

ADDENDUM

Lab Tech Bachelors Program
Bakersfield College
Kern Community College District
550-0047

Total Addendum includes:

[2] 8.5x11 [14] 30X42

Date: February 12, 2024

To: All Bidders

Subject: Addendum #2

NOTICE TO CONTRACTORS FIGURING THIS WORK

You are hereby notified of the following changes in the Plans and Specifications, which shall take precedence over anything to the contrary therein.

Item # Description

2.1 Refer to Sheets E1.00, E1.01, E2.00, E2.01, E3.00, E4.00, E4.01:

2.1.1 Replace Sheets in their entirety. All changes from previous version have been clouded (see Delta 1)

2.2 Refer to Sheets M0.00, M1.01, M1.02:

2.2.1 Replace Sheets in their entirety. All changes from previous version have been clouded (see Delta 1)

2.3 Refer to Sheets P0.00, P1.01, P1.02, P2.00:

2.3.1 Replace Sheets in their entirety. All changes from previous version have been clouded (see Delta 1)

2.4 Refer to Sheet A8.20:

2.4.1 Replace Detail 33 on Sheet A8.20 with attached Detail 33. Fume hoods and supporting steel base cabinets to be provided by Owner and installed by Contractor as noted in Specification Section 011000. Fume hoods are pre-wired and pre-plumbed. See Mechanical, Electrical and Plumbing Sheets for additional information. Balance of steel cabinets with epoxy tops in Room 27A to be provided and installed by Contractor.

