Bid No.030823

MADERA UNIFIED SCHOOL DISTRICT

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

OWNER
MADERA UNIFIED SCHOOL DISTRICT

769 SOUTH PINE STREET
MADERA, CA 93637
(559) 675-4546

CONTACT: ROSALIND COX

MECHANICAL ENGINEER
LAWRENCE ENGINEERING GROUP

7084 NORTH MAPLE AVE. SUITE 101
FRESNO, CA 93720
(559) 431-0101

CONTACT: RYAN CARLSON

ELECTRICAL ENGINEER
BORELLI & ASSOCIATES, INC.
2032 N. GATEWAY BLVD.
FRESNO, CA 93727
(559) 233-4438

CONTACT: JOHN BORELLI

STRUCTURAL ENGINEER
PARRISH HANSEN
418 CLOVIS AVE.
CLOVIS, CA 93612
(559) 323-1023

CONTACT: BOB PARRISH

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, CLASS 3, 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.*

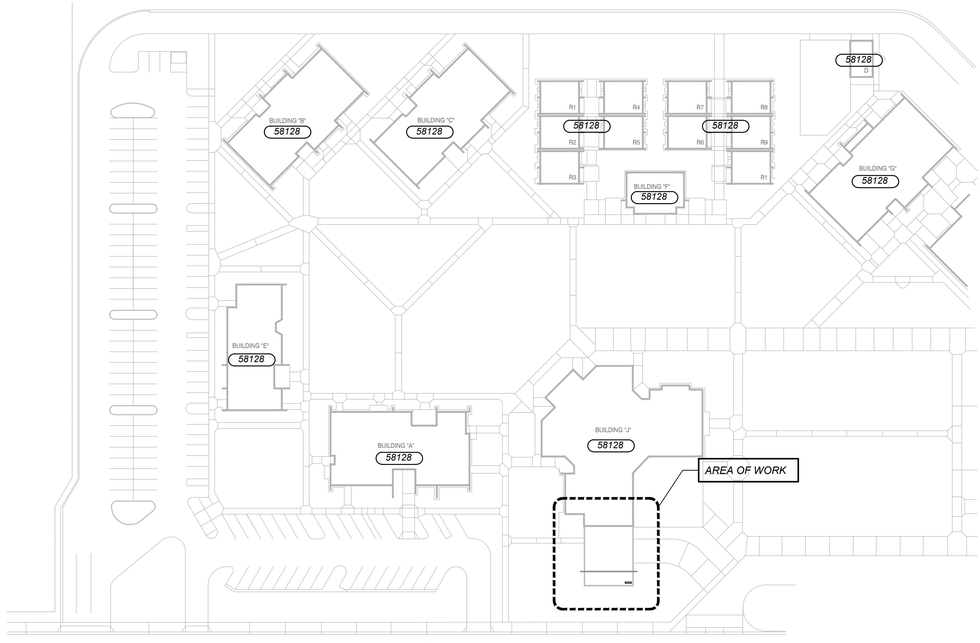
   THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE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



OVERALL SITE PLAN
SCALE: 1"=60'-0"

LEGEND:
(---) DSA NUMBER (EXISTING BUILDING)

11B-202.4 EXCEPTION #8; ADJUSTED CONSTRUCTION COST

ITEMS UPGRADED IN THIS APPLICATION:
- *UPGRADE TWO (2) VAN ACCESSIBLE HANDICAP AND ONE (1) STANDARD HANDICAP SPACE WITH NEW SIGNS, STRIPING AND ASHPALT. ($44,660)*
- *UPGRADE TWO (2) EXISTING ENTRANCE DOORS WITH NEW DOORS AND PANIC HARDWARE. ($15,305)*

SHEET INDEX

CAFETERIA BUILDING ANALYSIS

OCCUPANCY	*A3, B*
EXISTING AREA	*13,316 FT*
CONSTRUCTION TYPE	*TYPE III - 1HR.*

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.*

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 SAFTEY, STATE FIRE MARSHALL REGULATIONS*
- *2016 NFPA 72 FOR FIRE ALARM SYSTEM. CFC CH 33 FIRE SAFTEY DURING CONSTRUCTION AND DEMOLITION*

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. 02-120015 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 #
02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE
ENGINEERING GROUP
4710 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1362

TITLE:
COVER SHEET

SHEET:
G1

PROJECT 21182

NOTES:

1. FREEZER/COOLER COMBO BOX TO BE 15'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.

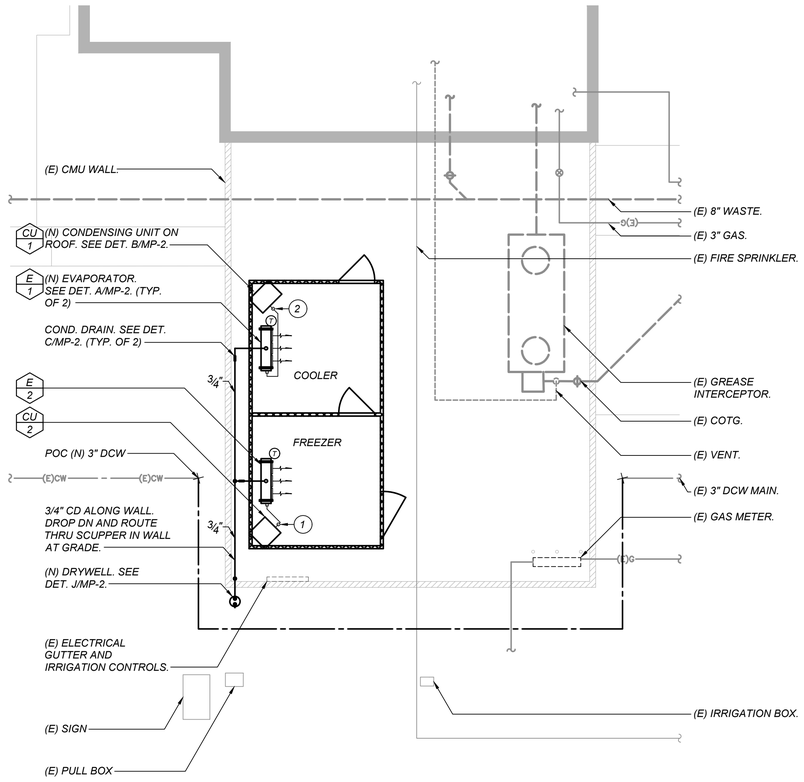
3. SLOPE REFRIG. PIPE 1/4" PER 10' DOWN TOWARD COND. UNITS.

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

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

6. SEE SHEET MP-4 FOR FREEZER SPECS.

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	—



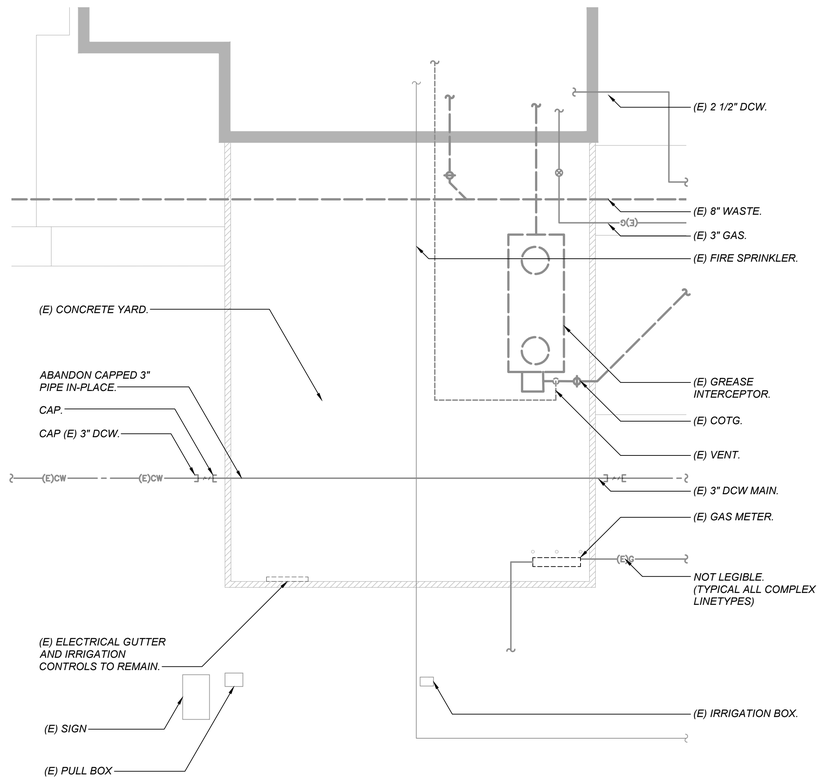
KEYNOTES: (THIS VIEW ONLY)

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

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

MECHANICAL YARD PLAN

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



MECHANICAL DEMOLITION YARD PLAN

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

APPROVALS:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
4919 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-1010
FAX (559) 431-1062

TITLE:
MECHANICAL
YARD PLAN

SHEET:
MP-1

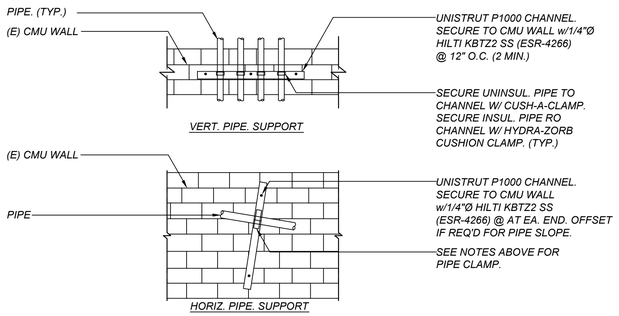
PROJECT 21182

EVAPORATOR SCHEDULE	E 1	E 2
AIRFLOW (CFM)	-	-
FLA	10.8	1.6
VOLTS/PHASE	230/1	230/1
TOTAL CAP. (MBH)	12,865	13,600
REFRIGERANT	R-448A	R-448A
SAFETY CLASSIFICATION	A1	A1
EVAP. TEMP. (°F)	-10	25
BOX TEMP. (°F)	0	35
MANUFACTURER	MASTER-BILT	MASTER-BILT
TYPE	-	-
MODEL NUMBER	E1LD0124B-TE2	E1LD0124B-TE2
LOCATION	FREEZER	COOLER
OPER. WT (LBS)	62	58
ACCESSORIES	1	-

1. INCLUDES DEFROST HEATER.

CONDENSING UNIT SCHEDULE	CU 1	CU 2
NAME PLATE AMPS	31.2	23.3
VOLTS/PHASE	230/1	230/1
EER/SEER (AT ARI)	-	-
COOLING CAP (MBH)	13,167	13.184
AMBIENT (°F)	105	105
MANUFACTURER	MASTER-BILT	MASTER-BILT
TYPE	-	-
MODEL NUMBER	MSLD035AB	MSLM017AB
LOCATION	EQUIPMENT YARD	EQUIPMENT YARD
OPER. WT (LBS)	250	240
ACCESSORIES	1,3	2,3

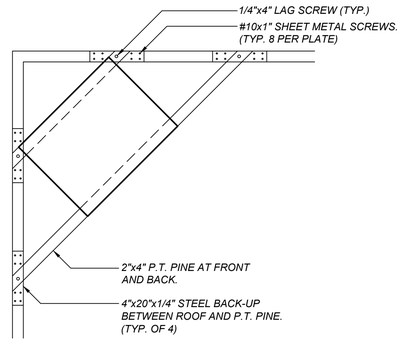
1. SINGLE 3.5 HP SCROLL COMPRESSOR.
2. SINGLE 1.75 HP COMPRESSOR.
3. REPLACEABLE CORE SUCTION FILTER, REPLACEABLE CORE LIQUID FILTER, FAN CYCLING CONTROL, SUCTION ACCUMULATOR, MANUAL RESET HIGH PRESSURE SWITCH.



