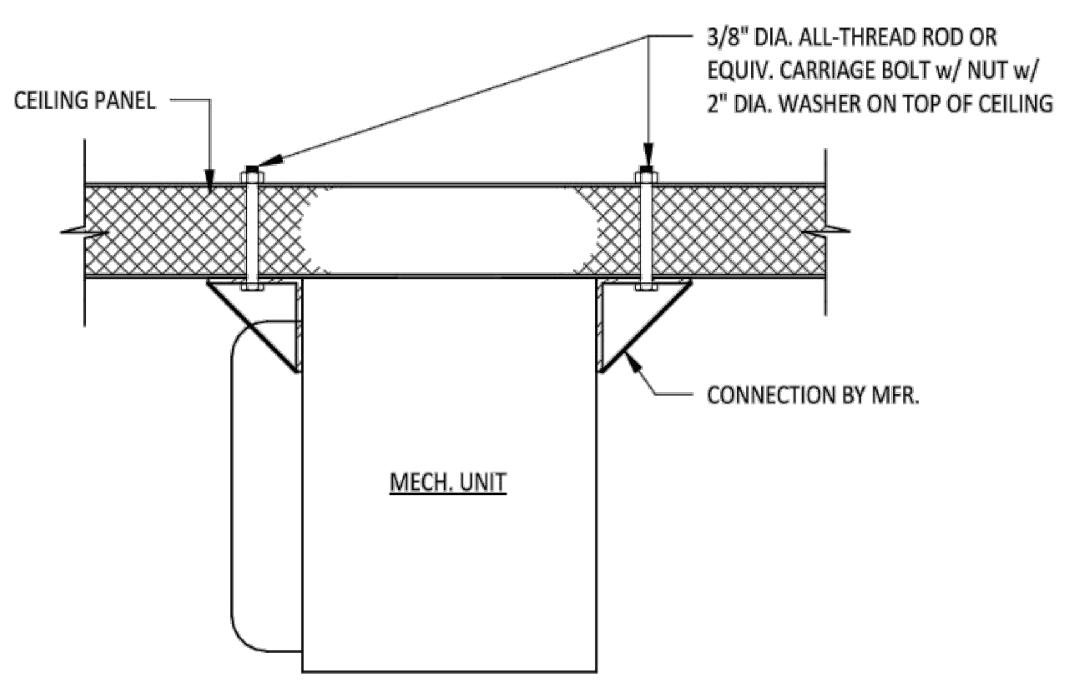
1 FLOOR DETAIL
3" = 1'-0"



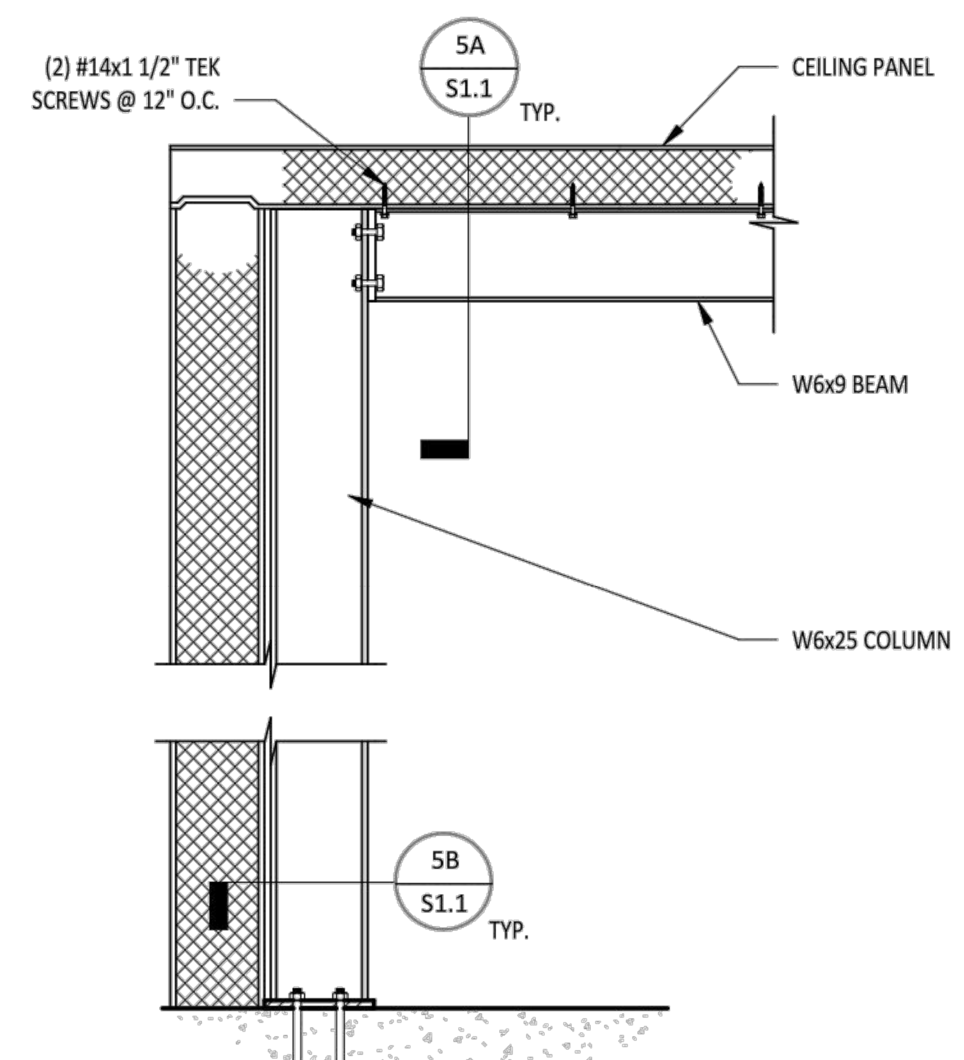
2 FLOORLESS STYLE TIE DOWN
3" = 1'-0"



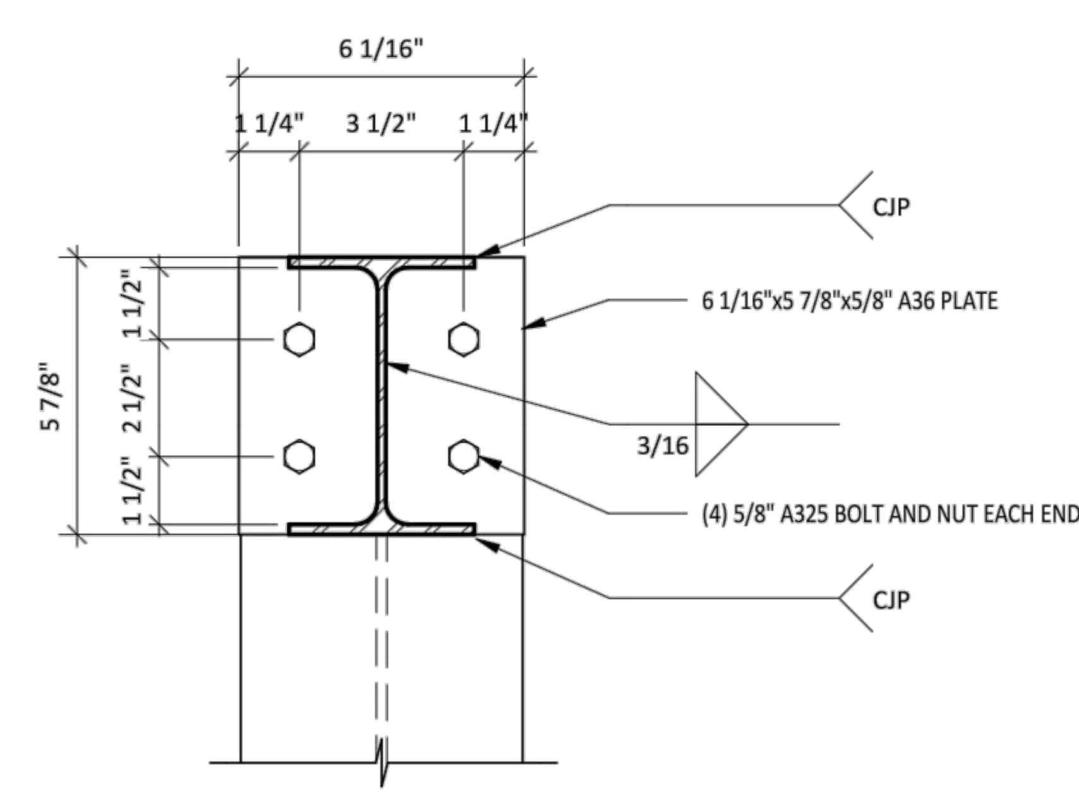
3 FRONT WALL TO CEILING
3" = 1'-0"



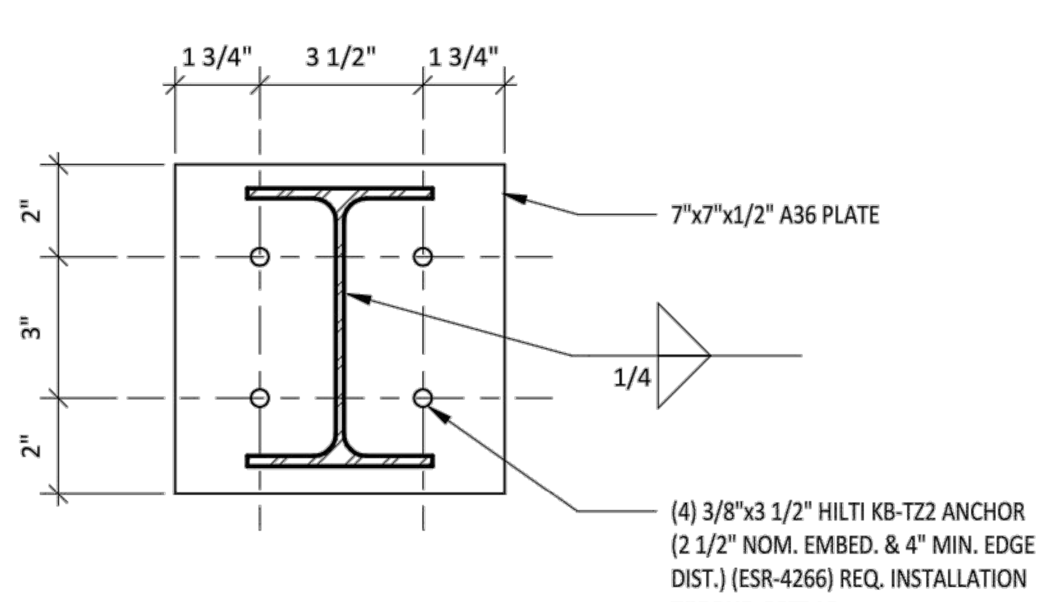
4 TYPICAL SUSPENDED UNIT TO CEILING DETAIL
1 1/2" = 1'-0"



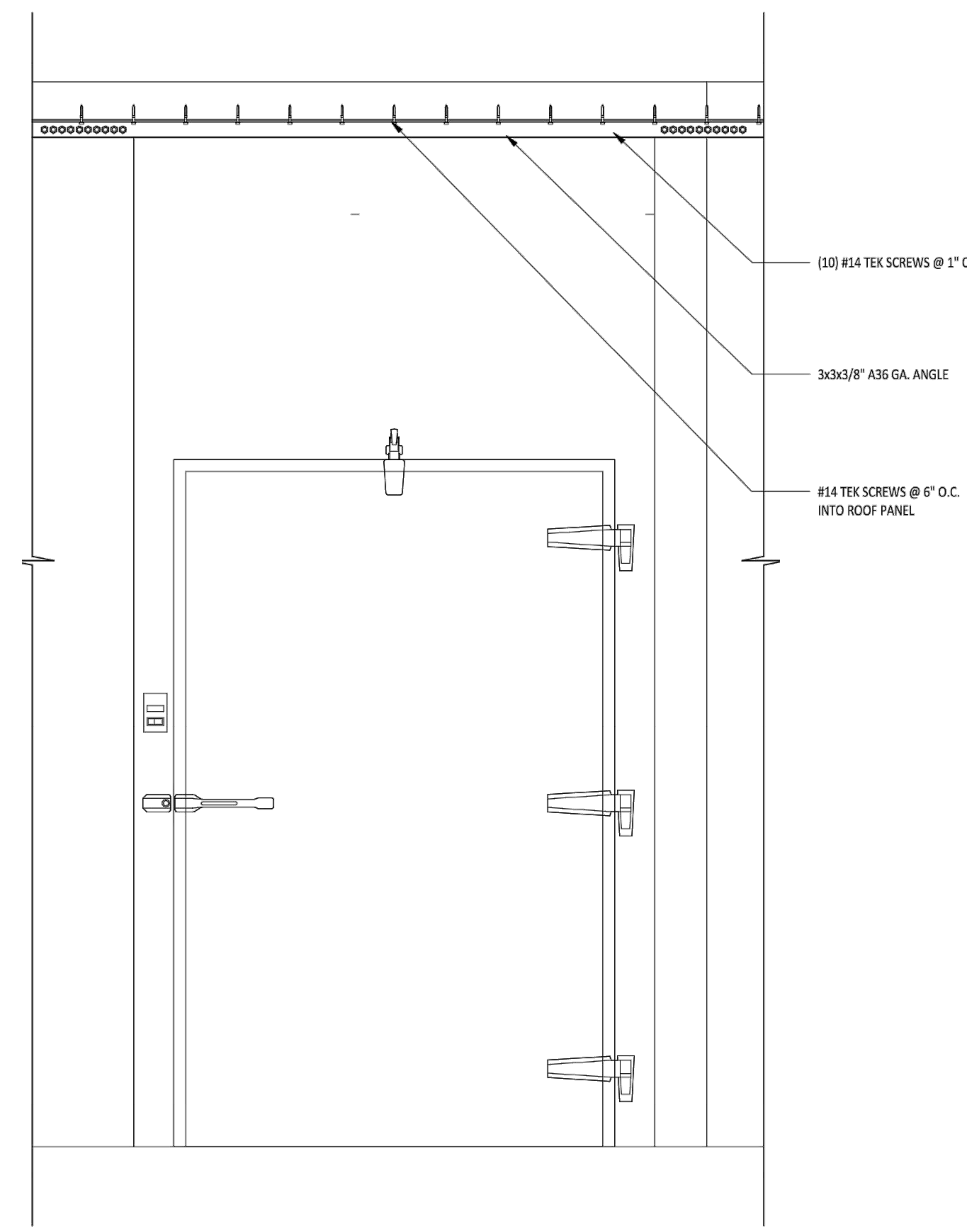
5 MOMENT FRAME
1" = 1'-0"



5A BEAM TO COLUMN CONNECTION
3" = 1'-0"



5B BASE PLATE
3" = 1'-0"



6 HEADER PANEL CONNECTION
1" = 1'-0"

RSG Refrigerated Solutions Group
MASTER-BILT NORLAKE NORLAKE

S 4372
EXP. 12/31/23
STRUCTURAL
STATE OF CALIFORNIA
07/10/23

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symbol	revision	date
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Desmond Middle School

26490 Martin St.
Madera, CA 93638

sheet title:

STRUCTURAL DETAILS

Job No:	22-20651
Dwg Date:	11-23-22
Drawn By:	AJB
Checked By:	DDH

S1.1

MANUFACTURER WALK-IN SPECIFICATIONS
SCALE: AS NOTED
A
MP-5

APPROVALS:
APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

RYAN W. CARLSON
M34146
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA
DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
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MADERA, CA 93638

REVISIONS

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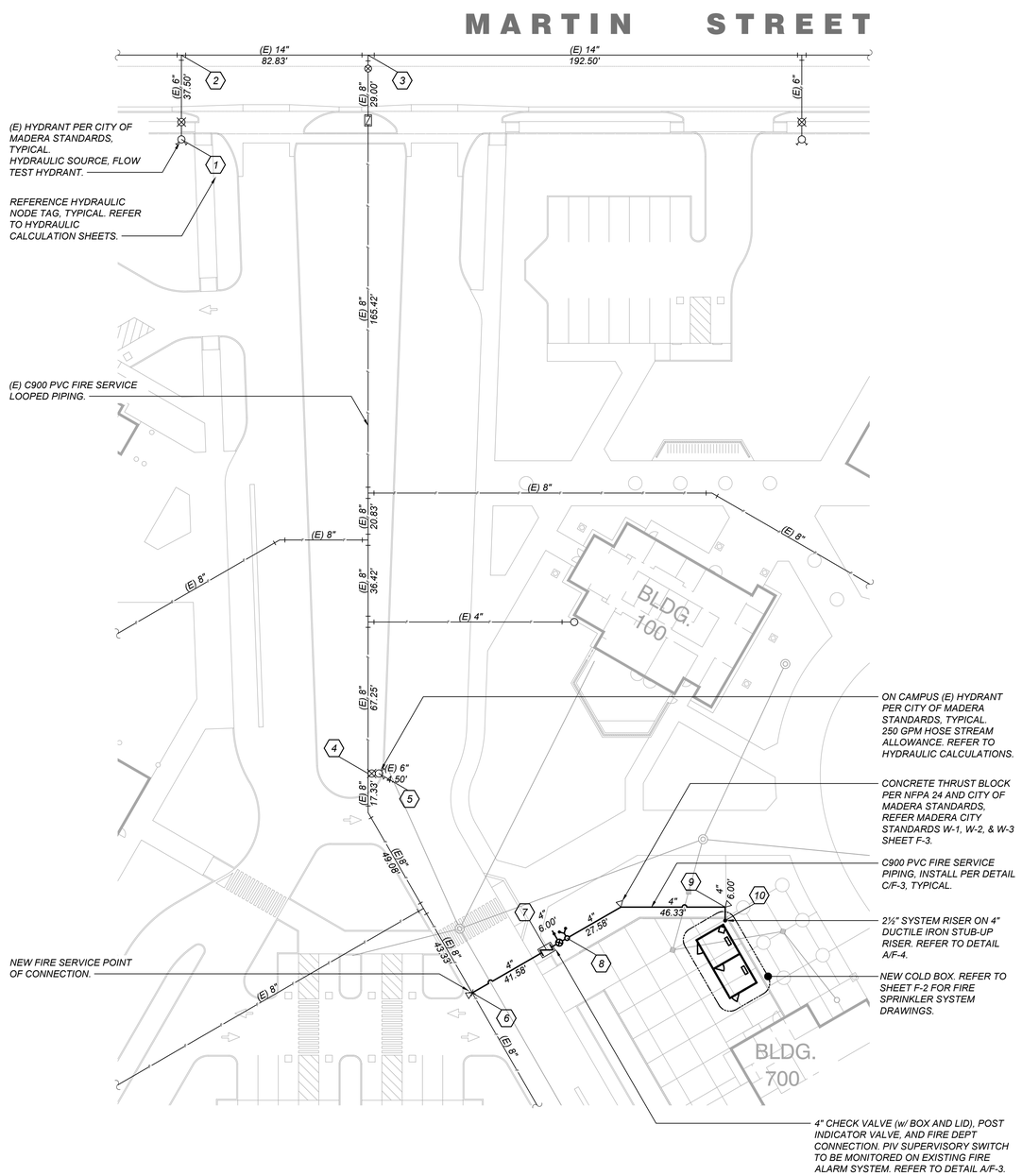
FAX (559) 431-1362

TITLE:
MECHANICAL SPECIFICATIONS

SHEET:
MP-5
PROJECT 21181

13 July 2023 6:17 PM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\4 M\MP-4 ~ MECHANICAL SPECS.dwg anthonyb



FIRE SPRINKLER SITE PLAN

SCALE: 1"=30'-0"

0 30'
SCALE: 1" = 30'

SITE PIPING SPECIFICATIONS

PIPING TO BE AS FOLLOWS:

1. UNDERGROUND SITE PIPING SHALL BE DR14 PVC UPSTREAM OF THE FIRE DEPARTMENT CONNECTION PER LOCAL AUTHORITY HAVING JURISDICTION REQUIREMENTS, AND SHALL BE DR14 PVC DOWNSTREAM OF THE FIRE DEPARTMENT CONNECTION.
2. UNDERGROUND PIPING INSTALLATION TO MEET REQUIREMENTS OF NFPA 13 (2016), NFPA 24 (2016), CBC/CFC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND CITY OF MADERA REQUIREMENTS.
3. ALL PIPE TO BE INSTALLED WITH A 36" MIN. BURY, FROM TOP OF PIPE, OR AS APPLICABLE TO LOCATION, AS PER NFPA 13 (2016), NFPA 24 (2016), CBC/CFC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND CITY OF MADERA REQUIREMENTS.
4. ALL THRUST BLOCKS & RESTRAINING GLANDS TO BE POURED IN PLACE AND SIZED IN ACCORDANCE TO NFPA 13 (2016), NFPA 24 (2016), CBC/CFC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND CITY OF MADERA REQUIREMENTS.
5. UG PIPING RISING UP AT BASE OF RISER SHALL BE A STAINLESS STEEL, SINGLE PIECE IN-BUILDING RISER, LISTED FOR FIRE PROTECTION USE.
6. ALL MECHANICAL JOINT FITTINGS SHALL BE COATED WITH A NON-OXIDIZING, CORROSIVE PROHIBITING COATING, AND WRAPPED WITH 2 MIL POLY WRAP.
7. ALL UG PIPING, COATED / WRAPPED FITTINGS, VALVES, DETECTION WIRE LOCATION AND TYPE, ETC TO BE INSPECTED BY ONSITE IOR BEFORE BACKFILL.
8. PER NFPA 24 §6.2.9(1)(a), THE POST INDICATOR VALVE MINIMUM DISTANCE TO BUILDING SHALL NOT BE LESS THAN THE HEIGHT OF THE EXTERIOR WALL FACING THE POST INDICATOR VALVE OR AS ALLOWED BY THE LOCAL FIRE MARSHAL.

APPLICABLE CODES AND SPECIFICATIONS

THE CONTRACTOR IS RESPONSIBLE TO ADHERE TO ALL APPLICABLE SPECIFICATIONS PERTINENT TO THE PROJECT, INCLUDING:

1. LIST OF APPLICABLE BUILDING CODES & STANDARDS:
   - 1.1. 2019 CBC
   - 1.2. 2019 CFC
   - 1.3. NFPA 13 (CA AMENDED) 2016 EDITION
   - 1.4. NFPA 24 (CA AMENDED) 2016 EDITION
2. CITY OF MADERA STANDARDS AND SPECIFICATIONS.
3. DIVISION OF THE STATE ARCHITECT INFORMATION BULLETINS, INTERPRETATIONS AND ADDENDA.

FLOW TEST

LOCATION: 26490 Martin

DATE: 5 April 2022

INFO

Static: 54 PSI
Residual: 38 PSI
Pitot: 18 PSI

Orifice Size: 4.5-inch

Flow: 1915 GPM

Available Flow at 20 PSI residual pressure: 2877 GPM

Q= (.9)(29.84)(4.5**2)(18**1/2) = 2307 GPM
Reduce value for large orifice (NFPA 291) = 2307 x .83 = 1915

At 20 PSI
Q2 = 1915 x [(54-20) /(54-38)]**.54

Q2 = 1915 x 2.125**.54 = 2877 GPM

Flow test performed, and calculations run by Matthew S. Tarr, FPE

Matthew S. Tarr, FPE
Interim Fire Marshal

GENERAL NOTES

SPRINKLER SYSTEM DESIGNED IN ACCORDANCE WITH NFPA 13 (2016), NFPA 24 (2016), CFC/CBC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND CITY OF MADERA STANDARDS. ALL WORK TO BE DONE IN ACCORDANCE WITH THESE PLANS AND ALL NATIONAL, STATE, AND LOCAL CODES.

THESE DRAWINGS ARE NOT INTENDED TO REFLECT FINAL, COORDINATED (AMONGST THE TRADES), INSTALLATION PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH AND INSTALL ALL ITEMS REQUIRED FOR A COMPLETE ACCEPTABLE WORKING INSTALLATION, WHETHER SHOWN OR NOT SHOWN, APPLICABLE TO ALL CITED CODES AND STANDARDS. IT SHALL BE THE RESPONSIBILITY OF THE SPRINKLER INSTALLATION CONTRACTOR TO COORDINATE WITH ALL TRADES.

CONTRACTOR TO REVIEW FOR BID, SYSTEM PLANS AS DESIGNED BY ENGINEER. ANY ALTERNATE PROPOSED DESIGN CHANGES OR REVISIONS BY CONTRACTOR, ARE TO BE SUBMITTED IN WRITTEN FORMAT, REVIEWED AND RESPONDED TO, BY ENGINEER PRIOR TO BIDDING. AFTER AWARD OF BID, ALL DEVIATIONS FROM THE ORIGINAL DESIGN INTENTION SHALL BE CLOUDED AND NOTED ON CONTRACTOR ISSUED SHOP DRAWINGS TO ENGINEER, WHICH HAVE BEEN COORDINATED AMONGST THE TRADES, FOR REVIEW AND APPROVAL BY ENGINEER. SUBSTANTIAL CHANGES MAY RESULT IN ADDITIONAL REVIEW TIME BY DSA. INSTALLATION OF AN AFSS WILL NOT BE ALLOWED TO BE STARTED WITHOUT DSA APPROVED AND STAMPED PLANS (INCLUDING REVISIONS AND CHANGES) ON SITE FOR INSTALLERS AND PROJECT INSPECTORS TO UTILIZE.

GENERAL CONTRACTOR IS SOLELY RESPONSIBLE FOR INSURING ALL SUB-CONTRACTOR'S COORDINATE SHOP DRAWINGS PRIOR TO ORDERING OR INSTALLATION OF ANY EQUIPMENT, DEVICE, MATERIAL, ETC. SUBMISSION OF SHOP DRAWINGS TO THE ENGINEER CONSTITUTES THAT THE DRAWINGS SUBMITTED HAVE BEEN COORDINATED AMONGST THE TRADES. FAILURE TO COORDINATE ALL SHOP DRAWINGS AMONGST THE TRADES, FOR REVIEW AND APPROVAL BY ENGINEER, WILL NOT CONSTITUTE A CHANGE ORDER TO THE OWNER, FOR UNIDENTIFIED FIELD COORDINATION ISSUES.

ANY DESIGN REVISIONS OR DEVIATIONS THAT ARISE FROM COORDINATION OF INSTALLATION METHODS AND MEANS AMONGST THE TRADES DURING CONSTRUCTION, SHALL BE PROVIDED TO THE ARCHITECT BY RFI, DETAILING COORDINATION ISSUE AND PROPOSED SOLUTION. ONCE REVIEWED AND APPROVED BY ENGINEER, THE DESIGN REVISIONS OR DEVIATIONS SHALL BE COORDINATED IN THE FIELD AMONGST THE IMPACTED TRADES, AND SHOWN ON THE AS-BUILTS. A COMPLETE, ACCURATE SET OF AS-BUILTS SHALL BE MAINTAINED ONSITE DURING CONSTRUCTION, AND ARE TO BE ISSUED TO ARCHITECT AND ENGINEER UPON COMPLETION, INSPECTION, AND TESTING OF INSTALLATION. SUBSTANTIAL CHANGES MAY RESULT IN ADDITIONAL REVIEW TIME BY DSA. MINOR CHANGES (SUCH AS CHANGES IN PRODUCT TYPE OR MANUFACTURER) THAT DO NOT SIGNIFICANTLY AFFECT THE DESIGN CHARACTERISTICS OF THE SYSTEM SHALL BE, AT THE DISCRETION OF THE DSA FIELD ENGINEER, SUBMITTED TO DSA FOR REVIEW AND APPROVAL IN ACCORDANCE WITH IR A-6: CONSTRUCTION CHANGE DOCUMENT SUBMITTAL AND APPROVAL PROCESS.

CONTRACTOR TO PROVIDE THE FOLLOWING:

A. FULLY COORDINATED AMONGST THE TRADES INSTALLATION SHOP DRAWINGS, INCLUDING ALL PIPE CUT LENGTHS, FITTINGS, HANGERS, BRACES, SPRINKLERS WITH LEGEND. HYDRAULIC AND SEISMIC CALCULATIONS, AND PRODUCT SUBMITTAL. INCLUDE CSFM LISTINGS AS APPLICABLE.
B. ELECTRONIC (DIGITAL) SUBMITTAL IN PDF FORMAT, PREPARED IN SINGLE PDF FILE, WITH BOOKMARKS FOR EACH ITEM SUBMITTED. SUBMITTALS NOT CONFORMING TO THIS REQUIREMENT WILL NOT BE REVIEWED.
C. BOUND SUBMITTAL TO INCLUDE COVER PAGE, PIPING, HARDWARE, AND MATERIALS (INCLUDING FIRE STOPPING). COVER PAGE TO INCLUDE PROJECT NAME, SPRINKLER CONTRACTOR, GENERAL CONTRACTOR, ARCHITECT, AND DATE SUBMITTED FOR REVIEW.

ALL ITEMS REQUIRED BY NFPA 13 (2016) CHAPTER 23 (FOR WORKING DRAWINGS) SHALL BE PROVIDED ON THE SHOP DRAWINGS. SUBMITTALS ARE IN ADDITION TO, AND NOT IN LIEU OF THIS REQUIREMENT.

FINAL INSTALLATION SPACING FOR SPRINKLER SYSTEM PIPING AND SPRINKLERS, MAY VARY WITH FIELD COORDINATION ISSUES. ALL VARIANCES TO COMPLY WITH LISTING OF SPRINKLERS, NFPA 13 (2016), CFC/CBC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND FRESNO COUNTY/CAL FIRE REQUIREMENTS. NOTE, SUBSTANTIAL CHANGES MAY RESULT IN ADDITIONAL REVIEW TIME BY DSA - REFER TO PROJECT SPECIFICATIONS.

ALL HANGERS, THREADED ROD, BRACING COMPONENTS AND HARDWARE, SHALL BE HOT DIPPED GALVANIZED - OR FACTORY COATED GALVANIZED - FOR ALL EQUIPMENT AND COMPONENTS IN EXTERIOR APPLICATIONS AND ALL FASTENERS USED (I.E. BOLTS, NUTS & WASHERS, AND ANCHORS) TO BE STAINLESS STEEL.

SPRINKLERS ARE TO BE LOCATED CENTER TILE (OR AS INDICATED) ACCORDING TO INDUSTRY STANDARDS AND PRACTICES.

LOCATION OF SEISMIC BRACING AND HANGERS ARE INTENDED TO SHOW APPROXIMATE LOCATIONS. SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR SHOWING THE EXACT LOCATION OF SEISMIC RESTRAINTS ON SUBMITTED COORDINATED AMONGST THE TRADES SHOP DRAWINGS, AND FINAL AS-BUILTS.

SUBMITTED SHOP DRAWINGS SHALL DESIGNATE THE TYPE AND LOCATION OF EACH BRACE, HANGER OR RESTRAINT, AND SHALL BE ACCOMPANIED BY A DETAIL WITH LEGEND, AND CALCULATIONS (IF APPLICABLE) IN ACCORDANCE WITH NFPA 13 (2016), CFC/CBC (2019), AND THE APPROPRIATE SEISMIC DESIGN CRITERIA FOR THE PROJECT.

ANY SUBSTITUTION OF "FLEXIBLE" TYPE PIPING IN LIEU OF "RIGID" PIPE, OR ANY CHANGES TO SIZE, MANUFACTURER, OR LENGTHS OF "FLEXIBLE" TYPE PIPING WILL REQUIRED RE-SUBMITTAL OF PIPING PLANS, PRODUCT DATA SHEETS, AND HYDRAULIC CALCULATIONS TO DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES (FIRE LIFE SAFETY) FOR REVIEW AND APPROVAL.

SHOP DRAWINGS THAT HAVE NOT BEEN COORDINATED AMONGST THE TRADES UTILIZING THE MOST CURRENT 2D/3D FILES, WILL NOT BE ACCEPTED FOR REVIEW.