End of addendum

| MECHANICAL ABBREVIATIONS | | | SY | 'MBOLS | | |
|--------------------------|---|--------------------|--|--------------------|--|--|
| & ∠ | AND ANGLE | HB HD | HOSE BIBB HEAD | SYMBOL | DESCRIPTION | |
| @ & | AT CENTER LINE | HDWE HI. | HARDWARE HIGH | SIZE X | SUPPLY AIR CEILING DIFFUSER | PART 1 - GENERAL |
| PL Ø | PROPERTY LINE DIAMETER or ROUND | HORIZ HP | HORIZONTAL HORSEPOWER | CFM | OUT ET AIR CEILING BITT OSER | 1.1 SUMMARY A. LABOR, MATER |
| (E) (N) | EXISTING NEW | HW HWR | HOT WATER HOT WATER RETURN | <u> </u> | | WITHIN THE CO B. PRINCIPAL FEA |
| <u></u> # | PERPENDICULAR POUND or NUMBER | HWS HVAC | HOT WATER SUPPLY HEATING, VENTILATING, | SIZE STATE | SUPPLY VARIBLE AIR CEILING DIFFUSER HEAT & COOL | 1. HEATI 2. ROOF |
| 1 | THERMOSTAT | ID | AIR CONDITIONING | | | SET U 3. REFRI 4. EXCA\ |
| A/C AC | AIR CONDITIONING ACCESSIBLE | ID INSUL | INSIDE DIAMETER (DIM.) INSULATION | SIZE CFM | RETURN AIR CEILING REGISTER | 5. ANCH 6. PREPA |
| AP ABV ADJ | ACCESS PANEL ABOVE ADJUSTABLE | INT LAV | INTERIOR LAVATORY | CFIVI L | | 7. PREPA |
| AFF AE | ABOVE FINISH FLOOR ADJUSTABLE EXTRACTOR | LBS LPG | POUNDS LIQUID PETROLEUM GAS | SIZE | EXHAUST AIR CEILING REGISTER | ITEMS DRAW |
| AGGR ALUM | AGGREGATE ALUMINUM | MACH MATL | MACHINE MATERIAL | CFM | | 1.2 JOB CONDITIONS. A. SUBMITTAL OF |
| APPROX APPT | APPROXIMATE APPOINTMENTS | MAX. MBH | MAXIMUM BTU PER HOUR (THOUSANDS) | SIZE 1 | | THEIR CONDITION |
| ARCH. ARI | ARCHITECTURAL AMERICAN REFRIGERATION INSTITUTE | MCA MECH | MINIMUM CIRCUT AMPS MECHANICAL | CFM CFM | SUPPLY AIR WALL DIFFUSER | 1.3 LOCAL CONDITION A. CONFORM WIT |
| ASPH ASST | ASPHALT ASSISTANT | MTL MFGR | METAL MANUFACTURER | | | 1.4 INTENT A. THE CONTRAC |
| AUTO. | AUTOMATIC | MH MIN | MANHOLE MINIMUM | SIZE CFM | RETURN AIR WALL REGISTER | ITEMS MENTIO B. THE CONTRAC |
| BDD BDD | BALANCING DAMPER BACKDDRAFT SAMPER BELOW FINISH FLOOR | MISC MUA | MISCELLANEOUS MAKE UP AIR | р | | NECESSARY BI FOR A COMPLE C. MECHANICAL L |
| (BF) (BG) BLDG | BELOW FINISH FLOOR BELOW FINISH GRADE BUILDING | (N) NIC | NEW NOT IN CONTRACT | SIZE | EXHAUST AIR WALL REGISTER | SHALL BE GOV |
| BLKG BM | BLOCKING BEAM | NO. or # NOM | NUMBER NOMINAL | CFM J | | {1.5 DEVIATIONS A. NO DEVIATION |
| BTUH BOT | BRITISH THERMAL UNIT/ HOUR BOTTOM | NTS OA | NOT TO SCALE OVERALL | 0175 | TRANSFER ORULE | FROM THE DIV B. SHOULD CONT |
| BV | BALL VALVE | OBD OC | OPPOSED BLADE DAMPER ON CENTER | SIZE | TRANSFER GRILLE | REQUIREMENT OF |
| CA CAP | COMBUSTION AIR CAPACITY | OSA OVHD | OUTSIDE AIR OVERHEAD | BDD E== | BACKDRAFT DAMPER | 1.6 QUALITY ASSURAN A. COMPLY WITH |
| CD CFD | CONDENSATE DRAIN CEILING FIRE DAMPER | PTN PHYS | PARTITION PHYSICAL | | | B. COMPLY WITH THE VARIOUS |
| CFM CHW | CUBIC FEET PER MINUTE CHILLED WATER | PR PVC | PRESSURE RELIEF POLY-VINYL CLORIDE PIPE | | DUCTWORK (RECTANGULAR) | C. EMPLOY ONLY WORK. |
| CHWR CHWS | CHILLED WATER RETURN CHILLED WATER SUPPLY | PLAS PLYWD | PLASTER PLYWOOD | | | 1.7 CODES AND STAND A. PERFORM WOR |
| CJ CLG | CONTROL JOINT CEILING | POC PREFAB | POINT OF CONNECTION PREFABRICATED | | DUCTWORK (ROUND) | BELOW, AND S STRINGENT, TH |
| CLKG CLR | CAULKING CLEAR | PREP PSI | PREPARATION POUNDS PER SQUARE INCH | | | 1. NFPA |
| COL | CLEANOUT COLUMN | PW | PROCESSED WATER | | LINED DUCTWORK | 2. NFPA 3. NFPA 4. APPLI |
| COMP | COMPRESSED CONCRETE | R RA | RISER RETURN AIR RADIUS | | LINED DOCTWORK | 5. APPLI 6. ACCE |
| CONF | CONFERENCE CONNECTION | RAD. RAG REF | RETURN AIR GRILLE REFERENCE | | | 7. APPLI 8. AGA: A |
| CONST CONT CORR | CONSTRUCTION CONTINUOUS CORRIDOR | REINF REQD | REINFORCED REQUIRED | | TURNIG VANE | 9. ANSI: 10. ARI: A 11. ASHR. |
| CTR CV | CENTER CHECK VALVE | RM RND | ROOM ROUND | | | 11. ASHR 12. ASME 13. ASTM |
| DBL | DOUBLE | S | SOUTH | | FLEXIBLE CONNECTION | 14. MSS: I 15. NFPA: |
| DB DEPT | DRY BULD (TEMPERATURE) DEPARTMENT | SA SAD | SUPPLY AIR SUPPLY AIR DIFFUSER | | | 16. SMAC 17. UL: UN 18. TITLE |
| DET DF | DETAIL DRINKING FOUNTAIN | SAG SAR SCHD | SUPPLY AIR GRILLE SUPPLY AIR REGISTER SCHEDULE | | | 1.8 COORDINATION |
| DHWR DHWR | DOMESTIC HOT WATER DOMESTIC HOT WATER RETURN | SD SEER | SMOKE DETECTOR SEASONAL ENERGY EFFICIENCY | | MANUAL AIR VOLUME DAMPER | A. CAREFULLY EX CONNECTIONS |
| DIA or Ø DIR DN | DIAMETER DIRECTOR DOWN | SECT. SHT | SECTION SHEET | G G | | B. COORDINATE I SUPPORTS PR |
| DR DS | DOOR DOWNSPOUT | SIM SQ | SIMILAR SQUARE | | FIRE DAMPER | 1.9 SUBMITTALS A. SUBMITTALS A |
| DSP DTR | DRY STANDPIPE DUCT THRU ROOF | SPEC SP | SPECIFICATION STATIC PRESSURE | SFD - | | THESE SPECIF B. WITHIN 15 DAY |
| DTW DWG | DUCT THRU WALL DRAWING | SOV SS | SHUT-OFF VALVE SERVICE SINK | | SMOKE FIRE DAMPER | EQUIPMENT OF PRODUCT DAT. C. SHOP DRAWIN |
| E EA | EAST EXHAUST AIR | SST STD | STAINLESS STEEL STANDARD | 1 1 | | 1.10 DELIVERY AND ST |
| EAG EDB | EXHAUST AIR GRILLE ENTERING DRY BUBL | STL STOR | STEEL STORAGE | OAI | OUTSIDE AIR INTAKE | A. INSOFAR AS PO PRACTICAL. CO |
| EER ELEC | ENERGY EFFICIENCY RATIO ELECTRICAL | STRUCT SUPV | STRUCTURAL SUPERVISOR | 500 | MIN. CFM | TRANSPORT, U |
| ELEV EMER | ELEVATION EMERGENCY | SUSP S&W | SUSPENDED SOIL & WASTE | | | A. MATERIALS US |
| ENCL EP | ENCLOSURE ELECTRICAL PANEL | TC TEL | TOP OF CURB TELEPHONE | T A/C-1 | ROOM THERMOSTAT OR RETURN AIR SENSOR, SUBSCRIPT INDICATES UNIT | 2. SMOK 3. FUEL |
| EQ EQUIP | EQUAL EQUIPMENT | TER TG | TERRAZZO TRANSFER GRILLE | | CONTROL @ 48" AFF TO TOP OF BOX | B. MATERIALS SH |
| (E) ESP | EXISTING EXTERNAL STATIC PRESSURE | THK TOC | THICK TOP OF CONCRETE | ВТ | BYPASS TIMER | A. OBTAIN, PAY F AUTHORITIES I |
| EWB EXPO. | ENTERING WET BULB EXPOSED | TP TRANS | TRAP PRIMER TRANSCRIPTION | | | ACCEPTANCE SUBMITTED PR |
| EXT FA | EXTERIOR FIRE ALARM | TREAT. TYP | TREATMENT TYPICAL | TC | TIME CLOCK | APPLICATION F |
| FC FD | FLEXIBLE CONNECTION FIRE DAMPER | TV UL | TEMPERING VALVE UNDERWRITERS LABORATORIES | TC | 52551 | 1.13 EXTENDED WARR A. WORK FURNIS FURNISHED) M |
| FDN FHC | FOUNDATION FIRE HOSE CAB. | UON UR | UNLESS OTHERWISE NOTED URINAL | | | FINAL ACCEPTA REMEDIED, AN |
| FIN. FLA | FINISH FULL LOAD AMPS | V VD | VENT VOLUME DAMPER | SD | DUCT SMOKE DETECTOR | WORK CAUSES TRADE CONTR |
| FM FPM | FIRE MAIN FEET PER MINUTE | VTR VSAD | VENT THRU ROOF VARIBLE SUPPLY AIR DIFFUSER | | | CONTRACTOR PART 2 - PRODUCTS |
| FSD FSL | FIRE/SMOKE DAMPER FIRE SPRINKLER LINE | W W/ | WASTE LINE WITH | | POINT OF CONNECTION | 2.1 MATERIALS AND E |
| FTR FURR | FLUE THRU ROOF FURRING | WFD WH | WALL FIRE DAMPER WATER HEATER | | | A. WITHIN THE CO |
| | | | | | CEILING EXHAUST FAN | THE STANDARI COMPETITIVE I SUBSTITUTION |
| GA GALV | GAUGE OR GAGE GALVANIZED | WHA W/O | WATER HAMMER ARRESTOR WITHOUT | | | OF ACCEPTABI B. MATERIALS AN |
| GEN GI | GENERAL GALVANIZED IRON | WMF WP | WASHING MACHINE FITTING WATERPROOF | CO | CO2 SENSOR | TESTING LABO |
| GPM G | GALLONS PER MINUTE GAS LINE | WT | WEIGHT | PLC | GENERIC FOR CONTROL PANEL OR PLC | PART 3 - EXECUTION |
| | | | | 1 | | |