PIPE ON WALL SUPPORT

G MP-2

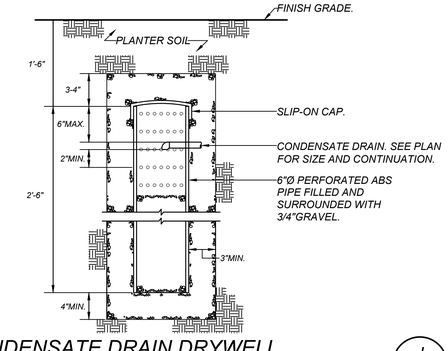
SCALE: NONE



CONDENSING UNIT SUPPORT FRAMING

H MP-2

SCALE: NONE

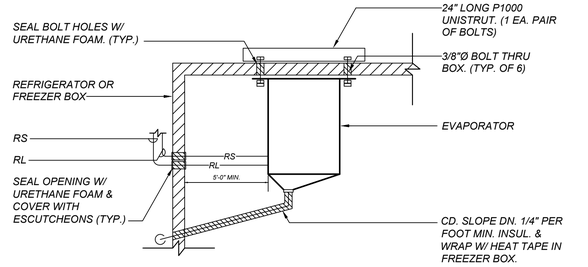


SINGLE CONDENSATE DRAIN DRYWELL

J MP-2

SCALE: NONE

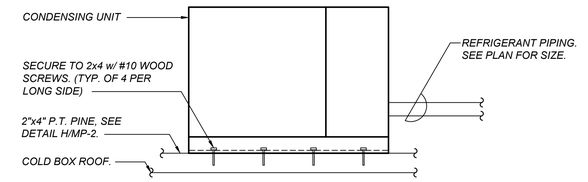
P029



EVAPORATOR MOUNTING DETAIL

A MP-2

SCALE: NONE

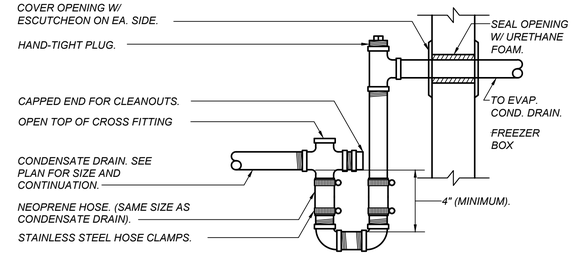


CONDENSING UNIT MOUNTING DETAIL

B MP-2

SCALE: NONE

MM098

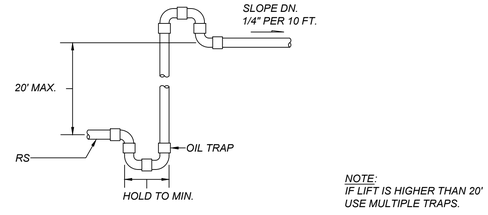


CONDENSATE DRAIN CONNECTION DETAIL

C MP-2

SCALE: NONE

P020



RS RISER DETAIL

D MP-2

SCALE: NONE

APPROVALS:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
BRIAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1562
4910 E. Clinton Way, Suite 101
(559) 431-5700

TITLE: MECHANICAL DETAILS & SCHEDULES

SHEET: MP-2

PROJECT 21182

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, 2016

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 # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
BRIAN W. CARAS
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1532

TITLE: MECHANICAL SPECIFICATIONS

SHEET: MP-3

PROJECT 21182

1 DESIGN CRITERIA

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

B. CEILING DESIGN DATA:
1. CEILING ROOF DEAD LOAD: = 5 PSF
2. CEILING ROOF LIVE LOAD: = 20 PSF

C. SEISMIC DESIGN DATA:
1. MAPPED SPECTRAL RESPONSE ACC. FOR SHORT PERIOD, SS = 0.588 G
2. MAPPED SPECTRAL RESPONSE ACC. FOR 1-SEC PERIOD, S1 = 0.231 G
3. DESIGN SPECTRAL RESPONSE ACC. COEFF. AT SHORT PERIOD, SDS = 0.521 G
4. DESIGN SPECTRAL RESPONSE ACC. COEFF. AT 1-SEC PERIOD, SD1 = 0.329 G
5. BUILDING SITE CLASS (TABLE 1613.5.2) = D - DEFAULT
6. SEISMIC DESIGN CATEGORY (TABLE 1613.5.6 (1 & 2)) = D
7. IMPORTANCE FACTOR, I = 1.5
8. RESPONSE MODIFICATION FACTOR,R = 2.0 (SHEAR WALL)

D. WIND DESIGN DATA:
1. BASIC WIND SPEED (3 SECOND GUST) = 105 MPH
2. HORIZONTAL WIND PRESSURE = 16.00 PSF
3. VERTICAL WIND PRESSURE = -17.67 PSF

ANY FUTURE ROOF/CEILING LID MOUNTED EQUIPMENT NOT CURRENTLY SHOWN ON THE APPROVED SHOP DRAWINGS SHALL BE COORDINATED WITH THE EOR PRIOR TO ANY INSTALLATION, TYP.

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: (CBC)			
EPOXY OR ADHESIVE ANCHOR PLACEMENT		X	BY BUILDING OFFICIAL
EXPANSION OR SCREW ANCHOR PLACEMENT		X	ACI 318: 17.8.2

4 SPECIFICATIONS

SPECIFICATIONS D2122901JK-C (QUOTE NUMBER NL2122901JK-C)
REFRIGERATED SOLUTIONS GROUP
(1) MASTER-BILT OUTDOOR WALK-IN COOLER/FREEZER COMBINATION (2 COMPARTMENTS)
30' 0" LONG, 15' 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 - ADVISE DIRECTION OF SLOPE-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 0F., 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) E1LD0142B-TE2*
EVAP 208-230/60/1 R-448A/R-449A, ELEC DEFROST MTD TXV/TEMP CTRL/SOL, LOW TEMP 0F., 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 10394 BTU'S/HOUR CALCULATED FROM 105 °F AMBIENT TEMPERATURE, 0' ELEVATION, 105 °F FLOOR TEMPERATURE, 9.91 MINUTES OPEN DOOR TIME PER 24 HRS FOR(1) 48.00" X 78.00" WALK-INDOOR OPENING INTO 35.00 °F AMBIENT, 4.58 MINUTES OPEN DOOR TIME PER 24 HRS FOR(1) 60.00" X 78.00" WALK-INDOOR OPENING INTO 105.00 °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
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.

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 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 (1/8 DIAMOND ALUMINUM)
(1) RAIN HOOD
(1) NL708 HIGH/LOW DIGITAL ALARM AND LIGHT MANAGEMENT SYSTEM (SURFACE 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 35F., 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 35F., 16300 BTUH EVAPORATOR CAPACITY. 60" (L) 16" (W) 17" (H) @ 72#. FAN AMPS: 2.4.

CALCULATED LOAD FOR COOLER (35.0°F) IS 10092 BTU'S/HOUR CALCULATED FROM 105 °F AMBIENT TEMPERATURE, 0' ELEVATION, 105 °F FLOOR TEMPERATURE, 12.79 MINUTES OPEN DOOR TIME PER 24 HRS FOR(1) 48.00" X 78.00" WALK-INDOOR OPENING INTO 35.00 °F AMBIENT, 9.04 MINUTES OPEN DOOR TIME PER 24 HRS FOR(1) 48.00" X 78.00" WALK-INDOOR OPENING INTO 105.00 °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
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.

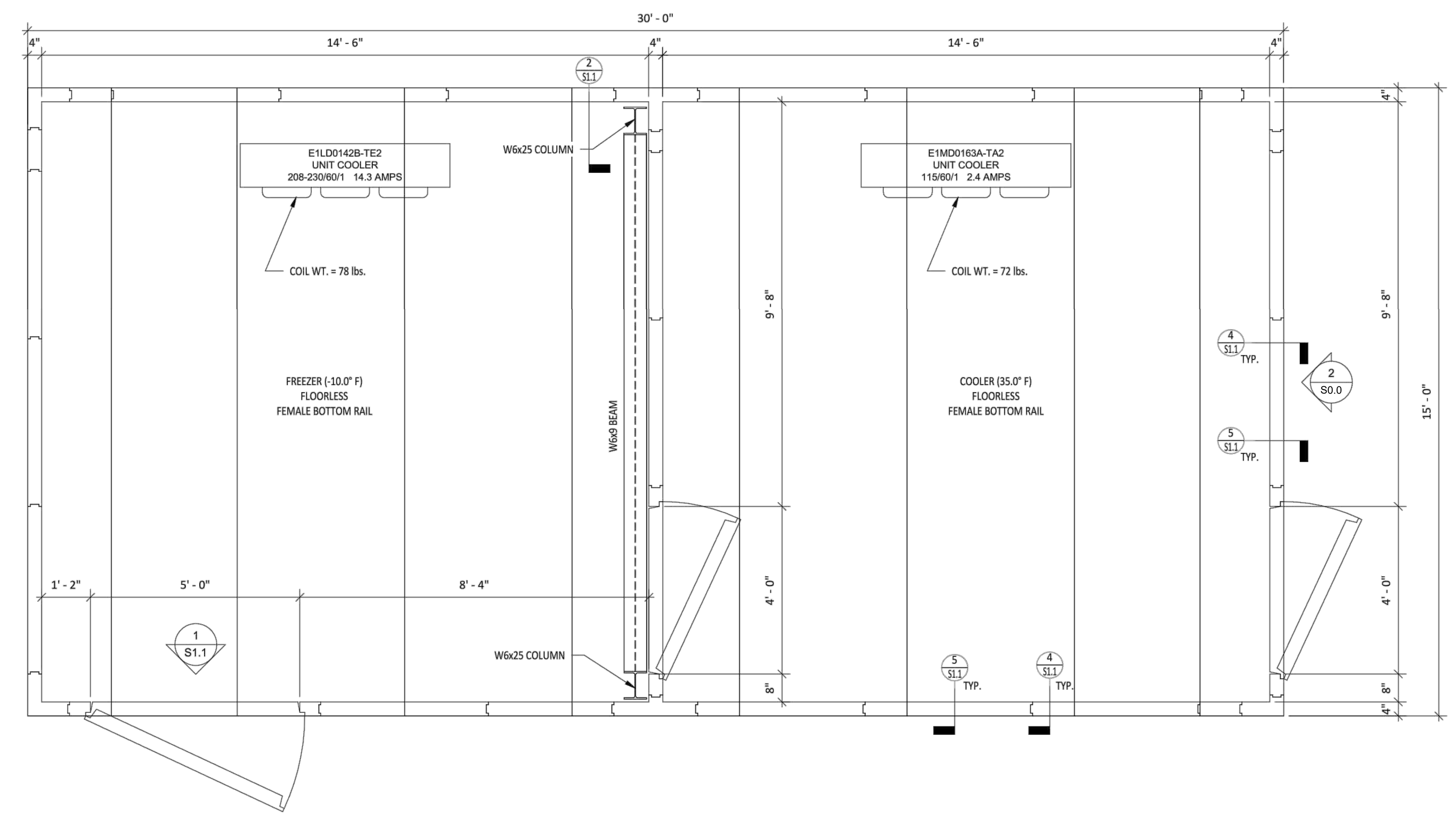
IF REMOTE REFRIGERATION CONDENSING WILL BE INSTALLED IN AMBIENT CONDITIONS COLDER THAN -10°F, RSG RECOMMENDS AN OUTDOOR HEATER KIT ADDED TO THE REFRIGERATION SYSTEM TO RUN SUFFICIENTLY IN THESE OUTDOOR AMBIENT CONDITIONS. TO ADD THIS SYSTEM ACCESSORY YOUR UPCHARGE WILL BE $600. *STANDARD OUTDOOR CAPSULE PAKS ARE RATED TO -20°F AMBIENT CONDITIONS. THIS ACCESSORY IS NOT REQUIRED.

OTHER WALK-IN ACCESSORIES:

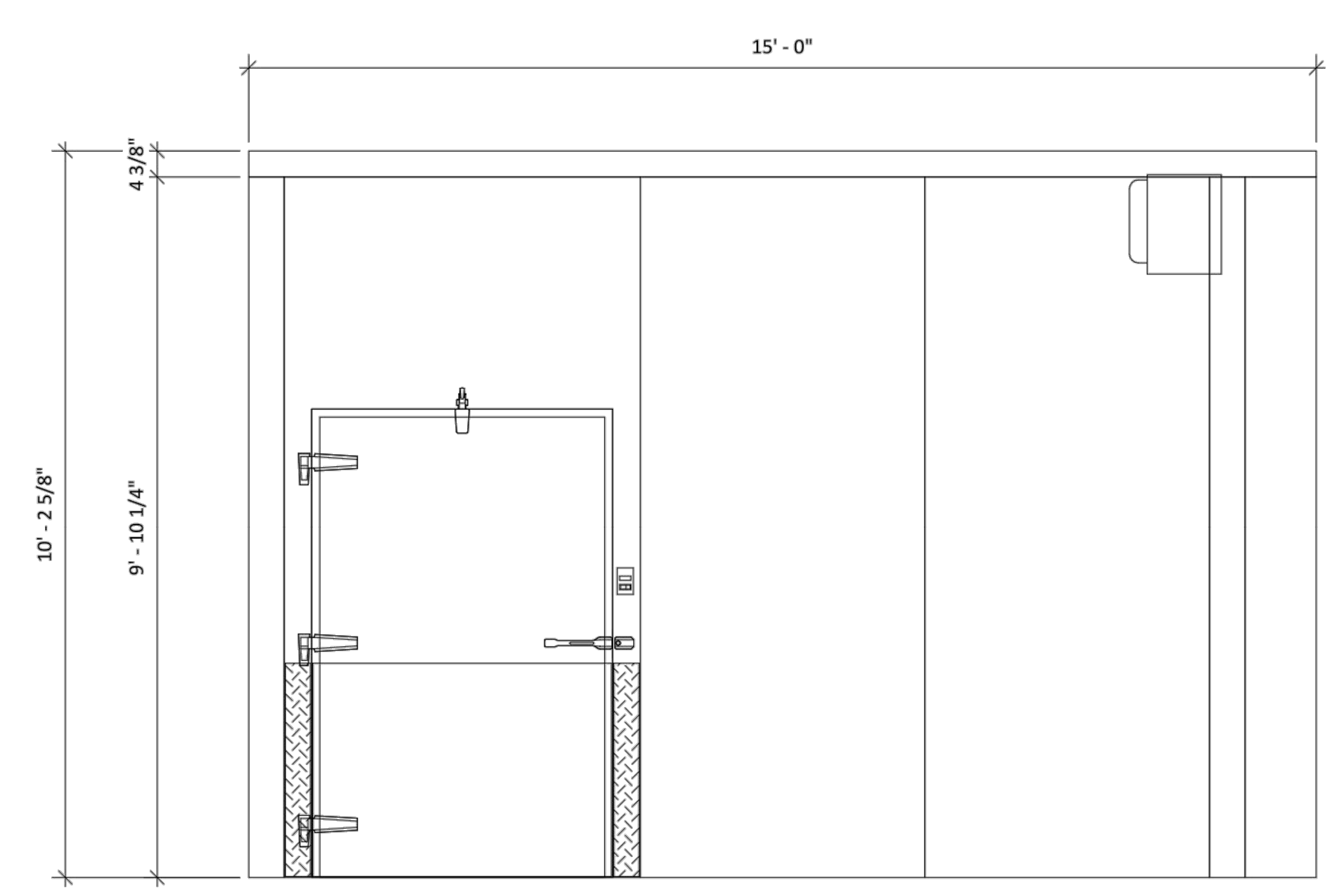
(4) 48" LED VAPOR-PROOF ALL TEMPERATURE INTEGRATED LIGHT FIXTURE (SHIPPED LOOSE)
(10) CONTINUOUS ANGLE CONCRETE ATTACHMENT 1.5" X 1.5" X 96" 14GA (3/8" DIA. HILTI KWIK BOLT OR SIMILAR TO BE PROVIDED BY OTHERS)
(13) EMBOSSED ALUMINUM COVE MOLDING, 5" HIGH X 8' LONG WITH ADHESIVE (SHIPPED LOOSE FOR FIELD 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)