SITE UNDERGROUND PLAN NOTES

1. THE UNDERGROUND PIPING NOTED AS EXISTING OR BY OTHERS, IS INTENDED FOR HYDRAULIC CALCULATION OF SPRINKLER SYSTEM REFERENCE ONLY.
2. UG FIRE PIPING INSTALLATION CONTRACTOR SHALL COORDINATE WITH PLUMBING, CIVIL, LANDSCAPE, AND MECHANICAL PIPING PLANS PRIOR TO INSTALLATION.
3. ALL UG PIPE LENGTHS INDICATED ON PLANS REFLECT TOTAL PIPE LENGTH (CENTER TO CENTER) WITH NO TAKEOUT FOR FITTINGS.
4. ALL UNDERGROUND PVC, C-900, OR OTHER PLASTIC PIPING UTILIZED SHALL BE EQUIPPED WITH A SUITABLE MAGNETIC LOCATION TAPE INSTALLED APPROPRIATELY TO THE TOP OF THE PIPING.

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

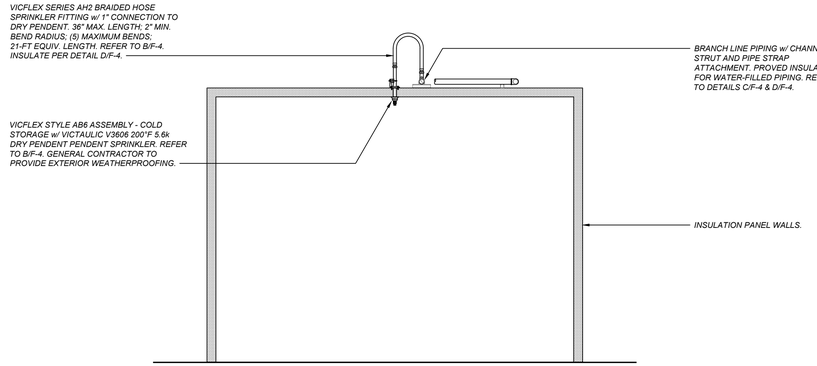
LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1562
4910 E. Clinton Way, Suite 101
(559) 431-9701

TITLE:
FIRE PROTECTION
SITE PLAN

SHEET: F—1

PROJECT 21181

16 March 2023 11:15 AM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\F FV-1 - FIRE SPRINKLER SITE PLAN.dwg bolt



SECTION DRAWING

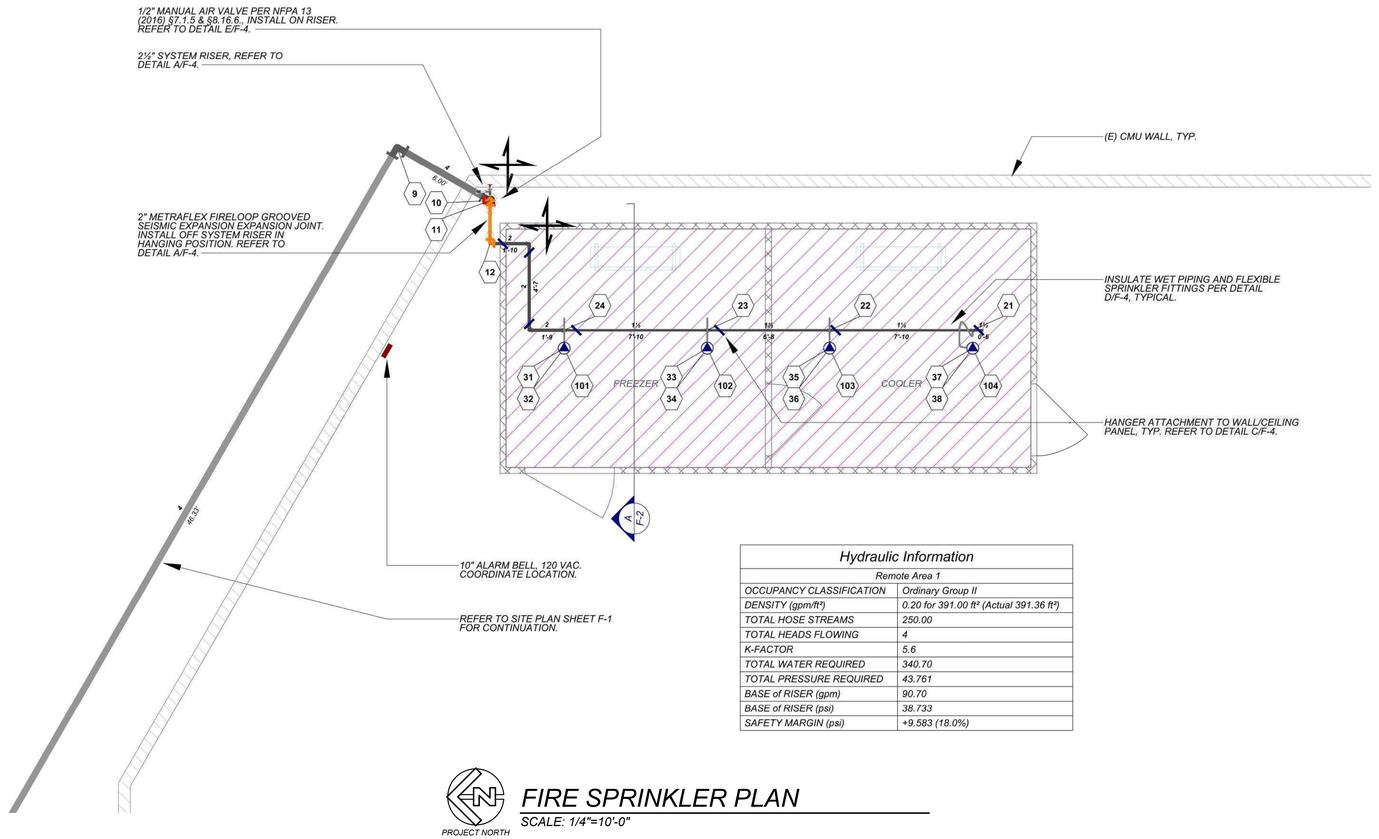
SCALE: NONE

A F-2

FSS101

Sprinkler Legend

Symbol	Manufacturer	SIN	Model	Quantity	K-Factor	Type	Size	Response	Finish	Temperature	Note
▲	Victaulic	V3606	V36	4	5.6	Pendent	1	Quick	Chrome	200 °F	w/ VIC. AB6 BRACKET
				Total = 4							



Hydraulic Information

Remote Area 1	
OCCUPANCY CLASSIFICATION	Ordinary Group II
DENSITY (gpm/ft²)	0.20 for 391.00 ft² (Actual 391.36 ft²)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	4
K-FACTOR	5.6
TOTAL WATER REQUIRED	340.70
TOTAL PRESSURE REQUIRED	43.761
BASE of RISER (gpm)	90.70
BASE of RISER (psi)	38.733
SAFETY MARGIN (psi)	+9.583 (18.0%)

PROJECT NORTH

FIRE SPRINKLER PLAN

SCALE: 1/4"=10'-0"

SPRINKLER SYSTEM NOTES

SPRINKLER SYSTEM DESIGN CRITERIA:

1. SYSTEM SHALL BE DESIGNED TO CONFORM WITH NFPA 13 (2016 CALIFORNIA EDITION), CFC/CBC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND CITY OF MADERA STANDARDS.
2. FIRE SPRINKLER SYSTEM POINT OF CONNECTION SHALL BE AT THE 4" DUCTILE IRON STUB-UP RISER, REFER TO RISER DETAIL A/F-4.
3. SPRINKLER DISCHARGE DENSITY FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH NFPA 13 (2016) §11.2.1.2.4 WITH DENSITY CURVES IN ACCORDANCE WITH FIG. 11.2.3.1.1.
   - 3.1. LIGHT HAZARD OCCUPANCY SHALL INCLUDE ALL OFFICE, CORRIDOR, DINING, CONCEALED ATTIC SPACES, RESTROOMS, AND SIMILAR AREAS. LIGHT HAZARD OCCUPANCY SHALL HAVE A DESIGN DENSITY OF 0.10 GPM/FT² OVER A MINIMUM REMOTE AREA OF 1500 FT². THE MAXIMUM ALLOWABLE PROTECTION AREA OF COVERAGE FOR A SPRINKLER SHALL BE IN ACCORDANCE WITH THE VALUE INDICATED IN TABLE 8.6.2.2.1(a) AND SHALL NOT EXCEED 225FT².
   - 3.2. ORDINARY HAZARD GROUP I (OH1) SHALL FOOD SERVICE AREAS, ELECTRICAL AND MECHANICAL EQUIPMENT ROOMS, PORTE COCHERES, AND SIMILAR AREAS INDICATED IN NFPA 13 (2016) §A.5.3.1. OH1 OCCUPANCY SHALL HAVE A DENSITY OF 0.15GPM/FT² OVER A MINIMUM REMOTE AREA 0F 1500FT². THE MAXIMUM ALLOWABLE PROTECTION AREA OF COVERAGE FOR A SPRINKLER SHALL BE IN ACCORDANCE WITH THE VALUE INDICATED IN TABLE 8.6.2.2.1(b) - 130FT².
   - 3.3. ORDINARY HAZARD GROUP II (OH2) SHALL INCLUDE AUTOMOTIVE WORKSHOP AREAS, SCIENCE LABRATORIES, STAGES, STORAGE ROOMS, SIMILAR AREAS INDICATED IN NFPA 13 (2016) A.5.3.2. OH2 OCCUPANCY SHALL HAVE A DESIGN DENSITY OF 0.20GPM/FT² OVER A MINIMUM REMOTE AREA OF 1500FT². THE MAXIMUM ALLOWABLE PROTECTION AREA OF COVERAGE FOR A SPRINKLER SHALL BE IN ACCORDANCE WITH THE VALUE INDICATED IN TABLE 8.6.2.2.1(b) - 130FT².
4. MAXIMUM SPRINKLER SPACING SHALL NOT EXCEED 15'-0" ON CENTER, UNLESS SPECIFICALLY LISTED BY THE SPRINKLER MANUFACTURER.
5. HOSE STREAM ALLOWANCE GPM FLOW SHALL BE IN ACCORDANCE WITH THE VALUES INDICATED IN TABLE 11.2.3.1.2: LIGHT HAZARD - 100 GPM; ORD HAZARD - 250 GPM.
6. PER NFPA 13 (2016) §11.2.3.2.3.1, WHERE LISTED QUICK-RESPONSE SPRINKLERS ARE USED THROUGHOUT A SYSTEM OR PORTION OF A SYSTEM HAVING THE SAME HYDRAULIC DESIGN BASIS, THE SYSTEM AREA OF OPERATION SHALL BEPERMITTED TO BE REDUCED WITHOUT REVISING THE DENSITY AS INDICATED IN FIG. 11.2.3.2.3.1. NOTE: REMOTE AREA REDUCTION EXCLUDES EXTENDED COVERAGE SPRINKLER HEADS AND ONLY APPLICABLE TO LIGHT HAZARD OCCUPANCY ONLY.
7. PER NFPA 13 (2016) §11.2.3.2.4, THE SYSTEM REMOTE AREA SHALL BE INCREASED BY 30% WITHOUT REVISING THE DENSITY WHEN SPRAY SPRINKLERS AND CMSA SPRINKLERS ARE USED ON SLOPED CEILINGS WITH A PITCH EXCEEDING 1 IN 6 (A RISE OF 2 UNITS IN A RUN OF 12 UNITS) IN NON-STORAGE APPLICATIONS.
8. PER NFPA 13 (2016) §11.2.3.2.7.1, MULTIPLE ADJUSTMENTS CAN BE MADE TO THE REMOTE AREA WHEN BOTH QUICK RESPONSE SPRINKLER AREA REDUCTIONS AND SLOPED CEILING AREA INCREASE ARE APPLICABLE.
9. THE HYDRAULIC CALCULATION SOURCE SHALL BE TO THE FLOW TEST HYDRANT OR APPLICABLE STREET CONNECTION, ACCORDING TO LOCAL FIRE PREVENTION DISTRICT WATER CURVE DETERMINATIONS AND OR TESTING PROCEDURES. REFER TO SITE PLAN AND HYDRAULIC CALCULATIONS.
10. STORAGE HEIGHT SHALL NOT EXCEED 8-FEET.
11. MICROBIAL INDUCED CORROSION WILL NOT BE A FACTOR FOR THIS SYSTEM.
12. THE FIRE SPRINKLER ALARM SYSTEM SHALL BE DESIGNED, INSTALLED AND PERMITTED BY OTHERS, AND IS NOT IN THE SCOPE OF WORK. SUPERVISORY FLOW DETECTORS AND TAMPER RESISTANT VALVES INSTALLED ON THE OVERHEAD SPRINKLER SYSTEM PIPING WILL BE SUPPLIED AND INSTALLED BY FIRE SPRINKLER CONTRACTOR AND WIRED BY ALARM CONTRACTOR.
13. PER PROJECT SPECIFICATIONS, IF DESIGN OR MATERIALS DIFFER FROM THAT SPECIFIED HEREIN, SUPPLEMENTAL ENGINEERING DESIGN, SUBMITTAL, AND REVIEW SHALL BE REQUIRED.

GENERAL INSTALLATION REQUIREMENTS:

1. OVERHEAD FIRE SPRINKLER PIPING SHALL BE AS FOLLOWS (UNLESS NOTED OTHERWISE ON PLANS):
   - 1.1. PIPING 2-1/2" AND LARGER SHALL BE SCH. 10 BLACK STEEL WITH ROLLED GROOVED FITTINGS, RISER TO BE SCH.10 GALVANIZED STEEL PIPE.
   - 1.2. PIPING 2" AND LESS SHALL BE SCH. 40 BLACK STEEL.
   - 1.3. DRAINAGE PIPING 2" OR SMALLER, DOWNSTREAM OF THE DRAIN VALVE SHALL BE SCH. 40 GALVANIZED PIPE WITH GALVANIZED FITTINGS.
2. WHERE APPLICABLE IN UNOBSTRUCTION CONSTRUCTION CONDITIONS (AS DEFINED PER NFPA 13 §3.7.2); PER NFPA 13 (2016) §8.6.4.1.1, THE DISTANCE BETWEEN THE SPRINKLER DEFLECTOR AND THE CEILING SHALL BE A MINIMUM OF 1-INCH AND A MAXIMUM OF 12-INCHES THROUGHOUT THE AREA OF COVERAGE OF THE SPRINKLER.
3. WHERE APPLICABLE IN OBSTRUCTION CONSTRUCTION CONDITIONS (AS DEFINED PER NFPA 13 §3.7.1); PER NFPA 13 (2016) §8.6.4.1.2, SPRINKLER DEFLECTORS SHALL BE INSTALLED WITH THE DEFLECTORS WITHIN THE HORIZONTAL PLANES OF 1-INCH TO 6-INCHES BELOW THE STRUCTURAL MEMBERS AND A MAXIMUM DISTANCE OF 22-INCHES FROM THE CEILING/ROOF DECK.
4. PER NFPA 13 (2016) §8.5.4.2 DEFLECTORS OF SPRINKLERS SHALL BE ALIGNED PARALLEL TO CEILINGS, ROOFS, OR THE INCLINE OF STAIRS.
5. PER NFPA 13 (2016) 8.15.7.2 SPRINKLERS SHALL BE PERMITTED TO BE OMITTED WHERE THE EXTERIOR CANOPIES, ROOFS, PORTE-COCHERES, BALCONIES, DECKS, AND SIMILAR PROJECTIONS ARE CONSTRUCTED WITH MATERIALS THAT ARE NONCOMBUSTIBLE.
6. CAGE-TYPE SPRINKLER HEAD GUARDS SHALL BE INSTALLED TO PROTECT ALL SPRINKLERS SUBJECT TO MECHANICAL DAMAGE, INCLUDING ALL NON-CONCEALED PENDENT SPRINKLER BELOW 8-FEET ABOVE FINISH FLOOR OR EXPOSED UPRIGHTS AND PENDENT SPRINKLER INSTALLED DIRECTLY ON PIPING WITHIN A GYMNASIUM AREA.
7. ALL HANGERS, BRACES, AND RESTRAINTS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13 (2016 CALIFORNIA EDITION), CBC/CFC (2019), DIVISION OF THE STATE ARCHITECT - DEPARTMENT OF GENERAL SERVICES, AND CITY OF MADERA STANDARDS.

APPROVALS:

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REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
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TITLE: FIRE SPRINKLER PLAN

SHEET: F – 2

PROJECT 21181

16 March 2023 11:15 AM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\6 F\F-2 – FIRE SPRINKLER PLAN.dwg bolt

NOTES

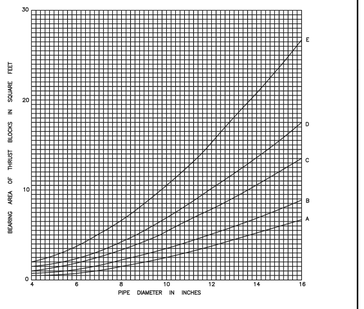
1. Horizonal thrust at fittings are based on 150 psi of water pressure.
2. Values from curves are for tees and dead ends, i.e. straight line thrust. For other fittings, multiply the bearing area obtained from curves by the following factors:

   For 90° Bend, 1.4
   For 45° Bend, 0.8
   For 22½° Bend, 0.4

3. Safe bearing loads on undisturbed soil are as follows:

   Curve A = 4,000 psf, Massive crystalline bedrock.
   Curve B = 3,000 psf, Sedimentary and foliated bedrock.
   Curve C = 2,000 psf, Sandy gravel and/or gravel.
   Curve D = 1,500 psf, Sand, silty sand or gravel and clayey sand or gravel.
   Curve E = 1,000 psf, Clay, sandy clay, silty clay, and clayey silt.

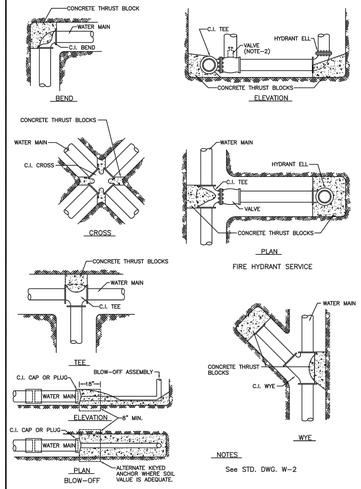
4. Thrust blocks for conditions not covered by curves shall be approved by the County Engineer.



THRUST BLOCK
BEARING AREA

REF. & REV. MARCH 2005

CITY OF MADERA
W-3



NOTES

See STD. DWG. W-2

CONCRETE THRUST BLOCKS
FOR
CAST IRON FITTINGS

REF. & REV. MARCH 2005

CITY OF MADERA
W-1

CONCRETE THRUST BLOCKS
FOR
CAST IRON FITTINGS

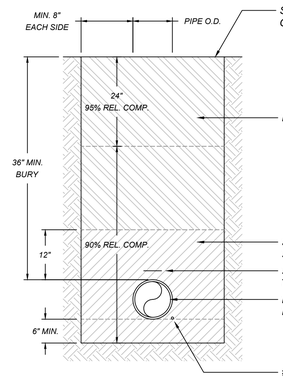
NOTES

1. Where PVC pipe is used, tie-down straps shall be provided, embedded in thrust blocks, design of such straps to be subject to approval or requirement of City Engineer.
2. Valves are to be flanged connected to all main lines. All other connections to be slip-joint, unless otherwise specified.
3. Locations for new valves to be determined and approved prior to installation.
4. Bearing area for thrust blocks shall depend on pressure and pipe size. For bearing areas see W-3.
5. All concrete for thrust blocks shall be Class B.
6. C.I. denotes cast iron.
7. Concrete anchors are to be kept clear of all pipe and valve joints.
8. Thrust blocks to be used where pipe sizes differ in cross section and when one or more openings are plugged.
9. For fire hydrant services, see W-26.
10. All dead end lines shall have blow-off assemblies.

CONCRETE THRUST BLOCKS
FOR
CAST IRON FITTINGS

REF. & REV. MARCH 2005 MAY 2007 NOV. 2013

CITY OF MADERA
W-2



INSTALLATION NOTES:

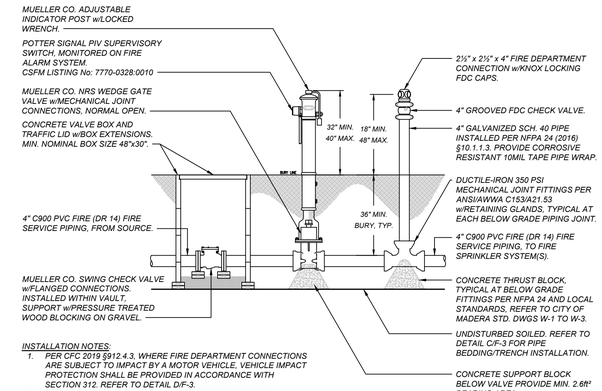
1. *TRACER WIRE SHALL BE #12 AWG, SINGLE STRAND, SOFT DRAWN, UN-INSULATED COPPER WIRE. THERE SHALL BE LAID ALONG THE BOTTOM OF THE TRENCH ADJACENT TO THE PIPE. ALL TRACER WIRE SHALL BE CONTINUOUS VALVE BOXES.*
2. *TRACER WIRE SHALL BE INSULATED ADJACENT TO VALVES OR FITTINGS. SPLICING OF TRACER WIRES SHALL BE ACCOMPLISHED BY WRAPPING THE BARE ENDS OF THE WIRE TOGETHER. SOLDERING THE CONNECTION AND WRAPPING THE SOLDERED CONNECTION WITH ELECTRICAL TAPE.*
3. *MINIMUM COVER SHALL BE 36" FROM TOP OF PIPE TO FINISHED GRADE. MAXIMUM COVER SHALL BE 42" FROM FINISHED GRADE UNLESS OTHERWISE APPROVED.*
4. *PIPES SHALL BE THROUGHOUT THEIR FULL LENGTH AND SHALL NOT BE SUPPORTED BY THE BELL ENDS ONLY OR BY BLOCKS.*
5. *BACKFILL SHALL NOT BE DROPPED DIRECTLY ON THE PIPE. BACKFILL PLACED WITHIN 6-INCHES OF THE PIPE SHALL BE FREE FROM HEAVY GRAVEL OR STONES GREATER THAN 3-INCHES.*
6. *THE PIPE SHALL NOT BE DISPLACED FROM ALIGNMENT DURING THE BACKFILLING OPERATION.*
7. *BACKFILL SHALL BE PLACED AT APPROXIMATELY THE SAME ELEVATION ON BOTH SIDES OF THE PIPE.*
8. *MATERIALS USED FOR BACKFILL AND COMPACTION SHALL CONFORM TO SOILS REPORT REQUIREMENTS.*

PIPE TRENCH DETAIL

SCALE: NONE

FSS101

C
F-3



INSTALLATION NOTES:

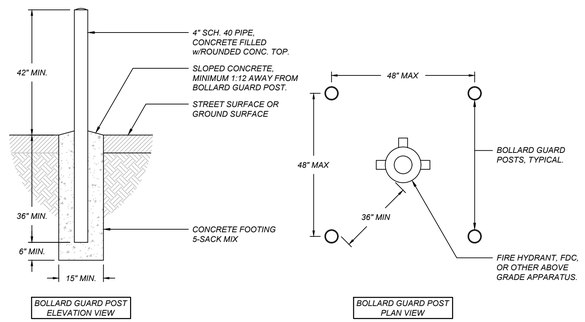
1. *PER CFC 2019 §912.4.3, WHERE FIRE DEPARTMENT CONNECTIONS ARE SUBJECT TO IMPACT BY A MOTOR VEHICLE, VEHICLE IMPACT PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 312. REFER TO DETAIL D/F-3.*
2. *PER NFPA 13 (2016) TABLE A.6.9 & CFC §912.5 SIGNAGE OF APPARATUS SHALL HAVE IDENTIFICATION SIGNAGE, REFER TO DETAIL B/F-3.*

CHECK VALVE - POST INDICATOR - FDC ASSEMBLY

SCALE: NONE

FSS101

A
F-3



INSTALLATION NOTES:

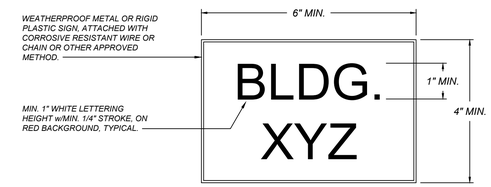
A. *BOLLARD GUARD POSTS SHALL BE INSTALLED IN ACCORDANCE TO CFC 2019 §312.2. GUARD POSTS SHALL BE CONSTRUCTED OF STEEL NOT LESS THAN 4-INCHES IN DIAMETER AND CONCRETE FILLED.*
B. *STEEL POSTS SHALL BE PAINTED WITH A CORROSIVE PROTECTIVE ENAMEL PAINT FINISH. COLOR SHALL BE SPECIFIED BY THE ARCHITECT.*

PROTECTIVE BOLLARD DETAIL

SCALE: NONE

FSS101

D
F-3



INSTALLATION NOTES:

A. *PER NFPA 13 (2016) TABLE A.6.9 SPRINKLER SYSTEM SIGNAGE SUMMARY, SYSTEM CONTROL VALVES AND FIRE DEPARTMENT CONNECTIONS SHALL HAVE IDENTIFICATION SIGNAGE. IDENTIFICATION SIGNS SHALL BE INSTALLED AT A MINIMUM 18" ABOVE FINISH GRADE MEASURED FROM THE BOTTOM EDGE OF THE SIGN.*
B. *PER NFPA 13 (2016) §8.16.1.1.8 IDENTIFICATION SIGNS ON CONTROL VALVES SHALL BE PROVIDED AT EACH VALVE TO INDICATE ITS FUNCTION AND WHAT IT CONTROLS.*
C. *PER NFPA 13 (2016) §8.17.2.4.7 (CFC 2019 §912.5) EACH FIRE DEPARTMENT CONNECTION TO SPRINKLER SYSTEMS SHALL BE DESIGNATED BY A SIGN HAVING RAISED OR ENGRAVED LETTERS AT LEAST 1-INCH IN HEIGHT ON PLATE OR FITTING READING SERVICE DESIGN.*
D. *WHEN SYSTEM DEMANDS ARE GREATER THAN 150PSI, THE SIGN SHALL INDICATE THE PRESSURE REQUIRED AT THE INLETS TO DELIVER THE GREATEST SYSTEM DEMAND.*
E. *WHERE LOCAL JURISDICTION REQUIRES ADDRESS OR BUILDING IDENTIFICATION ON POST INDICATOR VALVES AND/OR FIRE DEPARTMENT CONNECTIONS, IDENTIFICATION MARKING CAN BE PAINTED DIRECTLY ON THE APPARATUS IN LIEU OF SIGNAGE. VERIFY REQUIREMENT WITH LOCAL JURISDICTION REGARDING MINIMUM LETTERING HEIGHT AND PAINT COLOR REQUIREMENTS.*

SITE APPARATUS SIGNAGE

SCALE: NONE

FSS101

B
F-3

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SITE PLAN

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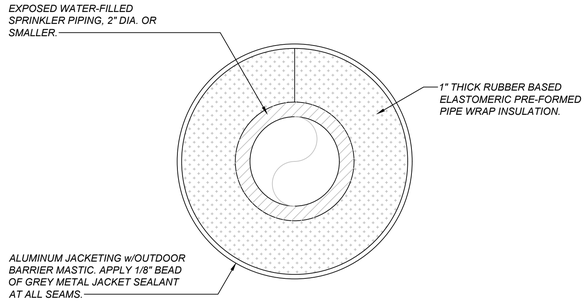
PROJECT 21181



INSTALLATION NOTES:

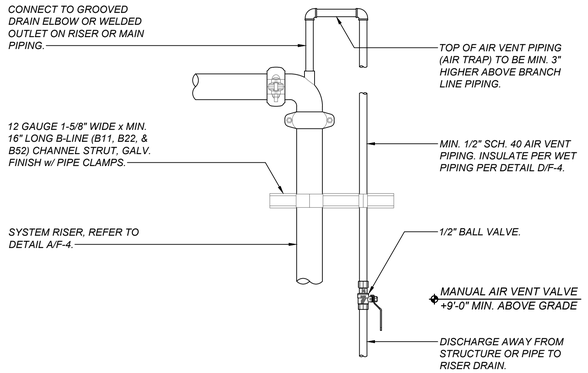
1. ALL WATER-FILLED SPRINKLER SYSTEM PIPING EXPOSED TO EXTERIOR SHALL BE INSULATED WITH 1" THICK RUBBER BASED ELASTOMERIC PRE-FORMED PIPE INSULATION.
2. ALL-WEATHER ALUMINUM PIPE AND FITTING JACKETING SHALL BE APPLIED OVER PIPE INSULATION w/PRE-FABRICATED ALUMINUM STRAPPING AND SEALS BY THE SAME MANUFACTURER.
3. ALUMINUM JACKETING SHALL BE SEALED WITH OUTDOOR BARRIER MASTIC. 1/8" BEAD OF GREY METAL JACKET SEALANT SHALL BE APPLIED AT ALL SEAMS.

PIPING INSULATION DETAIL

SCALE: NONE

FSS006

D / F-4

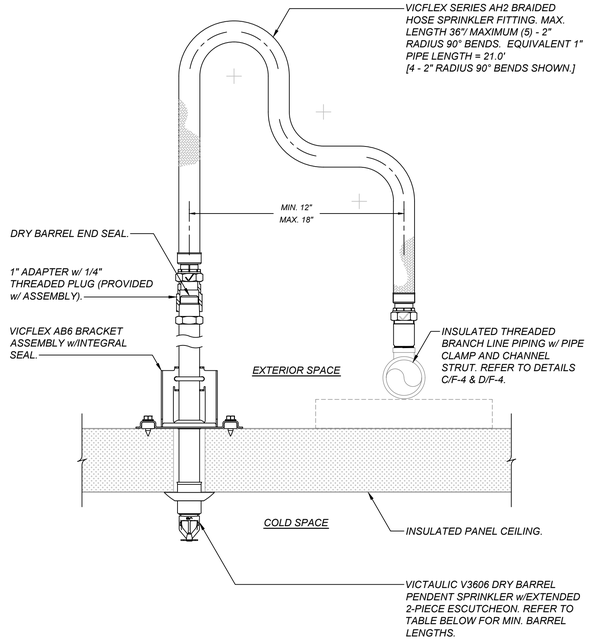


MANUAL AIR VENT VALVE AT RISER

SCALE: NONE

FSSXXX

E / F-4



DRY SPRINKLER BARREL LENGTH SELECTION		
AMBIENT TEMP. EXPOSED TO DISCHARGE END OF SPRINKLER	FREEZER CEILING OR WALL THICKNESS	ORDER LENGTH
DOWN TO 20°F	3"- 6"	12"
	7"- 12"	18"
19°F TO 0°F	3"- 6"	18"
	7"- 12"	24"
-1°F TO -20°F	3"- 6"	24"
	7"- 12"	30"
-31°F TO -40°F	3"- 6"	24"
	7"- 12"	30"

INSTALLATION NOTES:

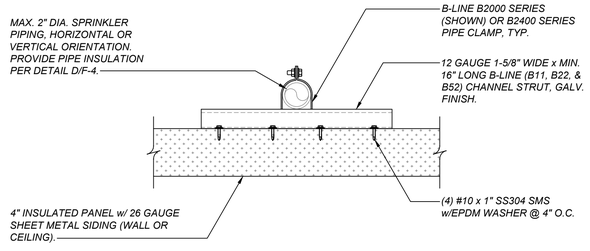
A. INSTALLATION OF DRY PENDENT SPRINKLER ASSEMBLY SHALL BE IN ACCORDANCE TO MANUFACTURER INSTRUCTIONS AND NFPA 13 REQUIREMENTS.
B. MIN 1-1/2" / MAX. 2-1/4" HOLE REQUIRED FOR INSTALLATION OF PENDENT SPRINKLER. DE-BURR METAL EDGES ON BOTH SIDES PANEL.
C. TERMINATE 1" SCH. 40 DROP APPROX. 30" ABOVE INSULATED CEILING PANEL.