GENERAL MECHANICAL NOTES

3.2 UTILITIES EXCAVATING AND BACKFILLING

SECTIONS AND AS SET FORTH BELOW

ABOVE SAND OR CRUSHED STONE.

PROVIDE FOR PROPER OPERATION AND CLEANLINESS.

NECESSARY AUXILIARIES AND APPURTENANCES.

MOISTURE, CONTAMINANTS, AND WEATHER.

OPENINGS AND PASSAGEWAYS CLEAR AND FREE.

AS REQUIRED FOR CERTIFICATE OF OCCUPANCY.

2.1 AIR CONDITIONING UNITS, FANS AND AIR DEVICES

A. SHALL BE AS INDICATED ON THE DRAWINGS.

LAST 5 FT CONNECTION TO REGISTERS.

1/8" SPONGE RUBBER OR FELT

DOOR SWING TO BE OPPOSITE OF AIRFLOW.

CLEARANCE SHALL MEET MINIMUM ACCEPTABLE DISTANCE AS RECOMMENDED BY EQUIPMENT MANUFACTURER.

A. PERFORM TRENCHING, EXCAVATING, BACKFILLING FOR MECHANICAL WORK IN ACCORDANCE WITH THE APPROPRIATE

A. CONNECT OR INSTALL EQUIPMENT SHOWN ON MECHANICAL DRAWINGS THAT REQUIRE MECHANICAL HOOKUPS.

A. IF EQUIPMENT IS PLACED IN SERVICE PRIOR TO ACCEPTANCE OF THE PROJECT, OPERATE EQUIPMENT STRICTLY IN

DEPTH OF EXCAVATION TO PROVIDE A MINIMUM OF 3' ABOVE TOP OF PIPE. EXCAVATION TO BE CARRIED TO A DEPTH

EXCAVATION. FINAL LAYER OR DIRT (12" MINIMUM) TO BE TOPSOIL. TRENCHES TO BE AT LEAST 18" WIDER THAN PIPE

OF AT LEAST 6" BELOW BOTTOM OF PIPE ELEVATION. FILL BELOW PIPE (6"), AROUND PIPE, AND A MINIMUM OF 12"

ABOVE PIPE WIT SAND OR CLASS "B" CRUSHED STONE TAMPED FIRM AND EVEN. SEPARATE TOPSOIL DURING

WITH BATTER BOARDS PLACED EVERY 25'. BACKFILLING SHALL BE DONE TO EXCLUDE USE OF ROCK OR STONE

PERFORM REPAIRS WITH MATERIALS WHICH MATCH EXISTING AND INSTALL IN ACCORDANCE WITH THE APPROPRIATE SECTION

ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL NEW FILTERS IN EQUIPMENT PRIOR TO OWNER OCCUPYING

LUBRICATE FOUIPMENT AND PERFORM SUCH OTHER MAINTENANCE AS REQUIRED TO PLACE IT IN FIRST CLASS OPERATING.