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(S) 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 VIEW
1/2" = 1'-0"



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

Refrigerated Solutions Group

TAMARACK GROVE ENGINEERING
812 S. La Cassia Drive
Boise, ID 83705
(208) 345-8941
fax (208) 345-8946
web www.tamarackgrove.com
firm Firm No.: N/A

symbol	revision	date
△		

Martin Luther King JR MS

601 Lilly Street
Madera, CA 93638

sheet title: DESIGN CRITERIA

Job No:	22-20650
Dwg Date:	11/28/22
Drawn By:	TSR
Checked By:	DDH

TGE S0.0

SHEET LIST	
SHEET NUMBER	SHEET NAME
S0.0	DESIGN CRITERIA
S1.0	PLAN & ELEVATION
S1.1	STRUCTURAL DETAILS

MANUFACTURER WALK-IN SPECIFICATIONS A / MP-4
SCALE: NONE

APPROVALS:
APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

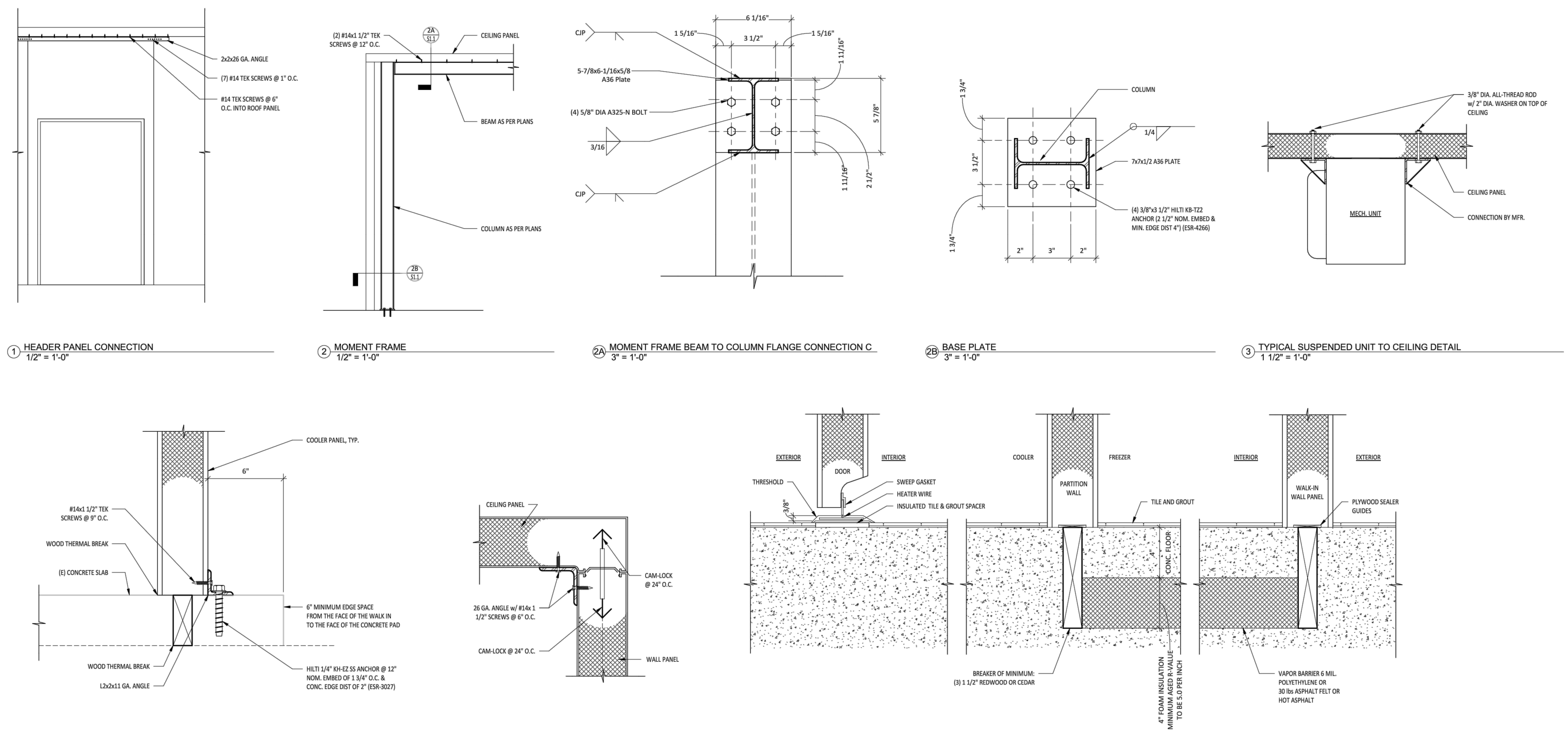
LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1362

TITLE: MECHANICAL SPECIFICATIONS

SHEET: MP-4
PROJECT: 21182

23 January 2023 10:38 AM P:\2021\21182 Madera USD MLK MS Cold Box Addition\4-Drawings\4 M\MP-3 - MECHANICAL SPECS.dwg anthonyb

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023



1 HEADER PANEL CONNECTION
1/2" = 1'-0"

2 MOMENT FRAME
1/2" = 1'-0"

2A MOMENT FRAME BEAM TO COLUMN FLANGE CONNECTION C
3" = 1'-0"

2B BASE PLATE
3" = 1'-0"

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

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

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

8 FLOOR DETAIL WITH WOOD THERMAL BREAKERS
3" = 1'-0"

RSG Refrigerated Solutions Group

TAMARACK GROVE ENGINEERING
812 S. La Cassia Drive
Boise, ID 83705
(208) 345-8941
fax (208) 345-8946
web www.tamarackgrove.com
firm Firm No.: N/A

symbol	revision	date
△		

Martin Luther King JR MS

601 Lilly Street
Madera, CA 93638

sheet title:

STRUCTURAL DETAILS

Job No:	22-20650
Dwg Date:	11/28/22
Drawn By:	TSR
Checked By:	Checker

TGE S1.1

MANUFACTURER WALK-IN SPECIFICATIONS
SCALE: NONE
A
MP-5

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1342

TITLE:
MECHANICAL SPECIFICATIONS

SHEET:
MP-5
PROJECT 21182

23 January 2023 10:35 AM P:\2021\21182 Madera USD MLK MS Cold Box Addition\4-Drawings\4 M\MP-3 - MECHANICAL SPECS.dwg anthonyb

FLOW TEST

LOCATION: 601 Lilly

DATE: 5 April 2022

INFO

Static: 50 PSI
Residual: 34 PSI
Pitot: 19 PSI

Orifice Size: 4.5-inch

Flow: 1968 GPM

Available Flow at 20 PSI residual pressure: 2763 GPM

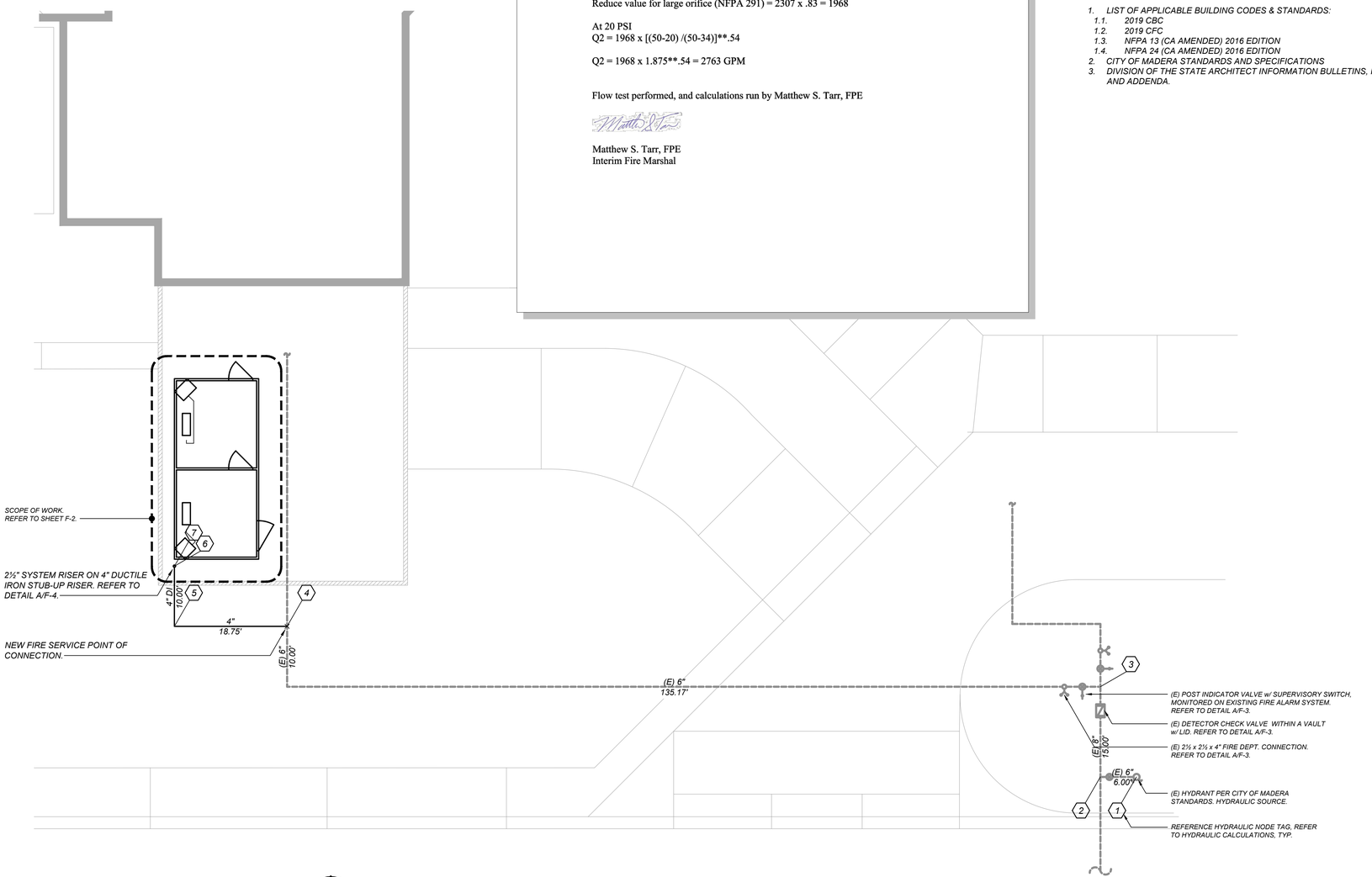
Q= (.9)(29.84)(4.5**2)(19**1/2) = 2370 GPM
Reduce value for large orifice (NFPA 291) = 2307 x .83 = 1968

At 20 PSI
Q2 = 1968 x [(50-20) /(50-34)]**.54

Q2 = 1968 x 1.875**.54 = 2763 GPM

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

Matthew S. Tarr, FPE
Interim Fire Marshal



FIRE SPRINKLER SITE PLAN

SCALE: 1"=10'-0"

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.