VICFLEX FLEXIBLE SPRINKLER DROP w/ VICTAULIC DRY BARREL PENDENT SPRINKLER

SCALE: NONE

FSSXXX

B / F-4



8-FEET MAXIMUM HANGER SPACING

SYMBOL

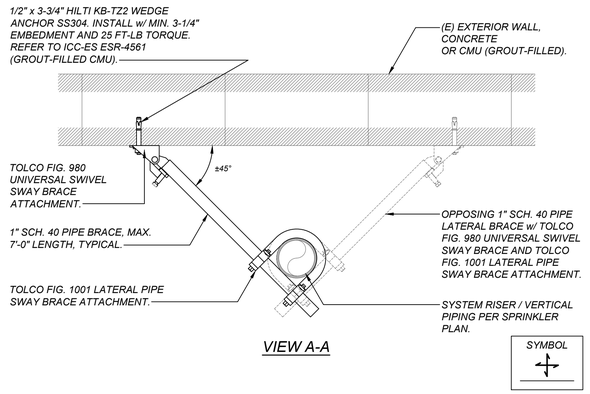
SYMBOL

CHANNEL STRUCT ATTACHMENT TO 4" INSULATED WALL/CEILING PANEL

SCALE: NONE

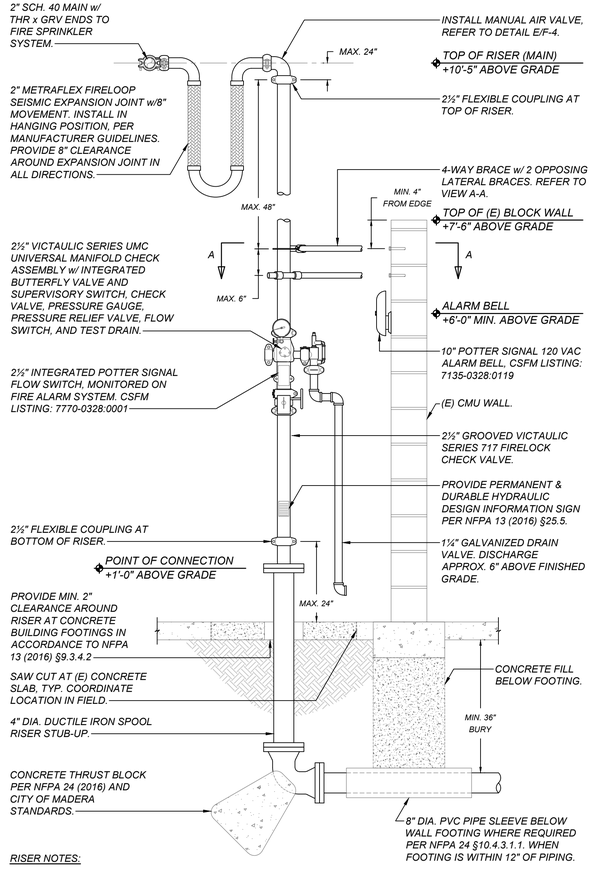
FSS102

C / F-4



VIEW A-A

SYMBOL



RISER NOTES:

1. EACH RISER DETAIL IS A SCHEMATIC REPRESENTATION OF THE RISER(S), ORIENTATION OF FITTINGS, VALVES, GAUGES, AND OTHER DEVICES HAVE BEEN MODIFIED FOR ILLUSTRATION PURPOSES AND MAY VARY IN ACTUAL INSTALLATION.
2. PER NFPA 13 (2016) §9.3.2.3.1 - A FLEXIBLE COUPLING SHALL BE INSTALLED WITHIN 24" OF THE TOP AND BOTTOM OF ALL RISERS. RISERS LESS THAN 3 FT IN LENGTH MAY OMIT FLEX COUPLINGS. ONE FLEX COUPLING IS ADEQUATE FOR RISERS 3' TO 7' IN LENGTH.
3. PER NFPA 13 (2016) §9.3.5.8.3 - WHEN A FOUR-WAY BRACE AT THE TOP OF A RISER IS ATTACHED ON THE HORIZONTAL PIPING, IT SHALL BE WITHIN 24" OF THE CENTERLINE OF THE RISER AND THE LOADS FOR THAT BRACE SHALL INCLUDE BOTH THE VERTICAL AND HORIZONTAL PIPE.
4. PER NFPA 13 (2016) §25.5. - THE INSTALLING CONTRACTOR SHALL IDENTIFY A HYDRAULICALLY DESIGNED SPRINKLER SYSTEM WITH A PERMANENTLY MARKED WEATHERPROOF METAL OR RIGID PLASTIC SIGN SECURED WITH CORROSION RESISTANT WIRE, CHAIN, OR OTHER APPROVED MEANS.
5. PER NFPA 13 (2016) §25.6.1 - THE INSTALLING CONTRACTOR SHALL PROVIDE A GENERAL INFORMATION SIGN USED TO DETERMINE SYSTEM DESIGN BASIS AND INFORMATION RELEVANT TO THE INSPECTION, TESTING, AND MAINTENANCE REQUIREMENTS REQUIRED BY NFPA 25.
6. LOCATION OF 1¼" SYSTEM DRAIN TO BE COORDINATED WITH GENERAL CONTRACTOR. DRAIN PIPE AND FITTINGS SHALL BE GALV.

RISER DETAIL: 2½" SYSTEM RISER ON 4" DUCTILE IRON STUB-UP

SCALE: NONE

FSSXXX

A / F-4

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TITLE:
FIRE PROTECTION
SITE PLAN

SHEET: F—4

PROJECT 21181

16 March 2023 11:15 AM P:\2021\21181 Madera USD Desmond MS Cold Box Addition\4-Drawings\6 F\F-4 - INSTALLATION AND STRUCTURAL DETAILS.dwg bolt

SECTION 21 05 00 - GENERAL PROVISIONS FOR FIRE SPRINKLERS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS:

A. THE PRECEDING GENERAL AND SPECIAL CONDITIONS AND DIVISION 1 REQUIREMENTS SHALL FORM A PART OF THIS SECTION WITH THE SAME FORCE AND EFFECT AS THOUGH REPEATED HERE. THE PROVISIONS OF THIS SECTION SHALL APPLY TO ALL OF THE FOLLOWING SECTIONS OF DIVISION 21 OF THESE SPECIFICATIONS AND SHALL BE CONSIDERED A PART OF THESE SECTIONS.

1.2 CODES AND REGULATIONS:

A. ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH CURRENT RULES AND REGULATIONS OF ALL APPLICABLE CODES. NOTHING IN THESE DRAWINGS OR SPECIFICATIONS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. SHOULD THE DRAWINGS OR SPECIFICATIONS CALL FOR MATERIAL OR METHODS OF CONSTRUCTION OF A HIGHER QUALITY OR STANDARD THAN REQUIRED BY THESE CODES, THE DRAWINGS AND SPECIFICATIONS SHALL GOVERN. APPLICABLE CODES AND REGULATIONS INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO, THE FOLLOWING:

1. CALIFORNIA CODE OF REGULATIONS (CCR):
    a. TITLE 8, INDUSTRIAL RELATIONS
    b. TITLE 24, PART 1, ADMINISTRATIVE REGULATIONS
    c. TITLE 24, PART 11, CALIFORNIA GREEN BUILDING CODE, 2019 EDITION
2. CALIFORNIA BUILDING CODE - CBC - 2019
3. CALIFORNIA FIRE CODE - CFC - 2019
4. CALIFORNIA ELECTRICAL CODE - CEC - 2019
5. AMERICAN NATIONAL STANDARDS INSTITUTE _ ANSI
6. AMERICAN SOCIETY OF MECHANICAL ENGINEERS _ ASME
7. AMERICAN SOCIETY FOR TESTING AND MATERIALS _ ASTM
8. AMERICAN WATER WORKS ASSOCIATION _ AWWA
9. NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION _ NEMA
10. NATIONAL FIRE PROTECTION ASSOCIATION _ NFPA
11. NATIONAL SANITATION FOUNDATION _ NSF
12. OCCUPATIONAL SAFETY AND HEALTH ACT _ OSHA
13. PLUMBING AND DRAINAGE INSTITUTE _ PDI
14. SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION _ SMACNA
15. UNDERWRITERS' LABORATORY _ UL

1.3 PERMITS AND FEES:

A. THE CONTRACTOR SHALL TAKE OUT ALL PERMITS AND ARRANGE FOR ALL TESTS IN CONNECTION WITH HIS WORK AS REQUIRED. ALL CHARGES ARE TO BE INCLUDED IN THE WORK.

1.4 COORDINATION OF WORK:

A. LAYOUT OF MATERIALS, EQUIPMENT AND SYSTEMS IS GENERALLY DIAGRAMMATIC UNLESS SPECIFICALLY DIMENSIONED. SOME WORK MAY BE SHOWN OFFSET FOR CLARITY. THE ACTUAL LOCATIONS OF ALL MATERIALS, PIPING, DUCTWORK, FIXTURES, EQUIPMENT, SUPPORTS, ETC. SHALL BE CAREFULLY PLANNED PRIOR TO INSTALLATION OF ANY WORK IN ORDER TO AVOID ALL INTERFERENCE WITH EACH OTHER, OR WITH STRUCTURAL, ELECTRICAL, ARCHITECTURAL OR OTHER ELEMENTS. VERIFY THE PROPER VOLTAGE AND PHASE OF ALL EQUIPMENT WITH THE ELECTRICAL PLANS. IF DISCREPANCIES ARE DISCOVERED BETWEEN DRAWING AND SPECIFICATION REQUIREMENTS, THE MORE STRINGENT REQUIREMENT SHALL APPLY. ALL CONFLICTS SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT AND THE ENGINEER PRIOR TO THE INSTALLATION OF ANY WORK OR THE ORDERING OF ANY EQUIPMENT. NO WORK SHALL BE PREFABRICATED OR INSTALLED PRIOR TO THIS COORDINATION. NO COSTS WILL BE ALLOWED TO THE CONTRACTOR FOR ANY PREFABRICATION OR INSTALLATION PERFORMED PRIOR TO THIS COORDINATION.

1.5 GUARANTEE:

A. GUARANTEE SHALL BE IN ACCORDANCE WITH THE GENERAL CONDITIONS. THESE SPECIFICATIONS MAY EXTEND THE PERIOD OF THE GUARANTEE FOR CERTAIN ITEMS. WHERE SUCH EXTENSIONS ARE CALLED FOR, OR WHERE ITEMS ARE NORMALLY PROVIDED WITH GUARANTEE PERIODS IN EXCESS OF THAT CALLED FOR IN THE GENERAL CONDITIONS, THE CERTIFICATE OF GUARANTEE SHALL BE FURNISHED TO THE OWNER THROUGH THE ARCHITECT.

1.6 QUIETNESS:

A. PIPING AND EQUIPMENT SHALL BE ARRANGED AND SUPPORTED SO THAT VIBRATION IS A MINIMUM AND IS NOT TRANSMITTED TO THE STRUCTURE.

1.7 DAMAGES BY LEAKS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES CAUSED BY LEAKS IN THE TEMPORARY OR PERMANENT PIPING SYSTEMS PRIOR TO COMPLETION OF WORK AND DURING THE PERIOD OF THE GUARANTEE, AND FOR DAMAGES CAUSED BY DISCONNECTED PIPES OR FITTINGS, AND THE OVERFLOW OF EQUIPMENT PRIOR TO COMPLETION OF THE WORK.

1.8 EXAMINATION OF SITE:

A. THE CONTRACTOR SHALL EXAMINE THE SITE, COMPARE IT WITH PLANS AND SPECIFICATIONS, AND SHALL HAVE SATISFIED HIMSELF AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. NO ALLOWANCE SHALL SUBSEQUENTLY BE MADE IN HIS BEHALF FOR ANY EXTRA EXPENSE TO WHICH HE MAY BE PUT DUE TO FAILURE OR NEGLECT ON HIS PART TO MAKE SUCH AN EXAMINATION.

1.9 MATERIALS AND EQUIPMENT:

A. MATERIALS AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED. MATERIALS AND EQUIPMENT OF A GIVEN TYPE SHALL BE BY THE SAME MANUFACTURER. MATERIALS AND EQUIPMENT SHALL BE FREE OF DENTS, SCRATCHES, MARKS, SHIPPING TAGS AND ALL DEFACING FEATURES AT TIME OF PROJECT ACCEPTANCE. MATERIALS AND EQUIPMENT SHALL BE COVERED OR OTHERWISE PROTECTED DURING CONSTRUCTION AS REQUIRED TO MAINTAIN THE MATERIAL AND EQUIPMENT IN NEW FACTORY CONDITION UNTIL PROJECT ACCEPTANCE.

1.10 SUBMITTALS:

A. SHOP DRAWINGS: WITHIN 30 DAYS OF CONTRACT AWARD, THE CONTRACTOR SHALL SUBMIT SIX COPIES OF SHOP DRAWINGS FOR ALL MATERIALS, EQUIPMENT, ETC. PROPOSED FOR USE ON THIS PROJECT. MATERIAL OR EQUIPMENT SHALL NOT BE ORDERED OR INSTALLED UNTIL WRITTEN REVIEW IS PROCESSED BY THE ENGINEER. ANY ITEM OMITTED FROM THE SUBMITTAL SHALL BE PROVIDED AS SPECIFIED WITHOUT SUBSTITUTION.
ALL SHOP DRAWINGS MUST COMPLY WITH THE FOLLOWING:

1. SHOP DRAWINGS ARE REQUIRED FOR ALL MATERIAL AND EQUIPMENT ITEMS AND SHALL INCLUDE MANUFACTURER'S NAME AND CATALOG NUMBERS, DIMENSIONS, CAPACITIES, PERFORMANCE CURVES, AND ALL OTHER CHARACTERISTICS AND ACCESSORIES AS LISTED IN THE SPECIFICATIONS OR ON THE DRAWINGS. DESCRIPTIVE LITERATURE SHALL BE CURRENT FACTORY BROCHURES AND SUBMITTAL SHEETS. CAPACITIES SHALL BE CERTIFIED BY THE FACTORY. FAX SUBMITTALS ARE NOT ACCEPTABLE.
2. ALL SHOP DRAWINGS SHALL BE SUBMITTED AT ONE TIME IN A NEAT AND ORDERLY FASHION IN A SUITABLE BINDER WITH TITLE SHEET INCLUDING PROJECT, ENGINEER AND CONTRACTOR, TABLE OF CONTENTS, AND INDEXED TABS DIVIDING EACH GROUP OF MATERIALS OR ITEM OF EQUIPMENT. ALL ITEMS SHALL BE IDENTIFIED BY THE SPECIFICATION PARAGRAPH NUMBER FOR WHICH THEY ARE PROPOSED. ALL EQUIPMENT SHALL ALSO BE IDENTIFIED BY THE MARK NUMBER AS INDICATED ON DRAWINGS.
3. ALL CAPACITIES, CHARACTERISTICS, AND ACCESSORIES CALLED FOR IN THE SPECIFICATIONS OR ON THE DRAWINGS SHALL BE HIGH_LIGHTED, CIRCLED OR UNDERLINED ON THE SHOP DRAWINGS. CALCULATIONS AND OTHER DETAILED DATA INDICATING HOW THE ITEM WAS SELECTED SHALL BE INCLUDED FOR ITEMS THAT ARE NOT SCHEDULED. DATA MUST BE COMPLETE ENOUGH TO PERMIT DETAILED COMPARISON OF EVERY SIGNIFICANT CHARACTERISTIC WHICH IS SPECIFIED, SCHEDULED OR DETAILED.
4. DRAWINGS SHALL BE SUBMITTED IN BOTH HARD COPY AND ELECTRONIC FORM, ELECTRONIC FILES SHALL BE IN THEIR NATIVE FORMAT (I.E. DWG FOR AUTOCAD, RVT FOR REVIT, ETC).
5. ELECTRONIC SUBMITTALS: WHERE ALLOWED BY DIVISION 01, ELECTRONIC SUBMITTALS ARE ACCEPTABLE PROVIDING THE FOLLOWING REQUIREMENTS ARE MET. ELECTRONIC SUBMITTALS WHICH DO NOT COMPLY WITH THESE REQUIREMENTS WILL BE REJECTED.
    a. SUBMITTAL SHALL BE IN PDF FORMAT, WITH BOOKMARKS FOR TABLE OF CONTENTS AND EACH TAB, AND SUB-BOOKMARKS FOR EACH ITEM.
    b. ALL TEXT SHALL BE SEARCHABLE (EXCEPT TEXT THAT IS PART OF A GRAPHIC).
    c. SUBMITTAL SHALL INCLUDE ALL ITEMS NOTED IN 1 THROUGH 3 ABOVE, EXCEPT A BINDER IS NOT REQUIRED.
    d. ELECTRONIC SUBMITTALS SHALL BE PROCESSED THROUGH NORMAL CHANNELS. DO NOT SUBMIT DIRECTLY TO THE ENGINEER UNLESS THE ENGINEER IS THE PRIME CONSULTANT FOR THE PROJECT.
    e. CONTRACTOR SHALL PROVIDE OWNER AND OWNER'S REPRESENTATIVE WITH HARD COPIES OF THE FINAL SUBMITTAL. COORDINATE EXACT NUMBER REQUIRED WITH OWNER THROUGH ARCHITECT/ENGINEER.

B. SUBSTITUTIONS: (REFER TO SECTION 21 00 00, PARAGRAPH 1.4, AND AS FOLLOWS. THIS PARAGRAPH IS INTENDED TO SUPPLEMENT PARAGRAPH 1.4, AND NOT REPLACE IT.)

1. MANUFACTURERS AND MODEL NUMBERS LISTED IN THE SPECIFICATIONS OR ON THE DRAWINGS ESTABLISH THE SIZE, STANDARD OF QUALITY, FEATURES AND FUNCTION SELECTED BY THE ENGINEER FOR THIS PROJECT. ALTERNATE MANUFACTURERS MAY BE SUBMITTED FOR REVIEW BY THE ENGINEER AS ALLOWED BY SECTION 01 33 00 “SUBMITTAL PROCEDURES” OR SECTION 01 25 00 “SUBSTITUTION PROCEDURES”, AS APPLICABLE. IF THE ALTERNATE MANUFACTURERS ARE NOT APPROVED, THEN THE CONTRACTOR SHALL SUBMIT PRODUCT SPECIFIED. CALCULATIONS AND OTHER DETAILED DATA INDICATING HOW THE ITEM WAS SELECTED SHALL BE INCLUDED.
2. DUE TO THE COMPLEXITY OF MECHANICAL EQUIPMENT, FEATURES AND FUNCTIONS, WHERE EQUIPMENT IS SCHEDULED ON THE DRAWINGS, ANY EQUIPMENT SUBMITTED OTHER THAN SCHEDULED EQUIPMENT IS CONSIDERED A SUBSTITUTION, AND SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 01 25 00 “SUBSTITUTION PROCEDURES”. IT IS UNDERSTOOD THAT BECAUSE OF THIS COMPLEXITY, SUBSEQUENT REVIEWS OF SUBSTITUTION REQUESTS MAY BE UNAVOIDABLE. THE MECHANICAL ENGINEER WAIVES THE FEES IDENTIFIED IN SECTION 01 25 00, FOR THE INITIAL AND FIRST SUBSEQUENT REVIEW OF A SUBSTITUTION REQUEST FOR MECHANICAL EQUIPMENT SCHEDULED ON THE DRAWINGS.
3. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY THAT SUBSTITUTED ITEMS OR PROCEDURES WILL MEET THE SPECIFICATIONS AND JOB REQUIREMENTS AND SHALL BE RESPONSIBLE FOR THE COST OF REDESIGN AND MODIFICATIONS TO THE WORK CAUSED BY THESE ITEMS. AT THE ENGINEER'S REQUEST, FURNISH LOCATIONS WHERE EQUIPMENT SIMILAR TO THE SUBSTITUTED EQUIPMENT IS INSTALLED AND OPERATING ALONG WITH THE USER'S PHONE NUMBERS AND CONTACT PERSON. SATISFACTORY OPERATION AND SERVICE HISTORY WILL BE CONSIDERED IN THE ACCEPTANCE OR REJECTION OF THE PROPOSED SUBSTITUTION.

C. REVIEW: SUBMITTALS WILL BE REVIEWED FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT, BUT THIS REVIEW DOES NOT GUARANTEE QUANTITY SHOWN, NOR DOES IT SUPERSEDE THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL MATERIALS, EQUIPMENT AND INSTALLATION IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL AGREE THAT SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS; THAT THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT, THAT HE DEMONSTRATES HIS UNDERSTANDING BY INDICATING WHICH EQUIPMENT AND MATERIAL HE INTENDS TO FURNISH AND INSTALL AND BY DETAILING THE FABRICATION AND INSTALLATION METHODS HE INTENDS TO USE. THE CONTRACTOR SHALL AGREE THAT IF DEVIATIONS, DISCREPANCIES OR CONFLICTS BETWEEN SHOP DRAWINGS AND DESIGN DRAWINGS AND SPECIFICATIONS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED. IF A RESUBMITTAL IS REQUIRED, SUBMIT A COMPLETE COPY OF THE ENGINEER'S REVIEW LETTER REQUIRING SUCH WITH THE RESUBMITTAL.

1.11 MANUFACTURER'S RECOMMENDATIONS:

A. ALL MATERIAL, EQUIPMENT, DEVICES, ETC., SHALL BE INSTALLED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE MANUFACTURER OF THE PARTICULAR ITEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSTALLATIONS CONTRARY TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL MAKE ALL NECESSARY CHANGES AND REVISIONS TO ACHIEVE SUCH COMPLIANCE. MANUFACTURER'S INSTALLATION INSTRUCTIONS SHALL BE DELIVERED TO AND MAINTAINED AT THE JOB SITE THROUGH THE CONSTRUCTION OF THE PROJECT.

1.12 SCHEDULING OF WORK:

A. ALL WORK SHALL BE SCHEDULED SUBJECT TO THE REVIEW OF THE ARCHITECT, ENGINEER AND THE OWNER. NO WORK SHALL INTERFERE WITH THE OPERATION OF THE EXISTING FACILITIES ON OR ADJACENT TO THE SITE. THE CONTRACTOR SHALL HAVE AT ALL TIMES, AS CONDITIONS PERMIT, A SUFFICIENT FORCE OF WORKMEN AND QUANTITY OF MATERIALS TO INSTALL THE WORK CONTRACTED FOR AS RAPIDLY AS POSSIBLE CONSISTENT WITH GOOD WORK, AND SHALL CAUSE NO DELAY TO OTHER CONTRACTORS ENGAGED UPON THIS PROJECT OR TO THE OWNER.

1.13 OPENINGS, CUTTING AND PATCHING:

A. THE LOCATIONS AND DIMENSIONS FOR OPENINGS THROUGH WALLS, FLOORS, CEILINGS, FOUNDATIONS, FOOTINGS, ETC. REQUIRED TO ACCOMPLISH THE WORK UNDER THIS SPECIFICATION DIVISION SHALL BE PROVIDED UNDER THIS DIVISION. EXCEPT AS NOTED BELOW, THE ACTUAL OPENINGS AND THE REQUIRED CUTTING AND PATCHING SHALL BE PROVIDED BY OTHER DIVISIONS. CORING THROUGH EXISTING CONCRETE OR MASONRY WALLS, FLOORS, CEILINGS, FOUNDATIONS, FOOTINGS, ETC., AND SAW CUTTING OF CONCRETE FLOORS OR ASPHALTIC CONCRETE REQUIRED TO ACCOMPLISH THE WORK UNDER THIS SPECIFICATION DIVISION SHALL BE PROVIDED UNDER THIS DIVISION. PATCHING OF THESE SURFACES SHALL BE PROVIDED BY OTHER DIVISIONS. CUTTING OR CORING SHALL NOT IMPAIR THE STRENGTH OF THE STRUCTURE. ANY DAMAGE RESULTING FROM THIS WORK SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE ARCHITECT.

1.14 EXCAVATION AND BACKFILL:

A. GENERAL: BARREL OF PIPE SHALL HAVE UNIFORM SUPPORT ON SAND BED. SAND SHALL BE FREE FROM CLAY OR ORGANIC MATERIAL, SUITABLE FOR THE PURPOSE INTENDED AND SHALL BE OF SUCH SIZE THAT 90 PERCENT TO 100 PERCENT WILL PASS A NO. 4 SIEVE AND NOT MORE THAN 5 PERCENT WILL PASS A NO. 200 SIEVE. UNLESS OTHERWISE NOTED, MINIMUM EARTH COVER ABOVE TOP OF PIPE OR TUBING OUTSIDE BUILDING WALLS SHALL BE 24", NOT INCLUDING BASE AND PAVING IN PAVED AREAS.

B. EXCAVATION: WIDTH OF TRENCHES AT TOP OF PIPE SHALL BE MINIMUM OF 16", PLUS THE OUTSIDE DIAMETER OF THE PIPE. PROVIDE ALL SHORING REQUIRED BY SITE CONDITIONS. WHERE OVER EXCAVATION OCCURS, PROVIDE COMPACTED SAND BACKFILL TO PIPE BOTTOM. WHERE GROUNDWATER IS ENCOUNTERED, REMOVE TO KEEP EXCAVATION DRY, USING WELL POINTS AND PUMPS AS REQUIRED.

C. BACKFILL:

1. 6" BELOW, AROUND, AND TO 12" ABOVE PIPE: MATERIAL SHALL BE SAND. PLACE CAREFULLY AROUND AND ON TOP OF PIPE, TAKING CARE NOT TO DISTURB PIPING, CONSOLIDATE WITH VIBRATOR. NATIVE SOIL MAY BE USED WHERE ALLOWED BY GEOTECHNICAL (SOILS) REPORT. WHERE NATIVE SOIL IS USED, TRENCHING FOR GRAVITY DRAIN PIPE SHALL BE DONE USING A LASER-LEVEL AND TRENCHER.
2. ONE FOOT ABOVE PIPE TO GRADE: MATERIAL SHALL BE SANDY OR SILTY LOAM, FREE OF LUMPS, LAID IN 6" LAYERS, UNIFORMLY MIXED TO PROPER MOISTURE AND COMPACTED TO REQUIRED DENSITY. IF BACKFILL IS DETERMINED TO BE SUITABLE AND REQUIRED COMPACTION IS DEMONSTRATED BY LABORATORY TEST, WATER COMPACTION IN 6" LAYERS MAY BE USED, SUBJECT TO REVIEW BY ENGINEER.

D. COMPACTION: COMPACT TO DENSITY OF 95% WITHIN BUILDING AND UNDER WALKWAYS, DRIVEWAYS, TRAFFIC AREAS, PAVED AREAS, ETC. AND TO 90% ELSEWHERE. DEMONSTRATE PROPER COMPACTION BY TESTING AT TOP, BOTTOM AND ONE_HALF OF THE TRENCH DEPTH. PERFORM THESE TESTS AT THREE LOCATIONS PER 100' OF TRENCH.

1.15 PROTECTIVE COATING FOR UNDERGROUND PIPING:

A. ALL FERROUS PIPE BELOW GRADE (EXCEPT CAST IRON) SHALL HAVE A FACTORY APPLIED PROTECTIVE COATING OF EXTRUDED HIGH DENSITY POLYETHYLENE, 35 TO 70 MILS TOTAL THICKNESS, X_TRU_COAT, SCOTCHKOTE. ALL FITTINGS AND AREAS OF DAMAGED COATING SHALL BE COVERED WITH TWO LAYER DOUBLE WRAP OF 10 MIL POLYVINYL TAPE TO TOTAL THICKNESS OF 40 MILS. JOHNS_MANVILLE. PROTECTIVE COATING SHALL BE EXTENDED 6" ABOVE SURROUNDING GRADE.

1.16 ACCESS DOORS:

A. PROVIDE ACCESS DOORS AS REQUIRED WHERE EQUIPMENT, PIPING, VALVES, ETC. ARE NOT OTHERWISE ACCESSIBLE. ACCESS DOORS SHALL MATCH THE WALL OR CEILING FINISH AND FIRE RATING AS INDICATED ON THE ARCHITECTURAL DRAWINGS. 16_GAGE STEEL FRAME AND 14_GAGE STEEL DOOR WITH PAINTABLE FINISH, EXCEPT IN CERAMIC TILE, WHERE DOOR SHALL BE 16_GAGE STAINLESS STEEL WITH SATIN FINISH. CONTINUOUS HINGE. KEY AND CYLINDER LOCK. DELIVER DOORS TO THE GENERAL CONTRACTOR FOR INSTALLATION. MILCOR. UNLESS OTHERWISE NOTED, THE MINIMUM SIZES SHALL BE AS FOLLOWS:

1 VALVE UP TO 1_1/2"	12" X 12"
1 VALVE UP TO 3"	16" X 16"

1.17 CONCRETE ANCHORS:

A. STEEL BOLT WITH EXPANSION ANCHOR REQUIRING A DRILLED HOLE _ POWDER DRIVEN ANCHORS, ADHESIVE ANCHORS AND CONCRETE SCREWS ARE NOT ACCEPTABLE. RE-USE OF SCREW ANCHOR HOLES SHALL NOT BE PERMITTED. MINIMUM CONCRETE EMBEDMENT SHALL BE 4_1/2 DIAMETERS. MINIMUM SPACING SHALL BE 12 DIAMETERS CENTER TO CENTER AND 6 DIAMETERS CENTER TO EDGE OF CONCRETE. POST-INSTALLED ANCHORS IN CONCRETE USED FOR COMPONENT ANCHORAGE SHALL BE PRE-QUALIFIED FOR SEISMIC APPLICATION IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. POST-INSTALLED ANCHORS IN MASONRY USED FOR COMPONENT ANCHORAGE SHALL BE PRE-QUALIFIED FOR SEISMIC APPLICATIONS IN ACCORDANCE WITH ICC-ES AC01. MAXIMUM ALLOWABLE STRESSES FOR TENSION AND SHEAR SHALL BE 80% OF THE ICC ES TEST REPORT VALUES. HILTI, POWERS, RED HEAD.

1.18 EQUIPMENT ANCHORING:

A. ALL EQUIPMENT SHALL BE SECURELY ANCHORED IN ACCORDANCE WITH CBC SECTION 1613A. ALL EQUIPMENT MOUNTED ON CONCRETE SHALL BE SECURED WITH A CONCRETE ANCHOR AS SPECIFIED ABOVE AT EACH MOUNTING POINT.

1.19 SUPPORTS AND SEISMIC RESTRAINTS:

A. SHALL BE AS DETAILED ON DRAWINGS, AND SHALL COMPLY WITH 2016 NFPA #13 AND WITH 2019 CBC SECTION 1613A.

1.20 ASBESTOS CONTAINING MATERIALS:

A. NO MATERIALS OR MATERIAL COATINGS CONTAINING ASBESTOS SHALL BE ALLOWED ON THIS PROJECT.

1.21 CLEANING:

A. PROGRESSIVELY AND AT COMPLETION OF THE JOB, THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL OF HIS WORK, REMOVING ALL DEBRIS, STAIN AND MARKS RESULTING FROM HIS WORK. THIS INCLUDES BUT IS NOT LIMITED TO BUILDING SURFACES, PIPING, EQUIPMENT AND DUCTWORK, INSIDE AND OUT. SURFACES SHALL BE FREE OF DIRT, GREASE, LABELS, TAGS, TAPE, RUST, AND ALL FOREIGN MATERIAL.

1.22 ACCEPTANCE TESTING:

A. THE CONTRACTOR SHALL PERFORM, DOCUMENT AND SUBMIT ALL ACCEPTANCE TESTING AS REQUIRED BY CALIFORNIA CODE OF REGULATIONS, TITLE 24, 2016 NFPA #13 AND 2016 NFPA #24.

1.23 OPERATION AND MAINTENANCE INSTRUCTIONS:

A. PRINTED: THREE COPIES OF OPERATION AND MAINTENANCE INSTRUCTIONS AND WIRING DIAGRAMS FOR ALL EQUIPMENT AND PARTS LIST FOR ALL TRIM, VALVES, ETC. SHALL BE SUBMITTED TO THE ENGINEER. ALL INSTRUCTIONS SHALL BE CLEARLY IDENTIFIED BY MARKING THEM WITH THE SAME DESIGNATION AS THE EQUIPMENT ITEM TO WHICH THEY APPLY. ALL WIRING DIAGRAMS SHALL AGREE WITH REVIEWED SHOP DRAWINGS AND INDICATE THE EXACT FIELD INSTALLATION. ALL INSTRUCTIONS SHALL BE SUBMITTED AT THE SAME TIME AND SHALL BE BOUND IN A SUITABLE BINDER WITH TABS DIVIDING EACH TYPE OF EQUIPMENT. EACH BINDER SHALL BE LABELED INDICATING "OPERATING AND MAINTENANCE INSTRUCTIONS, PROJECT TITLE, CONTRACTOR, DATE" AND SHALL HAVE A TABLE OF CONTENTS LISTING ALL ITEMS INCLUDED.