DURING MANUFACTURING DUCT OPENINGS AND MECHANICAL EQUIPMENT SHALL BE PROTECTED THROUGH SHIPMENT AND

END OF SECTION

HEATING, VENTILATION AND AIR CONDITIONING

A. REFER TO DRAWINGS AND CONTRACT FOR MATERIALS FURNISHED BY OWNER, INSTALLED BY CONTRACTOR OR FURNISHED

A. FURNISH ALL LABOR, SUPERVISION, AND EQUIPMENT (UNLESS EQUIPMENT IS SPECIFICALLY NOTED AS 'OWNER FURNISHED')

FOR THE COMPLETE INSTALLATION OF HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM TOGETHER WITH ALL

A. MANUFACTURER'S QUALIFICATIONS - INSTALL PACKAGED UNITS. AS INDICATED IN THE DRAWINGS. IN ACCORDANCE WITH

MANUFACTURER'S INSTRUCTIONS AND REQUIREMENTS. PROVIDE RELATED PRODUCTS AND ACCESSORIES FROM ONE

B. CODES AND STANDARDS - PERFORM ALL INSTALLATION IN ACCORDANCE WITH THE LATEST STANDARDS AS RECOGNIZED BY

C. WORKMANSHIP - EXPERIENCED, WELL - TRAINED WORKERS, COMPETENT TO COMPLETE THE WORK AS SPECIFIED, SHALL

A. ALL WORK SHALL AVOID OBSTRUCTIONS AND INTERFERENCE WITH OTHER TRADES, PRESERVE HEADROOM AND KEEP

A. INSTALL EACH OF THE VARIOUS PIECES OF EQUIPMENT TO OPERATE WITHOUT OBJECTIONABLE VIBRATION OR NOISE.

A. CUTTING OR PATCHING NECESSARY TO PERMIT THE INSTALLATION OF ANY WORK UNDER THIS CONTRACT SHALL BE THE

RESPONSIBILITY OF THIS TRADE. CUTTING AND PATCHING SHALL BE COORDINATED WITH OTHER TRADES SO AS NOT TO

A. TEST AND BALANCE SHALL BE PERFORMED BY A NATIONALLY QUALIFIED TEST AND BALANCE COMPANY. BALANCE COMPANY

OPERATIONAL PRIOR TO COMMENCEMENT OF TESTING. CORRECT ALL DEFICIENCIES NOTED IN THE TEST AND BALANCE

D. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEST REPORTS TO THE LOCAL BUILDING AND HEALTH DEPARTMENTS

E. OUTSIDE AIR SETTING ON A HVAC UNIT SHALL BE PERFORMED BY AN INDEPENDENT CERTIFIED COMPANY. COMPANY SHALL BE

A. FABRICATION AND INSTALLATION. GENERAL - EXCEPT AS OTHERWISE INDICATED. FABRICATE AND INSTALL RECTANGULAR AND ROUND DUCTS IN ACCORDANCE WITH 2022 CMC CHAPTER 6 DUCT SYSTEMS. CONFORM TO THE REFERENCED SMACNA HVAC

DUCT CONSTRUCTION STANDARDS FOR METAL AND FLEXIBLE DUCTS. AN APPROVED FLEXIBLE DUCT MAY BE USED FOR THE

SHALL BE SEALED USING UL 181 TAPE OR MASTIC. HORIZONTAL FLEX DUCTS SHALL BE SUPPORTED AT A MAX. 4 FT. INTERVALS

W/ HANGING STRAPS A MIN. 1-1/2" WIDE. FLEX DUCTS MUST BE PULLED TIGHT W/ A MAX. SAG OF 1/2" PER FOOT OF HORIZONTAL RUN. FLEX DUCTS SHALL USE A DRAW-BAND TO ATTACH THE INNER CORE TO A METAL COLLAR. FLEX DUCTS SHALL NOT BE

MANUFACTURER'S INSTALLATION INSTRUCTIONS. ALL CONNECTIONS BETWEEN HVAC EQUIPMENT, PLENUMS AND DUCTS

C. FOR ROOF MOUNTED HVAC UNITS A GASKET SHALL BE PLACED BETWEEN THE CURB AND THE HVAC UNIT. MASTIC SEALANT

A. IN SHEET METAL WORK, HOLLOW CORE DOUBLE CONSTRUCTION OF SAME OR HEAVIER GAGE MATERIAL AS DUCT IN WHICH

PROVIDE VENTLOK OR APPROVED HINGES AND LATCHES ON ALL DOORS; 100 SERIES HINGES AND LATCHES ON LOW

SPONGE RUBBER, FIT LARGER DOORS AGAIN 1-1/2" BY 1/8" FLAT STOCK OR ANGLE FRAME AND GASKET WITH 3/4" BY

PRESSURE SYSTEM DOORS UP TO 18" MAXIMUM DIMENSION, 200 SERIES ON LARGER LOW PRESSURE SYSTEM

CONSTRUCT DOORS UP TO 18" MAXIMUM DIMENSION WITH ONE INCH OVERLAP FIT AND GASKET WITH 3/4" BY 1/8"

SHALL BE USED TO SEAL ALL SEAMS BETWEEN THE HVAC UNIT AND THE CURB. THE SUPPLY AND RETURN DUCTS SHALL BE

B. CONTRACTOR SHALL COORDINATE TESTING WITH THE TESTING AND BALANCE COMPANY. ALL SYSTEMS SHALL BE FULLY

C. ASSUME RESPONSIBILITY FOR CORRECTING ALL ITEMS DETERMINED TO BE THE RESULT OF IMPROPER OR INCOMPLETE

INSTALLATION. EXTRA TESTING REQUIRED DUE TO SUCH DEFICIENCIES WILL BE AT CONTRACTOR'S EXPENSE.

B. DUCT INSTALLATION AND PLENUMS SHALL MEET THE REQUIREMENTS OF ENERGY CODE SECTION 120.4 AND THE

MANUFACTURER. STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION PROTECTING FROM DIRT.

PERFORM LABOR IN CONFORMANCE WITH GENERALLY ACCEPTED TRADE STANDARDS. INSTALL ALL EQUIPMENT SQUARE AND

PERFORM WORK NECESSARY FOR INSTALLATION OF MECHANICAL UTILITIES.

A. REPAIR OR REPLACE ROUTINE DAMAGE CAUSED BY CUTTING IN PERFORMANCE OF CONTRACT.

START UP TO REDUCE THE AMOUNT OF DUST. WATER AND DEBRIS ENTERING THE SYSTEM.

ASHRAE, SMACNA AND ALL APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.

PLUMB ALLOWING ACCESS FOR PROPER OPERATION, ADJUSTMENT AND SERVICE.