GENERAL NOTES

SPRINKLER SYSTEM DESIGNED IN ACCORDANCE WITH NFPA 13 (2016), NFPA 20 (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 # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
BRIAN W. CARTER
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

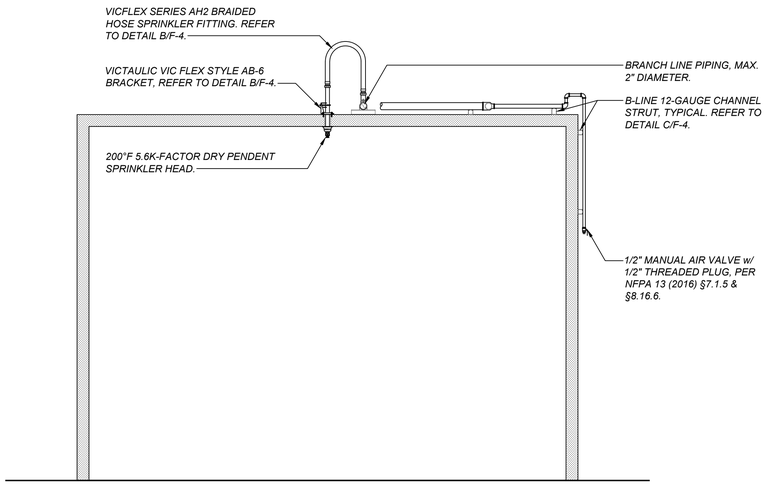
LAWRENCE ENGINEERING GROUP
Fresno, CA 93727
FAX (559) 431-1562
4910 E. Clinton Way, Suite 101
(559) 431-0101

TITLE:
FIRE PROTECTION
SITE PLAN

SHEET: F—1

PROJECT 21182

27 December 2022 10:06 AM P:\2021\21182 Madera USD MLK MS Cold Box Addition\4-Drawings\F FVF-1 – FIRE SPRINKLER SITE PLAN.dwg bolt



COLD BOX SECTION DRAWING

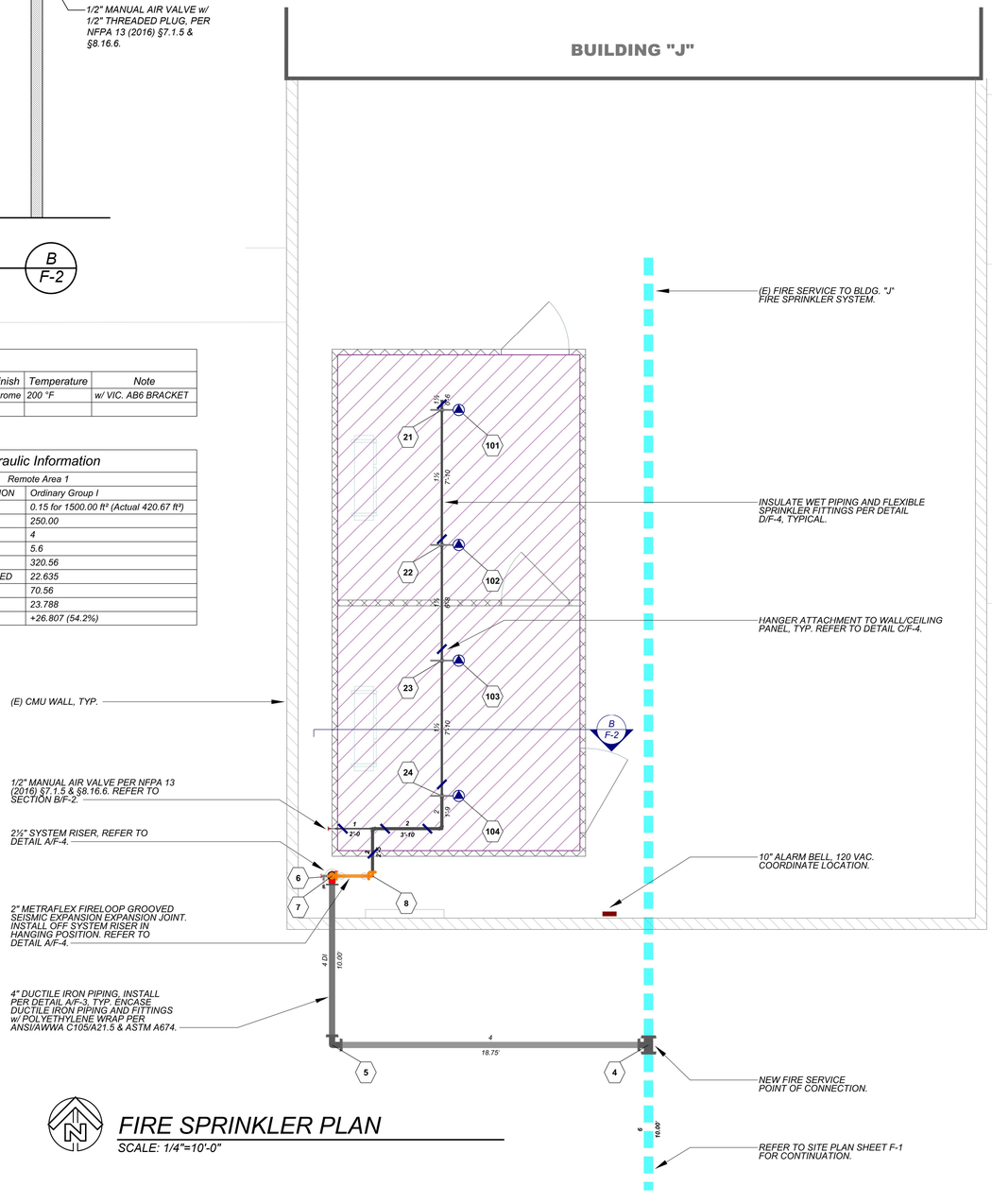
B / F-2

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

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 I
DENSITY (gpm/ft²)	0.15 for 1500.00 ft² (Actual 420.67 ft²)
TOTAL HOSE STREAMS	250.00
TOTAL HEADS FLOWING	4
K-FACTOR	5.6
TOTAL WATER REQUIRED	320.56
TOTAL PRESSURE REQUIRED	22.635
BASE of RISER (gpm)	70.56
BASE of RISER (psi)	23.788
SAFETY MARGIN (psi)	+26.807 (54.2%)



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 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.
   - 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:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARTER
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY 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: FIRE SPRINKLER PLAN

SHEET: F – 2

PROJECT 21182

NOTES

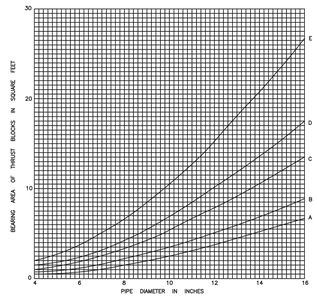
1. Horizonal thrust at fittings are based on 150 psi of water pressure.
2. Values from curves are for tees and dead ends, i.e. straight line thrust. For other fittings, multiply the bearing area obtained from curves by the following factors:

   For 90° Bend, 1.4
   For 40° Bend, 0.8
   For 22½° Bend, 0.4

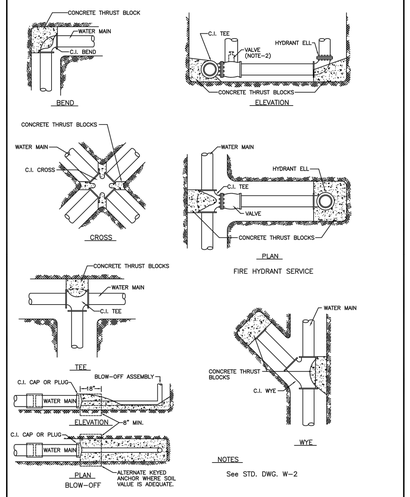
3. Safe bearing loads on undisturbed soil are as follows:

   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



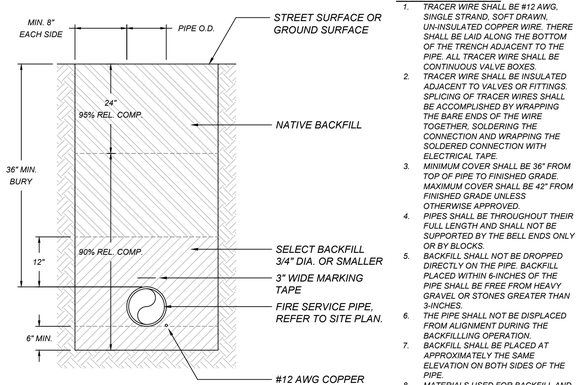
CONCRETE THRUST BLOCKS FOR CAST IRON FITTINGS	REF. & REV. MARCH 2005	CITY OF MADERA W-1

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

A
F-3

APPROVALS:

APPLICATION #
02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

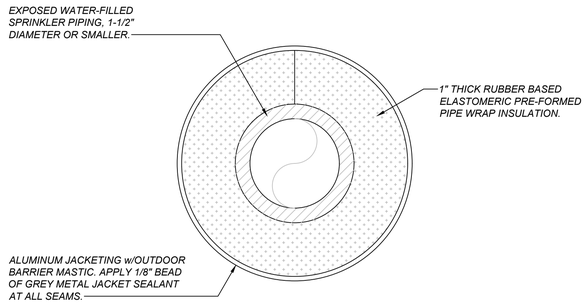
REVISIONS

LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1302

TITLE:
FIRE PROTECTION
SITE PLAN

SHEET:
F-3

PROJECT 21182



INSTALLATION NOTES:

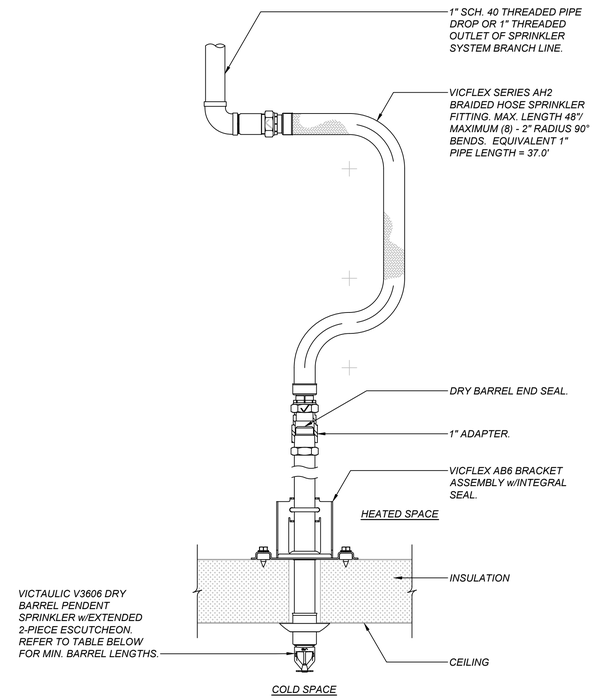
1. ALL WATER-FILLED SPRINKLER SYSTEM PIPING EXPOSED TO EXTERIOR SHALL BE INSULATED WITH 1" THICK RUBBER BASED ELASTOMERIC PRE-FORMED PIPE INSULATION.
2. ALL-WEATHER ALUMINUM PIPE AND FITTING JACKETING SHALL BE APPLIED OVER PIPE INSULATION w/PRE-FABRICATED ALUMINUM STRAPPING AND SEALS BY THE SAME MANUFACTURER.
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

D
F-4

SCALE: NONE

FSS006



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:

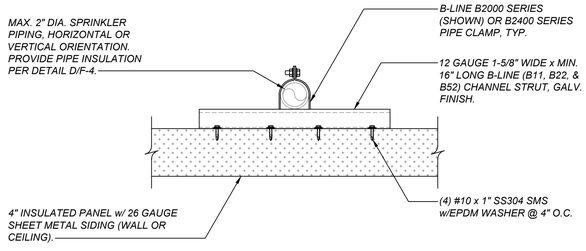
A. INSTALLATION OF DRY PENDENT SPRINKLER ASSEMBLY SHALL BE IN ACCORDANCE TO MANUFACTURER INSTRUCTIONS AND NFPA 13 REQUIREMENTS.
B. MIN 1-1/2" / MAX. 2-1/4" HOLE REQUIRED FOR INSTALLATION OF PENDENT SPRINKLER. DE-BURR METAL EDGES ON BOTH SIDES PANEL.
C. TERMINATE 1" SCH. 40 DROP APPROX. 30" ABOVE INSULATED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