B. VERBAL: THE CONTRACTOR SHALL VERBALLY INSTRUCT THE OWNER'S MAINTENANCE STAFF IN THE OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND SYSTEMS. THE ENGINEER'S OFFICE SHALL BE NOTIFIED 48 HOURS PRIOR TO THIS MEETING.

1.24 RECORD DRAWINGS:

A. THE CONTRACTOR SHALL OBTAIN ONE SET OF BLUE LINE PRINTS FOR THE PROJECT, UPON WHICH A RECORD OF ALL CONSTRUCTION CHANGES SHALL BE MADE. AS THE WORK PROGRESSES, THE CONTRACTOR SHALL MAINTAIN A RECORD OF ALL DEVIATIONS IN THE WORK FROM THAT INDICATED ON THE DRAWINGS. FINAL LOCATION OF ALL UNDERGROUND WORK SHALL BE RECORDED BY DEPTH FROM FINISHED GRADE AND BY OFFSET DISTANCE FROM PERMANENT SURFACE STRUCTURES, I.E. BUILDING, CURBS, WALKS. IN ADDITION, THE WATER, GAS, SEWER, UNDERFLOOR DUCT, ETC. WITHIN THE BUILDING SHALL BE RECORDED BY OFFSET DISTANCES FROM BUILDING WALLS. AS PART OF THE CONTRACTOR'S OVERHEAD EXPENSE, REQUEST FROM THE ARCHITECT A FULL SET OF REPRODUCIBLE DRAWINGS TO TRANSFER THE CHANGES, NOTATIONS, ETC. FROM THE MARKED_UP PRINTS TO THE REPRODUCIBLE DRAWINGS. THE RECORD DRAWINGS (MARKED_UP PRINTS AND REPRODUCIBLES) SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

END OF SECTION

SECTION 21 00 00 - FIRE SPRINKLER SYSTEM

PART 1 - GENERAL

1.1 GENERAL PROVISIONS FOR FIRE SPRINKLERS:

A. THE GENERAL PROVISIONS FOR FIRE SPRINKLERS, SECTION 21 05 00, SHALL FORM A PART OF THIS SECTION WITH THE SAME FORCE AND EFFECT AS THOUGH REPEATED HERE.

1.2 SCOPE:

A. GENERAL: PROVIDE ALL LABOR, MATERIALS AND SERVICES NECESSARY FOR COMPLETE, LAWFUL AND OPERATING SYSTEMS AS SHOWN OR NOTED ON THE DRAWINGS OR AS SPECIFIED HERE. THE ENTIRE BUILDING SHALL BE FIRE SPRINKLED.

B. DESIGN/CALCULATIONS: THE SPRINKLER SYSTEM HAS BEEN DESIGNED AND SIZED BY HYDRAULIC CALCULATIONS IN ACCORDANCE WITH 2016 NFPA NO. 13 AND FIRE AUTHORITY REQUIREMENTS. CALCULATIONS HAVE BEEN INCLUDED IN SUBMITTALS. PROVIDE CURRENT FIRE FLOW INFORMATION FROM FLOW TEST AT NEAREST FIRE HYDRANT. FIRE FLOW TEST SHALL BE DONE WITHIN 6 MONTHS OF INSTALLATION OF SPRINKLER SYSTEM.

C. PREPARATION OF DRAWINGS AND MATERIAL DATA SHEETS: A COMPLETE FIRE SPRINKLER SUBMITTAL (DRAWINGS, SPECIFICATIONS, MATERIALS AND HYDRAULIC CALCULATIONS) HAS BEEN PREPARED. HYDRAULIC CALCULATIONS SHALL CONFORM TO 2016 NFPA 13, PARAGRAPH 23.3.5 IN ALL RESPECTS.

D. COORDINATION DRAWINGS: CONTRACTOR SHALL SUBMIT COORDINATION DRAWINGS WITH CONTRACTOR TITLE BLOCK TO ENGINEER FOR REVIEW, IN ADDITION TO MATERIALS SUBMITTALS. DEVIATIONS BETWEEN BID DOCUMENTS AND COORDINATION DRAWINGS SHALL BE SPECIFICALLY NOTED ON DRAWINGS (HIGHLIGHTED, CLOUDED, ETC.). ANY CONTRACTOR REQUESTED DESIGN CHANGES TO THESE DOCUMENTS, INCLUDING LAYOUT, MATERIALS, OR CALCULATIONS, MAY BE CONSIDERED A SUBSTITUTION AND SHALL COMPLY WITH PARAGRAPH 1.4 BELOW.

E. ALL FIRE SPRINKLER PROTECTION PLANS, CALCULATIONS, PRODUCT DATA SUBMITTALS, WATER FLOW TEST, AND ANY OTHER FIRE SPRINKLER PROTECTION CORRECTIONS AND COMMENTS MUST BE ADDRESSED, RESOLVED AND TENTATIVELY APPROVED BY DSA FLS BEFORE THE ARCHITECT OF RECORD WILL BE ALLOWED TO SCHEDULE A BACK CHECK APPOINTMENT FOR THIS ENTIRE PROJECT. COORDINATE CORRECTIONS AND COMMENTS WITH THE ARCHITECT, AND DSA FLS PLAN REVIEWER.

1.3 WORK SPECIFIED ELSEWHERE:

A. ELECTRICAL WIRING.

B. FIRE ALARM SYSTEM.

C. PAINTING OF EXPOSED PIPING.

1.4 DESIGN CHANGES/SUBSTITUTIONS:

A. GENERAL: DESIGN CHANGES OR SUBSTITUTIONS OF FIRE SPRINKLER SYSTEM SHALL BE SUBMITTED TO ENGINEER FOR REVIEW.

B. SIGNIFICANT CHANGES IN DESIGN OR SUBSTITUTION OF MATERIALS MAY REQUIRE A CHANGE ORDER, REQUIRING RESUBMISSION TO DSA/FLS, AS DETERMINED BY THE ENGINEER AND/OR DSA FIELD ENGINEER. CONTRACTOR SHALL BEAR ALL EXPENSES INCURRED DUE TO PREPARATION AND PROCESSING OF DESIGN SUBSTITUTIONS, UP TO AND INCLUDING SUBMISSION TO, AND OBTAINING APPROVAL FROM, DSA/FLS. REFER TO SECTION 21 05 00, 1.10, B, AND DSA POLICY PL 10-01 AND INTERPRETATION OF REGULATIONS IR A-6, AVAILABLE FROM HTTP://WWW.DSA.DGS.CA.GOV.

C. ANY SUBSTITUTION OF “FLEXIBLE” TYPE PIPING IN LIEU OF “RIGID” PIPE OR ANY CHANGES TO SIZE, MANUFACTURER OR LENGTHS OF “FLEXIBLE” TYPE PIPING WILL REQUIRE RESUBMITTAL OF PIPING PLANS, PRODUCT DATA SHEETS AND HYDRAULIC CALCULATIONS TO DSA FLS FOR REVIEW AND APPROVAL.

PART 2 - PRODUCTS

2.1 STANDARDS:

A. ALL MATERIALS SHALL BE IN ACCORDANCE WITH 2016 NFPA NO.13 "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS". UNDERGROUND MAINS SHALL BE IN ACCORDANCE WITH 2016 NFPA NO. 24 "STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES".

2.2 PIPING MATERIALS:

A. GENERAL: THE PRESSURE RATING OF ALL PIPING, VALVES, FLANGES AND OTHER PIPING ACCESSORIES SHALL BE IN ACCORDANCE WITH CODE AND FIRE AUTHORITY REQUIREMENTS. PRESSURE RATINGS SHALL EXCEED THE HIGHEST POSSIBLE WORKING PRESSURE.

B. PIPING:

1. UNDERGROUND TO 5 FEET OUTSIDE BUILDING: POLYVINYL CHLORIDE, CLASS 200, DR 14, AWWA C900, WITH RUBBER RING JOINTS, ASTM D1869. CAST OR DUCTILE IRON FITTINGS, AWWA C110 OR C153, CLASS 250 OR HIGHER, WITH RUBBER RING JOINTS, ASTM D1869.
2. ABOVE GRADE:
    a. 2" AND SMALLER: THREADED BLACK STEEL PIPE, ASTM A53, SCHEDULE 40. 175 PSI WOG (MIN.) BLACK CAST IRON THREADED FITTINGS, ANSI B16.4, UL LISTED. UNIONS SHALL BE CLASS 150 MALLEABLE IRON THREADED, ANSI B16.3.
    b. 2_1/2" AND LARGER: WELDED BLACK STEEL PIPE, ASTM A53, SCHEDULE 10. STANDARD WEIGHT CARBON STEEL WELDING FITTINGS, ANSI B16.9. FLANGES SHALL BE STEEL, ANSI B16.5. ROLL GROOVED PIPE COUPLINGS MAY BE USED FOR ASSEMBLING WELDED SECTIONS, VICTAULIC, GRINNELL, GRUVLOK.
    c. NONMETALLIC PIPE OF ALL SIZES: ORANGE CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE, SCHEDULE 80, ASTM F442, UL LISTED. CPVC SOCKET TYPE FITTINGS, ASTM F437, UL LISTED.

C. GATE VALVE:

1. 2" AND SMALLER: ALL BRONZE, RISING STEM. UL LISTED.
2. 2_1/2" AND LARGER: IRON BODY, BRONZE MOUNTED, OUTSIDE SCREW AND YOKE. UL LISTED. (UL LISTED BUTTERFLY VALVES MAY BE SUBSTITUTED FOR 4" AND LARGER GATE VALVES ABOVE GRADE.)

D. CHECK VALVE:

1. 2" AND SMALLER: ALL BRONZE SWING CHECK. UL LISTED.
2. 2_1/2" AND LARGER: IRON BODY, BRONZE MOUNTED SWING CHECK. UL LISTED.

E. DRAIN VALVE: ALL BRONZE ANGLE GLOBE VALVE. UL LISTED.

F. ANCHORS AND HANGERS: SHALL COMPLY WITH 2016 NFPA NO. 13.

2.3 SPRINKLER HEAD:

A. AUTOMATIC SPRINKLER HEAD, CONCEALED TYPE IN AREAS WITH FINISHED CEILINGS AND RECESSED OR SUSPENDED LIGHTING, SEMI-RECESSED IN AREAS WITH FINISHED CEILINGS AND SURFACE LIGHTING, UPRIGHT OR PENDENT HEADS ELSEWHERE (AS ALLOWED BY NFPA 13). HEADS IN FINISHED AREAS SHALL BE VICTAULIC FIRELOCK V38 QUICK RESPONSE CONCEALED; TYCO RFII QUICK RESPONSE CONCEALED; OR GLOBE FIRE SPRINKLER CORP., QUICK RESPONSE GL SERIES CONCEALED PENDENT, WITH CHROME-FINISH METAL COVER PLATE. HEADS ELSEWHERE SHALL BE QUICK RESPONSE, VICTAULIC FIRELOCK V27, V34; TYCO, MODEL TY-FRB; OR GLOBE FIRE SPRINKLER CORP., MODEL GL QUICK RESPONSE, WITH STANDARD FINISH. UL LISTED. TEMPERATURE RATINGS SHALL BE IN ACCORDANCE WITH NFPA NO. 13. PROVIDE EXTRA HEADS (OF EACH TYPE INSTALLED) IN ACCORDANCE WITH CODE REQUIREMENTS. EXPOSED HEADS INSTALLED WITH DEFLECTOR LOWER THAN 7'-6" ABOVE FLOOR SHALL HAVE WIRE GUARDS.

2.4 ALARM VALVE ASSEMBLY:

A. STANDARD WET TYPE ALARM VALVE ASSEMBLY COMPLETE WITH TRIM AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION. PROVIDE FLOW SWITCH AND ELECTRIC BELL FOR CONNECTION TO ALARM SYSTEM. PROVIDE TAMPER SWITCH. UL LISTED. COORDINATE ELECTRIC BELL WITH DIVISIONS 26 AND 28.

2.5 ALARM VALVE ASSEMBLY:

A. UL LISTED ALARM VALVE ASSEMBLY DESIGNED FOR A PRE_ACTION SYSTEM. THE ASSEMBLY SHALL BE DOUBLE INTERLOCKED SO THAT THE VALVE DOES NOT OPEN UNLESS THE DETECTION SYSTEM IS ACTIVATED AND THE SPRINKLER SYSTEM IS ACTIVATED. THE ASSEMBLY SHALL HAVE THE FOLLOWING FEATURES.

1. AIR PRESSURE SWITCH TO SUPERVISE THE PRESSURE IN THE PIPING SYSTEM AND SIGNAL THE ALARM SYSTEM OF A LOSS IN AIR PRESSURE.
2. PIPE MOUNTED AIR COMPRESSOR, 120 VOLT, L PHASE.
3. FILTER/DEHYDRATOR FOR AIR SUPPLY.
4. PRESSURE REGULATOR TO MAINTAIN AIR PRESSURE IN PIPING SYSTEM.
5. SOLENOID VALVE TO ALLOW MAIN VALVE TO OPEN UPON RECEIPT OF A SIGNAL FROM THE SYSTEM CONTROLLER.
6. MISCELLANEOUS GAGES, VALVES, TAMPER SWITCH AND CONTROL DEVICES AS DETAILED AND AS REQUIRED BY NFPA NO.13 AND THE LOCAL FIRE AUTHORITY.
7. OS & Y VALVE ON THE DISCHARGE SIDE OF THE ALARM VALVE.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION:

A. GENERAL: PIPING SHALL BE CONCEALED IN WALLS, ABOVE THE CEILINGS OR BELOW GRADE UNLESS OTHERWISE NOTED. EXPOSED PIPING SHALL RUN PARALLEL TO ROOM SURFACES; LOCATION SHALL BE APPROVED BY THE ARCHITECT. NO STRUCTURAL MEMBER SHALL BE WEAKENED BY CUTTING, NOTCHING, BORING OR OTHERWISE, UNLESS SPECIFICALLY ALLOWED BY STRUCTURAL DRAWINGS AND/OR SPECIFICATIONS. WHERE SUCH CUTTING IS REQUIRED, REINFORCEMENT SHALL BE PROVIDED AS SPECIFIED OR DETAILED. DEPTH OF COVER IN TRAFFIC AREAS SHALL BE 36 INCHES (MINIMUM).

B. STANDARDS: ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH NFPA NO. 13 "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS". UNDERGROUND MAINS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA NO. 24 "STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES".

C. MISCELLANEOUS:

1. ESCUTCHEONS: PROVIDE CHROME PLATED METAL ESCUTCHEONS WHERE PIPING PENETRATES WALLS, CEILINGS OR FLOORS IN FINISHED AREAS.
2. PATTERN: SPRINKLERS SHALL BE INSTALLED IN A SYMMETRICAL PATTERN WITH LIGHTING FIXTURES AND WITH CEILING PATTERN. HEADS LOCATED IN LAY-IN CEILINGS SHALL BE CENTERED IN PANEL, UNLESS SHOWN OTHERWISE ON DRAWINGS.
3. PIPE SLEEVES: ALL PIPING PASSING THROUGH CONCRETE SHALL BE PROVIDED WITH PIPE SLEEVES. ALLOW 1" ANNULAR CLEARANCE BETWEEN SLEEVE AND PIPE FOR PIPING 3" AND SMALLER AND 2" ANNULAR CLEARANCE FOR PIPING 4" AND LARGER.
4. ACCESS: PROVIDE ACCESS DOORS AS REQUIRED FOR ALL VALVES, DEVICES, ETC.
5. PIPES PASSING THROUGH FIRE RATED SURFACES: PIPES PASSING THROUGH FIRE RATED WALLS, FLOORS, CEILINGS, PARTITIONS, ETC. SHALL HAVE THE ANNULAR SPACE SURROUNDING THE PIPE, OR PIPE INSULATION SEALED WITH FIRE RATED MATERIALS IN ACCORDANCE WITH THE REQUIREMENTS OF 2019 CBC SECTION 714.
6. CONCRETE THRUST BLOCKS: SHALL BE CONSTRUCTED AT ALL VALVES, TEES, ELBOWS, BENDS, CROSSES, REDUCERS AND DEAD ENDS IN LOOSE-JOINT PIPE. BLOCKS SHALL CURE A MINIMUM OF 7 DAYS BEFORE PRESSURE IS APPLIED. CONCRETE SHALL BE 3000 PSI MIX.
7. ELECTRICAL EQUIPMENT: PIPING SHALL NOT BE RUN OVER ELECTRICAL PANELS, MOTOR CONTROL CENTERS OR SWITCHBOARDS, EXCEPT WHERE SPECIFICALLY ALLOWED BY CEC.

3.2 IDENTIFICATION:

A. ALL CONTROLS, PIPING, VALVES AND EQUIPMENT SHALL BE LABELED FOR FUNCTION AND SERVICE IN ACCORDANCE WITH NFPA NO. 13 AND NO. 24.

3.3 TESTS AND ADJUSTMENTS:

A. UNLESS OTHERWISE DIRECTED, TESTS SHALL BE WITNESSED BY A REPRESENTATIVE OF THE ARCHITECT AND AN INSPECTOR OF THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL NOTIFY FIRE AUTHORITY AT LEAST 48 HOURS PRIOR TO TESTING. AT VARIOUS STAGES AND UPON COMPLETION, THE SYSTEM MUST BE TESTED IN THE PRESENCE OF THE ENFORCING AGENCY. WORK TO BE CONCEALED SHALL NOT BE ENCLOSED UNTIL PRESCRIBED TESTS ARE MADE. SHOULD ANY WORK BE ENCLOSED BEFORE SUCH TESTS, THE CONTRACTOR SHALL, AT HIS EXPENSE, UNCOVER, TEST AND REPAIR ALL WORK TO ORIGINAL CONDITIONS. LEAKS AND DEFECTS SHOWN BY TESTS SHALL BE REPAIRED AND THE ENTIRE WORK RETESTED. TEST ALL SYSTEMS IN ACCORDANCE WITH FIRE AUTHORITY REQUIREMENTS AND NFPA NO. 13 AND NO. 24.

3.4 ADDITIONAL TESTING AND DRAINING OF THE SYSTEM:

A. IN ADDITION TO THE ABOVE DESCRIBED TESTING, THE PRE_ACTION SYSTEM(S) SHALL ALSO BE GIVEN A ONE_TIME TEST TO INTRODUCE WATER INTO THE MAINS FOR THE PURPOSE OF DETERMINING THE LENGTH OF TIME REQUIRED FOR WATER TO REACH THE MOST REMOTE AREA. THE CONTRACTOR SHALL COMPLETELY DRAIN THE SYSTEM AFTER THIS TEST, INCLUDING DRAINING THE DROP NIPPLES TO PENDENT HEADS BY REMOVING THOSE HEADS. THE OS & Y VALVE ON THE DISCHARGE OF THE ALARM VALVE ASSEMBLY IS TO BE CLOSED FOR ALL SUBSEQUENT TESTS OF THE TRIP MECHANISM. NO WATER SHALL BE INTRODUCED INTO THE PIPING SYSTEM DOWNSTREAM OF THIS OS & Y VALVE AFTER THE INITIAL TEST. COORDINATE ALL TESTING WITH THE FIRE AUTHORITY. THE SYSTEM SHALL BE AIR TESTED AFTER THIS TEST.

3.5 CERTIFICATION:

A. AT COMPLETION OF THE PROJECT, A CONTRACTOR'S MATERIAL AND TEST CERTIFICATE, INDICATING INSTALLATION AND TESTING IN ACCORDANCE WITH REFERENCED STANDARDS, SHALL BE COMPLETED. COPIES SHALL BE PREPARED BY CONTRACTOR FOR THE APPROVING AUTHORITIES, OWNER AND CONTRACTOR. DELIVER CERTIFICATES TO OWNER THROUGH ARCHITECT.

END OF SECTION

APPROVALS:
APPLICATION #
02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

RYAN W. CARLSON
M34846
Exp. 6-30-24
MECHANICAL

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

LAWRENCE
ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1362

TITLE:
PROJECT
SPECIFICATIONS

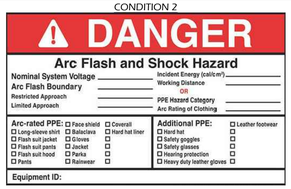
SHEET:
F-5
PROJECT 21182

ARC FLASH WARNING LABEL REQUIREMENTS

CONDITION 1

ARC FLASH HAZARD HAZARD WARNING LABELS SHALL BE FIELD MARKED/PLACED ON ALL NEW AND EXISTING ELECTRICAL DISTRIBUTION BOARDS, MAIN SWITCHBOARDS, TRANSFORMERS, PANELS, PANELBOARDS, DISCONNECTS, MCC'S. PER CEC/NEC 110.16A THAT IS WITHIN THE SCOPE OF THIS PROJECT. LABELS SHALL BE APPLIED TO EXISTING EQUIPMENT WHERE NEW CONNECTIONS ARE MADE. THE LABELS SHALL MEET THE REQUIREMENTS OF 110.21(B) PER ANSI Z535.4-2011 GUIDELINES BY USING EFFECTIVE COLORS, SYMBOLS OR ANY COMBINATION THEREOF.

CONDITION 2



ARC FLASH HAZARD WARNING LABELS FOR AN ENTIRELY NEW ELECTRICAL SERVICE AND DISTRIBUTION SYSTEMS, THE EXCEPTION TO 110.16(B) SHALL BE UTILIZED AND ALL ELECTRICAL COMPONENTS OF THE DISTRIBUTION EQUIPMENT SHALL HAVE AN ARC FLASH WARNING LABEL WITH THE FOLLOWING INFORMATION:

a. NOMINAL SYSTEM VOLTAGE
b. ARC FLASH BOUNDARY
c. MINIMAL ARC RATING OF CLOTHING
d. AT LEAST ONE, BUT NOT BOTH OF THE FOLLOWING:
   - INCIDENT ENERGY & CORRESPONDING WORKING DISTANCE
   - THE ARC FLASH PPE CATEGORY

THE LABELS SHALL MEET THE REQUIREMENTS OF 110.21(B) PER ANSI Z535.4-2011 GUIDELINES BY USING EFFECTIVE COLORS, SYMBOLS OR ANY COMBINATION THEREOF. THE CONTRACTOR SHALL HAVE THE EQUIPMENT MANUFACTURER PROVIDE THE REQUIRED LABELING OR OBTAIN THE SERVICES OF A THIRD PARTY OR THE ELECTRICAL ENGINEER OF RECORD.

CONDITION 3

ARC FLASH HAZARD WARNING LABELS SHALL BE FIELD MARKED/PLACED ON ALL NEW SERVICE EQUIPMENT WITH THE FOLLOWING INFORMATION: NOMINAL SYSTEM VOLTAGE, AVAILABLE FAULT CURRENT AT THE SERVICE OVERCURRENT PROTECTIVE DEVICES, CLEARING TIME OF THE SERVICE OVERCURRENT PROTECTIVE DEVICES BASED ON THE AVAILABLE FAULT CURRENT AT THE SERVICE EQUIPMENT, THE DATE THE LABEL WAS APPLIED. THE LABELS SHALL MEET THE REQUIREMENTS OF 110.21(B) PER ANSI Z535.4-2011 GUIDELINES BY USING EFFECTIVE COLORS, SYMBOLS OR ANY COMBINATION THEREOF.

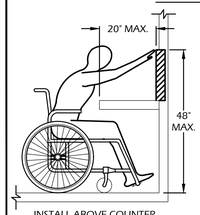
120V BRANCH CIRCUIT VOLT DROP CONDUCTOR LENGTH CHART

LOAD IN VOLT AMPERES	LENGTH OF CONDUCTOR				
	WIRE SIZE IN (GAUGE)				
	#12	#10	#8	#6	#4
1200VA	74	121	183	284	434
1560VA	57	93	141	218	334
1800VA	49	81	122	189	289
1920VA	46	76	115	178	271
2340VA	X	62	94	146	223
2880VA	X	51	76	118	181
3000VA	X	48	73	114	174
3900VA	X	X	56	87	134
4800VA	X	X	46	71	108

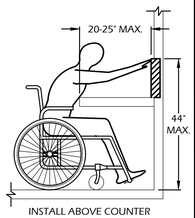
NOTES:
1. THIS CHART IS FOR COPPER CONDUCTORS ONLY.
2. THIS CHART ASSUME AN 80% POWER FACTOR AND STEEL RACEWAYS.
3. 2019 CALIFORNIA ENERGY CODE, 130.5(c) ALLOWS A MAXIMUM COMBINED VOLTAGE DROP OF 5%. THIS CHART ASSUMES A MAXIMUM LENGTH OF CONDUCTORS FOR LESS THAN 2% VOLTAGE DROP ON A BRANCH CIRCUIT AT GIVEN VA LOAD.
4. USE WIRE SIZE FROM THIS CHART UNLESS LARGER CONDUCTOR SIZES ARE NOTED ON THE DRAWINGS.
5. FOR VA VALUES NOT SHOWN USE NEXT HIGHEST VALUE FROM VALUE FROM THE CHART.

TYPICAL WALL DEVICE MOUNTING HEIGHTS

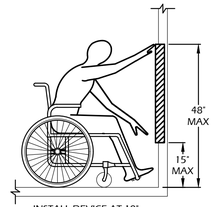
ADA GUIDELINES



INSTALL ABOVE COUNTER DEVICE AT 44" ABOVE FINISHED FLOOR.

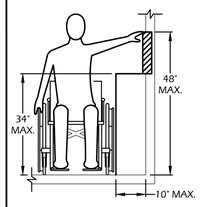


INSTALL ABOVE COUNTER DEVICE AT 40" ABOVE FINISHED FLOOR.

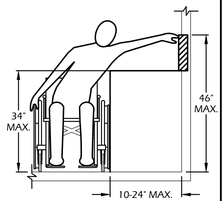


INSTALL DEVICE AT 18" ABOVE FINISHED FLOOR

FRONT ACCESS

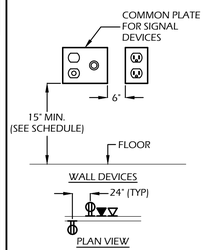


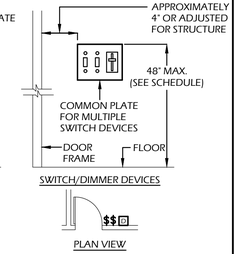
INSTALL DEVICE AT 44" ABOVE FINISHED FLOOR.



INSTALL DEVICE AT 42" ABOVE FINISHED FLOOR.

SIDE ACCESS





DEVICE TYPE	MOUNTING HEIGHT
SWITCHES	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
DIMMERS	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
RECEPTACLES	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
TEL. OUTLETS (OFFICE)	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
TEL. OUTLETS (CLASSROOMS)	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
DATA OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
INTERCOM OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
TELEVISION OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
MICROPHONE OUTLETS	NO LESS THAN 15" A.F.F. TO BOTTOM OF DEVICE
RECEPTACLES, OUTLETS, SWITCHES, ETC. MOUNTED ABOVE COUNTERS	WITHIN THE REACH RANGE SPECIFIED IN SECTION 11B-308 OF THE CALIFORNIA BUILDING CODE.
CLOCKS	AS SHOWN ON DRAWINGS
SPEAKERS	AS SHOWN ON DRAWINGS
HAND DRYERS	REFER TO ARCHITECTURAL PLANS
HAIR DRYERS	REFER TO ARCHITECTURAL PLANS
WALL SCONCES	ABOVE 80" FOR PROJECTIONS INTO CORRIDORS OF MORE THAN 4" OR AS SHOWN ON DRAWING
EXIT LIGHTS	SEE DETAILS
EXIT MARKERS	SEE DETAILS
EMERGENCY LIGHTING WALL PACK	AS SHOWN ON DRAWINGS
KEYPADS	NO MORE THAN 48" A.F.F. TO TOP OF DEVICE
WIREMOLD	MOUNTING HEIGHT SHALL BE SUCH THAT THE LOWEST DEVICE MOUNTED ON WIREMOLD IS AT 15" A.F.F. TO BOTTOM OF DEVICE, U.O.N.

NOTES:
1. ALL VERTICAL MEASUREMENTS ARE 'ABOVE FINISHED FLOOR' - (A.F.F.).
2. SEE DRAWINGS FOR NON-TYPICAL MOUNTING HEIGHTS.
3. WHERE MOUNTING HEIGHTS ARE NOT SHOWN, REFER TO ARCHITECTURAL PLANS.
4. RECEPTACLES, LIGHT SWITCHES, TELEPHONE-DATA OUTLETS AND OTHER RECESSED ELECTRICAL DEVICES THAT ARE SHOWN BACK-TO-BACK ON WALLS SEPARATING CORRIDORS, ROOMS AND OPEN AREAS SHALL BE SEPARATED HORIZONTALLY BY AT LEAST 24 INCHES. THIS REQUIREMENT IS TO SATISFY BOTH THE CONDITIONS AT FIRE RATED CORRIDORS AND SOUND TRANSMISSION FACTOR BETWEEN ALL CORRIDORS, ROOMS AND OPEN AREAS INCLUDING EXTERIOR WALLS.