REPORT WITHIN THREE DAYS OR PRIOR TO ACCEPTANCE OF THE PROJECT

B. CORRECT UNNECESSARY DAMAGE CAUSED DUE TO INSTALLATION OF MECHANICAL WORK.

OF THESE SPECIFICATIONS OR THE BEST STANDARDS OF THE INDUSTRY.

B. EMPLOY COMPETENT, QUALIFIED PERSONNEL IN OPERATION OF THE EQUIPMENT.

D. OPEN UP EQUIPMENT FOR INSPECTION AS DIRECTED BY THE SUPERINTENDENT

3.1 LOCATIONS BASIC MECHANICAL MATERIALS AND METHODS A. MECHANICAL LAYOUTS INDICATED ON DRAWINGS ARE DIAGRAMMATIC. EXACT LOCATIONS OF DUCT, AND EQUIPMENT MAY VARY BECAUSE OF CONFLICTS WITH WORK OF OTHER TRADES. WORK OUT CONFLICTS WHERE RELOCATION'S WILL NOT AFFECT OPERATION OR APPEARANCE OF SYSTEMS. B. LOCATE EQUIPMENT REQUIRING PERIODIC SERVICING SO THAT IT IS READILY ACCESSIBLE. DO NOT BACK UP SERVICE SIDES TO WALLS, NOR PLACE IT TOO CLOSE TO OTHER EQUIPMENT TO MAKE SERVICE IMPRACTICAL. EQUIPMENT SERVICE

3.3 CUTTING AND PATCHING

3.4 CONNECTION TO EQUIPMENT

3.5 SERVICE OF SYSTEM

BUILDING

CONDITION

PART 1 - GENERAL

1.2 SCOPE OF WORK

1.3 QUALITY ASSURANCE

1.1 RELATED DOCUMENTS

AND INSTALLED BY OWNER.

1.4 STRUCTURAL AND SPACE CONDITIONS

1.6 CUTTING AND PATCHING

1.7 BALANCING AND TESTING

PART 2 - PRODUCTS

2.2 DUCTWORK

IMPACT OTHER WORK

SHALL BE AN NEBB COMPANY

B. PRINCIPAL FEATURES OF THE WORK INCLUDED ARE HEATING, VENTILATING, AIR CONDITIONING SYSTEMS, CONTROLS, AND MECHANICAL SYSTEM INSULATION.

ROOF CURBS FOR HVAC SYSTEMS, INTAKE HOODS, LOUVERS, SUPPLY FANS, AND RELIEF VENTS FURNISHED AND SET UNDER THIS DIVISION REFRIGERANT PIPING, CONNECTIONS, REFRIGERANT AND REFRIGERANT CHARGES. EXCAVATING AND BACKFILLING FOR MECHANICAL WORK; COORDINATE WITH APPROPRIATE TRADE.

A. LABOR, MATERIALS, TOOLS, AND SERVICES FOR A COMPLETE INSTALLATION OF EQUIPMENT AND SYSTEM CONTAINED

ANCHOR BOLTS. SLEEVES. SUPPORTS AND SIMILAR ITEMS TO BE BUILT INTO CONCRETE OR MASONRY PREPARATION FOR TESTING AND BALANCE OF MECHANICAL SYSTEMS AND CORRECTING DEFICIENCIES. PREPARATION AND SUBMITTAL OF SHOP DRAWING AND PRODUCT DATA. MAINTAINING A RECORD SET OF BLUE LINE PRINTS AND MAKING THEM TO INDICATE LOCATIONS OF CONCEALED ITEMS, AND DEVIATIONS MADE TO SUIT CONDITIONS AND PRODUCTION OF MECHANICAL AS-BUILT (RECORD)

1.2 JOB CONDITIONS A. SUBMITTAL OF BID IMPLIES BIDDER HAS READ APPLICABLE PARAGRAPHS OF THE SPECIFICATIONS AND WILL BE BOUND BY

1.3 LOCAL CONDITIONS A. CONFORM WITH LOCAL CONDITIONS. COORDINATE WITH LOCAL UTILITIES ON SIZE OF UTILITY SERVICE.

A. THE CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS) DESCRIBE THE MECHANICAL WORK OF THIS PROJECT ANY ITEMS MENTIONED IN ONE PART SHALL BE AS BINDING AS THOUGH MENTIONED IN BOTH. B. THE CONTRACT DOCUMENTS FORM A GUIDE FOR A COMPLETE MECHANICAL INSTALLATION, WHERE AN ITEM IS REASONABLY NECESSARY BUT NOT SPECIFICALLY MENTIONED, SUCH AS DUCT HANGERS OR TRANSITIONS, PIPING OFFSETS, DRAINS, ETC., FOR A COMPLETE SYSTEM, PROVIDE SAME C. MECHANICAL LAYOUTS INDICATED ON DRAWINGS ARE DIAGRAMMATIC ONLY. EXACT LOCATIONS OF DUCTS, AND EQUIPMENT

1.5 DEVIATIONS A. NO DEVIATIONS FROM SPECIFICATIONS AND DRAWINGS SHALL BE MADE WITHOUT FULL KNOWLEDGE AND WRITTEN CONSENT FROM THE DIVISION OF THE STATE ARCHITECT. B. SHOULD CONTRACTOR FIND, DURING PROGRESS OF WORK, CONDITIONS WHICH DICTATE A MODIFICATION OF ANY PARTICULAR

REQUIREMENTS, REPORT SUCH ITEM PROMPTLY FOR DECISION OF INSTRUCTIONS. C. EQUIPMENT OR MATERIALS MAY NOT VARY FROM THE APPROVED PLANS.