VICFLEX FLEXIBLE SPRINKLER DROP w/ VICTAULIC DRY BARREL PENDENT SPRINKLER

B
F-4

SCALE: NONE

FSSXXX



8-FEET MAXIMUM HANGER SPACING

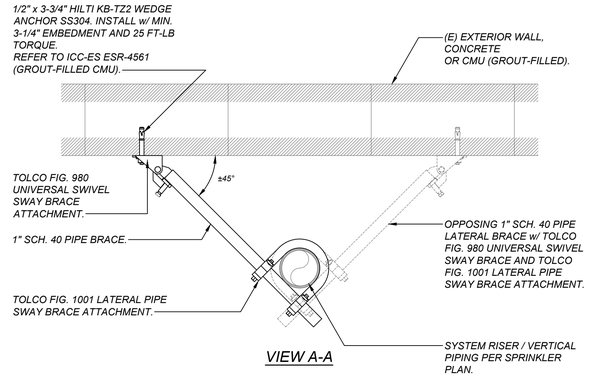
SYMBOL

CHANNEL STRUCT ATTACHMENT TO 4" INSULATED WALL/CEILING PANEL

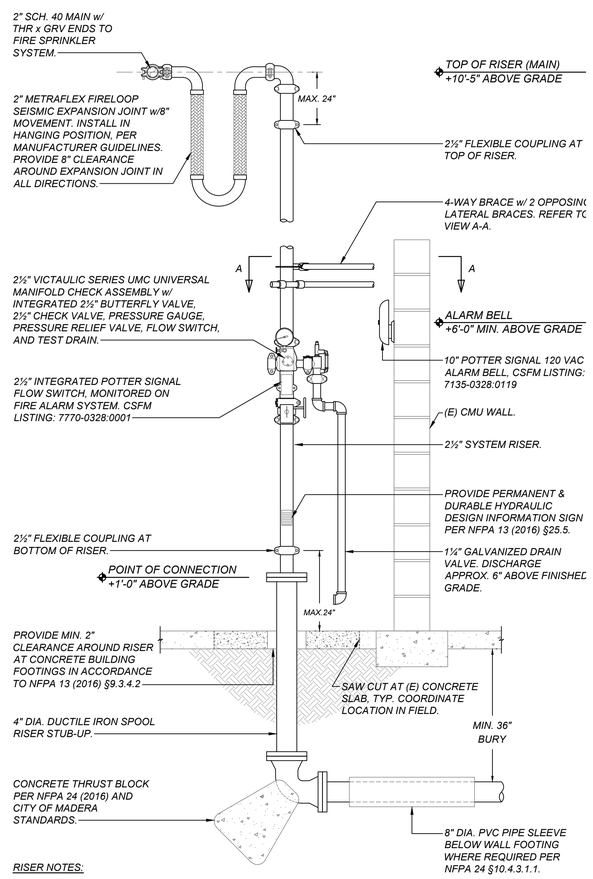
C
F-4

SCALE: NONE

FSS102



VIEW A-A



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

A
F-4

SCALE: NONE

FSSXXX

APPROVALS:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
BRIAN W. CARABA
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-1010
FAX (559) 431-1302

TITLE:
FIRE PROTECTION INSTALLATION & STRUCTURAL DETAILS

SHEET: F—4

PROJECT 21182

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: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

RYAN W. CARLSON
No. M34846
Exp. 6-30-24

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION

601 LILLY ST.
MADERA, CA 93638

REVISIONS

△
△
△
△
△

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

TITLE:
PROJECT
SPECIFICATIONS

SHEET:
F-5

PROJECT 21182

APPROVALS:

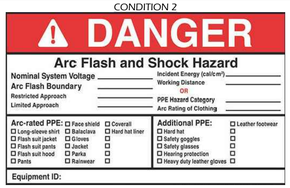
APPLICATION #

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.

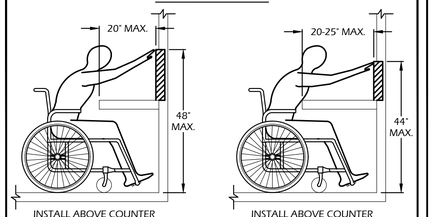
120V BRANCH CIRCUIT VOLT DROP CONDUCTOR LENGTH CHART

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

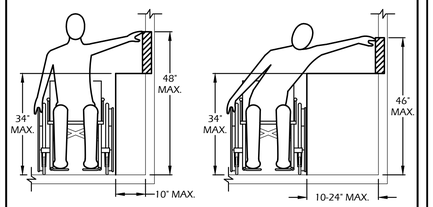
NOTES:
1. THIS CHART IS FOR COPPER CONDUCTORS ONLY.
2. THIS CHART ASSUME AN 80% POWER FACTOR AND STEEL RACEWAYS.
3. 2019 CALIFORNIA ENERGY CODE, 130.5(c) ALLOWS A MAXIMUM COMBINED VOLTAGE DROP OF 5%. THIS CHART ASSUMES A MAXIMUM LENGTH OF CONDUCTORS FOR LESS THAN 2% VOLTAGE DROP ON A BRANCH CIRCUIT AT 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

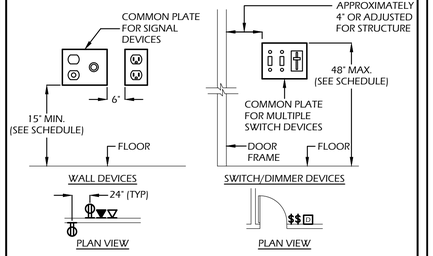
ADA GUIDELINES



FRONT ACCESS



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
- 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
- WATTSTOPPER LMRC-101 ON/OFF, 1 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMRC-102 ON/OFF, 2 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMRC-211 DIMMING, 1 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMRC-212 DIMMING, 2 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMRC-213 DIMMING, 3 SWITCH LEG LIGHTING CONTROLLER
- WATTSTOPPER LMDC-100 DUAL TECHNOLOGY MOTION SENSOR
- WATTSTOPPER LMDX-100 DUAL TECHNOLOGY OCCUPANCY SENSOR
- WATTSTOPPER LMSW-101 SWITCH, 'a' INDICATES SWITCH LEG CONTROL. 2 LETTERS NEXT TO EACHOTHER WITHOUT A COMMA INDICATES 1 SWITCH LEG
- WATTSTOPPER LMDM-101 DIMMER, 'a' INDICATES SWITCH LEG CONTROL. 2 LETTERS NEXT TO EACHOTHER WITHOUT A COMMA INDICATES 1 SWITCH LEG
- WATTSTOPPER LMLS-400 PHOTOSENSOR
- 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
- 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
- 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.
- 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(1/2) — 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.
- SURGE PROTECTOR

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

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
7084 N. Maple Ave., Suite 101
Fresno, CA 93720
(559) 431-1010
FAX (559) 431-1062

TITLE:
SYMBOLS LEGEND, ABBREVIATIONS, AND REQUIREMENTS

SHEET:
E1.01

PROJECT 21182

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# 21161

REGISTERED PROFESSIONAL ENGINEER
JOHN BORRELLI
No. E16890
Exp. 6/30/23
ELECTRICAL
STATE OF CALIFORNIA

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

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# 21161

REGISTERED PROFESSIONAL ENGINEER JOHN BORRELLI No. E10390 EXP. 6/30/23 ELECTRICAL CALIFORNIA

APPROVALS:
APPLICATION #

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER RYAN W. CARLSON No. M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION

601 LILLY ST.
MADERA, CA 93638

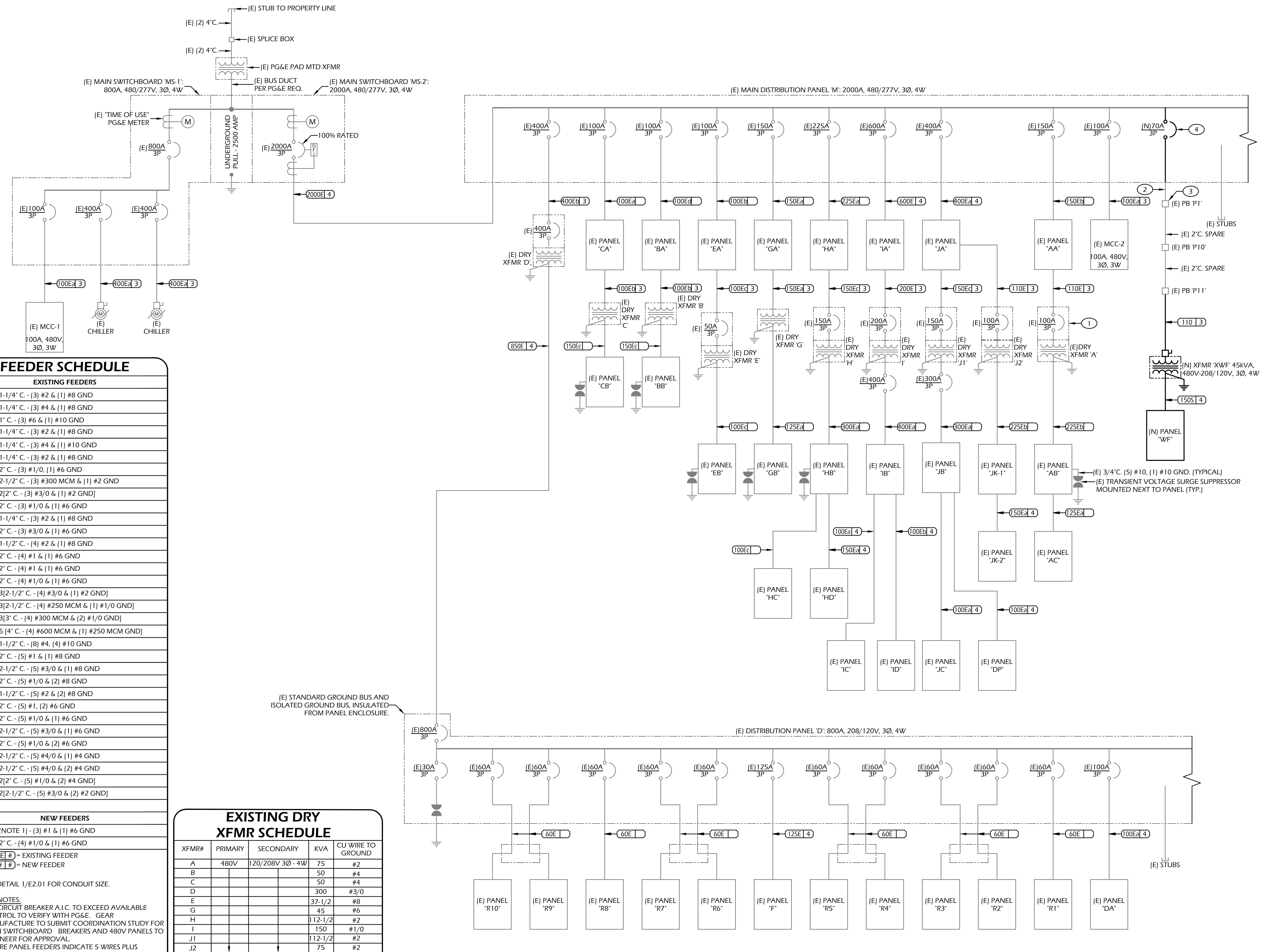
REVISIONS

LAWRENCE ENGINEERING GROUP
7084 N. Maple Ave., Suite 101
(559) 431-0101
Fresno, CA 93720
FAX (559) 431-1362

TITLE:
ELECTRICAL NOTES

SHEET:
E1.02
PROJECT 21182

APPROVALS:
APPLICATION #



FEEDER SCHEDULE

EXISTING FEEDERS	
100Ea 3	1-1/4" C. - (3) #2 & (1) #8 GND
100Eb 3	1-1/4" C. - (3) #4 & (1) #8 GND
100Ec 3	1" C. - (3) #6 & (1) #10 GND
110E 3	1-1/4" C. - (3) #2 & (1) #8 GND
150Ea 3	1-1/4" C. - (3) #4 & (1) #10 GND
150Eb 3	1-1/4" C. - (3) #2 & (1) #8 GND
150Ec 3	2" C. - (3) #1/0, (1) #6 GND
400Ea 3	2-1/2" C. - (3) #300 MCM & (1) #2 GND
400Eb 3	2[2" C. - (3) #3/0 & (1) #2 GND]
400Ec 3	2" C. - (3) #1/0 & (1) #6 GND
400Ed 3	1-1/4" C. - (3) #2 & (1) #8 GND
200E 3	2" C. - (3) #3/0 & (1) #6 GND
100Ea 4	1-1/2" C. - (4) #2 & (1) #8 GND
100Eb 4	2" C. - (4) #1 & (1) #6 GND
125E 4	2" C. - (4) #1 & (1) #6 GND
150Ea 4	2" C. - (4) #1/0 & (1) #6 GND
400Ea 4	3[2-1/2" C. - (4) #3/0 & (1) #2 GND]
600E 4	3[2-1/2" C. - (4) #250 MCM & (1) #1/0 GND]
850E 4	3[3" C. - (4) #300 MCM & (2) #1/0 GND]
2000E 4	5 [4" C. - (4) #600 MCM & (1) #250 MCM GND]
60E	1-1/2" C. - (8) #4, (4) #10 GND
100Ea	2" C. - (5) #1 & (1) #8 GND
100Eb	2-1/2" C. - (5) #3/0 & (1) #8 GND
100Ed	2" C. - (5) #1/0 & (2) #8 GND
100Ec	1-1/2" C. - (5) #2 & (2) #8 GND
125Ea	2" C. - (5) #1, (2) #6 GND
150Ea	2" C. - (5) #1/0 & (1) #6 GND
150Eb	2-1/2" C. - (5) #3/0 & (1) #6 GND
150Ec	2" C. - (5) #1/0 & (2) #6 GND
225Ea	2-1/2" C. - (5) #4/0 & (1) #4 GND
225Eb	2-1/2" C. - (5) #4/0 & (2) #4 GND
300Ea	2[2" C. - (5) #1/0 & (2) #4 GND]
400Ea	2[2-1/2" C. - (5) #3/0 & (2) #2 GND]
NEW FEEDERS	
110 3	(NOTE 1) - (3) #1 & (1) #6 GND
150S 4	2" C. - (4) #1/0 & (1) #6 GND

NOTE: ###E # = EXISTING FEEDER
= NEW FEEDER

NOTES:
1. SEE DETAIL 1/E2.01 FOR CONDUIT SIZE.