STANDARD SYMBOL LEGEND

- (#) FIXTURE DESIGNATOR - '#' INDICATES FIXTURE TYPE.
- LIGHT FIXTURE - APPROXIMATELY TO SCALE
- FIXTURE WITH 90 MINUTE EMERGENCY BATTERY BACK-UP UNIT - SEE TYPICAL WIRING DETAIL
- O^3_a LIGHT FIXTURE - WALL OR CEILING MOUNTED. '3' INDICATES CIRCUIT, 'a' INDICATES SWITCH CONTROL.
- EXIT LIGHTS- CEILING OR WALL MOUNTED, ARROW(S) INDICATES DIRECTION.
- EXISTING POLE LIGHTING
- S1 WATTSTOPPER LMRC-101 ON/OFF, 1 SWITCH LEG LIGHTING CONTROLLER
- S2 WATTSTOPPER LMRC-102 ON/OFF, 2 SWITCH LEG LIGHTING CONTROLLER
- D1 WATTSTOPPER LMRC-211 DIMMING, 1 SWITCH LEG LIGHTING CONTROLLER
- D2 WATTSTOPPER LMRC-212 DIMMING, 2 SWITCH LEG LIGHTING CONTROLLER
- D3 WATTSTOPPER LMRC-213 DIMMING, 3 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMDC-100 DUAL TECHNOLOGY MOTION SENSOR
- WATTSTOPPER LMDX-100 DUAL TECHNOLOGY OCCUPANCY SENSOR
- HS_a WATTSTOPPER LMSW-101 SWITCH, 'a' INDICATES SWITCH LEG CONTROL. 2 LETTERS NEXT TO EACHOTHER WITHOUT A COMMA INDICATES 1 SWITCH LEG
- HD_a WATTSTOPPER LMDM-101 DIMMER, 'a' INDICATES SWITCH LEG CONTROL. 2 LETTERS NEXT TO EACHOTHER WITHOUT A COMMA INDICATES 1 SWITCH LEG
- PS WATTSTOPPER LMLS-400 PHOTOSENSOR
- RC WATTSTOPPER LMPL-201 RECEPTACLE CONTROLLER
- PANEL IDENTIFICATION
- CIRCUIT IDENTIFICATION
- SWITCH-LEG IDENTIFICATION
- 'PNL'-#a
- LIGHTING AND RECEPTACLE ROOM CONTROLLERS SHALL BE LOCATED ABOVE THE T-BAR CEILING FOR THE ROOMS THEY ARE CONTROLLING. IF THE ROOM WITH THE CONTROLLED DEVICES HAS A HARD CEILING THEN LOCATE THE ROOM CONTROLLERS AT THE NEAREST ADJACENT ROOM WITH A T-BAR CEILING. IF NO T-BAR CEILINGS EXISTS LOCATE THE ROOM CONTROLLERS IN THE ELECTRICAL ROOM. LABEL ALL ROOM LIGHTING AND RECEPTACLE CONTROLLERS WITH THE ROOM NAME, ROOM NUMBER, AND CIRCUIT(S) THEY CONTROL.
- SKYLIT OR PRIMARY SIDE DAYLIT ZONE
- SECONDARY SIDE DAYLIT ZONE
- $ SPST TOGGLE WALL SWITCH - 20A, 120/277V, 'a' INDICATES CONTROL
- $_{OC}$ OCCUPANCY SENSOR COMBO WALL SWITCH - 20A, 120/277V RATED
- CEILING OR WALL MOUNTED JUNCTION BOX
- PULLBOX(S) - SIZE AND NUMBER AS INDICATED
- RECEPTACLE, DUPLEX - 20A, 120V & GROUND
- RECEPTACLE, DUPLEX CEILING MOUNTED
- RECEPTACLE, DUPLEX - WITH ONE-HALF SWITCHED/CONTROLLED
- RECEPTACLE, DUPLEX- WITH GFCI PROTECTION
- WP RECEPTACLE, DUPLEX - WITH GFCI PROTECTION IN WEATHERPROOF HOUSING
- 20A, 120V RECEPTACLE, DUPLEX- WITH TWO USB PORTS
- RECEPTACLE, DOUBLE DUPLEX - (2) 20A, 120V & GROUND
- RECEPTACLE, DOUBLE DUPLEX CEILING MOUNTED
- RECEPTACLE, DOUBLE DUPLEX WITH GFCI PROTECTION
- RECEPTACLE, DOUBLE DUPLEX - WITH ONE-HALF SWITCHED/CONTROLLED
- RECEPTACLE, DOUBLE DUPLEX - WITH ONE-HALF SWITCHED/CONTROLLED, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- RECEPTACLE, SPECIAL - REFER TO FLOOR PLAN FOR RECEPTACLE SIZE.
- TELEPHONE OUTLET: PROVIDE & INSTALL 2-GANG BOX WITH 1" CONDUIT. STUB-UP INTO T-BAR CEILING. FOR HARD CEILINGS, RUN THE CONDUIT TO THE CABLE TERMINATION LOCATION INDICATED PER THE RISER DIAGRAM.
- DATA OUTLET: PROVIDE & INSTALL 2-GANG BOX WITH 1" CONDUIT. STUB-UP INTO T-BAR CEILING. FOR HARD CEILINGS, RUN THE CONDUIT TO THE CABLE TERMINATION LOCATION INDICATED PER THE RISER DIAGRAM.
- RECEPTACLE, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- RECEPTACLE WITH ONE-HALF SWITCHED/CONTROLLED, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- TELEPHONE OUTLET, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- DATA OUTLET, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- INTERCOM OUTLET, FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED.
- FLUSH, FLOOR MOUNTED DUPLEX RECEPTACLE, DATA JACK, AND TELEPHONE JACK.
- DATA OUTLET, CEILING MOUNTED
- CEILING OR WALL MOUNTED WIRELESS ACCESS POINT PROVISIONS. PROVIDE AND INSTALL ONE DATA CABLE FROM EACH ACCESS POINT TO IDF. FOR HARD CEILINGS TERMINATE THE CABLES INTO A BOX WITH COVER PLATE. FOR T-BAR CEILINGS TERMINATE THE CABLES INTO A CUBE CAT-6 PORT AND CURL UP THE CABLE WITH 10-FEET OF SLACK. LEAVE ABOVE THE T-BAR CEILING. PROVIDE A LABEL BENEATH THE T-BAR CEILING TO INDICATE DATA PORTS ABOVE.
- 3/4" THICK x 96" TALL FIRE RETARDANT PLYWOOD BACKBOARD, PROVIDE QUANTITY OF PLYWOOD SHEETS TO ENCOMPASS ENTIRE LENGTH INDICATED ON PLANS.
- TERMINAL CABINET - SURFACE OR FLUSH MOUNTED WITH FLAME RETARDANT PLYWOOD BACKBOARD
- PANELBOARD - SURFACE OR FLUSH MOUNTED
- DISTRIBUTION OR SWITCHBOARD
- NEUTRAL LINK
- TRANSFORMER
- TRANSFORMER
- #A/#B/#C FUSED DISCONNECT - MOTOR RATED. FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. DISCONNECTS TO BE FURNISHED WITH DUAL ELEMENT FUSES SIZED ACCORDING TO NAME PLATE DATA ON EQUIPMENT INSTALLED. SIZE AS : #A = AMPERE RATING OF DISCONNECT, #B = POLES, #C = FUSE SIZE REQUIRED. ALSO REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR DISCONNECT REQUIREMENTS. IF NO AMPERE RATING IS INDICATED ON PLAN SIZE DISCONNECT PER NAMEPLATE RATING AND CEC.
- #A/#B UNFUSED DISCONNECT - MOTOR RATED, FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR: #1 = AMPERE RATING OF DISCONNECT, #2 = POLES REQUIRED. ALSO REFER TO MECHANICAL EQUIPMENT SCHEDULE FOR DISCONNECT REQUIREMENTS. IF NO AMPERE RATING IS INDICATED ON PLAN SIZE DISCONNECT PER NAMEPLATE RATING AND CEC.
- MAGNETIC MOTOR STARTER FURNISHED, INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED.
- MOTOR - FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR AND CONNECTED BY ELECTRICAL CONTRACTOR.
- M METER
- FIRE SPRINKLER HEAD. REFER TO OTHER DISCIPLINE PLANS.
- INTRUSION ALARM DOOR CONTACT PROVISION, SEE TYPICAL DETAILS.
- INTRUSION ALARM KEYPAD
- INTRUSION ALARM MOTION DETECTOR, AIM AS INDICATED ON PLANS.
- GROUND
- CIRCUIT BREAKER
- EXISTING ABOVE GROUND CONDUIT
- EXISTING UNDERGROUND CONDUIT
- WIREMOLD 5400 SERIES DUAL CHANNEL IVORY RACEWAY. PROVIDE ALL ACCESSORIES, FITTINGS, DIVIDERS, ETC FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
- WIREMOLD RACEWAY VERTICAL RUNS. PROVIDE ALL ELBOWS, FITTINGS, AND CONNECTORS AS NECESSARY FOR A COMPLETE RACEWAY SYSTEM.
- NEW ELECTRICAL EQUIPMENT
- EXISTING ELECTRICAL EQUIPMENT TO REMAIN
- EXISTING ELECTRICAL EQUIPMENT TO BE DEMOLISHED
- GROUND WIRE WITH GREEN INSULATION SIZE PER N.E.C., U.O.N.
- CONDUIT CONCEALED IN WALL OR CEILINGS. PROVIDE NUMBER OF WIRES NECESSARY FOR BRANCH CIRCUIT, SWITCH LEGS, ETC. PROVIDE SEPARATE NEUTRALS FOR EACH PHASE WIRE. SIZE SHALL BE DETERMINED BY OCPD CONNECTED TO THE PHASE CONDUCTORS AND VOLTAGE DROP CONSIDERATIONS. ALL CONDUITS SHALL HAVE GROUND CONDUCTOR(S). SIZE CONDUIT PER NEC.
- CONDUIT CONCEALED UNDERGROUND OR BELOW FLOOR, MINIMUM SIZE IS 3/4". PROVIDE NUMBER OF WIRES NECESSARY FOR BRANCH CIRCUIT, SWITCH LEGS, ETC. PROVIDE SEPARATE NEUTRALS FOR EACH PHASE WIRE. SIZE SHALL BE DETERMINED BY OCPD CONNECTED TO THE PHASE CONDUCTORS AND VOLTAGE DROP CONSIDERATIONS. ALL CONDUITS SHALL HAVE GROUND CONDUCTOR(S). SIZE CONDUIT PER NEC.
- CONDUIT- UP
- CONDUIT-DOWN
- # SHEET NOTE NUMBER - #, SEE NOTE DESCRIPTION ON SAME SHEET.
- # GENERAL NOTE NUMBER - #, SEE NOTE DESCRIPTION ON SAME SHEET.
- #/# REFERENCE TO PLAN/DETAIL/DIAGRAM
- XX | X DESIGNATES SIZE AND QUANTITY OF FEEDERS SEE FEEDER SCHEDULE
- PROVIDE AND INSTALL TWO MALE F-TYPE CONNECTORS AND TV FACEPLATE. PROVIDE AND INSTALL RG-6 COAXIAL CABLE FROM EACH CONNECTOR TO THE CABLE TV HEADEND & TERMINATE WITH A MALE F-TYPE CONNECTOR.
- TELEVISION OUTLET IN FLUSH FLOOR BOX - CARPET PLATE WHERE REQUIRED, SEE TELEVISION SYMBOL.
- (5) (4)(2) NUMBER IN PARENTHESIS INDICATES QUANTITY OF DEVICES. TYPICAL FOR ALL TYPES OF DEVICES.
- SPEAKER - WALL OR CEILING MOUNTED, REFER TO RISER DIAGRAM AND/OR NOTES ON PLANS.
- CLOCK, REFER TO RISER DIAGRAM AND/OR NOTES ON PLANS.
- COMBINATION CLOCK & SPEAKER, SEE CLOCK & SPEAKER SYMBOLS.

ELECTRICAL EQUIPMENT NOTES

1. THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF ELECTRICAL EQUIPMENT, DEVICES AND WIRING. REFER TO THE TECHNICAL SPECIFICATIONS FOR FURTHER REQUIREMENTS.

ELECTRICAL SHEET LIST

THESE PLANS ARE ACCOMPANIED WITH BOOK SPECIFICATIONS THAT FORM PART OF THE CONTRACT DOCUMENTS.

ABBREVIATIONS

A, AMP	AMPERES
A.C.	ABOVE COUNTER
A.F.F.	ABOVE FINISHED FLOOR
AL	ALUMINUM CONDUCTOR OR BUS
BD	BOARD
C	CONDUIT
CAB	CABINET
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CC	CENTER TO CENTER
CKT	CIRCUIT
CO	CONDUIT ONLY (EMPTY CONDUIT) WITH PULL WIRE
CPB	COMMUNICATIONS PULL BOX
CU	COPPER CONDUCTOR OR BUS
DB	DISTRIBUTION PANEL
(E)	EXISTING
EM	EMERGENCY
EMT	ELECTRIC METALLIC TUBING
E.O.L.	END-OF-LINE
EPO	EMERGENCY POWER-OFF
EWC	ELECTRIC WATER COOLER
F	FUSE
F.A./FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
F.B.O.	FURNISHED BY OTHER/FURNISHED BY OWNER
FLA	FULL LOAD AMPS
FMC	FLEXIBLE METALLIC CONDUIT
FS	FLOW SWITCH
G	GREEN GROUND WIRE
GFCI	GROUND FAULT CIRCUIT INTERRUPT
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HC	HORIZONTAL CROSSCONNECT
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM
I.B.O.	INSTALLED BY OTHER
I.B.E.	INSTALLED AND CONNECTED BY ELECTRICAL CONTRACTOR
IDF	INTERMEDIATE DISTRIBUTION FRAME (DATA)
IG	ISOLATED GROUND
INT	INTRUSION ALARM
J/JB	JUNCTION BOX
KV	KILOVOLTS
KVA	KILOVOLTS-AMPERES
KW	KILOWATT
LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
LCP	LIGHTING CONTROL PANEL
LTG	LIGHTING
LV	LOW VOLTAGE
MTD	MOUNTED
MTG	MOUNTING
MLO	MAIN LUG ONLY
N	NEUTRAL
(N)	NEW
NL	NIGHT LIGHT
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
O.C./OC	ON CENTER
OFOI	OWNER FURNISHED OWNER INSTALLED
Ø	PHASE
P	POLE
P.A./PA	PUBLIC ADDRESS SYSTEM
PB	PULL BOX
PIV	POST INDICATOR VALVE
PNL	PANEL
PPB	POWER PULL BOX
REC/RECEPT.	RECEPTACLE
REF.	REFRIGERATOR
RELO	RELOCATABLE BUILDING/ PORTABLE BUILDING
RM	ROOM
RS	RAPID START
RU	RACK UNIT
SCE	SIGNAL CURRENT EXPANDER PANEL
S.L.	SECURITY LIGHT
SCTB	SIGNAL AND COMMUNICATION TERMINAL BACKBOARD
SPB	SIGNAL PULL BOX
SPD	SURGE SUPPRESSION DEVICE
STB	SIGNAL TERMINAL BOARD
STC	SIGNAL TERMINAL CABINET
SW	SWITCH
TPB	TELEPHONE PULL BOX
TS	TAMPER SWITCH
TEL	TELEPHONE
TERM	TERMINAL
TYP	TYPICAL
TTB	TELEPHONE TERMINAL BOARD
TTC	TELEPHONE TERMINAL CABINET
U.C.	UNDER COUNTER
UG	UNDERGROUND
U.O.N.	UNLESS OTHERWISE NOTED
V	VOLTS/VOLTAGE
V.P.	VANDAL PROOF
W	WATTS
WP	WEATHERPROOF
WM	WIREMOLD

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REGISTERED PROFESSIONAL ENGINEER BORRELLI No.E16390 EXP. 6/30/23 ELECTRICAL CALIFORNIA

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER IVAN W. CARLSON M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
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TITLE:
SYMBOLS LEGEND, NOTES, ABBREVIATIONS, AND REQUIREMENTS

SHEET:
E1.01

PROJECT 21181

CALIFORNIA CODE OF REGULATIONS

PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS - CALIFORNIA CODE OF REGULATIONS TITLE 19

2022 CALIFORNIA ADMINISTRATIVE CODE - CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 1 (CAC)

2019 CALIFORNIA BUILDING CODE - CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 2 (CBC)

2019 CALIFORNIA ELECTRICAL CODE - CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 3 (CEC)

2019 CALIFORNIA MECHANICAL CODE - CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 4 (CMC)

2019 CALIFORNIA FIRE CODE - CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 9 (CFC)

2019 CALIFORNIA REFERENCED STANDARDS - CALIFORNIA CODE OF REGULATIONS TITLE 24, PART 12

PARTIAL LIST OF APPLICABLE STANDARDS

2019 CALIFORNIA BUILDING CODE (FOR SFM) NATIONAL STANDARDS SECTION 3504.1.3

NATIONAL FIRE ALARM CODE (CALIF. AMENDED)
(NOTE SEE UL STANDARD 1971 FOR `VISUAL DEVICES')

REFERENCE CODE SECTION FOR NFPA STANDARDS - CBC (SFM) 3504.1

GENERAL NOTES

1. ALL WORK AND MATERIAL SHALL CONFORM TO LATEST CODES AND ORDINANCES. IT IS THE INTENTION OF THESE PLANS AND SPECIFICATIONS TO COVER ALL THINGS REQUIRED TO PROVIDE COMPLETE AND OPERATIVE SYSTEMS. THE CONTRACTOR SHALL FURNISH LABOR, MATERIAL, TRANSPORTATION, EQUIPMENT, MISCELLANEOUS SERVICES, ETC. REQUIRED TO ACCOMPLISH THIS RESULT. ANYTHING WHICH MAY BE REASONABLY CONSTRUED AS A NECESSARY PART OF THE INSTALLATION SHALL BE INCLUDED. NOTHING IN THESE PLANS OR SPECIFICATIONS MAY BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO ANY CONSTRUCTION CODES.

2. ALL EQUIPMENT SHALL HAVE TESTING LABORATORY LABEL ATTACHED (U.L. C.S.A. ETC.) AS PER N.E.C. 110. PROOF OF TESTING LABELS REQUIRED WITH ALL SUBMITTALS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL THESE REQUIREMENTS. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PURCHASING, IF ANY OF THE SPECIFIED MATERIAL FAILED THESE REQUIREMENTS. WHERE A FIELD CERTIFIED PRODUCT MAY BE REQUIRED FOR FIELD ASSEMBLED COMPONENT, PROVIDE CERTIFIED REPORT BY AN APPROVED TESTING AGENCY ACCEPTABLE TO THE AUTHORITIES HAVING JURISDICTION. INCLUDE ALL TESTING FEES IN BID.

3. THE ENGINEERING SERVICE ARE LIMITED TO PREPARATION OF PLANS AND SPECIFICATIONS. THE PLANS AND SPECIFICATIONS ARE INTENDED TO BE USED AS CONSTRUCTION GUIDELINES ONLY AND NOT THE TOTAL INSTRUMENT OF CONTRACT DOCUMENTS. IT IS NOT THE INTENTION OF ANY CONSTRUCTION PLANS TO DIVIDE WORK AMONG DIFFERENT TRADES. VERIFY SCOPE OF WORK WITH GENERAL CONTRACTOR/OWNER SINCE THE ENGINEER IS NOT SUPERVISING THE JOB. THE ENGINEER WILL PROVIDE INTERPRETATION OF THE CONSTRUCTION DOCUMENTS, BUT SUPERVISION IS UNDER THE RESPONSIBILITY OF THE OWNER OR HIS APPOINTEE.

4. WORKING CLEARANCE SHALL BE MAINTAINED AS PER C.E.C/N.E.C. FOR ALL PANEL(S), SERVICE EQUIPMENT, DISCONNECT SWITCH, ETC. LOCAL UTILITY COMPANY WORKING CLEARANCE REQUIREMENT SHALL ALSO BE OBSERVED. POWER EQUIPMENT MANUFACTURER'S PRODUCT MAY VARY IN DIMENSION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF WORKING CLEARANCE REQUIREMENT WHEN LAYING OUT THE ELECTRICAL EQUIPMENT.

5. AVAILABLE FAULT CURRENT SHALL BE INDICATED ON ALL NEWLY INSTALLED SERVICE EQUIPMENT. THE FIELD MARKING SHALL INCLUDE THE DATE OF THE FAULT CURRENT CALCULATION WAS PERFORMED.

6. THE CONTRACTOR SHALL VERIFY EXACT LOCATION OF TERMINAL BOXES AND CONDUIT ENTRANCES OF ALL EQUIPMENT AGAINST SHOP DRAWINGS BEFORE STUBBING UP CONDUITS OR PENETRATING EXTERIOR WALL(S) OF BUILDING(S).

7. IN CASE OF INTERFERENCE BETWEEN ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND OTHER EQUIPMENT, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING BEFORE PROCEEDING.

8. ALL OUTDOOR DEVICES SHALL BE WEATHERPROOF.

9. ONLY MAJOR PULL BOXES ARE SHOWN. CONTRACTOR SHALL PROVIDE ADDITIONAL PULL BOXES WHERE THEY ARE REQUIRED TO MAKE A WORKABLE INSTALLATION. ALL PULL BOXES ABOVE GROUND SHALL BE PAD LOCKABLE. ALL PULL BOXES UNDERGROUND SHALL HAVE HOLD DOWN BOLTS AND BE TRAFFIC RATED.

10. MARK ALL PANELS WITH LAMANOID TAGS. PROVIDE TYPE WRITTEN PANEL SCHEDULE AT ALL PANELS.

11. ALL FLOOR/GROUND MOUNTED EQUIPMENT SHALL SIT ON A CONCRETE PAD 3" HIGHER THAN SURROUNDING SURFACE FOR INTERIOR EQUIPMENT AND 6" FOR EXTERIOR EQUIPMENT.

12. CONTRACTOR SHALL FURNISH ALL MATERIALS, TOOLS, LABOR, EQUIPMENT AND SUPERVISION NECESSARY TO COMPLETE INSTALLATION, CHECKOUT AND INITIAL OPERATION.

13. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GENERAL ARRANGEMENT OF EQUIPMENT SHOWN AND SHALL SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT PRIOR TO PURCHASE.

14. CAUTION SHOULD BE USED WHEN EXCAVATING OR TRENCHING TO LOCATE EXISTING UNDERGROUND CONDUITS. COORDINATE WITH AGENCIES SUCH AS UNDERGROUND SERVICE ALERT PRIOR TO EXCAVATION.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING VISITED THE SITE AND SATISFIED HIMSELF AS TO THE CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED. THE CONTRACTOR SHALL CHECK ALL OF THE CONDITIONS WHICH MAY AFFECT HIS WORK. THE SITE VISIT SHALL BE MADE PRIOR TO SUBMITTING THE BID. BIDDERS SHALL PREARRANGE A SITE VISIT WITH THE OWNER/ARCHITECT.

16. THE CONTRACTOR SHALL OBTAIN A FULL SET OF PLANS WHEN BIDDING THE JOB.

17. ALL PHASE CONDUCTORS SHALL HAVE THEIR OWN NEUTRALS. NO SHARING OF NEUTRALS ALLOWED.

18. A CERTIFIED ELECTRICAL SHALL BE PRESENT ON THE PROJECT WHENEVER ELECTRICAL WORK IS IN PROGRESS. AN ELECTRICAL CONTRACTOR IS NOT EXEMPT FROM THIS REQUIREMENT AND SHALL ALSO BE CERTIFIED IF HE IS WORKING AS THE RESPONSIBLE PROJECT ELECTRICIAN . VIOLATION OF THIS REQUIREMENT BY EITHER ELECTRICIANS OR WORKING CONTRACTORS SHALL BE REPORTED TO THE STATE LICENSE CONTRACTOR BOARD AS REQUIRED UNDER THE EXISTING LABOR CODE SECTION 108.2. NO VOLUNTEERS ARE ALLOWED TO PERFORM WORK ON THIS PROJECT AND ALL CITY INSURANCE REQUIREMENTS MUST BE MET PRIOR TO PERFORMING ANY WORK.

19. ALL CONDUIT SHALL BE CONCEALED WITHIN ATTIC SPACE AND WALLS.

20. ALL EXTERIOR CONDUIT USED ON THIS PROJECT SHALL BE IMC OR RIGID.

21. ALL FASTENERS USED SHALL BE STAINLESS STEEL GRADE 316.

22. ALL EXTERIOR RECEPTACLES SHALL BE GFCI TYPE WITH A LOCKING, WEATHERPROOF IN-USE COVER.

23. ALL DISCONNECTS SHALL BE READILY ACCESSIBLE AND IN SIGHT OF THE EQUIPMENT, PER THE CALIFORNIA ELECTRICAL CODE. IF THE DISCONNECTING MEANS CANNOT BE LOCATED WITHIN SIGHT OF THE EQUIPMENT SERVED, IT SHALL HAVE THE CAPABILITY OF BEING LOCKED IN THE OPEN POSITION.

24. ALL CONDUCTORS IN STALLED IN UNDERGROUND OR WET LOCATIONS SHALL BE LISTED FOR WET LOCATIONS AND MARKED WITH "W" PER CEC.

25. SPLICES AND TERMINALS SHALL BE COMPRESSION TYPE OF SEAMLESS PURE COPPER, TIN PLATED, LONG BARREL (TERMINALS WITH TWO-HOLE PAD AND INSPECTION WINDOW WITH NEMA DRILLING), AS MANUFACTURED BY BURNDY TYPE YS, YAZ-2N OR EQUAL. CLEAN ALL SURFACES AND INSTALL WITH OXIDE INHIBITING COMPOUND, BURNDY PENETROX-E OR EQUAL. INSTALL COMPRESSION CONNECTORS WITH 360° CIRCUMFERENTIAL COMPRESSION DYE, BURNDY HYPRESS OR EQUAL. THE INDENTER OR OTHER TYPE TOOLS WILL NOT BE ACCEPTABLE.

26. INSTALL 'MECHANICALLY FASTENED PHENOLIC NAMEPLATE WITH WHITE LETTERING ON BLACK BACKGROUND ON ALL EQUIPMENT, INCLUDING PULL BOXES, WITH DESCRIPTION INDICATED ON DRAWINGS. NAMEPLATES SHALL READ EXACTLY AS DESCRIBED ON THE DRAWINGS. IN GENERAL NAMEPLATE LETTERING SIZE SHALL BE 3/16-INCH HIGH FOR ALL NAMEPLATES SERVING FEEDER AND BRANCH CIRCUIT BREAKERS. ON MAIN SERVICE PANELS AND ALL OTHER NAMEPLATES LETTERING SHALL BE 1/4-INCH HIGH.
    29.1 ALL SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, VFD'S, MOTORS, JUNCTION BOXES, PULL BOXES, DISCONNECT SWITCHES, ETC., SHALL BE MARKED TO INDICATE EACH DEVICE OR EQUIPMENT WHERE THE POWER ORIGINATES PER CEC 408.4, FIELD IDENTIFICATION REQUIRED, (B) SOURCE OF SUPPLY.

27. COORDINATE EQUIPMENT LOCATIONS, CONTROL AND POWER WIRING REQUIREMENTS AND CONNECT POINTS WITH ALL APPLICABLE DISCIPLINES.

28. PROVIDE AND INSTALL FUSES PER UNIT NAMEPLATE DATA ON THE EQUIPMENT PROVIDED.

29. REINSTALL EXISTING ELECTRICAL INSTALLATIONS DISTURBED. CERTAIN EXISTING ELECTRICAL INSTALLATIONS MAY BE LOCATED IN WALL, CEILINGS OR FLOORS THAT ARE TO BE REMOVED AND ARE ESSENTIAL FOR THE OPERATION OF OTHER REMAINING INSTALLATIONS. WHERE THIS CONDITIONS OCCURS, PROVIDE A NEW EXTENSION OF ORIGINAL CIRCUITS, RACEWAYS, EQUIPMENT AND OUTLETS TO RETAIN SERVICE CONTINUITY. INSTALLATIONS SHALL BE CONCEALED IN FINISHED AREAS.

TRENCHING AND EXCAVATION NOTES

1. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO CALL UNDERGROUND SERVICE ALERT "USA" BEFORE THE COMMENCEMENT OF ANY EXCAVATION. EACH CONTRACTOR SHALL HAVE THEIR OWN USA TICKET NUMBER FOR EACH PROJECT LOCATION AND SHALL NOT RIDE ON ANY OTHER CONTRACTORS TICKET. CONTRACTOR SHALL NOTIFY THE OWNER 72 HOURS PRIOR TO EXCAVATION.

2. THIS CONTRACTOR SHALL PERFORM ALL CUTTING AND PATCHING NECESSARY FOR THE INSTALLATION OF EQUIPMENT AND MATERIALS. ALL PATCHING SHALL ACCURATELY MATCH THE ADJOINING WORK.

3. THIS CONTRACTOR SHALL DO EXCAVATING REQUIRED FOR THE INSTALLATION OF THE WORK. UNDERGROUND LINES OUTSIDE THE BUILDINGS SHALL BE INSTALLED WITH A MINIMUM OF 24" OF COVER, EXCEPT DEPTH OF UTILITY SERVICES SHALL COMPLY WITH RESPECTIVE UTILITY COMPANY REQUIREMENTS.

4. BEFORE COMPACTION, MOISTEN OR AERATE EACH LAYER AS NECESSARY TO PROVIDE OPTIMUM MOISTURE CONTENT. COMPACT EACH LAYER TO REQUIRED PERCENTAGE OF MAXIMUM DRY DENSITY OR RELATIVE DRY DENSITY FOR EACH AREA CLASSIFICATION. DO NOT PLACE BACKFILL OR FILL MATERIAL ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.

5. STRUCTURES, BUILDING SLABS, WALKWAYS, AND STEPS: COMPACT TOP 6" OF SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL AT 95% MAXIMUM RELATIVE COMPACTION.

6. COMPACT TOP 6" OF SUBGRADE MATERIAL AT 85% RELATIVE COMPACTION.

7. COMPACT TOP 6" OF SUBGRADE IMMEDIATELY BENEATH THE BASE COURSE AT 95% MINIMUM RELATIVE COMPACTION.

8. ANY SURPLUS EXCAVATION RESULTING FROM THESE EXCAVATIONS SHALL BE HAULED OFF.

9. AFTER ALL TRENCHES HAVE BEEN TAMPED IN, RAKE OUT ALL HIGH AND LOW AREAS ALONG THE TRENCH LINE. ALL CLODS AND SOLID ROCKS EXPOSED ON THE SURFACE AS A RESULT OF THE EXCAVATION SHALL BE BROKEN DOWN AND OR CLEANED UP. ALL TRENCH LINES SHALL BE RAKED LEVEL WITH EXISTING GRADE.

10. ELECTRICAL, NETWORK, OR DATA CONDUIT SHALL NOT BE RUN IN EXCAVATIONS PROVIDED FOR PLUMBING OR HEATING PIPES, UNLESS SEPARATED BY A MINIMUM OF 12 INCHES.

11. PATCH ALL TRENCHED AREAS TO MATCH EXISTING.

12. HAND EXCAVATE IN AREAS WHERE TRENCHING IS DIFFICULT DUE TO STRUCTURAL OBSTRUCTIONS OR EXISTING UNDERGROUND CONDUIT.

13. THE CONTRACTOR SHALL WALK THE SITE WITH THE DISTRICT TO IDENTIFY ALL EXISTING CONDUITS AND PIPES.

14. CONTRACTOR SHALL RETAIN AND PAY FOR THE SERVICES OF A SOILS LAB TO TEST FOR THE COMPACTION OF THE BACKFILL. A SOILS PROFILE SHALL BE DONE OF THE EXCAVATED NATIVE TRENCHED DIRT SO THE COMPACTION TEST CAN BE COMPARED WITH THE NATIVE DIRT PROFILE. THE CONTRACTOR SHALL PROVIDE ALL COMPACTION OF THE TRENCH REQUIRED TO MEET A 95% COMPACTION REQUIREMENT. AN INSPECTED AND SIGNED OFF COMPACTION TESTING REPORT SHALL BE PROVIDED BY THE SOILS TESTING LAB AND COPY OF THE COMPACTION TEST SHALL BE PROVIDED TO THE ENGINEER OF RECORD/PROJECT COORDINATOR PRIOR INSTALLING THE HARDSCAPE. THE CONTRACTOR SHALL WILL BE REQUIRED TO PAY FOR ALL TESTS UNTIL THE COMPACTION RESULTS MEET OR EXCEED THE COMPACTION TEST.

MEP ANCHORAGE BRACING NOTE

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 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

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

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

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND 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.

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

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE:

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION13.6.5, 13.6.6, 13.6.7, 13.6.8 AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHAT BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOB SITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEM (E):

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

MP [ ] MD [ ] PP [ ] E [x] OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM#) # OPM-0052-13

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REGISTERED PROFESSIONAL ENGINEER — JOHN BORRELLI — No.E16390 — EXP. 6/30/23 — ELECTRICAL — CALIFORNIA

APPROVALS:
APPLICATION # 02-120016

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APP: 02-120016 INC:
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SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 3-16-2023

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TITLE:
ELECTRICAL NOTES

SHEET:
E1.02
PROJECT 21181

MECHANICAL EQUIPMENT SCHEDULE

DESIG. (#/#)	DESCRIPTION	FLA/MCA/HP/W	STARTER/ FUSES	VOLT	PHASE	MAX. OCPD SIZE	CON-DUIT SIZE	CONDUCTOR #	CONDUCTOR SIZE	GND.
CU-1	CONDENSING UNIT	48 MCA	FUSE/DISC.	208	1	NOTE 2	3/4"	2	8	#10
CU-2	↓	31 MCA	↓	↓	↓	↓	↓	↓	↓	↓
E-1	EVAPORATOR UNIT	18.8 FLA	↓	↓	↓	↓	↓	↓	10	↓
E-2	↓	7.2 FLA	↓	120	↓	↓	↓	↓	↓	↓

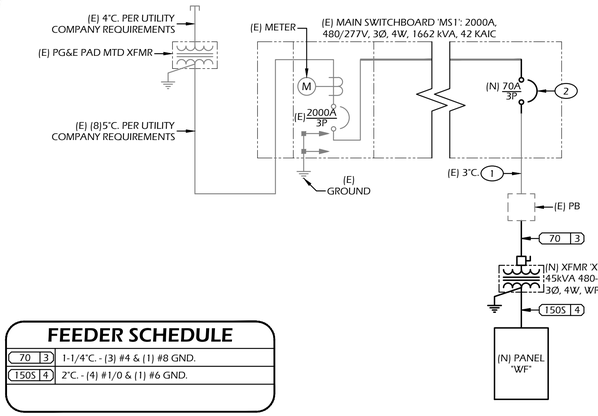
NOTES:
1. * – THERMAL RATED SWITCH FOR FRACTIONAL HORSEPOWER MOTORS.
2. REFER TO THE PANEL SCHEDULE AND SINGLE LINE DIAGRAM FOR THE CIRCUIT BREAKER AND CONDUIT SIZES, IF NOT INDICATED WITHIN THE SCHEDULE.
3. GROUNDING CONDUCTOR SIZE TO MATCH CONDUCTOR SIZE.

GENERAL NOTES:
1. COORDINATE LOCATIONS AND POWER REQUIREMENT FOR MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR.
2. PROVIDE FUSED SWITCH DISCONNECT PER NAME PLATE RATING OF MECHANICAL UNITS FOR OVERLOAD PROTECTION.