1.6 QUALITY ASSURANCE A. COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL CODES. B. COMPLY WITH APPLICABLE REQUIREMENTS OF RECOGNIZED INDUSTRY ASSOCIATIONS WITH PROMULGATE STANDARDS FOR

HE VARIOUS TRADES. (SEE DIVISIONS 21 THRU 23) C. EMPLOY ONLY QUALIFIED JOURNEYMEN FOR THIS WORK. EMPLOY COMPETENT, QUALIFIED MECHANICS TO SUPERVISE THE

1.7 CODES AND STANDARDS A. PERFORM WORK SPECIFIED IN DIVISIONS 21 THRU 23 IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS LISTED BELOW, AND SUCH STANDARDS THAT MAY BE SPECIFIED IN OTHER SECTIONS. WHEN THESE SPECIFICATIONS ARE MORE STRINGENT, THEY TAKE PRECEDENCE. IN CASE OF CONFLICT, OBTAIN A DECISION FROM THE MECHANICAL ENGINEER.

NFPA 54: NATIONAL FUEL AND GAS CODE. NFPA 90A: AIR CONDITIONING AND VENTILATION SYSTEMS. NFPA 101: LIFE SAFETY CODE.

SHALL BE GOVERNED BY THE DRAWINGS OF RELATED TRADES.

WITHIN THE CONTRACT DOCUMENTS.

APPLICABLE STATE BUILDING CODE. APPLICABLE STATE MECHANICAL CODE. ACCESSIBILITY REQUIREMENTS ANSI A117.1, ADA, AND CBC CHAPTER 11-B APPLICABLE STATE ENERGY CODE. AGA: AMERICAN GAS ASSOCIATION.

ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE. ARI: AMERICAN REFRIGERATION INSTITUTE ASHRAE: AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS ASME: AMERICAN SOCIETY FOR MECHANICAL ENGINEERS.

ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS MSS: MANUFACTURER'S STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY. NFPA: NATIONAL FIRE PROTECTION ASSOCIATION. SMACNA: SHEET METAL AND AIR CONDITIONING CONTRACTOR'S NATIONAL ASSOCIATION. UL: UNDERWRITERS' LABORATORIES. INC.

1.8 COORDINATION A. CAREFULLY EXAMINE SPECIFICATIONS AND DRAWINGS TO BE THOROUGHLY FAMILIAR WITH ITEMS WHICH REQUIRE HVAC CONNECTIONS AND COORDINATION B. COORDINATE WITH OTHER DIVISIONS TO LEAVE PROPER CHASES AND OPENINGS. PLACE OUTLETS, ANCHORS, SLEEVES, AND SUPPORTS PRIOR TO POURING CONCRETE OF INSTALLATION OF MASONRY WORK.

1.9 SUBMITTALS A. SUBMITTALS ARE ONLY REQUIRED FOR SPECIFIC ITEMS OF EQUIPMENT OR MATERIAL LISTED IN INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS B. WITHIN 15 DAYS AFTER AWARD OF CONTRACT FOR THIS WORK, SUBMIT A LIST OF PROPOSED MANUFACTURERS (OF EQUIPMENT OR MATERIAL TO BE USED) FOR APPROVAL. SUBMIT THIS LIST BEFORE SUBMITTAL OF SHOP DRAWINGS AND PRODUCT DATA, AND OBTAIN APPROVAL BEFORE SUBMITTING REQUIRED ITEMS. C. SHOP DRAWINGS (NOT REQUIRED FOR OWNER FURNISHED EQUIPMENT).

1.10 DELIVERY AND STORAGE A. INSOFAR AS POSSIBLE, DELIVER ITEMS IN MANUFACTURER'S ORIGINAL UNOPENED PACKAGING. WHERE THAT IS NOT PRACTICAL. COVER ITEMS WITH PROTECTIVE MATERIALS TO KEEP THEM FROM BEING DAMAGED. USE CARE IN LOADING, TRANSPORT, UNLOADING, AND STORAGE TO KEEP ITEMS FROM BEING DAMAGED.

1.11 FIRE RATINGS A. MATERIALS USED ANYWHERE IN THE WORK MUST HAVE NFPA RATINGS AS FOLLOWING:

FLAME SPREAD - NOT OVER 25 SMOKE DEVELOPED - NOT OVER 50 **FUEL CONTRIBUTED - NOT OVER 25**

18. TITLE 24 CODES: SEE SHEET E-0.01

B. MATERIALS SHALL BE "SELF EXTINGUISHING" 1.12 PERMITS AND FEES

A. OBTAIN, PAY FOR, AND DELIVER PERMITS, CERTIFICATION OF INSPECTION, AND OTHER SUCH ITEMS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. DELIVER CERTIFICATION TO THE CONSTRUCTION MANAGER PRIOR TO FINAL ACCEPTANCE OF THE WORK. AN INSPECTION CERTIFICATE FOR EACH CLASS OF WORK REQUIRING INSPECTION MUST BE SUBMITTED PRIOR TO OR WITH THE FINAL PAYMENT INVOICE. THE RESPONSIBLE TRADE CONTRACTOR MUST MAKE APPLICATION FOR THE INSPECTION, COORDINATE SAME AND PAY THE REQUIRED INSPECTION FEE.

1 13 EXTENDED WARRANTIES A. WORK FURNISHED UNDER THE CONTRACT SHALL BE WARRANTED AGAINST DEFECTS IN WORKMANSHIP AND (${\sf CONTRACTOR}$ FURNISHED) MATERIALS FOR A PERIOD OF NOT LESS THAT ONE (1) YEAR, OR AS OTHERWISE SPECIFIED, FROM THE DATE OF FINAL ACCEPTANCE OF THE INSTALLATION, DEFECTS OF WORKMANSHIP DEVELOPING DURING THIS PERIOD SHALL BE REMEDIED, AND DEFECTIVE MATERIAL REPLACED, WITHOUT ADDITIONAL COST. WHEN DEFECTS IN A TRADE CONTRACTOR'S WORK CAUSES DAMAGE TO THE WORK OF THE OTHER TRADE CONTRACTORS, SUCH DAMAGE SHALL BE REPAIRED BY THE TRADE CONTRACTOR CAUSING DAMAGE AND WORK RESTORED TO ITS ORIGINAL CONDITION, AT THE EXPENSE OF THE TRADE CONTRACTOR THAT CAUSED THE DAMAGE.