GENERAL NOTES:
1. ALL CIRCUIT BREAKER A.I.C. TO EXCEED AVAILABLE CONTROL TO VERIFY WITH PG&E. GEAR MANUFACTURE TO SUBMIT COORDINATION STUDY FOR MAIN SWITCHBOARD BREAKERS AND 480V PANELS TO ENGINEER FOR APPROVAL.
2. WHERE PANEL FEEDERS INDICATE 5 WIRES PLUS GROUND, 2 WIRES ARE PARALLEL NEUTRALS.

EXISTING DRY XFMR SCHEDULE

XFMR#	PRIMARY	SECONDARY	KVA	CU WIRE TO GROUND
A	480V	120/208V 3Ø - 4W	75	#2
B			50	#4
C			50	#4
D			300	#3/0
E			37-1/2	#8
G			45	#6
H			112-1/2	#2
I			150	#1/0
J1			112-1/2	#2
J2			75	#2

1
-

PARTIAL SINGLE LINE DIAGRAM

NOT TO SCALE

SHEET NOTES

1. BREAKER AT TRANSFORMER, TYPICAL WHERE SHOWN.
2. UTILIZE THE EXISTING SPARE 2-INCH CONDUIT GOING FROM THE EXISTING DISTRIBUTION PANEL 'M' TO PULLBOX 'P11' VIA PULLBOX 'P1' AND PULLBOX 'P10'. ROUTE THE CONDUCTOR INDICATED PER THE FEEDER SCHEDULE TO POWER THE NEW TRANSFORMER 'XWF.'
3. EXISTING PULLBOX 'P1' IS TWO SEPARATE PULLBOXES. ONE FOR THE EXISTING SPARE CONDUIT AND THE OTHER FOR THE REMAINING EXISTING FEEDERS.
4. PROVIDE AND INSTALL ALL MOUNTING HARDWARE FOR A FULLY FUNCTIONAL SYSTEM.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION

601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE
ENGINEERING GROUP

7084 N. Maple Ave., Suite 101
Fresno, CA 93720
(559) 431-0101
FAX (559) 431-1342

TITLE:
PARTIAL SINGLE LINE DIAGRAM

SHEET:
E1.03

PROJECT 21182

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# 21161

REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL
STATE OF CALIFORNIA

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	31 MCA	FUSE/DISC.	208	1	NOTE 2	3/4"	2	8	NOTE 3
CU-2	CONDENSING UNIT	48 MCA	↓	↓	↓	↓	↓	↓	↓	↓
E-1	EVAPORATOR UNIT	7.2 FLA		120					10	
E-2	EVAPORATOR UNIT	4.5 FLA		208					↓	

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-1	FREEZER EVAP. E-2		2765		25A/2P	4
5	↓			0	SPARE		2765				6
7	35A/2P	2293			COOLER CONDENSING UNIT, CU-1	SPARE			0	20A/1P	8
9			2293			RECEPTACLE ON ROOF		180		↓	10
11	50A/2P			4359	FREEZER CONDENSING UNIT, CU-2	SPARE	0			↓	12
13		4359				SPACE			0	↓	14
15			0		SPACE	↓		0		↓	16
17	↓			0	↓	↓	0			↓	18
19	↓	0			↓	↓			0	↓	20
21	↓		0		↓	↓		0		↓	22
23	↓			0	↓	↓	0			↓	24
25	↓	0			↓	↓			0	↓	26
27	↓		0		↓	↓		0		↓	28
29	↓			0	↓	↓	0			↓	30
TOTAL Ø LOADS (VA):					PHASE A = 6852	PHASE B = 6102	PHASE C = 7124				
TOTAL Ø LOADS (A):					PHASE A = 57	PHASE B = 51	PHASE C = 59				
TOTAL LOAD:					20078 VA	56 A					

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'	850.000	Copper	56.000	480	1	#1	12.6931	2.64%	12.6931	2.64%
(N) PNL 'WF'	15.000	Copper	120.000	208	1	#1/0	0.4402	0.21%	0.4402	0.21%
WF-1	70.000	Copper	7.200	120	1	#10	1.2527	1.04%	1.6929	1.41%
WF-2	30.000	Copper	7.200	120	1	#10	0.5369	0.45%	0.9771	0.81%
WF-3	60.833	Copper	7.200	120	1	#10	1.0887	0.91%	1.5289	1.27%
WF-7,9	71.500	Copper	14.000	208	1	#8	1.5643	0.75%	2.0044	0.96%
WF-11,13	44.917	Copper	26.800	208	1	#8	1.8811	0.90%	2.3213	1.12%
WF-4,6	47.583	Copper	18.800	208	1	#10	2.2235	1.07%	2.6637	1.28%
WF-10	63.000	Copper	2.000	120	1	#12	0.4978	0.41%	0.9380	0.78%

ELECTRICAL DISTRIBUTION WEIGHT & DIMENSIONS SCHEDULE

NAME	CB	WEIGHT(Lb)	H	W	D	MOUNTING
PANEL 'WF'	150A	213	62"	20"	6.5"	SURFACE

TRANSFORMER WEIGHT & DIMENSIONS SCHEDULE

SITE PLAN

NAME	WEIGHT(LBS)	H	W	D
45kVA XFMR 'XWF'	369	29.32"	25.14"	25.93"

BASE ANCHORAGE: 4=3/8" DIA. HILTI KB-TZ2 PER DETAIL 1/E4.01.

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# 21161

REGISTERED PROFESSIONAL ENGINEER — JOHN BORRELLI — No. E16890 — Exp. 6/30/23 — ELECTRICAL — STATE OF CALIFORNIA

APPROVALS:
APPLICATION #

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC: A
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER — BRIAN W. CARLSON — No. M34846 — Exp. 6-30-24 — MECHANICAL — STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
7084 N. Maple Ave., Suite 101
Fresno, CA 93720
(559) 431-9101
FAX (697) 431-1362

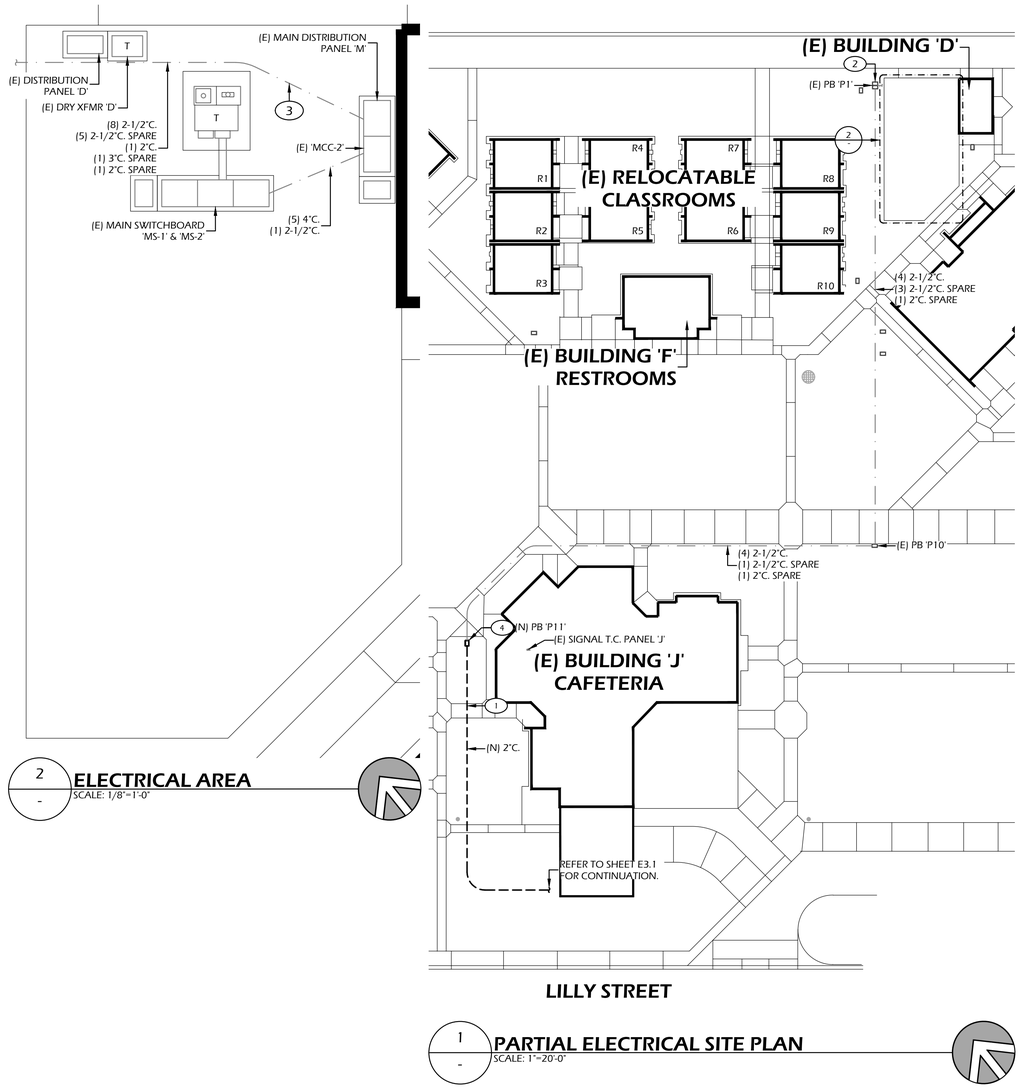
TITLE:
PANEL SCHEDULE, WEIGHT AND DIMENSION SCHEDULE, VOLTAGE DROP

SHEET:
E1.04

PROJECT 21182

18 August 2022 2:21 PM G:\Educational\MaderaUSD\MartinLutherKingMiddle\ColdBoxAddition\21161E1-04.dwg joy marie haliare

G:\Educational\MaderaUSD\MartinLutherKingMiddle\ColdBoxAddition\21161E1-04.dwg, 8/18/2022 2:21:28 PM, ARCH full bleed D (36.00 x 24.00 Inches)



2 / - **ELECTRICAL AREA**
SCALE: 1/8"=1'-0"

1 / - **PARTIAL ELECTRICAL SITE PLAN**
SCALE: 1"=20'-0"

SHEET NOTES (#)

1. SAWCUT CONCRETE AS APPLICABLE ALONG CONDUIT ROUTE AND HAUL AWAY DEBRIS. PATCH AND REPAIR TO MATCH THE EXISTING SURFACE AFTER INSTALLATION OF CONDUITS.
2. EXISTING PULLBOX 'P1' IS TWO SEPARATE PULLBOXES. ONE FOR THE EXISTING SPARE CONDUIT AND THE OTHER FOR THE REMAINING EXISTING FEEDERS.
3. UTILIZE THE SPARE 2-INCH CONDUIT TO ROUTE CONDUCTORS TO THE NEW PULLBOX 'P11' FOR THE NEW TRANSFORMER LOCATED IN THE EQUIPMENT YARD.
4. REMOVE EXISTING PULLBOX 'P11' AND REPLACE WITH NEW PULLBOX SIZE B2436. MAKE ALL CONNECTIONS SAME AS BEFORE.

PULL BOX SCHEDULE

	DESIGNATION	MINIMUM SIZE	SYSTEMS
POWER	P11	B2436	POWER

NOTES:
1. ALL PULL BOXES SHALL BE EITHER BROOKS, CHRISTY, OR EQUIVALENT.
2. ALL PULL BOXES SHALL BE PROVIDED WITH EXTENSION RINGS AND BOLT DOWN COVERS AS REQUIRED TO SUIT THE APPLICATION. ALL PULL BOXES TO BE TRAFFIC RATED.
3. LABEL PULL BOXES `ELECTRICAL', `SIGNAL' OR `COMMUNICATIONS' AS REQUIRED.