(N) PANEL 'WF'

VOLTAGE: 208/120V, 3Ø, 4W
BUS: 150A
MAIN BREAKER: 150A/3P
BREAKER AIC: 35,000
MOUNTING: SURFACE
ENCLOSURE: NEMA 3R

CIR #	BKR	LOAD (VA) PHASE A	PHASE B	PHASE C	DESCRIPTION	DESCRIPTION	LOAD (VA) PHASE C	PHASE B	PHASE A	BKR	CIR #
1	15A/1P	100			FRZR ALRM & LMS	COOLER ALRM & LMS			100	15A/1P	2
3	20A/1P		864		COOLER EVAP. E-2	FREEZER EVAP. E-1		2327		25A/2P	4
5	↓			0	SPARE		2327				6
7	35A/2P	2925			COOLER CONDENSING UNIT, CU-2	FIRE ALARM BELL			50	20A/1P	8
9			2925			RECEPTACLE ON ROOF		180		↓	10
11	60A/2P			4784	FREEZER CONDENSING UNIT, CU-1	SPARE	0			↓	12
13		4784				↓			0	↓	14
15			0		SPACE	SPACE		0			16
17	↓			0	↓	↓	0			↓	18
19	↓	0			↓	↓			0	↓	20
21	↓		0		↓	↓		0		↓	22
23	↓			0	↓	↓	0			↓	24
25	↓	0			↓	↓				↓	26
27	↓		0		↓	↓				↓	28
29	↓			0	↓	↓				↓	30
TOTAL Ø LOADS (VA):					PHASE A = 7959	PHASE B = 6296	PHASE C = 7111				
TOTAL Ø LOADS (A):					PHASE A = 66	PHASE B = 52	PHASE C = 59				
TOTAL LOAD:					21366 VA	59 A					



FEEDER SCHEDULE

70 3	1-1/4"C. - (3) #4 & (1) #8 GND.
150S 4	2"C. - (4) #1/0 & (1) #6 GND.

PARTIAL SINGLE LINE DIAGRAM

1 – NOT TO SCALE

VOLTAGE DROP CALCULATIONS

Panel or Device	Distance	Material	Current	Voltage	Parallel Runs	Wire Size	For segment V_{DS}	For segment $\%V_{DS}$	Total to Device V_{DT}	Total to Device $\%V_{DT}$
(N) XFMR 'XWF'	83.6	Copper	56.000	480	1	#4	2.5026	0.52%	2.5026	0.52%
(N) PNL 'WF'	15.0	Copper	120.000	208	1	#1/0	0.4402	0.21%	0.4402	0.21%
WF-1	20.0	Copper	7.200	120	1	#10	0.3579	0.30%	0.7981	0.67%
WF-2	70.0	Copper	7.200	120	1	#10	1.2527	1.04%	1.6929	1.41%
WF-3	57.9	Copper	7.200	120	1	#10	1.0365	0.86%	1.4767	1.23%
WF-7,9	62.1	Copper	14.000	208	1	#8	1.3582	0.65%	1.7984	0.86%
WF-11,13	36.6	Copper	26.800	208	1	#8	1.5321	0.74%	1.9723	0.95%
WF-4,6	43.8	Copper	18.800	208	1	#10	2.0483	0.98%	2.4884	1.20%
WF-8	30.0	Copper	2.000	120	1	#12	0.2371	0.20%	0.6772	0.56%
WF-10	60.7	Copper	2.000	120	1	#12	0.4794	0.40%	0.9196	0.77%

ELECTRICAL DISTRIBUTION WEIGHT & DIMENSIONS SCHEDULE

NAME	CB	WEIGHT(Lb)	W	D	H	MOUNTING
PANEL 'WF'	150A	213	20"	6.5"	68"	SURFACE

TRANSFORMER WEIGHT & DIMENSIONS SCHEDULE

SITE PLAN

NAME	WEIGHT(LBS)	H	W	D
45kVA XFMR 'XWF'	389	29.32"	25.5"	25.93"

SHEET NOTES (#)

1. UTILIZE ONE OF THE 3-INCH SPARE CONDUITS GOING FROM THE EXISTING PULLBOX TO THE (E) MSB 'MS1' TO ROUTE THE CONDUCTOR INDICATED PER THE FEEDER SCHEDULE FOR THE NEW TRANSFORMER 'XWF'.
2. PROVIDE AND INSTALL ALL MOUNTING HARDWARE FOR A FULLY FUNCTIONAL SYSTEM.

Borrelli & Associates, Inc.
Consulting Electrical Engineers
2032 N. Gateway Boulevard
Fresno, CA. 93727
Phone: 559-233-4138
http://www.borrelliengineering.com/
ca-bai@borrelliengineering.com
BAI# 21162

REGISTERED PROFESSIONAL ENGINEER — No. E16390 — EXP. 6/30/23 — ELECTRICAL — STATE OF CALIFORNIA

APPROVALS:
APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 3-16-2023

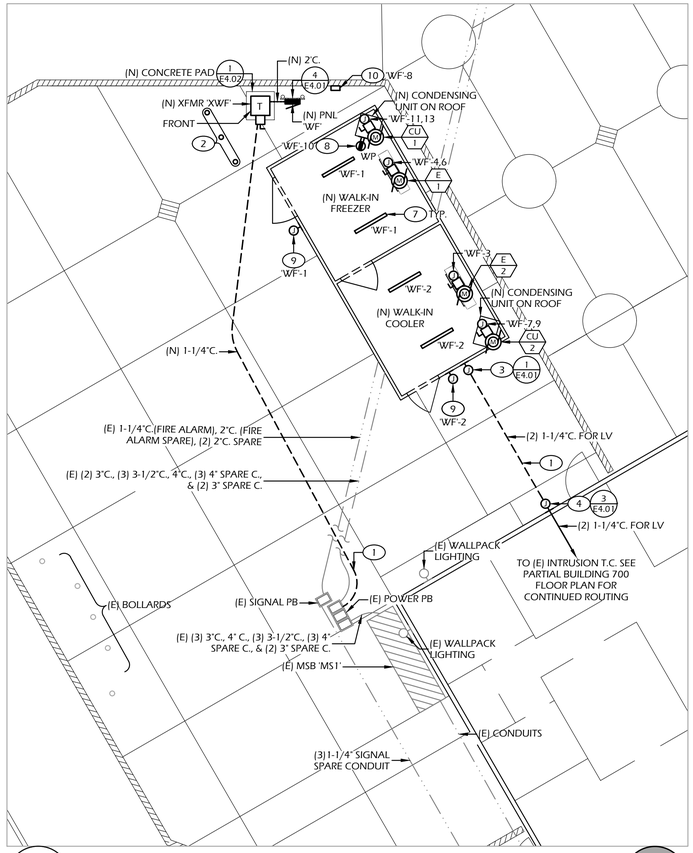
JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

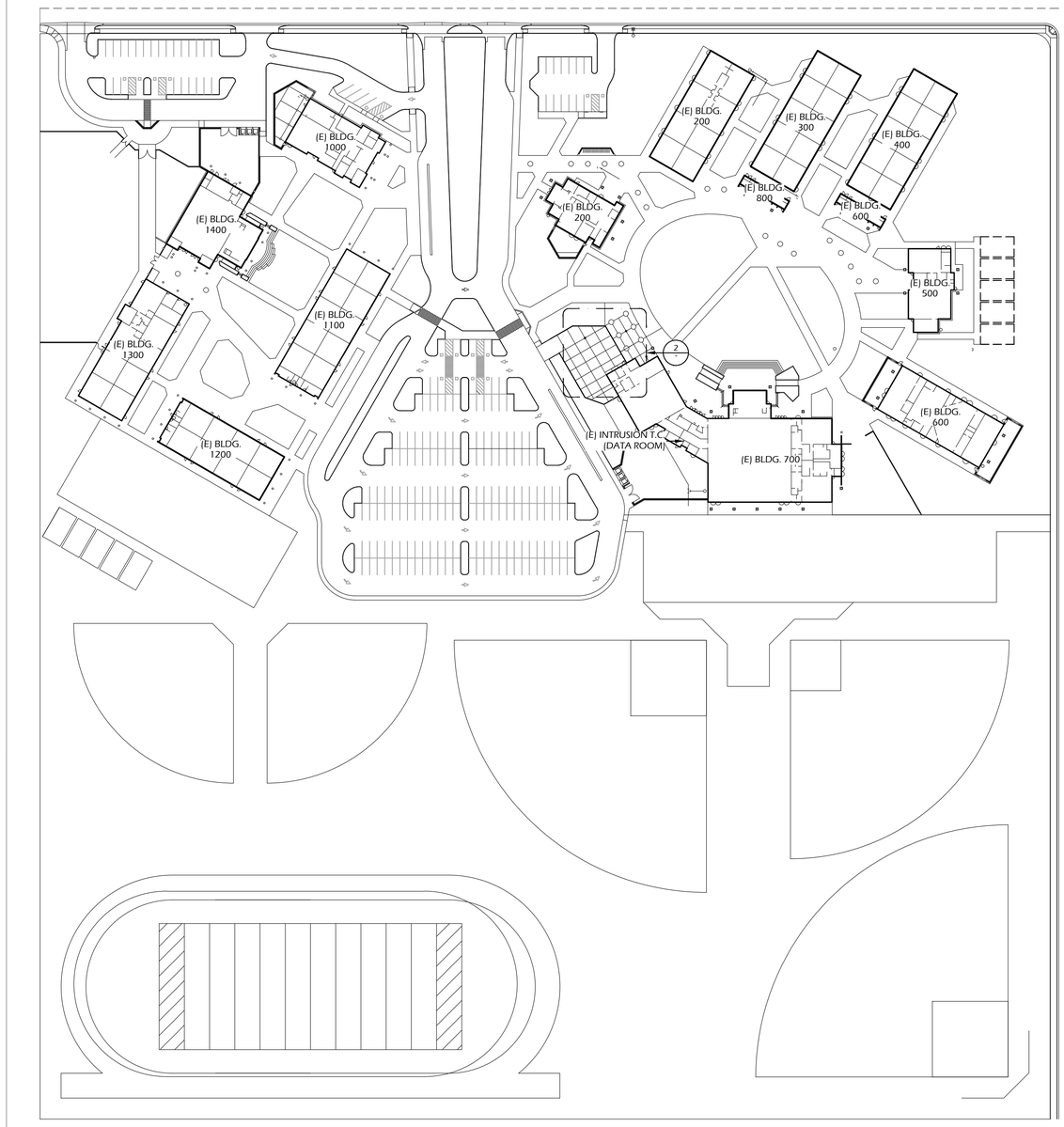
LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1562
4910 E. Clinton Way, Suite 101
(559) 431-0101

TITLE:
PARTIAL SINGLE DIAGRAM,
PANEL SCHEDULE, WEIGHT AND DIMENSION SCHEDULE

SHEET: E1.03
PROJECT 21181



2 - **PARTIAL ELECTRICAL SITE PLAN**
SCALE: 1/8"=1'-0"



1 - **ELECTRICAL SITE PLAN**
SCALE: 1"=80'-0"

SHEET NOTES

1. SAW-CUT CONCRETE AS APPLICABLE ALONG CONDUIT ROUTE AND HAUL AWAY DEBRIS. PATCH AND REPAIR TO MATCH THE EXISTING SURFACE AFTER INSTALLATION OF CONDUITS.
2. PROVIDE AND INSTALL NEW FIXED BARRIER POST.
3. PROVIDE AND INSTALL A 6x6x4-INCH J-BOX, MOUNTED UP HIGH. TERMINATE THE SPARE COMMUNICATIONS CONDUITS AT J-BOX.
4. PROVIDE AND INSTALL A 6x6x4-INCH J-BOX, MOUNTED UP HIGH ABOVE THE INTERIOR CEILING LEVEL. PROVIDE (2) 1-1/4-INCH CONDUIT, NIPPLE THROUGH WALL TO THE ATTIC FOR FUTURE COMMUNICATION CABLES.
5. NOT USED.
6. NOT USED.
7. LIGHT FIXTURE SHALL BE MASTER-BILT 48-INCH FIXTURE P/N #157752. FIXTURE SHALL HAVE OPTIONAL CEILING MOUNT AND MOUNTED ON CEILING OF FREEZER/COOLER.
8. MOUNT RECEPTACLE ON ROOF.
9. PROVIDE AND INSTALL A 1-1/4-INCH CONDUIT BACK TO PANEL INDICATED. MAKE CONNECTIONS TO THE NL708 HIGH/LOW ALARM AND LIGHTING MANAGEMENT SYSTEM. MAKE ALL LIGHTING CONNECTIONS WITH 3/4-INCH LIQUID TIGHT CONDUITS TO THE LIGHT AND SWITCHES. COORDINATE WITH WALK-IN FREEZER CONTRACTOR FOR EXACT LOCATION.
10. NEW FIRE ALARM BELL. REFER TO FIRE SPRINKLER PLAN.

GENERAL NOTES

1. ALL CONDUIT PENETRATIONS SHALL BE SEALED WITH APPROVED SEALANT TO PREVENT MOISTURE PENETRATION WITHIN THE FREEZER AND COOLER.
2. ALL PANELS SHALL BE LOCKABLE.
3. COORDINATE WITH THE REFRIGERATION CONTRACTOR. PART NUMBERS WITHIN THIS PLAN ARE PER THE BUILT OF MATERIAL FOR THE WALK-IN BOXES. COORDINATE WITH THE REFRIGERATION CONTRACTOR FOR EQUIPMENT PURCHASE.

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BAI# 21162

REGISTERED PROFESSIONAL ENGINEER — DAVID BORRELLI — No.E16390 — EXP. 6/30/23 — ELECTRICAL — STATE OF CALIFORNIA

APPROVALS:
APPLICATION # 02-120016

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DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER — RYAN W. CARLSON — M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

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FAX (559) 431-1302

TITLE:
ELECTRICAL SITE PLAN

SHEET:
E2.01

PROJECT 21181

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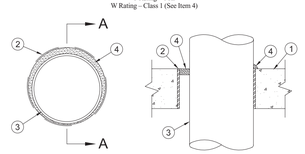
Through Penetrations | **Metallic Pipes** | 1000 Series | Concrete | CAJ

System No. C-AJ-1551
June 12, 2006
F Rating – 2 Hr
T Rating – 0 Hr
W Rating – Class 1 (See Item 4)



1. **Floor or Wall Assembly –** Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600 - 2400 kg/m³) concrete floors or min 3-1/2 in. (89 mm) thick reinforced lightweight or normal weight concrete walls. Floor assembly may also be constructed of any min 6 in (152 mm) thick UL Classified hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening 28 in. (711 mm). Max diam of opening in floors constructed of hollow-core concrete is 7 in. (78 mm).
   See **Concrete Blocks** (CAZT) and **Precast Concrete Units** (CFTV) categories in Fire Resistance Directory for names of manufacturers.
2. **Steel Sleeve –** (Optional) – Nom 28 in. (711 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. (51 mm) beyond the floor or wall surfaces.
3. **Through Penetrant –** One metallic pipe, conduit, tubing or flexible metal piping installed concentrically or eccentrically within opening. Annular space between penetrant and periphery of opening or sleeve shall be min of 0 in. (0 mm, point contact) to max 3-7/8 in. (98 mm). Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:
   A. **Steel Pipe –** Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. **Iron Pipe –** Nom 24 in. (610 mm) diam (or smaller) cast or ductile iron pipe.
   C. **Conduit –** Nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing.
   D. **Copper Tubing –** Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
   E. **Copper Pipe –** Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
   F. **Through Penetrating Product* – Flexible Metal Piping** – The following types of steel flexible metal gas piping may be used:
      1) Nom 2 in. (51 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
         OMEGA FLEX INC
      2) Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
         GASTITE, DIV OF TITEFLEX
      3) Nom 1 in. (25 mm) diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.
         WARD MFG INC
4. **Firestop System –** The details of the firestop system shall be as follows:
   A. **Packing Material –** (Optional, Not Shown) – Polyethylene backer rod or min 1 in. (25 mm) thickness of min 4 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material. In floors constructed of hollow-core concrete, packing material to be recessed from top and bottom surfaces of floor as required to accommodate the required thickness of fill material.
   B. **Fill, Void or Cavity Materials* – Caulk or Sealant** – Min 1 in. (25 mm) thickness of caulk applied within the annulus, flush with top surface of floor or with both surfaces of wall. In floors constructed of hollow-core concrete, min 1 in. (25 mm) thickness of caulk applied within the annulus, flush with top and bottom surfaces of floor. Min 1/4 in. (6 mm) diam bead of caulk applied to the penetrant/concrete or penetrant/sleeve interface at the point contact location on the top surface of floor or both surfaces of wall or hollow-core floor.
      3M COMPANY – IC 15WB+ Caulk, CP 25WB+ Caulk or FB-3000 WT Sealant
      (Note – W Rating applies only when FB-3000 WT is used.)

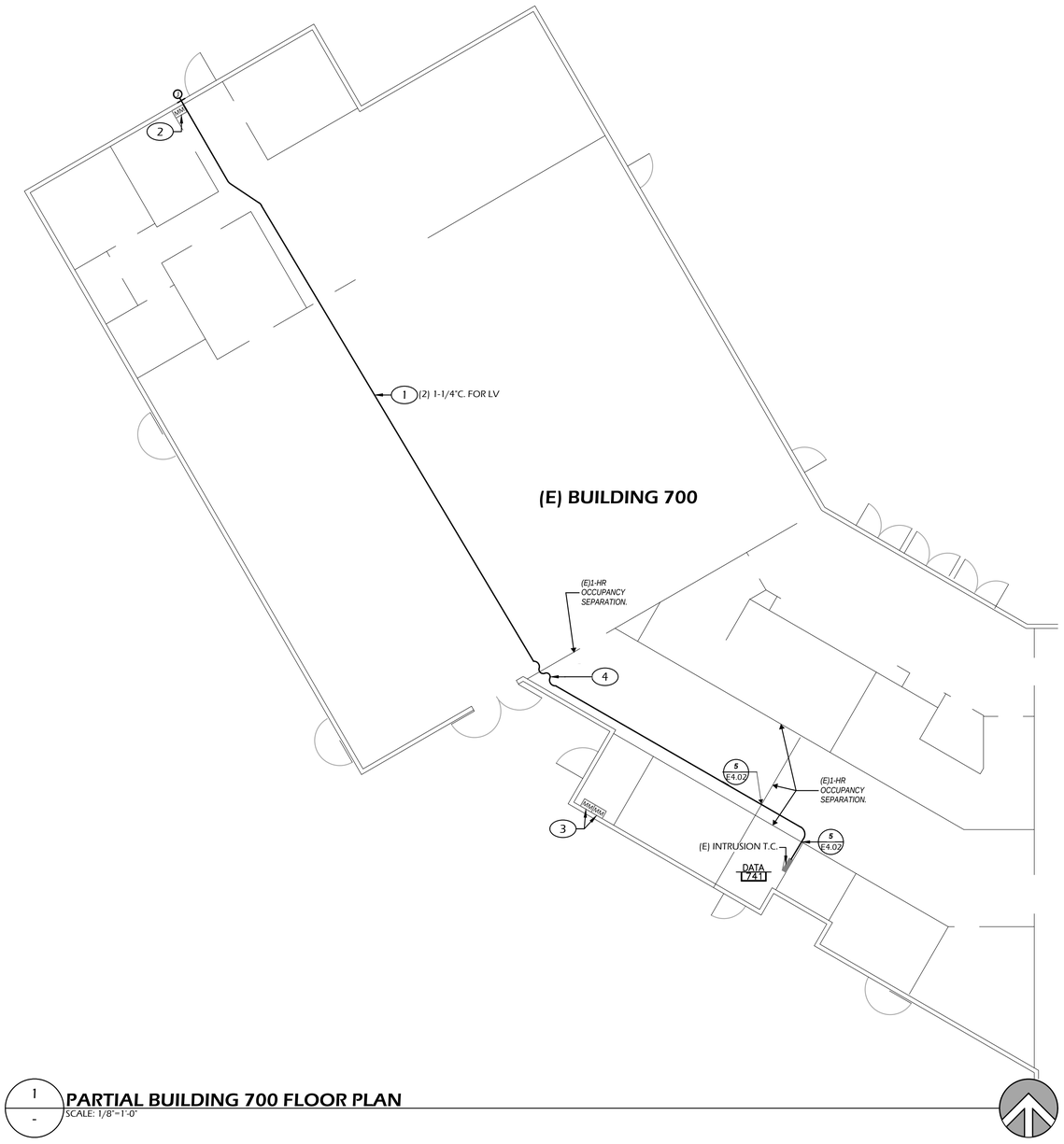
*Bearing the UL Classification Mark

This material was extracted and drawn by 3M Fire Protection Products from the 2006 edition of the UL Fire Resistance Directory

3M Fire Protection Products www.3m.com/firestop C-AJ-1551 • 1 of 1 Product Support Line: 1-800-328-1687 Choose option 4 for FAX ON DEMAND

1 - **CONDUIT PENETRATION THRU CMU WALL DETAIL *(RATED)***

NOT TO SCALE



1 - **PARTIAL BUILDING 700 FLOOR PLAN**
SCALE: 1/8"=1'-0"

SHEET NOTES (#)

1. ROUTE CONDUIT IN ACCESSIBLE CEILING SPACE.
2. EXISTING FIRE SPRINKLER MONITOR MODULES FOR MONITORING THE EXISTING SPRINKLER SYSTEM POST INDICATOR VALVE.
3. EXISTING FIRE SPRINKLER MONITOR MODULES IN DROP TILE CEILING FOR EXISTING FIRE SPRINKLER RISER TAMPER AND WATERFLOW SWITCHES.
4. ***REFER TO DETAIL 1/E3.01 FOR PENETRATION THRU RATED CMU WALL.***

APPROVALS:
APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
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REVISIONS

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4710 E. Clinton Way, Suite 101
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FAX (697) 431-1502

TITLE:
PARTIAL BUILDING 700
FLOOR PLAN

SHEET: E3.01
PROJECT 21181

Borrelli & Associates, Inc.
Consulting Electrical Engineers
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BAI# 21162

REGISTERED PROFESSIONAL ENGINEER
BORRELLI
No.E16390
Exp. 6/30/23
ELECTRICAL
STATE OF CALIFORNIA

APPROVALS:
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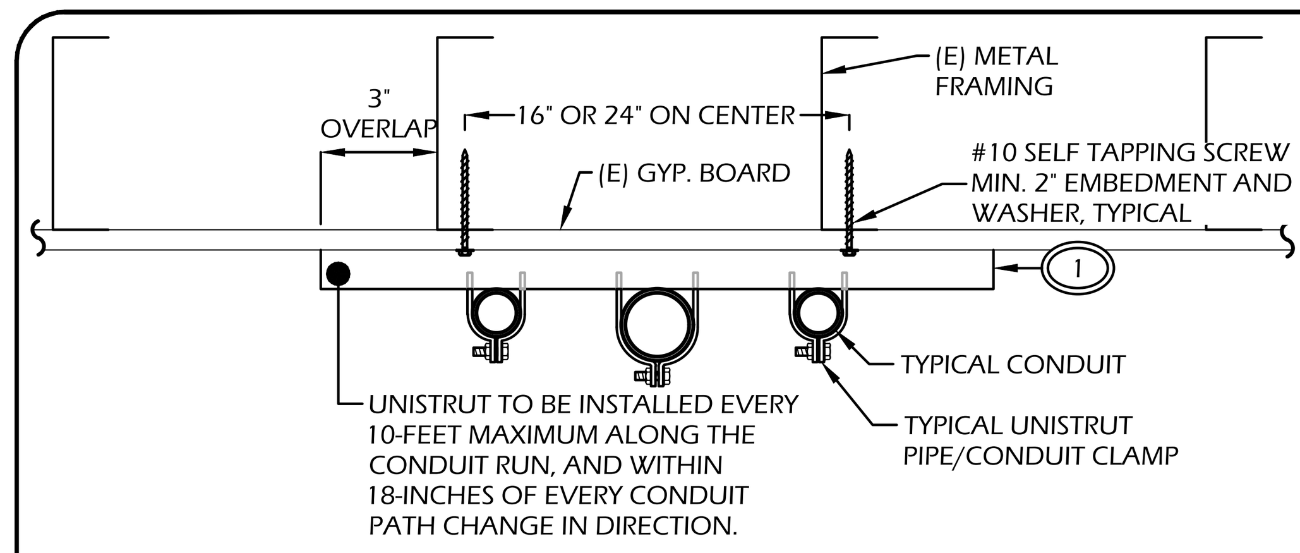
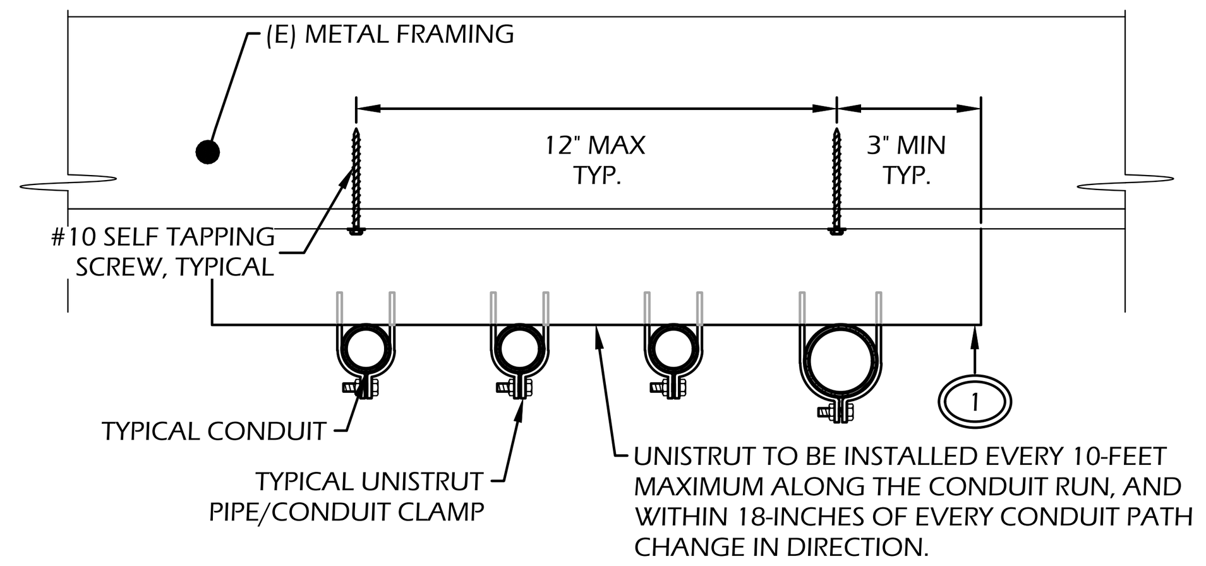
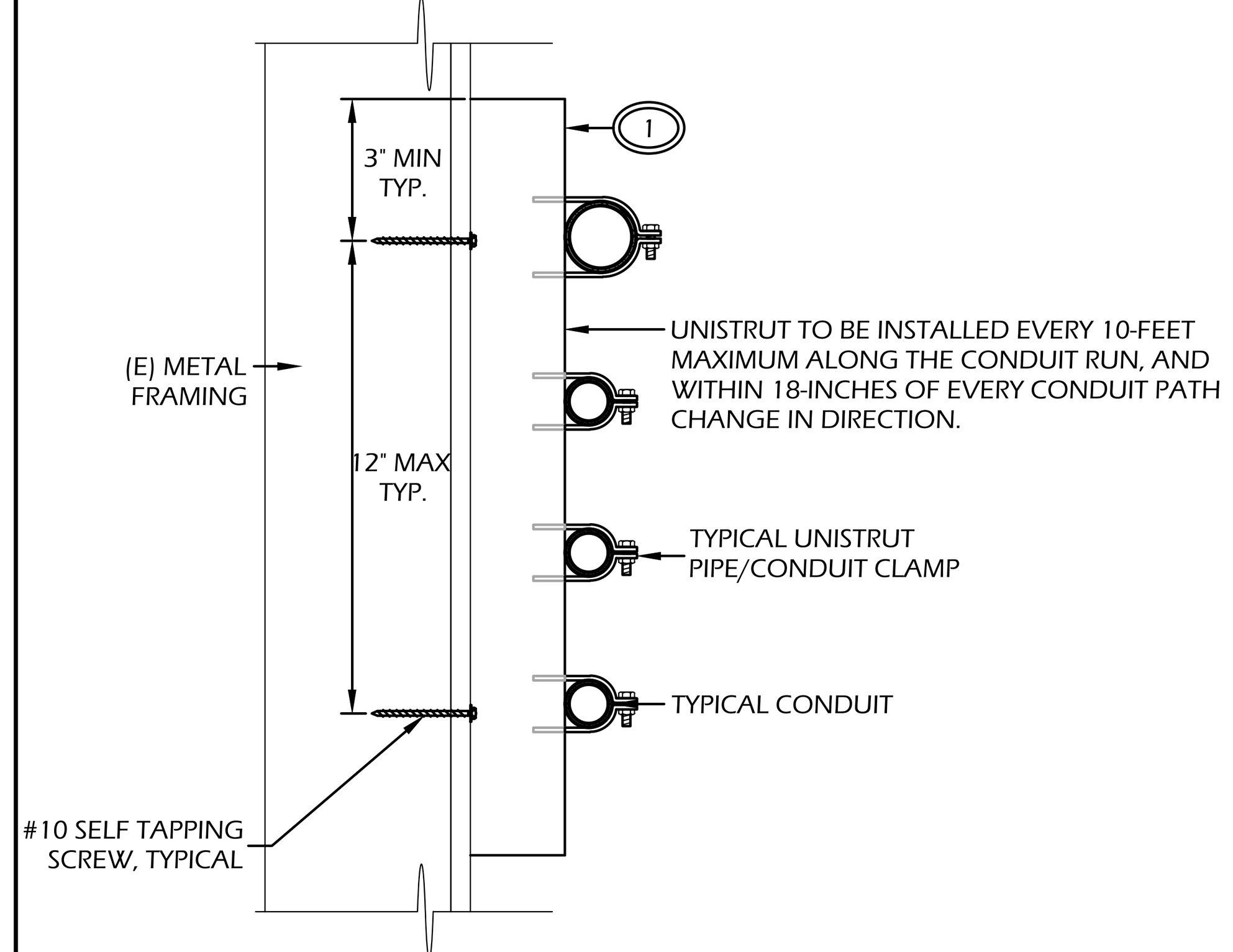