2.1 MATERIALS AND EQUIPMENT A. WITHIN THE CONTRACT DOCUMENTS RELATING TO MECHANICAL WORK, MANUFACTURER'S NAMES, CATALOG NUMBERS, AND OTHER PROPRIETARY REFERENCES TO MATERIALS AND EQUIPMENT ARE MADE. SUCH REFERENCES ARE MADE TO ESTABLISH THE STANDARDS OF QUALITY AND TYPE REQUIRED, AND NOT TO LIMIT COMPETITION. ACCEPTABLE MANUFACTURER'S OF COMPETITIVE PRODUCTS ARE LISTED IN APPLICABLE SECTIONS AS "APPROVED EQUALS". REASONABLE REQUESTS FOR SUBSTITUTION OR ADDITIONS TO "APPROVED EQUALS" WILL BE CONSIDERED, BUT THE ARCHITECT WILL BE THE SOLE JUDGE OF ACCEPTABILITY OF ITEMS PROPOSED AS SUBSTITUTES.

B. MATERIALS AND EQUIPMENT USED IN CARRYING OUT THESE SPECIFICATIONS SHALL BEAR UL OR OTHER RECOGNIZED TESTING LABORATORY LABEL WHEN SUCH LABELS ARE AVAILABLE.

SAD - SUPPLY AIR

PUBLISHED IN MANUAL Q

| ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. | | REGISTERS TO BE PROSELECT OR EQ |
|--|--|---|
| 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26 AND 30: | SAD - SUPPLY AIR CFM CEILING DIFFUSER | SUPPLY 'T'BAR CEILING-#PSAMCTBSB ADJUSTABLE MODULAR CORE |
| 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 | | SUPPLY HARD CEILING-#PSAMODOB |
| WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEX CABLE. | SIZE RAG - FILTERED RETURN AIR GRILLE | ADJUSTABLE MODULAR CORE SUPPLY ROUND-#TMRA |
| OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA. | - | ADJUSTABLE ROUND DIFFUSER |
| | SIZE RAG - RETURN AIR CFM WALL REGISTER | RETURN/EXHAUST 'T'BAR CEILING #PS |
| THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING | | RETURN/EXHAUST HARD SURFACE #P |

THE FOLL THE REFI AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

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

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

PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (EG. OSHPOD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO 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 THE LOADS.

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

MEP COMPONENT ANCHORAGE NOTE

FLOOR OR HUNG FROM A WALL

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

☐ MP ☐ MD ☐ PP ☐ E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM #) #

REGISTER SCHEDULE

| | l <u></u> | OAD OUDDLY AID | REGISTERS TO BE PROSELECT OR EQ. |
|-------------------------------------|---|--|--|
| | CFM CFM | SAD - SUPPLY AIR CEILING DIFFUSER | SUPPLY 'T'BAR CEILING-#PSAMCTBSB ADJUSTABLE MODULAR CORE |
| | SIZE 🔽 | RAG - FILTERED RETURN | SUPPLY HARD CEILING-#PSAMODOB ADJUSTABLE MODULAR CORE |
| | CFM 🗀 | AIR GRILLE | SUPPLY ROUND-#TMRA ADJUSTABLE ROUND DIFFUSER |
| | SIZE CFM | SIZE RAG - RETURN AIR CFM WALL REGISTER RETURN/EXHAUST 'T'BA | RETURN/EXHAUST 'T'BAR CEILING #PSAEC5TB RETURN/EXHAUST HARD SURFACE #PSAEC5 |
| SIZE EAG - EXHAUST AIR RETURN/EXHAU | RETURN/EXHAUST WALL SURFACE #PSHFSW PROVIDE w/ROUND COLLAR WHEN REQ'D | | |
| | SIZE EAG - EXHAUST AIR CFM WALL REGISTER SEE PLAN F | SEE PLAN FOR ALL SIZES. SEE PLAN FOR SUPPLY AIR THROWS. | |
| | | | |

CEILING DIFFUSER | LIGHTING.

DUCT SIZING REQUIREMENTS

CORDINATE REGISTERS w/CEILING GRID &

| וטטטו | OIZINC | TILQUIIL | |
|---------------|---------|--------------------|--------------|
| 0-90 CFM | 600 FPM | .08 LOSS PER 100FT | 6" DIAMETER |
| 90-200 CFM | 600 FPM | .08 LOSS PER 100FT | 8" DIAMETER |
| 200-375 CFM | 700 FPM | .08 LOSS PER 100FT | 10" DIAMETER |
| 375-600 CFM | 800 FPM | .08 LOSS PER 100FT | 12" DIAMETER |
| 600-900 CFM | 875 FPM | .08 LOSS PER 100FT | 14" DIAMETER |
| 900-1200 CFM | 900 FPM | .08 LOSS PER 100FT | 16" DIAMETER |
| 1200-1600 CFM | 900 FPM | .08 LOSS PER 100FT | 18" DIAMETER |
| 1600-2000 CFM | 900 FPM | .08 LOSS PER 100FT | 20" DIAMETER |
| 2000-2400 CFM | 900 FPM | .08 LOSS PER 100FT | 22" DIAMETER |

2. ALL FITTINGS TO BE OF INDUSTRY STANDARD TYPE WITH COEFFICIENTS

2.3 DUCT ACCESS PANELS AND DOORS

THE CALIFORNIA ENERGY CODE SECTION 10-103 REQUIRES ACCEPTANCE TESTING ON ALL NEWLY INSTALLED LIGHTING CONTROLS, MECHANICAL SYSTEMS, ENVELOPES, AND PROCESS EQUIPMENT AFTER INSTALLATION AND BEFORE PROJECT COMPLETION. AN ACCEPTANCE TEST IS A FUNCTIONAL PERFORMANCE TEST TO HELP ENSURE THAT NEWLY INSTALLED EQUIPMENT IS OPERATING AND IN COMPLIANCE WITH THE ENERGY CODE.