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# 21161

REGISTERED PROFESSIONAL ENGINEER JOHN BORRELLI No. E18780 Exp. 6/30/23 ELECTRICAL STATE OF CALIFORNIA

APPROVALS:
APPLICATION #

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER RYAN W. CARTER No. M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

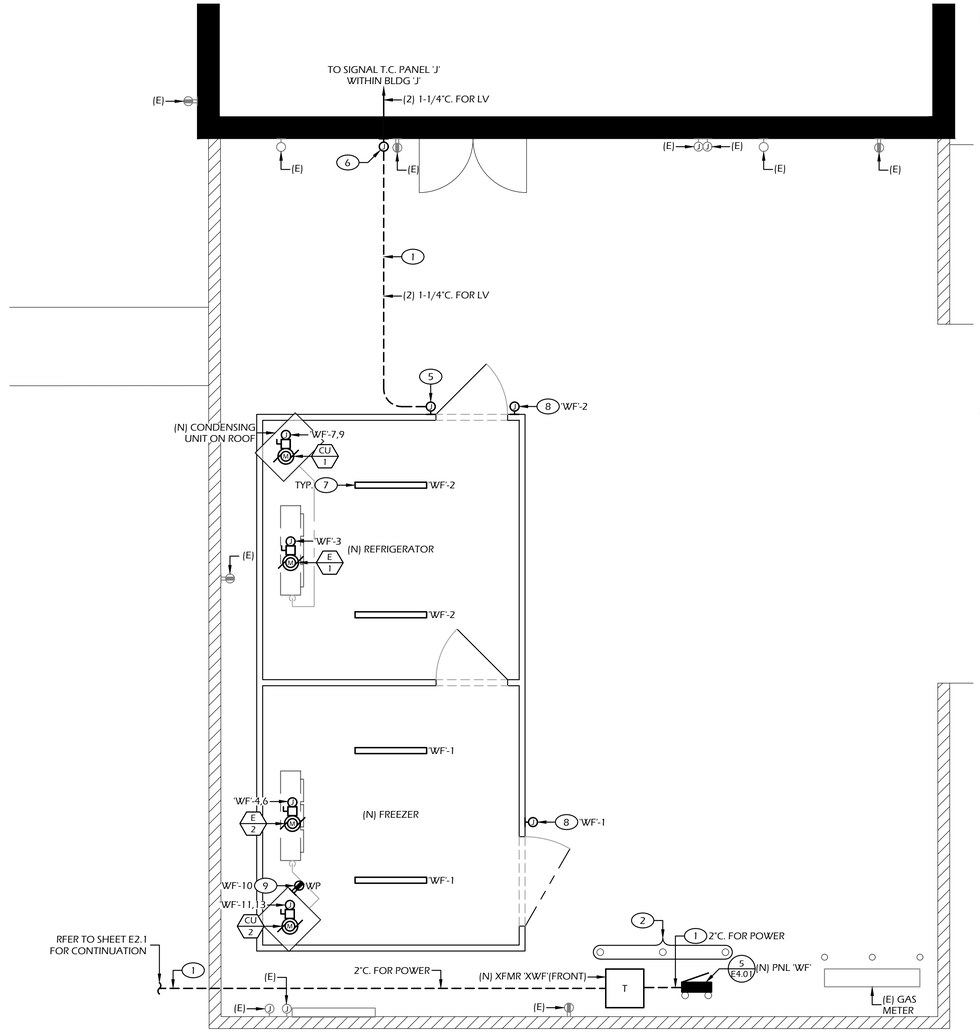
LAWRENCE ENGINEERING GROUP
7884 N. Maple Ave., Suite 101
Fresno, CA 93720
(559) 431-0101
FAX (559) 431-1622

TITLE:
PARTIAL ELECTRICAL
SITE PLAN

SHEET:
E2.01

PROJECT 21182

18 August 2022 2:21 PM G:\Educational\MaderaUSD\MartinLutherKingMiddle\ColdBoxAddition\21161E2-01.dwg jay marie hallare



1
-

ENLARGED EQUIPMENT YARD

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

SHEET NOTES

1. SAWCUT 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. NOT USED.
4. NOT USED.
5. PROVIDE AND INSTALL A 6X6X4-INCH J-BOX, MOUNTED UP HIGH. TERMINATE THE SPARE COMMUNICATIONS CONDUITS AT J-BOX.
6. 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.
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. 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 LIGHTS AND SWITCHES. COORDINATE WITH WALK-IN FREEZER CONTRACTOR FOR EXACT LOCATION.
9. MOUNT RECEPTACLE ON ROOF.

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.

APPROVALS:

APPLICATION #

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARLSON
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
7084 N. Maple Ave., Suite 101
Fresno, CA 93720
(559) 431-0101
FAX (559) 431-1562

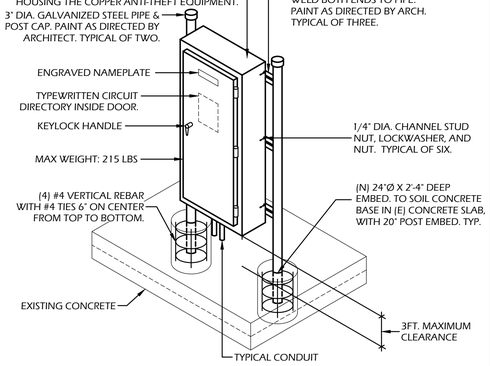
TITLE:
ENLARGED EQUIPMENT YARD

SHEET:
E3.01

PROJECT 21182

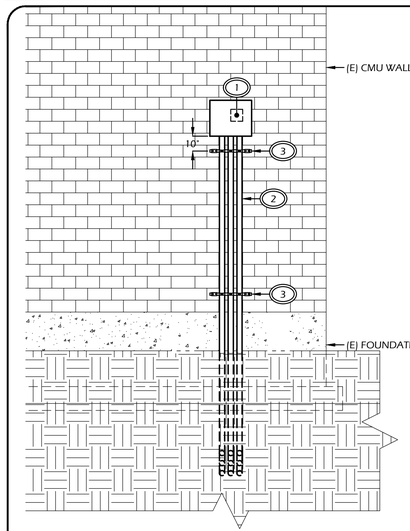
Borrelli & Associates, Inc.
Consulting Electrical Engineers
2032 N. Gateway Boulevard
Fresno, CA, 93727
Phone: 559-233-4138
http://www.borrelliengineering.com/
ca-bai@borrelliengineering.com
BAI# 21161

REGISTERED PROFESSIONAL ENGINEER
JOSEPH BORRELLI III
No. E14890
Exp. 6/30/25
ELECTRICAL
STATE OF CALIFORNIA



5 — **TYPICAL POST MOUNTED EQUIPMENT**

NOT TO SCALE



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

DETAIL NOTES (#)

1. SEE STRUCTURAL PLANS 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.

GENERAL NOTES:

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

6 — **CMU WALL MOUNTED J-BOX/WIREWAY DETAIL**

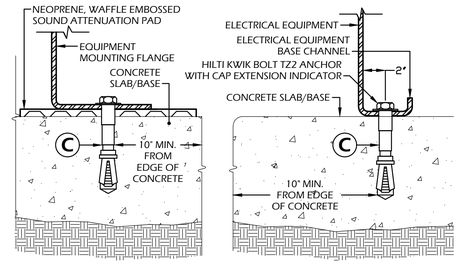
NOT TO SCALE

HILTI KWIK BOLT TZ2 STAINLESS STEEL NOTES

1. EXPANSION ANCHORS SHALL BE STAINLESS STEEL HILTI KWIK BOLT KB-TZ2 AS MANUFACTURED BY HILTI, INC., 5400 SOUTH 122ND EAST AVENUE, TULSA, OKLAHOMA 74146. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND I.C.C. REPORT NO. ESR-4266.
2. TEST VALUES AND INSTALLATION REQUIREMENTS SHALL BE AS FOLLOWS:

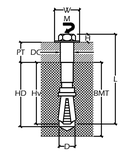
BOLT SIZE	EFF. EMBED	EDGE DISTANCE	SPACING	CONC. THKS.	TORQUE INSTALLATION
3/8"	2 -1/2"	5"	5"	5"	30 # FT
1/2"	3 -1/4"	6"	6"	5 1/2"	40 # FT
5/8"	4"	6"	7"	6"	60 # FT
3/4"	4 - 3/4"	6"	8"	8"	125 # FT

3. PLACEMENT GUIDELINES FOR ABOVE VALUES IN ITEM 2 REQUIRE THE FOLLOWING CONDITIONS:
   - 3.1. TABLE VALUES ARE BASED ON F'C = 2500 PSI MIN.
   - 3.2. HOLES DRILLED WITH A HAMMER DRILL AND CARBIDE BIT COMPLYING W/ ANSI B212.15-1994.
   - 3.3. BIT DIAMETER EQUALS THE SIZE OF THE ANCHOR BEING INSTALLED.
   - 3.4. HOLE DEPTH MUST EXCEED EFF. EMBED PER ICC REPORT.
   - 3.5. ANY SEISMIC DESIGN CATEGORY PER 2016 C.B.C.
   - 3.6. A.C.I. "CRACKED" CONCRETE CONDITION IS SUFFICIENT.
   - 3.7. FOR STAINLESS STEEL BOLTS UNLESS SPECIFIED OTHERWISE.
4. WHEN INSTALLING EXPANSION ANCHORS IN EXISTING CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. MAINTAIN A MINIMUM CLEARANCE OF ONE-INCH BETWEEN THE EXISTING REINFORCEMENT AND THE EXPANSION ANCHOR.
5. 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.
6. ANCHOR SIZES, QUANTITIES, AND TORQUES SHALL BE PER TABLES.
7. REFER TO ESR-4266 REPORT FOR FURTHER REQUIREMENTS.
8. POST-INSTALLED ANCHORS SHALL BE INSTALLED PER THE TORQUE LISTED WITH SPECIAL INSPECTION.
9. CONTRACTOR TO OBTAIN SPECIAL INSPECTIONS TESTING TO VERIFY BOLTS ARE TORQUED PROPERLY AND A REPORT SHALL BE PROVIDED TO THE ENGINEER OF RECORD AND THE PROJECT INSPECTOR.



A MOUNTING WITH SOUND PAD DETAIL
TRANSFORMER INSTALLATIONS

B MOUNTING WITHOUT SOUND PAD DETAIL
DIST.BOARD, MAIN SWITCHBOARDS, ETC.

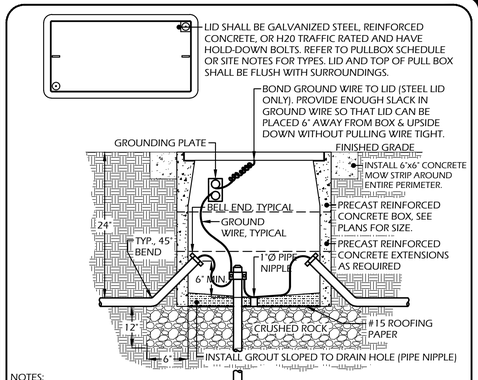


C ANCHOR DETAIL

NOTES:
1. MINIMUM BOLT SIZE IS 3/8". REFER TO TABLE FOR LARGER BOLTS.

4 — **FREESTANDING ELECTRICAL EQUIPMENT TYPICAL FOR ALL GROUND MOUNTED EQUIPMENT**

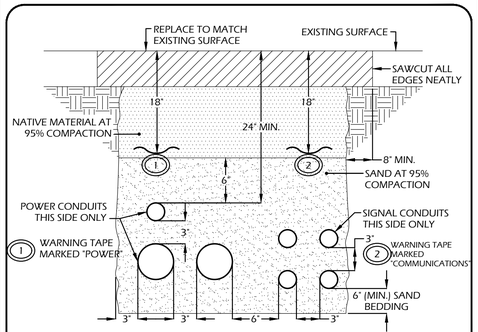
NOT TO SCALE GB20-01-27



NOTES:
1. SEAL AROUND CONDUIT, BOX, AND JUNCTION OF EXTENSION(S) WITH GROUT.
2. ALL GROUT SHALL BE PORTLAND CEMENT WITH MAXIMUM OF 4 GALLONS OF WATER PER 94 POUNDS OF CEMENT.

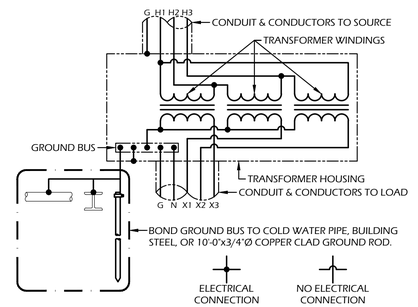
1 — **PULL BOX DETAIL**

NOT TO SCALE GB30-01-01



2 — **TRENCH DETAIL WITHOUT SPACERS AND UNDER EXISTING SURFACE**

NOT TO SCALE



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

3 — **TRANSFORMER GROUNDING & CONNECTION DETAIL**

NOT TO SCALE

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# 21161

REGISTERED PROFESSIONAL ENGINEER JOSEPH BORRELLI ELECTRICAL CALIFORNIA
No. E18790
Exp. 6/30/23

APPROVALS:
APPLICATION #

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER RYAN W. CARLSON No. M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 11-9-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
7084 N. Maple Ave., Suite 101
Fresno, CA 93720
(559) 431-0101
FAX (559) 431-1562

TITLE:
TYPICAL DETAILS

SHEET: E4.01
PROJECT 21182

18 August 2022 2:21 PM G:\Educational\MaderaUSD\MartinLutherKingMiddle\ColdBoxAddition\21161E4-01.dwg joy marie hallare

G:\Educational\MaderaUSD\MartinLutherKingMiddle\ColdBoxAddition\21161E4-01.dwg, 8/18/2022 2:21:45 PM, 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 THE LOCAL BUILDING OFFICIALS. ONLY STEEL FABRICATORS ACCREDITED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) OR THE INTERNATIONAL ACCREDITED SERVICE (IAS - A SUBSIDIARY OF THE INTERNATIONAL CODE COUNCIL) WILL BE CONSIDERED AN APPROVED STEEL FABRICATOR, AND THEREFORE EXEMPT FROM SPECIAL INSPECTION FOR SHOP WELDING PER CBC 1704.2.5.1. ALL FIELD WELDING SHALL BE INSPECTED.
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
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 SHOWN IN THESE DRAWINGS FOR THE SUPPORT OF ROOF AND/OR FLOOR MOUNTED EQUIPMENT AND OPENINGS IN ROOF AND/OR FLOOR DECKS ARE TYPICAL CONDITIONS. CONTRACTOR SHALL REFER TO THE MECHANICAL, PLUMBING, ELECTRICAL AND OTHER CONTRACT DOCUMENTS FOR EQUIPMENT AND OPENING LOCATIONS, SIZES AND MOUNTING REQUIREMENTS.