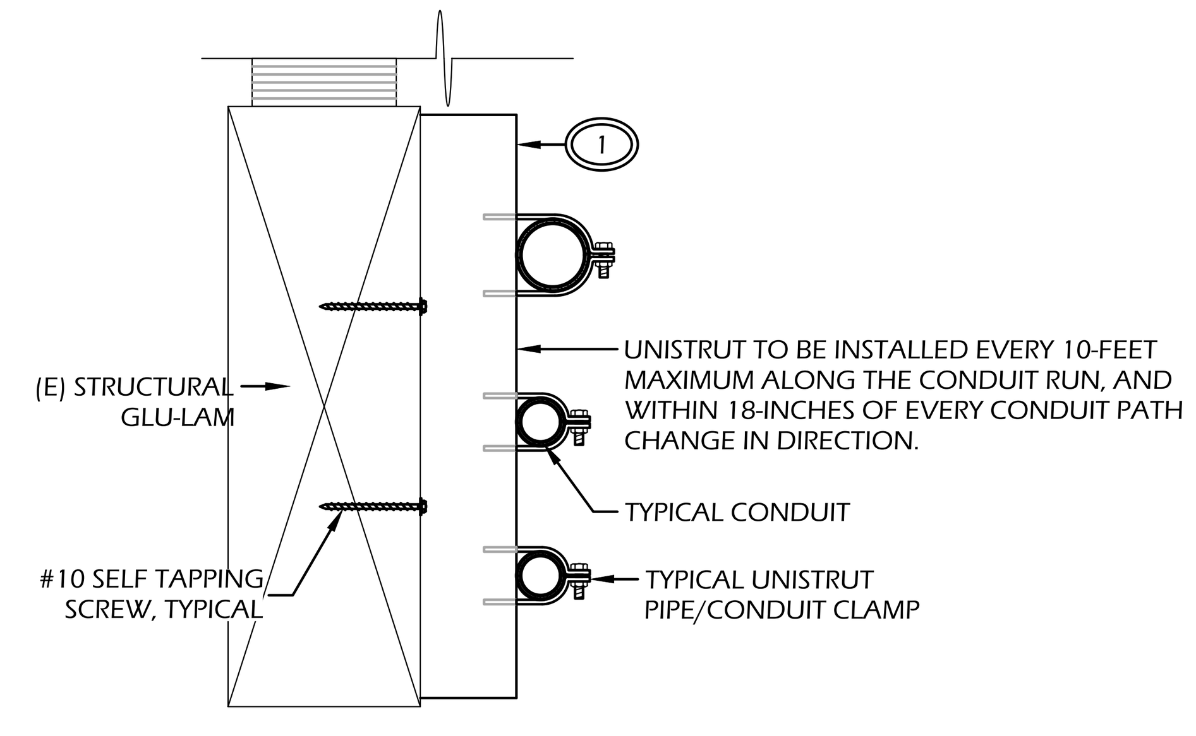
A CONDITION 1 - CEILING MOUNTED
CEILING JOIST PARALLEL TO CONDUIT RUN



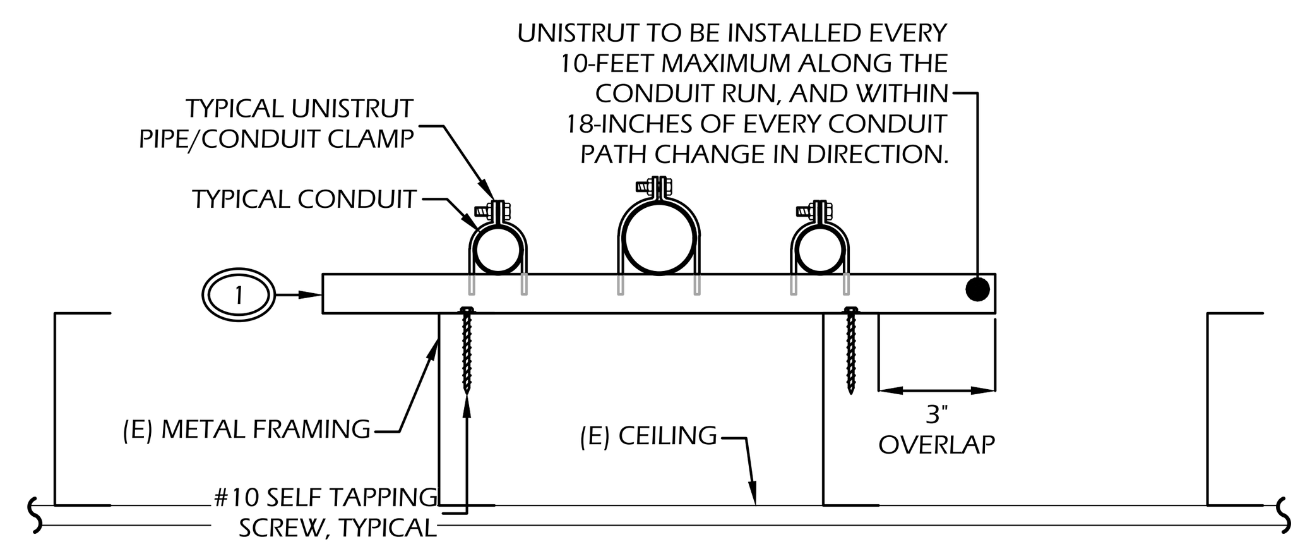
B CONDITION 2 - CEILING MOUNTED
CEILING JOIST PERPENDICULAR TO CONDUIT RUN



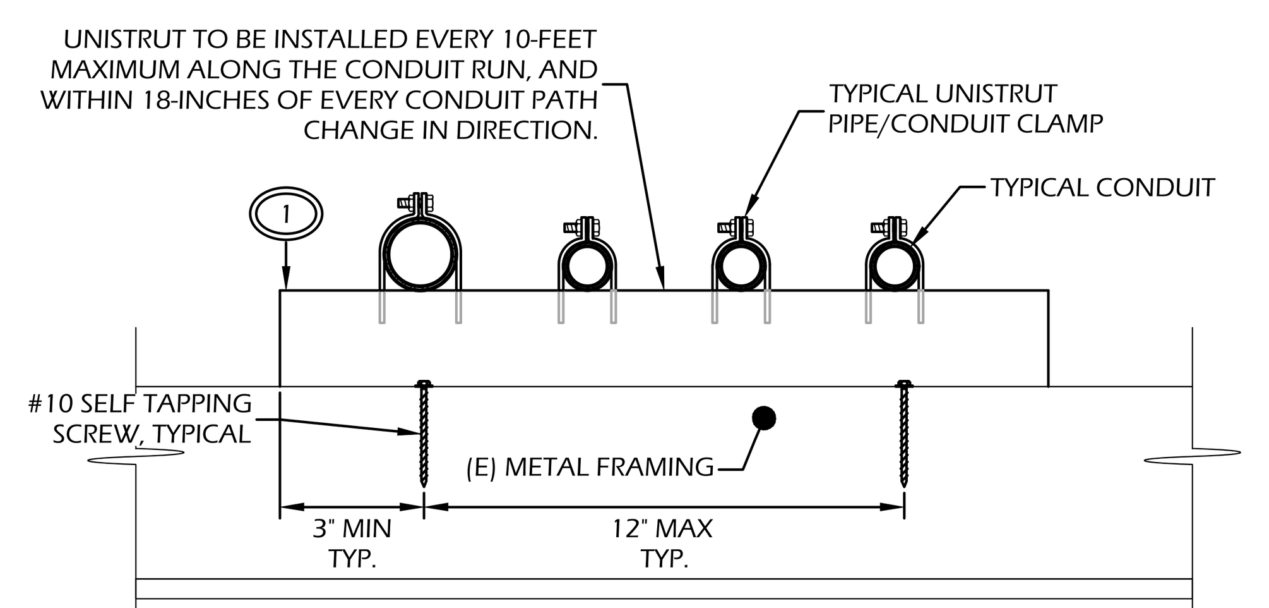
C CONDITION 3 - WALL MOUNTED



D CONDITION 4 - CONDUIT MOUNTING ON GLU-LAM



E CONDITION 5 - ABOVE CEILING MOUNTED
CEILING JOIST PARALLEL TO CONDUIT RUN



F CONDITION 6 - ABOVE CEILING MOUNTED
CEILING JOIST PERPENDICULAR TO CONDUIT RUN

DETAIL NOTES

1. PROVIDE AND INSTALL UNISTRUT CONDUIT CLAMPS. COORDINATE LENGTH OF UNISTRUT REQUIRED. MAX LENGTH TO BE 30-INCHES. REFER TO SCHEDULE BELOW FOR CLAMP MODEL NUMBER AND MAXIMUM CONDUIT SIZE PER CLAMP.

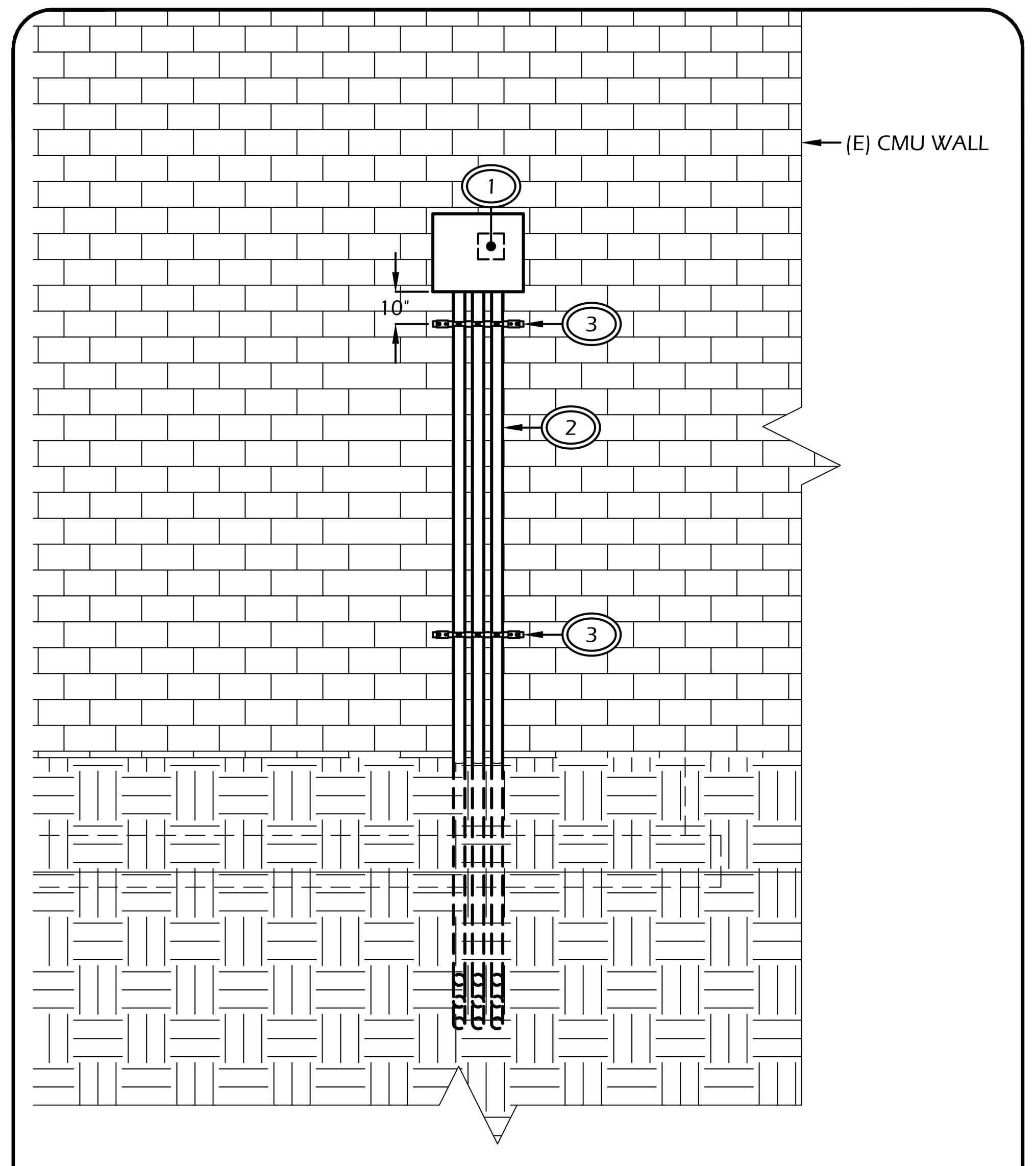
PART NO.	CONDUIT SIZE IN (mm)	THICKNESS GAUGE (mm)	WT/100 PCS LBS (kg)	DESIGN LOAD LBS (kN)
P1211	1/2 12.7	16 1.5	10 4.5	400 1.78
P1212	3/4 19.1	16 1.5	11 5.0	400 1.78
P1213	1 25.4	16 1.5	12 5.4	400 1.78
P1214	1-1/4 31.8	14 1.9	18 8.2	600 2.67
P1215	1-1/2 38.1	14 1.9	20 9.1	600 2.67
P1217	2 50.8	14 1.9	22 10.0	600 2.67
P1218	2-1/2 63.5	12 2.7	40 18.1	800 3.56
P1219	3 76.2	12 2.7	47 21.3	800 3.56
P1220	3-1/2 88.9	11 3.0	62 28.1	1000 4.45
P1221	4 101.6	11 3.0	67 30.4	1000 4.45

GENERAL NOTES

1. QUANTITY OF CONDUIT ON UNISTRUT MOUNTED MAY VARY. REFER TO CONDUIT ROUTING FLOOR PLAN FOR QUANTITY OF CONDUIT.
2. FOR CONDUITS ROUTING PARALLEL TO THE ROOF JOISTS WITH A WEIGHT GREATER THAN 15LBS./FT., THE SUPPORTS SHALL BE WITHIN 2 FEET OF AN EXISTING STRUCTURAL BEAM, ONE SUPPORT ON EACH SIDE OF THE BEAM.
3. CONDUITS ROUTING PERPENDICULAR TO THE ROOF JOISTS WITH A WEIGHT GREATER THAN 25LBS./FT. SHALL BE WITHIN 2 FEET OF AN EXISTING STRUCTURAL GLU-LAM.
4. UNISTRUT CHANNEL SHALL BE #P1000-HS, UON. COORDINATE LENGTH OF UNISTRUT REQUIRED. MAX LENGTH TO BE 30-INCHES.

5 TYPICAL CONDUIT SUPPORT DETAIL

NOT TO SCALE



A FRONT ELEVATION
SCALE: 1/4"=1'-0"

DETAIL NOTES

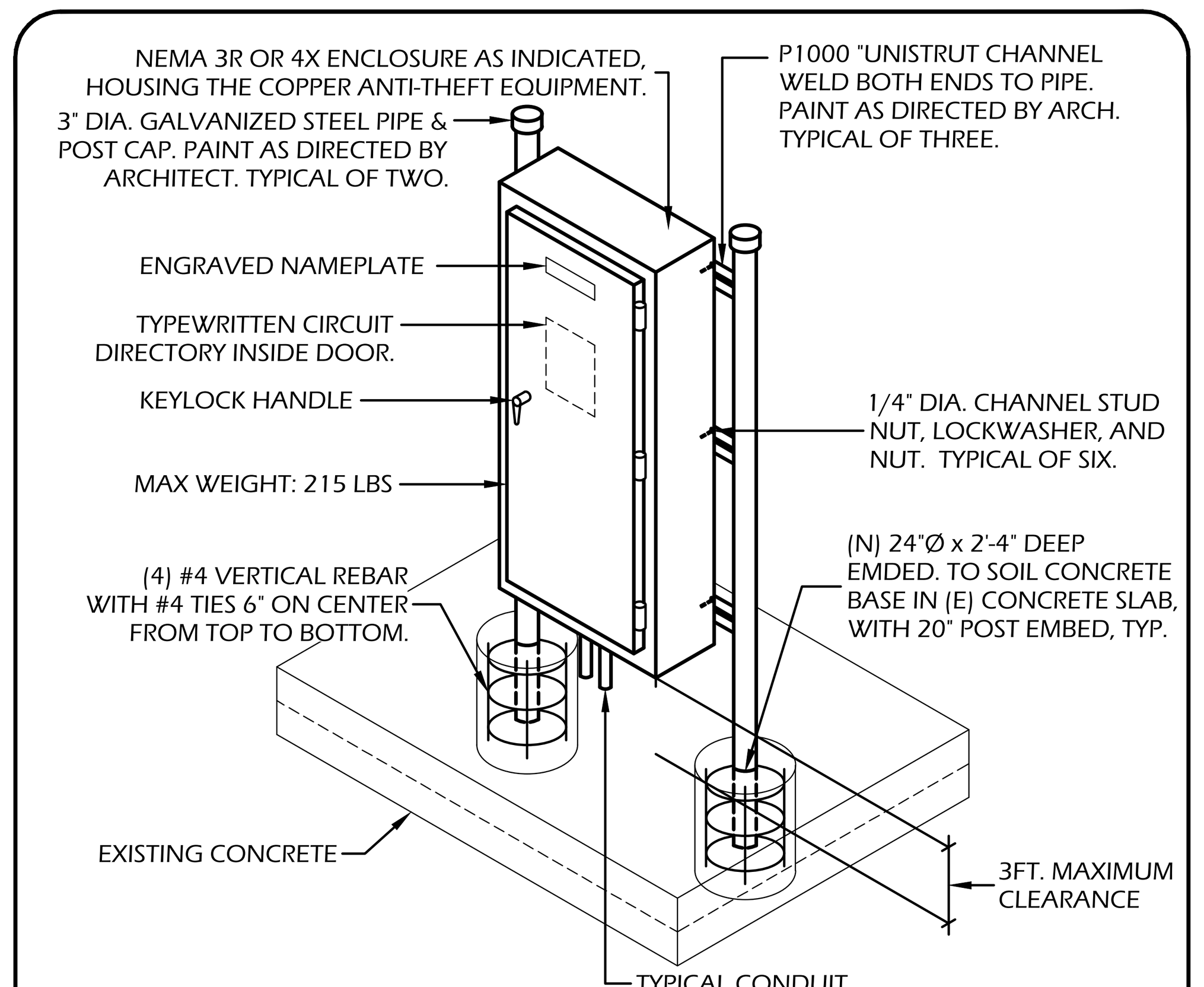
1. SEE CONDUIT PENETRATION THROUGH CMU WALL DATAIL FOR WALL PENETRATION REQUIREMENTS.
2. PROVIDE AND INSTALL 316 STAINLESS STEEL, RIGID CONDUIT. QUANTITIES AND SIZES VARY, REFER TO SITE PLANS.
3. MOUNT CONDUITS TO STRUCTURE USING UNISTRUT P1000HS-ST AND UNISTRUT 316 STAINLESS STEEL PIPE CLAMPS AT 10'-0" O.C., MAX. MOUNT UNISTRUT TO STRUCTURE USING UNISTRUT P4376-ST AND 3/8"Ø SS TITEN HD SCREW ANCHOR WITH 2-3/4" EMBEDMENT AT EACH END (ESR-1056).

GENERAL NOTES:

1. SEAL ALL OPENINGS INTO CMU WITH CMU APPROVED SEALANT TO CREATE A WATERTIGHT SEAL.

3 CMU WALL MOUNTED J-BOX/WIREWAY DETAIL

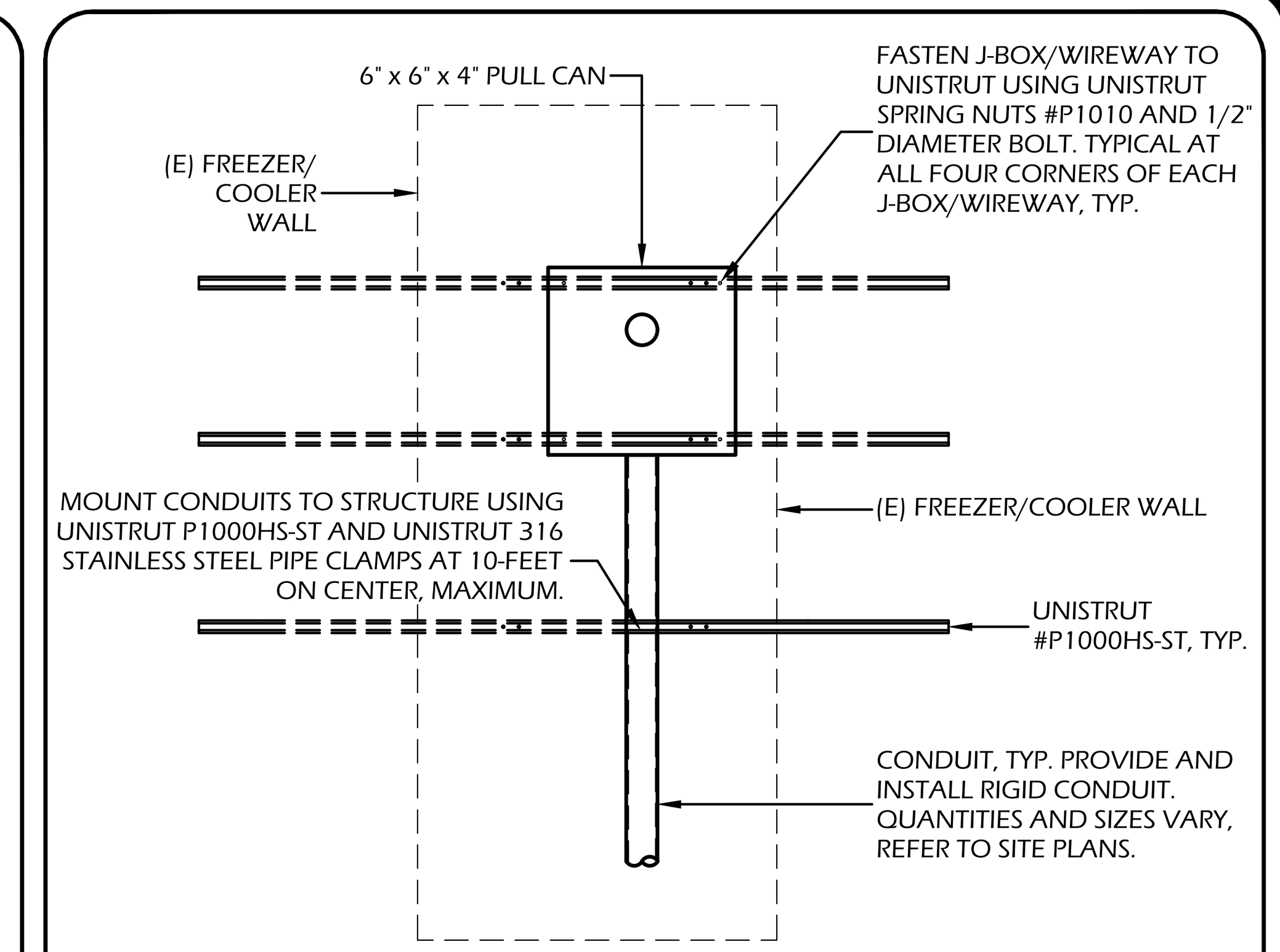
NOT TO SCALE



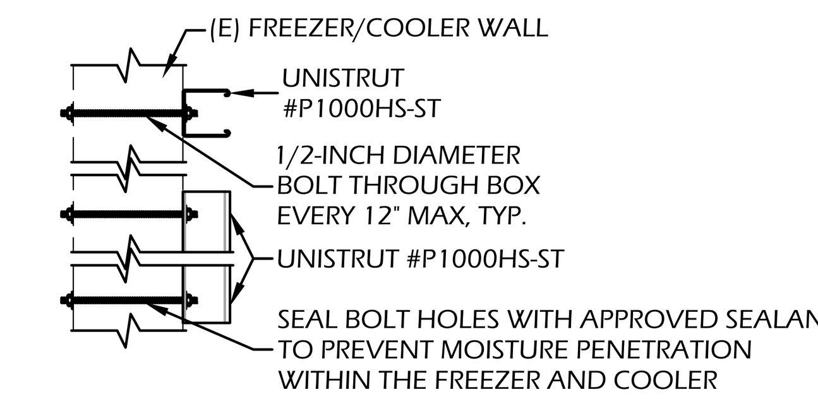
NOTE:
1. ALL CONCRETE SHALL BE MIN 3000 PSI. AT 28 DAYS.
2. REINFORCING REBAR TO BE ASTM A615 OR A706 - GRADE 60 U.O.N.

4 TYPICAL POST MOUNTED EQUIPMENT

NOT TO SCALE



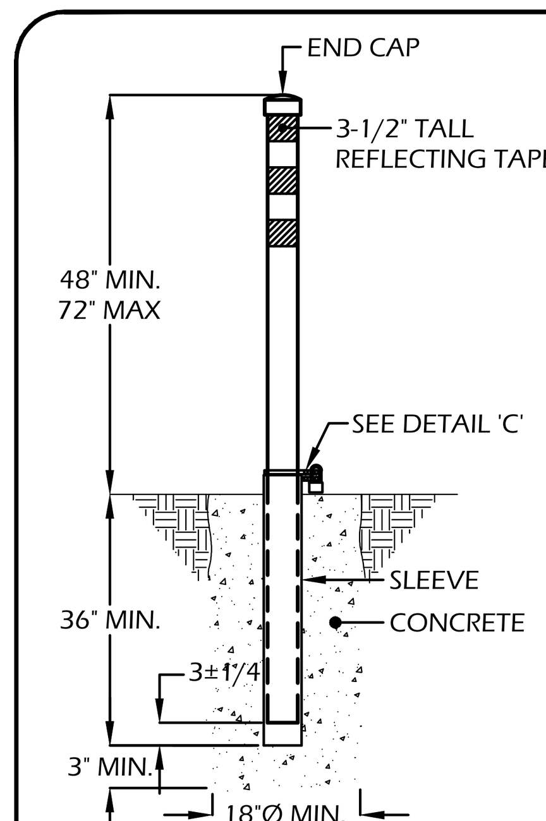
A J-BOX/WIREWAY MOUNTING



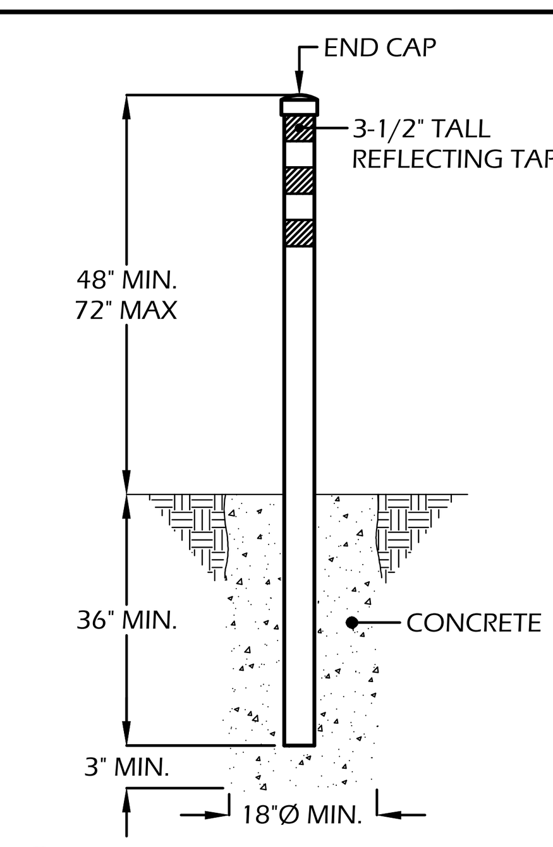
B UNISTRUT MOUNTED TO FREEZER/ COOLER WALL

1 FREEZER/ COOLER WALL MOUNTED J-BOX/WIREWAY DETAIL

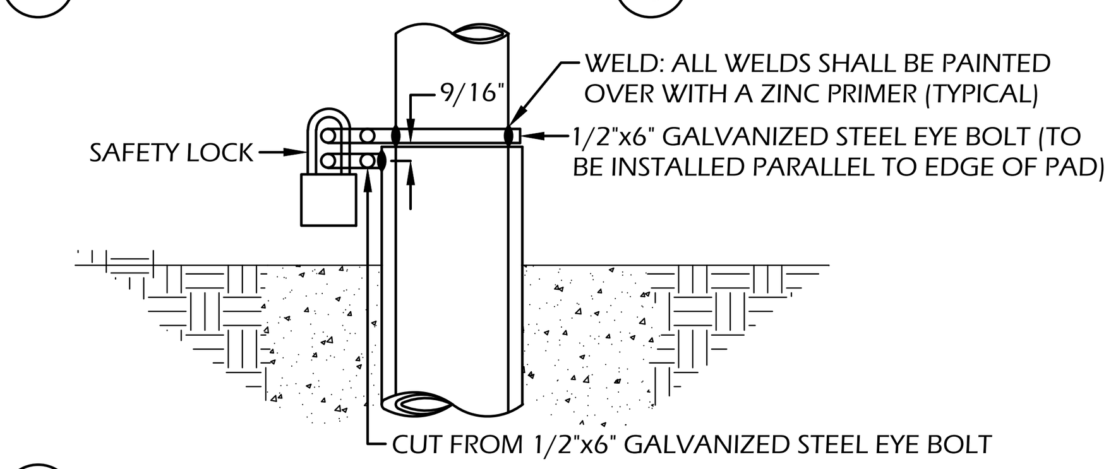
NOT TO SCALE



A REMOVEABLE STEEL POST



B FIXED STEEL POST



C REMOVEABLE POST LOCK ATTACHMENT

ITEM	MATERIAL
POST	4" GALVANIZED, STEEL PIPE, STANDARD, SCHEDULE NO. 40
SLEEVE	5" GALVANIZED, STEEL PIPE 36" LONG, STANDARD, SCHEDULE NO. 40
END CAP	4" GALVANIZED, MALLEABLE IRON, THREADED (SCREWED)

CONCRETE SHALL BE MIN 3000 PSI. IN 28 DAYS.

2 BARRIER POST DETAIL

NOT TO SCALE

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

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ca-bai@borrelliengineering.com
BAI# 21162

DATE: 3-16-2023

TITLE: TYPICAL DETAILS

SHEET: E4.01

PROJECT 21181

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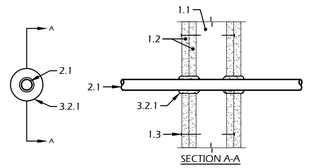
UL SYSTEM NO. W-L-3003

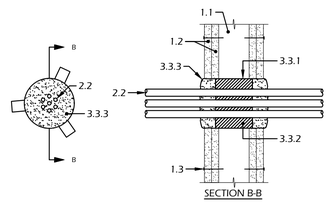
`F' RATINGS- 2 HOUR
`T' RATINGS- 2 HOUR



FIRESTOP CONFIGURATION `A'

UL SYSTEM NO. W-L-3004

`F' RATINGS- 2 HOUR
`T' RATINGS- 2 HOUR

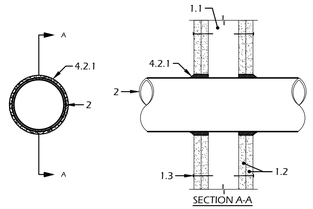


FIRESTOP CONFIGURATION `B'

1. WALL ASSEMBLY
 1.1. STUDS- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS.
 1.2. WALLBOARD, GYPSUM- 5/8" THICK.
 1.3. FASTENERS- 1-7/8" LONG 6D CEMENT COATED NAILS.
2. CABLES
 2.1. 50 PAIR (OR SMALLER) #24 AWG TELEPHONE CABLE WITH POLYVINYL CHLORIDE JACKET WITH POLYVINYL CHLORIDE INSULATION.
 2.2. TWO CONDUCTOR #24 AWG (OR SMALLER) WITH POLYVINYL CHLORIDE JACKET WITH POLYETHYLENE INSULATION.
3. FIRESTOP SYSTEM
 3.1. INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE FIRESTOP CONFIGURATION (`A' OR `B') IS DEPENDENT UPON THE TYPE AND SIZE OF THE CABLE AND THE SIZE OF THE ANNULAR SPACE BETWEEN THE CABLE AND THE PERIMETER OF THE CIRCULAR THROUGH OPENING AS TABULATED BELOW:
  3.1.1. ONE 50 PAIR, #24 AWG CABLE: 3/16" ANNULAR SPACE, FIRESTOP CONFIGURATION A.
  3.1.2. UP TO SEVEN 2 CONDUCTOR, #20 AWG CABLES: 3/8" ANNULAR SPACE, FIRESTOP CONFIGURATION B.
 3.2. FIRESTOP CONFIGURATION `A'
  3.2.1. FILL, VOID OR CAVITY MATERIAL (PUTTY)- MIN. 1-1/2" THICK LAYER OF PUTTY FIRMLY PACKED WITHIN THE OPENING. ADDITIONAL PUTTY INSTALLED SUCH THAT A MIN. 1/8" CROWN IS FORMED AROUND THE CIRCUMFERENCE TYPE `FSP').
 3.3. FIRESTOP CONFIGURATION `B'
  3.3.1. STEEL SLEEVE- NOMINAL 5" LONG CYLINDRICAL SLEEVE WITH NOMINAL 3/4" BY 3" LONG TABS TO RETAIN PUTTY IN POSITION. SLEEVE FORMED OF PRECUT 0.016" THICK (#30 GA.) GALVANIZED STEEL SHEET AVAILABLE FROM PUTTY MANUFACTURERS.
  3.3.2. FORMING MATERIAL- MINERAL WOOL INSULATION HAVING A MIN. DENSITY OF 6 PCF, FIRMLY PACKED WITHIN THE SLEEVE TO A MIN. THICKNESS OF 4".
  3.3.3. FILL, VOID OR CAVITY MATERIAL (PUTTY)- MIN. 1" THICK LAYER OF PUTTY MATERIAL FIRMLY PACKED TO FILL THE ANNULAR SPACE BETWEEN THE CABLES, MINERAL WOOL AND PERIPHERY OF THE OPENING. ADDITIONAL PUTTY SHOULD BE INSTALLED SUCH THAT A MIN. 1/8" CROWN IS FORMED AROUND THE CABLES. (NELSON ELECTRIC, UNIT OF GENERAL SIGNAL CORP.- TYPE FSP.)

UL SYSTEM NO. W-L-1001

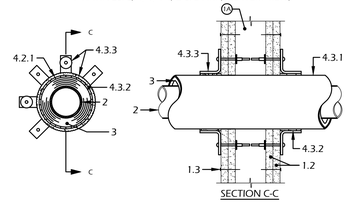
`F' RATINGS: 1, 2, 3 & 4 HR. (SEE ITEM 4.1)
`T' RATINGS: 0, 1, 2, 3, & 4 HR. (SEE ITEM 4.1.1)



FIRESTOP CONFIGURATION `C'

UL SYSTEM NO. W-L-2002

`F' RATINGS: 1, 1-1/2 & 2 HR. (SEE ITEM 4.1)
`T' RATINGS: 3/4, 1, 1-1/2 & 2 HR. (SEE ITEM 4.2.1)



FIRESTOP CONFIGURATION `D'

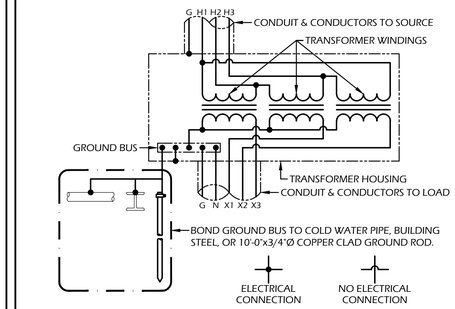
1. WALL ASSEMBLY
 1.1. STUDS- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS.
 1.2. WALLBOARD, GYPSUM- 5/8" THICK.
 1.3. FASTENERS
2. CONDUIT
3. PIPE COVERING (OPTIONAL)- NOM. 1" OR 2" THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN. 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH FOIL-SCRIM-KRAFT.
4. FIRESTOP SYSTEM
 4.1. INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY `F' RATING OF THE FIRESTOP SYSTEM IS EITHER (1) OR (2) HOUR DEPENDING UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. THE HOURLY `T' RATINGS FOR THE FIRESTOP SYSTEM ARE DEPENDENT UPON THE SIZE OF THE STEEL PIPE OR CONDUIT, THE ABSENCE OR PRESENCE OF PIPE COVERING (ITEM3), THE FIRESTOP CONFIGURATION AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED
  4.1.1. MAXIMUM 1"Ø CONDUIT: 3/16" ANNULAR SPACE, FIRESTOP CONFIGURATION C, 1 OR 2 HOUR `T' RATING
  4.1.2. MAXIMUM 4"Ø CONDUIT AND 1" COVERING: 3/8" ANNULAR SPACE, FIRESTOP CONFIGURATION D, 1 OR 2 HOUR `T' RATING
 4.2. FIRESTOP CONFIGURATION `C'
  4.2.1. FILL, VOID OR CAVITY MATERIAL - CAULK FILL MATERIAL FORCED INTO ANNULAR SPACE TO MAX. EXTENT POSSIBLE AND WITH A MIN. 1/4" DIAM. BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL.
 4.3. FIRESTOP CONFIGURATION `D'
  4.3.1. FILL, VOID OR CAVITY MATERIALS (WRAP STRIP)- NOMINAL 1/4" THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2" WIDE STRIPS. NOMINAL 2" WIDE STRIP, TIGHTLY WRAPPED AROUND PIPE COVERING (FOIL SIDE OUT) WITH SEAM BUTTED AND WITH EDGE OF WRAP STRIP ABUTTING WALL SURFACE. WRAP STRIP TEMPORARILY HELD IN POSITION WITH ALUMINUM FOIL TAPE, STEEL WIRE TIE OR EQUIVALENT.
  4.3.2. FILL, VOID OR CAVITY MATERIALS (CAULK)- GENEROUS BEAD OF CAULK TO OUTER PERIMETER OF WRAP STRIP AT INTERFACE WITH WALL SURFACE.
  4.3.3. STEEL COLLAR- NOMINAL 2" DEEP COLLAR WITH 1-1/4" WIDE BY 2" LONG ANCHOR TABS AND MINIMUM 1/4" LONG TABS TO RETAIN WRAP STRIP LAYER. COILS OF PRECUT 0.016" THICK (NO. 30 GAUGE) GALVANIZED SHEET STEEL AVAILABLE FROM WRAP STRIP MANUFACTURER.

CABLES	CONDUITS

NOTE: FOR OTHER RATED ASSEMBLIES, REFER TO THE LATEST ISSUE OF "UNDERWRITERS LABORATORIES, INC., FIRE RESISTANCE DIRECTORY."

5 - **CONDUIT/CABLE PENETRATIONS THRU RATED STUD/WALLBOARD ASSEMBLY DETAIL (TYPICAL)**

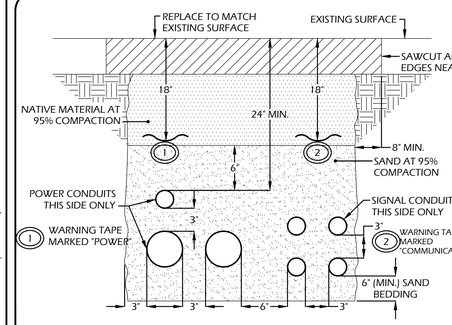
NOT TO SCALE GB160-01-01



NOTES:
1. SIZE CONDUITS AND CONDUCTORS PER THE SINGLE LINE DIAGRAM.

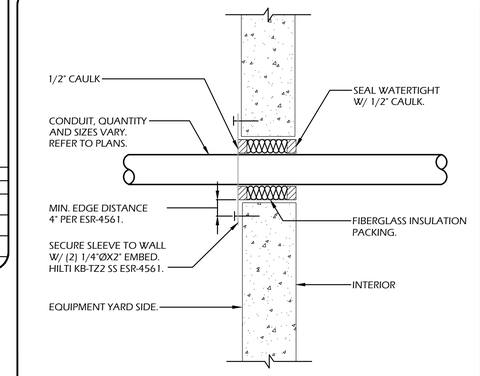
2 - **TRANSFORMER GROUNDING & CONNECTION DETAIL**

NOT TO SCALE



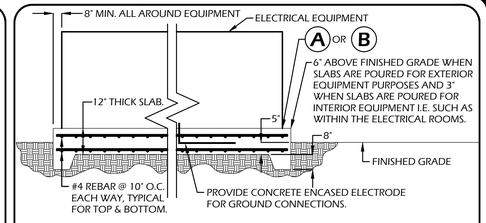
3 - **TRENCH DETAIL WITHOUT SPACERS AND UNDER EXISTING SURFACE**

NOT TO SCALE

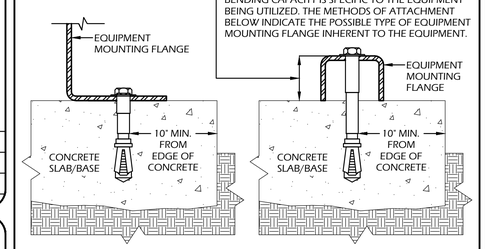


4 - **CONDUIT PENETRATION THRU CMU WALL DETAIL**

NOT TO SCALE

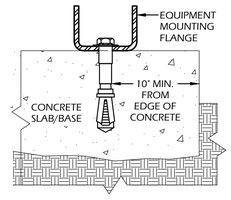


THE MAXIMUM DIMENSION FOR THE CHECKBOLT BENDING CAPACITY IS SPECIFIC TO THE EQUIPMENT BEING UTILIZED. THE METHODS OF ATTACHMENT BELOW INDICATE THE POSSIBLE TYPE OF EQUIPMENT MOUNTING FLANGE INHERENT TO THE EQUIPMENT.



A FREE STANDING EQUIPMENT MOUNTING AT EXISTING OR NEW CONCRETE

B FREE STANDING EQUIPMENT MOUNTING AT EXISTING OR NEW CONCRETE



C FREE STANDING EQUIPMENT MOUNTING AT EXISTING OR NEW COCNRETE

BOLT DIAM.	MINIMUM EMBEDMENT		MIN. CONC. THICKNESS	TENSION LOAD	TORQUE TEST
3/8"	2"		4"	1600 LBS	30 LB-FT

NOTES:
1. EXPANSION ANCHORS SHALL BE A SINGLE-END, STAINLESS STEEL EXPANSION SHIELD ANCHOR WHICH MEETS THE DESCRIPTIVE PART OF FEDERAL SPECIFICATIONS FF-S-325 GROUP II, TYPE 2, CLASS 2, STYLE 1. ANCHORS SHALL BE DIMENSIONED AS PER HILTI FASTENING SYSTEMS, 5400 SOUTH 122nd EAST AVENUE, TULSA, OK 74146.
2. KWIK BOLT TZ2 EXPANSION ANCHORS SHALL BE INSTALLED IN HOLES DRILLED WITH HILTI CARBIDE TIPPED DRILL BITS. ANCHORS SHALL BE INSTALLED AND TORQUED PER MANUFACTURERS RECOMMENDATIONS.
3. INSTALL ANCHORS PER STRUCTURAL PLANS.
4. USE STAINLESS STEEL ANCHORS.
5. ANCHORS SHALL BE A MINIMUM OF 3/8" DIAMETER AND 2" EFFECTIVE EMBEDMENT.
6. REFER TO ICC ESR-4266 REPORT FOR FURTHER REQUIREMENTS.
7. ALL CONCRETE SHALL HAVE 3000 PSI STRENGTH AT 28 DAYS.
8. REINFORCING REBAR TO BE ASTM A615 OR A706 - GRADE 60 U.O.N.

TESTING AND INSPECTION REQUIREMENTS
POST-INSTALLED ANCHORS SHALL BE TESTED IN ACCORDANCE WITH CALIFORNIA BUILDING CODE. REFER TO PLANS FOR CITED YEAR OF THE BUILDING CODE.

IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE, NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE ANCHORS PASS, THEN RESUME THE INITIAL TEST FREQUENCY. IF THE ANCHORS ARE USED FOR THE SUPPORT AND BRACING OF NON-STRUCTURAL COMPONENTS (PIPE, DUCT OR CONDUIT), THE TWENTY (20) SHALL BE ONLY THOSE ANCHORS INSTALLED BY THE SAME TRADE.

1 - **FREESTANDING ELECTRICAL EQUIPMENT TYPICAL FOR ALL GROUND MOUNTED EQUIPMENT**

NOT TO SCALE GB20-01-27

Borrelli & Associates, Inc.
Consulting Electrical Engineers
2032 N. Gateway Boulevard
Fresno, CA. 93727
Phone: 559-233-4138
http://www.borrelliengineering.com/
ca-bai@borrelliengineering.com
BAI# 21162

REGISTERED PROFESSIONAL ENGINEER DAVID BORRELLI No.E16390 Exp. 6/30/25 ELECTRICAL CALIFORNIA

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER RYAN W. CARLSON M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 3-16-2023

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
(559) 431-0101
Fresno, CA 93727
FAX (559) 431-1682

TITLE:
TYPICAL DETAILS

SHEET: E4.02

PROJECT 21181

G:\Educational\MaderaUSD\DesmondMiddleSchool\21162E4-2.dwg, 4/28/2023 8:49:18 PM, JMH2032, AutoCAD PDF (High Quality Print).pc3, ARCH full bleed D (36.00 x 24.00 Inches)

4. STRUCTURAL STEEL AND MISCELLANEOUS METALS

A. GENERAL:
1. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH ACCEPTED PRACTICES OF THE A.I.S.C.
2. STEEL TO BE TESTED WILL BE INDICATED IN THE SPECIFICATIONS. TESTING WILL BE WAIVED WITH MILL CERT. IDENTIFICATION.
3. WELDING OF STRUCTURAL STEEL SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE A.W.S. "STRUCTURAL WELDING CODE" (AWS D1.1:2020).
4. WELDING PROCEDURE SPECIFICATIONS "WPS" SHALL BE SUBMITTED TO THE SPECIAL INSPECTOR FOR ALL WELD TYPES USED ON THE PROJECT. SPECIAL INSPECTOR SHALL PROVIDE A LETTER TO THE SEOR INDICATING THEIR OFFICE HAS REVIEWED AND APPROVED ALL WELDING PROCEDURES.
5. WELDERS CERTIFICATES SHALL BE SUBMITTED TO THE PROJECT INSPECTOR PRIOR TO STARTING WORK. WELDERS SHALL BE QUALIFIED BY AWS CERTIFICATION FOR THE TYPE OF WORK TO BE DONE.
6. ALL WELDING SHALL BE SUBJECT TO SPECIAL INSPECTION. INSPECTION SHALL BE IN CONFORMANCE WITH THE CBC AND DSA.
7. FABRICATION SHALL NOT TAKE PLACE UNTIL SHOP DRAWINGS HAVE BEEN RECEIVED, RETURNED, AND ISSUES IN QUESTION HAVE BEEN RESOLVED.

B. MATERIALS:
1. STRUCTURAL STEEL
   a. CHANNELS, ANGLES & BASE PLATES - ASTM A36, Gr. A
   b. WIDE FLANGES (W) SHAPES - ASTM A992, Gr. 50
2. MISC. METALS - ASTM A36, Gr. A
3. STANDARD BOLTS - ASTM A307, Gr. A - TYPICAL UNLESS NOTED OTHERWISE.
4. STANDARD ANCHOR BOLTS - ASTM F1554 (Gr. 36 OR Gr. 55 WHERE NOTED)
5. WASHERS - AS REQUIRED BY THE AISC, RCSC, SECTION 6 - USE OF WASHERS.
6. WELDING ROD - HEAVILY COATED, CONFORMING WITH A.W.S. "SPECIFICATIONS FOR ARC WELDING". ELECTRODES OF CLASSIFICATION NUMBERS SUITABLE FOR THE WORK TO BE DONE.

C. SHOP DRAWING SUBMITTALS:
1. SHOP DRAWINGS MAY BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION.
2. SHOP DRAWINGS SHALL NOT BE PREPARED UNTIL ALL CONDITIONS HAVE BEEN VERIFIED. ELEVATIONS AND DIMENSIONS ON STRUCTURAL DRAWINGS SHALL BE VERIFIED PRIOR TO FABRICATION. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO PERFORMING WORK.
3. DETAILER SHALL SUBMIT RFI'S FOR ISSUES REQUIRING RESOLUTION FOR COMPLETION OF SHOP DRAWINGS. MINOR ISSUES MAY BE CLOUDED IN THE SHOP DRAWINGS.

D. FRAMING AND DETAILS FOR THE SUPPORT OF ROOF AND/OR FLOOR MOUNTED EQUIPMENT AND OPENINGS IN ROOF AND/OR FLOOR DECKS ARE PROVIDED BY THE BLDG. MANUF.. CONTRACTOR SHALL REFER TO THE MANUF. DRWGS. FOR EQUIPMENT AND OPENING LOCATIONS, SIZES AND MOUNTING REQUIREMENTS.

3. CONCRETE

A. GENERAL: ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE ACI MANUAL OF CONCRETE PRACTICE AND THE C.B.C.

B. REINFORCING MATERIALS:
1. DEFORMED ASTM A615 OR A706 - GRADE 60
2. WELDED WIRE FABRIC, ASTM A1064: NOT USED
3. WELDED REBAR: NOT USED

C. CONCRETE MIX DESIGNS: CONCRETE MIX SHALL BE LIMITED BY THE FOLLOWING.

LOCATION	COMP. STRENGTH (f'c)	MINIMUM SACKS/YD.	MAX. WATER/ CEMENT RATIO	AGGREGATE SIZE
TYPICAL INTERIOR SLAB ON GRADE	3,000 psi (DESIGN=2,500 psi)	5½	.45	ASTM C33 SIZE 57
FOOTINGS	3,000 psi (DESIGN = 2,500 psi)	5½	.45	ASTM C33 SIZE 57
EXTERIOR WALKWAYS & SITE WORK	2,500 psi	5	.66	ASTM C33 SIZE 57

D. ADMIXTURES: ONLY AS APPROVED BY THE ENGINEER.

E. NO WELDING OF REINFORCING STEEL (BAR TO BAR). SPLICE LAPS SHALL BE PROVIDED AS REQUIRED, UNLESS NOTED.

F. LAP SPLICES: SEE SCHEDULE BELOW.

G. COVER TO BARS: SEE SCHEDULE BELOW.

H. CONCRETE CURING: 5 DAY MOIST CURE.

I. FORM REMOVAL: SIDE FORMS OF FOOTINGS SLABS ON GRADE, MINIMUM 2 DAYS.

J. VIBRATION: VIBRATE ALL CONCRETE IN PLACE WITH A MECHANICAL VIBRATOR USED BY EXPERIENCED PERSONNEL.

K. TESTING: IN ACCORDANCE WITH ACI-318, SECTION 26.12.

L. DRILLED AND EPOXIED ANCHOR BOLTS: WHERE ANCHOR BOLTS OR HOLDOWN BOLTS ARE OMITTED, BOLTS SHALL BE SUBSTITUTED WITH DRILLED OR EPOXIED ANCHORS PER ENGINEERS WRITTEN DIRECTION ONLY.

CONCRETE REINFORCEMENT COVER

LOCATION	MINIMUM COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH:	3"
CONCRETE EXPOSED TO EARTH OR WEATHER:	
#6 THROUGH #18 BAR	2"
#5 BAR, W31 OR D31, AND SMALLER	1½"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, JOISTS:	
#14 AND #18 BAR	1½"
#11 BAR AND SMALLER	¾"

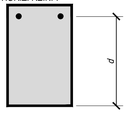
CONCRETE REINFORCEMENT LAP SPLICES

MIN. SPLICES UNLESS OTHERWISE DIMENSIONED ON DRAWINGS:

CONCRETE BAR TYPES	LAP TYPE
FOOTING BARS (OTHER THAN TOP BARS)	CL1
HORIZ. & VERT. WALL BARS	CL2
FOOTING 'TOP BARS'	CL2

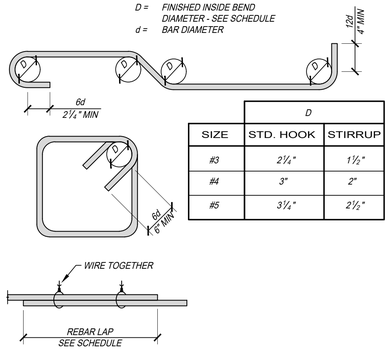
BAR SIZE	CL1	CL2	CL3
#4	24"	30"	48"
#5	30"	36"	60"

'TOP BAR' = HORIZ. BARS WHERE d > 12" FRESH CONCRETE PLACED BELOW HORIZ. REINF.



REINFORCEMENT BENDING REQUIREMENTS

D = FINISHED INSIDE BEND DIAMETER - SEE SCHEDULE
d = BAR DIAMETER



SIZE	D STD. HOOK	D STIRRUP
#3	2¼"	1½"
#4	3"	2"
#5	3¼"	2½"

2. SITE PREP. & FOUNDATION

A. FOUNDATION DESIGN: BASED ON ALLOWABLE SOIL BEARING PRESSURES AND OTHER REQUIREMENTS PER TABLE 1806A.2 - CLASS 5 SOIL:

1. ALLOWABLE BEARING PRESSURES:
   STATIC (DEAD + LIVE)(DEAD+WIND) 1000 psf
   COMBINED (DEAD + LIVE + SEISMIC) 1333 psf
2. ACTIVE PRESSURE 30 pcf
3. PASSIVE PRESSURE 100 pcf STATIC
   133 pcf COMBINED
4. FRICTION COEFFICIENT 0.25 STATIC
   0.33 COMBINED

B. ALL FOOTINGS SHALL EXTEND TO FIRM BEARINGS.

C. ALL ANCHOR BOLTS, INSERTS, REINFORCING STEEL, DOWELS, AND OTHER EMBEDDED ITEMS SHALL BE SECURELY POSITIONED WITHIN THE FORMWORK PRIOR TO POURING CONCRETE.

1. GENERAL NOTES

A. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE CALIFORNIA BUILDING CODE (CBC), 2019 EDITION, AND ALL OTHER PUBLICATIONS AND STANDARDS LISTED HEREIN.

B. ALL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND ALL OTHER CONTRACT DRAWINGS AND SPECIFICATIONS.

C. DETAILS SHOWN ON STRUCTURAL DRAWINGS ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS. CONDITIONS NOT COMPATIBLE TO THE DETAILS PROVIDED SHALL BE REPORTED TO THE ARCHITECT.

D. DIMENSIONS SHOWN SHALL TAKE PRECEDENCE OVER SCALE ON PLANS, SECTIONS AND DETAILS. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.

E. NOTES AND DETAILS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

F. FRAMING AND DETAIL CONDITIONS SPECIFIED BY THESE DRAWINGS SHALL NOT BE MODIFIED WITHOUT APPROVED WRITTEN DOCUMENTATION FROM THE ENGINEER AND ARCHITECT AND DIVISION OF THE STATE ARCHITECT (DSA). CONTRACTOR SHALL NOT PROCEED WITH CONSTRUCTION OF CONDITIONS NOT APPROVED.

G. CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FLOOR OR ROOF FRAMING MEMBERS. LOAD SHALL NOT EXCEED DESIGN LIVE LOAD.

H. DESIGN LOADING: PER CBC, 2019 EDITION.

I. CONSTRUCTION DOCUMENTS SHALL CONSIST OF THE "APPROVED" DRAWINGS, SPECIFICATIONS AND ADDENDUM BEARING THE STAMP AND SIGNATURE OF THE ARCHITECT AND THE APPROVAL STAMP OF DSA. STRUCTURAL CALCULATIONS ARE NOT PART OF THE CONSTRUCTION DOCUMENTS AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES.

J. ALL WORK SHALL BE PERFORMED FROM THE "APPROVED" DOCUMENTS ONLY. A FULL SET OF APPROVED DOCUMENTS SHALL BE KEPT ON SITE DURING ALL CONSTRUCTION PHASES.

K. DESIGN DATA CONDITIONS AS LISTED BELOW.

LOADING DATA	
ROOF DEAD LOAD	**3.5 psf**
ROOF LIVE LOAD	**20 psf**
FLOOR LIVE LOAD	**100 psf**

WIND DESIGN DATA	
ULTIMATE WIND SPEED (3 SECOND GUST)	**105 mph**
WIND EXPOSURE CATEGORY	C
RISK CATEGORY	II
INTERNAL PRESSURE COEFFICIENT	±0.18
ANALYSIS PROCEDURE	ASCE CHAPTER 28

SEISMIC DESIGN DATA	
SITE COORDINATES	36.990° N -120.065° W
SEISMIC IMPORTANCE FACTOR (I)	**1.5**
RISK CATEGORY	II
MAPPED SPECTRAL RESPONSE	S_s = 0.579 S_1 = 0.230
SITE CLASS	D
SPECTRAL RESPONSE COEFFICIENTS	S_{DS} = 0.516
SEISMIC DESIGN CATEGORY	D
SEISMIC-RESISTING FORCE SYSTEM(S)	ASCE 7-16 TABLE 15.4-1 OMF
RESPONSE MODIFICATION FACTOR(S) R	**1.0**
SEISMIC RESPONSE COEFFICIENT(S) C_s	**0.776**
ANALYSIS PROCEDURE USED	ASCE 7 12.8 EQUIVALENT LATERAL FORCE

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
BRIAN W. CARLSON
M34346
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 9-23-2022

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

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Fresno, CA 93727
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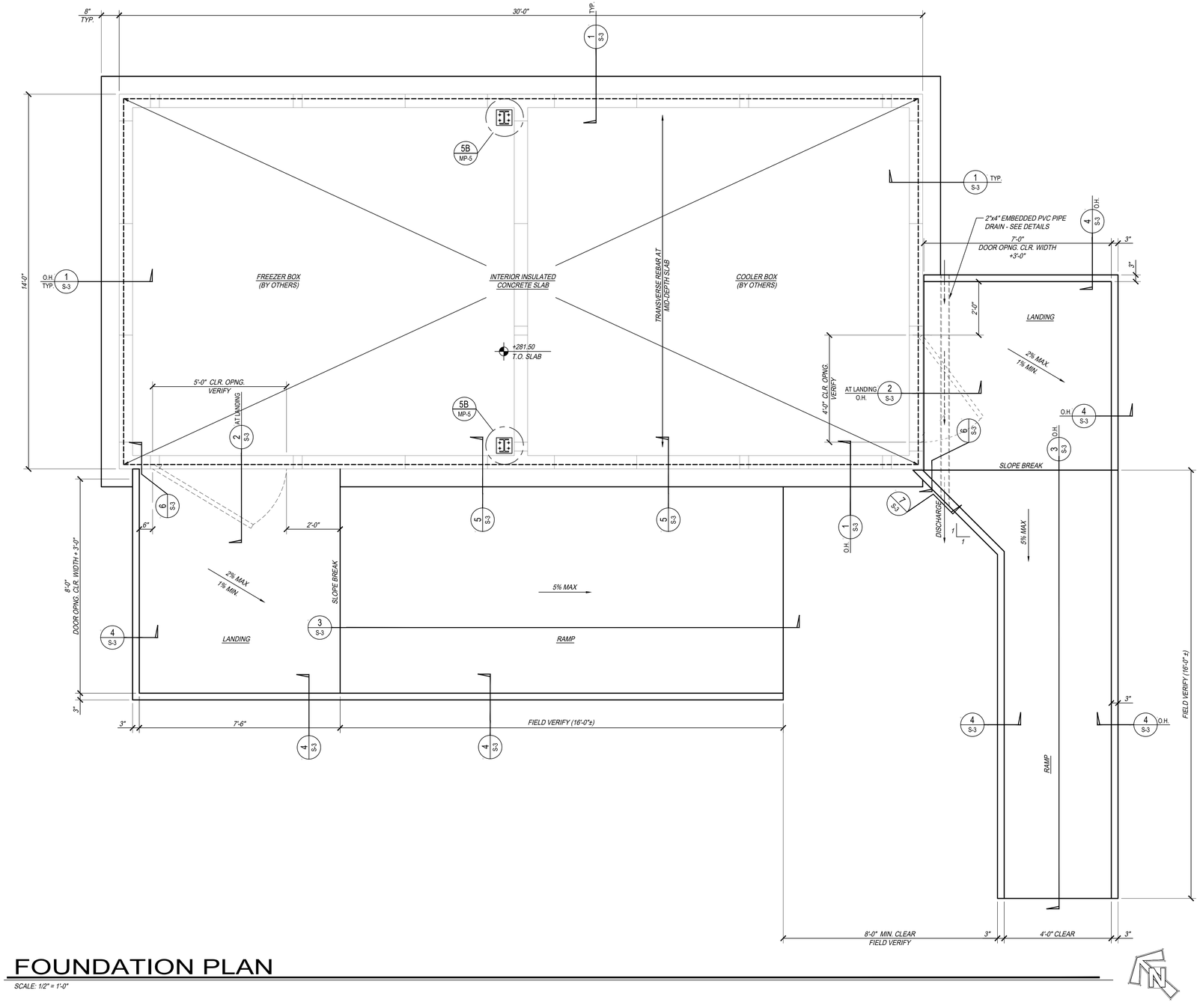
TITLE: TYPICAL NOTES

SHEET: S-1

PROJECT 21181

REGISTERED PROFESSIONAL ENGINEER
ROBERT S. PARRISH
No. S2331
Exp. 3/25
4/7/23
STRUCTURAL
STATE OF CALIFORNIA

PROVOST& PRITCHARD
PARRISH HANSEN
STRUCTURAL DESIGNERS
455 W FIR AVENUE
CLOVIS, CALIFORNIA 93611
559/449-2700
https://provostandpritchard.com/



FOUNDATION PLAN

SCALE: 1/2" = 1'-0"

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
BRIAN W. CARLSON
M34346
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 9-23-2022

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
MADERA, CA 93638

REVISIONS

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TITLE: FOUNDATION PLAN

SHEET: S-2

PROJECT 21181

REGISTERED PROFESSIONAL ENGINEER
ROBERT S. PARRISH
No. S2331
Exp. 3/25
4/7/23
STRUCTURAL
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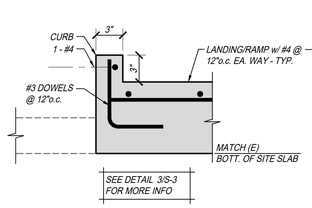
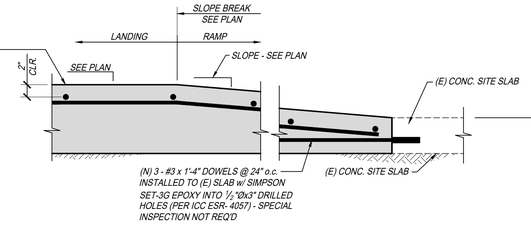
559/449-2700
https://provostandpritchard.com/



DETAIL

SCALE: 1 1/2" = 1'-0"

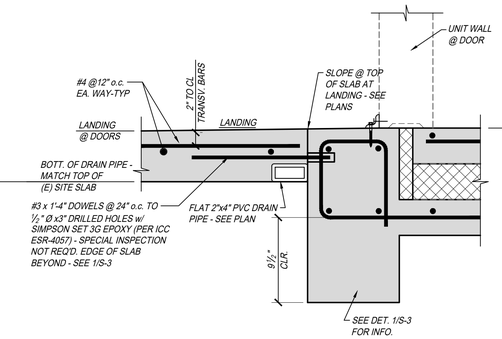
DET05 4 S-3



DETAIL

SCALE: 1 1/2" = 1'-0"

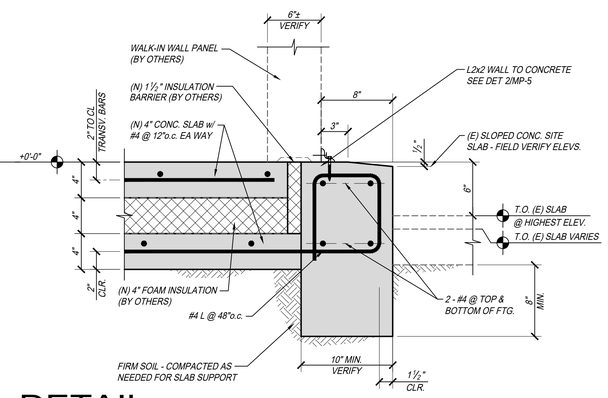
DET03 3 S-3



DETAIL

SCALE: 1 1/2" = 1'-0"

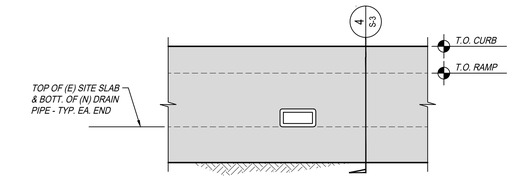
DET02 2 S-3



DETAIL

SCALE: 1 1/2" = 1'-0"

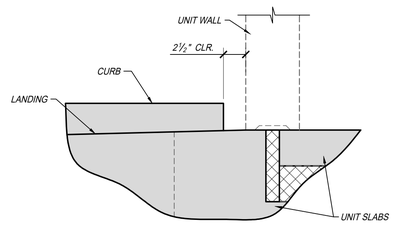
DET01 1 S-3



DETAIL

SCALE: 1 1/2" = 1'-0"

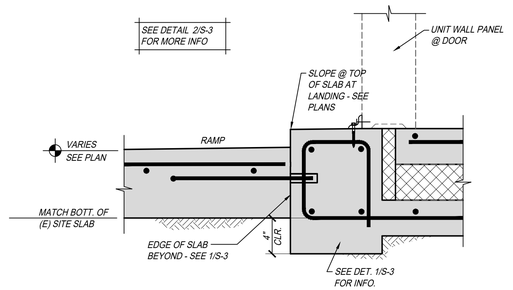
DET08 7 S-3



DETAIL

SCALE: 1 1/2" = 1'-0"

DET06 6 S-3



DETAIL

SCALE: 1 1/2" = 1'-0"

DET07 5 S-3

APPROVALS:

APPLICATION # 02-120016

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120016 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 09/19/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
M34146
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 9-23-2022

JACK G. DESMOND MIDDLE SCHOOL
COLD BOX ADDITION
26490 MARTIN ST.
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Fresno, CA 93727
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TITLE: DETAILS

SHEET: S-3

PROJECT 21181

REGISTERED PROFESSIONAL ENGINEER
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