E. LOCATIONS OF ROOF AND FLOOR EQUIPMENT SHALL BE COORDINATED AND VERIFIED WITH ALL RELATED DOCUMENTS. LOCATIONS OF EQUIPMENT SHOWN ON THE STRUCTURAL DRAWINGS ARE GENERAL REPRESENTATIONS FOR REQUIRED FRAMING.

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
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	.60	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"

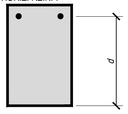
CONCRETE REINFORCEMENT LAP SPLICES

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

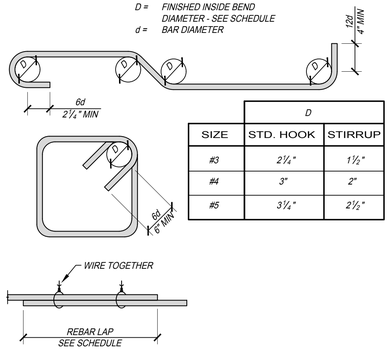
BAR SIZE	CL1	CL2	CL3
#4	24"	30"	48"
#5	30"	36"	60"

'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) 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. COMPACTION REQUIREMENTS: REFER TO THE SOILS REPORT.

C. ENGINEERING FILL: REFER TO THE SPECIFICATIONS AND SOILS REPORT. ALL ENGINEERED FILL SHALL BE SUBJECT TO "SPECIAL INSPECTION" AS REQUIRED BY THE ARCHITECT AND THE LOCAL BUILDING OFFICIALS.

D. REFER TO THE ARCHITECT'S DRAWINGS FOR FINISHED FLOOR ELEVATIONS.

E. ALL FOOTINGS SHALL EXTEND TO FIRM BEARINGS.

F. SEE ARCHITECT'S DRAWINGS FOR SIZE AND LOCATION OF NON-BEARING PARTITIONS.

G. SEE ARCHITECT'S & CIVIL DRAWINGS FOR EXTENT OF EXTERIOR WALKWAYS AND CONTROL JOINT REQUIREMENTS.

H. 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. 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 THE JURISDICTIONAL BUILDING DEPARTMENT. 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	5 psf
ROOF LIVE LOAD	20 psf
FLOOR LIVE LOAD	100 psf

WIND DESIGN DATA	
ULTIMATE WIND SPEED (3 SECOND GUST)	94 mph
WIND EXPOSURE CATEGORY	C
RISK CATEGORY	II
INTERNAL PRESSURE COEFFICIENT	±0.18
ANALYSIS PROCEDURE	ASCE CHAPTER 28

SEISMIC DESIGN DATA	
SITE COORDINATES	36.964° N -120.045° W
SEISMIC IMPORTANCE FACTOR (I)	1.0
RISK CATEGORY	II
MAPPED SPECTRAL RESPONSE	S_s = 0.589 S_1 = 0.232
SITE CLASS	D
SPECTRAL RESPONSE COEFFICIENTS	S_{DS} = 0.522
SEISMIC DESIGN CATEGORY	D
SEISMIC-RESISTING FORCE SYSTEM(S)	ASCE 7-16 TABLE 15.4-1 OMF
RESPONSE MODIFICATION FACTOR(S) R	2.5
SEISMIC RESPONSE COEFFICIENT(S) C_s	0.209 W
ANALYSIS PROCEDURE USED	ASCE 7 12.8 EQUIVALENT LATERAL FORCE

APPROVALS:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
BRYAN W. CARROLL
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 1-7-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

LAWRENCE ENGINEERING GROUP
4910 E. Clinton Way, Suite 101
Fresno, CA 93727
(559) 431-0101
FAX (559) 431-1342

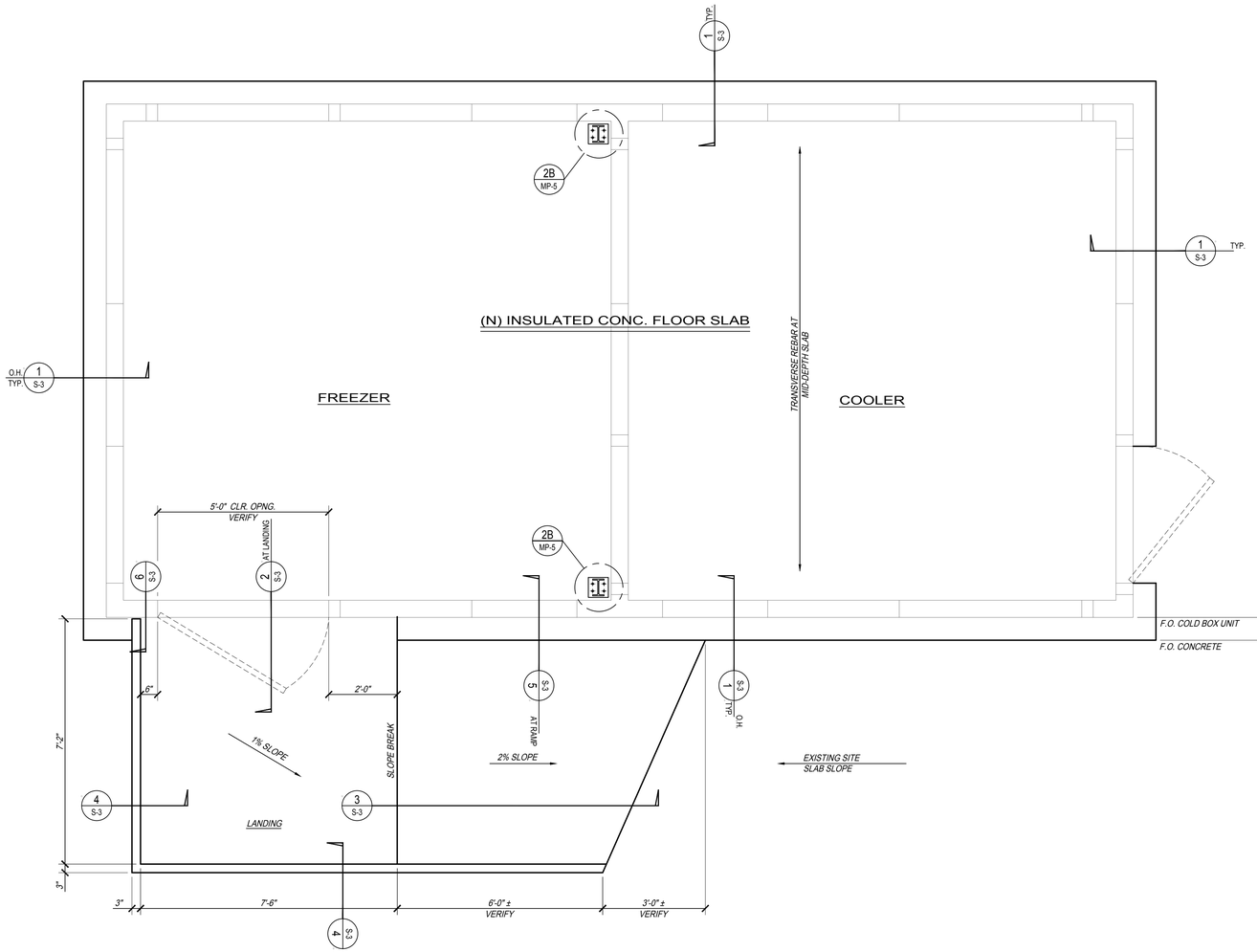
REGISTERED PROFESSIONAL ENGINEER
ROBERT S. PARRISH
No. YS2331
Exp. 3/23
2/15/23
STRUCTURAL
STATE OF CALIFORNIA

PARRISH HANSEN
STRUCTURAL ENGINEERS
A division of Provost & Pritchard Consulting Group
455 W Fir Avenue ■ Clovis CA. 93611
Phone 559.449.2700 ■ Fax 559.323.8090
WWW.PARRISH-HANSEN.COM

TITLE: TYPICAL NOTES

SHEET: S-1

PROJECT 21182



FOUNDATION PLAN (SEE MECHANICAL YARD PLAN FOR LOCATION OF THE COLD BOX UNIT ON SITE)

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

APPROVALS:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER
RYAN W. CARROLL
No. M34846
Exp. 6-30-24
MECHANICAL
STATE OF CALIFORNIA

DATE: 1-7-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

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

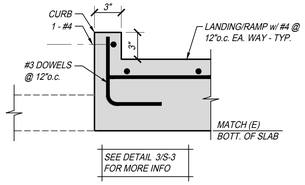
REGISTERED PROFESSIONAL ENGINEER
ROBERT S. PARRISH
No. S2331
Exp. 3/23
2/15/23
STRUCTURAL
STATE OF CALIFORNIA

PARRISH HANSEN
STRUCTURAL ENGINEERS
A division of Provost & Pritchard Consulting Group
455 W Fir Avenue ■ Clovis CA. 93611
Phone 559.449.2700 ■ Fax 559.323.8090
WWW.PARRISH-HANSEN.COM

TITLE: FOUNDATION PLAN

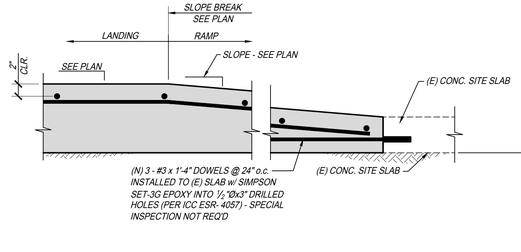
SHEET: S-2

PROJECT 21182



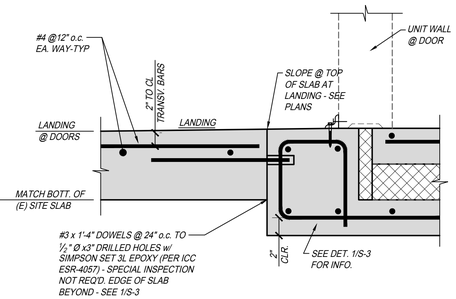
DETAIL 4

SCALE: 1 1/2" = 1'-0" — DET05 — S-3



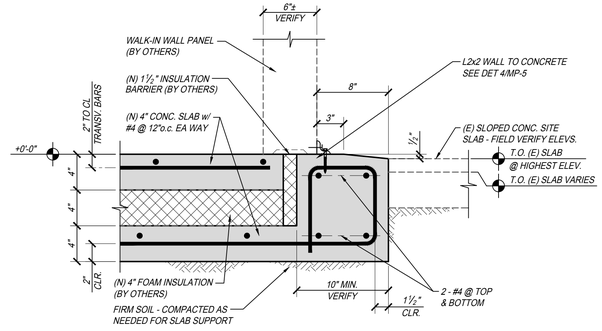
DETAIL 3

SCALE: 1 1/2" = 1'-0" — DET03 — S-3



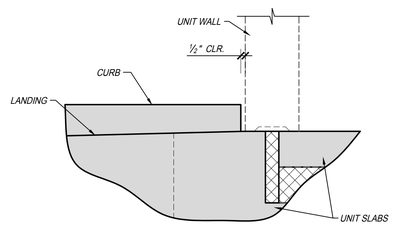
DETAIL 2

SCALE: 1 1/2" = 1'-0" — DET02 — S-3



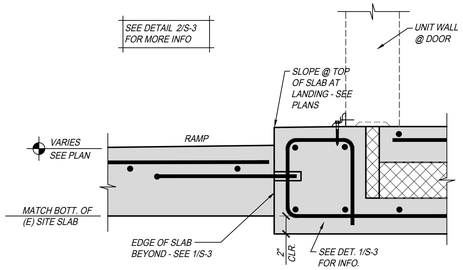
DETAIL 1

SCALE: 1 1/2" = 1'-0" — DET01 — S-3



DETAIL 6

SCALE: 1 1/2" = 1'-0" — DET06 — S-3



DETAIL 5

SCALE: 1 1/2" = 1'-0" — DET07 — S-3

REGISTERED PROFESSIONAL ENGINEER ROBERT S. PARRISH No. S2331 Exp. 3/23 2/15/23 STRUCTURAL STATE OF CALIFORNIA

PARRISH HANSEN
STRUCTURAL ENGINEERS
A division of Provost & Pritchard Consulting Group
455 W Fir Avenue ■ Clovis CA. 93611
Phone 559.449.2700 ■ Fax 559.323.8090
WWW.PARRISH-HANSEN.COM

APPROVALS:

APPLICATION # 02-120015

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 02-120015 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 02/14/2023

REGISTERED PROFESSIONAL ENGINEER BRIAN W. CARROLL No. M34846 Exp. 6-30-24 MECHANICAL STATE OF CALIFORNIA

DATE: 1-7-2022

MARTIN LUTHER KING MIDDLE SCHOOL
COLD BOX ADDITION
601 LILLY ST.
MADERA, CA 93638

REVISIONS

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

TITLE: DETAILS

SHEET: S-3

PROJECT 21182