ATTACHED TO THE CURB AND MASTIC SHALL BE USED TO SEAL THE DUCTS TO THE CURB.

D. THE SUPPLY AND RETURN DUCTS SHALL BE THE SAME SIZE AND ALIGN WITH THE HVAC UNIT.

INSTALLED, PRODUCTS BY CESCO, VENT PRODUCTS, AIR BALANCE, OR EQUIVALENT.

DOORS AND 333 SERIES ON HIGH PRESSURE SYSTEMS.

LIGHTING CONTROLS ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED LIGHTING CONTROLS ACCEPTANCE TEST TECHNICIAN (ATT).

MECHANICAL SYSTEM ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED MECHANICAL ATT FOR PROJECTS SUBMITTED ON OR AFTER OCTOBER 1, 2021.

A LISTING OF CERTIFIED ATT'S CAN BE FOUND AT: https://www.energy.ca.gov/programs-and-topics/programs/acceptance-test--technician-certification-provider-program/acceptance

THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED, AND DEFICIENCIES MUST BE CORRECTED BY THE BUILDER OR INSTALLING CONTRACTOR UNTIL THE CONSTRUCTION/INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA.

PROJECT INSPECTORS WILL BE COLLECTING THE FORMS TO CONFIRM THAT THE REQUIRED ACCEPTANCE TESTS HAVE BEEN COMPLETED

ACCEPTANCE TESTS SHALL BE COMPLETED ON NEWLY INSTALLED OR REPLACEMENT OF MECHANICAL SYSTEMS BEFORE PROJECT COMPLETION PER THE CALIFORNIA ENERGY CODE SECTION 10-103. ACCEPTANCE TESTS MUST BE PERFORMED BY A CERTIFIED ACCEPTANCE TEST TECHNICIAN (ATT). THE ACCEPTANCE TESTING PROCEDURES MUST BE REPEATED. AND DEFICIENCIES CORRECTED UNTIL THE INSTALLATION OF THE SPECIFIED SYSTEMS CONFORM AND PASS THE REQUIRED ACCEPTANCE CRITERIA. COMPLETED NRCA FORMS SHALL BE SUBMITTED TO THE PROJECT INSPECTOR AND THE DISTRICT.

A. VOLUME AND SPLITTER DAMPERS

2.4 DUCTWORK SPECIALTIES

- GALVANIZED SHEET METAL BLADE AND FRAME WITH VENTFABRICE INC. VENTLOK OPERATING HARDWARE. FOR ACCESSIBLE DAMPERS, PROVIDE #641 SELF - LOCKING DIAL REGULATORS AND #644 SELF - LOCKING DIAL REGULATORS FOR INSULATED DUCTWORK, #637 SQUARE END BEARING, AND #635 SPRING END BEARING, AS APPLICABLE
- FOR INACCESSIBLE DAMPERS, PROVIDE #666 OR #667 CONCEALED LOCKING DAMPER REGULATOR WITH BEARING AS ABOVE. FOR STATIC PRESSURES ABOVE 3" W.G., PROVIDE #640 HIVEL DIAL REGULATOR AND #609 HIVEL END BEARING FOR ACCESSIBLE DAMPERS.
- B. MULTI LOUVER VOLUME DAMPERS 1. 16 - GAUGE GALVANIZED STEEL FRAME. OPPOSED, 6" WIDE, 16 - GAUGE GALVANIZED STEEL BLADES. CONCEALED LINKAGE IN FRAME. TITUS #AG - 35 - B, RUSKIN #CD35/ OBD OR EQUAL
- C. FLEXIBLE CONNECTIONS PROVIDE FLEXIBLE CONNECTORS AT THE DISCHARGE AND INLET OF FANS, AIR HANDLERS, ROTATING MECHANICAL EQUIPMENT, AND WHERE SHOWN AN THE DRAWINGS FOR PROPER VIBRATION ISOLATION. NEOPRENE IMPREGNATED GLASS CLOTH WITH 24 - GAUGE GALVANIZED METAL FRAME. MINIMUM DIMENSIONS - 3" METAL, 3" FABRIC, 3" METAL. DURO DYNE #MFN4. VENT FABRICS #VENTGLAS. Q INDUSTRIES. CONSOLIDATED KINETICS. ELGEN. OR EQUAL
- D. BACKDRAFT DAMPERS PROVIDE COUNTERWEIGHT TYPE COMPLETE WITH FRAME, END BEARING, COUNTERBALANCE ASSEMBLY, BLADES AND LINKAGE.
- INSTALL AT OUTSIDE AIR INTAKE, EXHAUST OUTLETS, AND WHERE SHOWN ON DRAWINGS. PACIFIC AIR PRODUCTS #PRD - 100AL, RUSKIN #CBS - 7 OR EQUAL BY AMERICAN WARMING. OR VENT PRODUCTS. E. TURNING VANES PROVIDE TURNING VANES AT ALL 90° AND 45° SQUARE ELBOWS. TURNING VANES SHALL BE DOUBLE WALL AIR FOIL
- 2.5 DUCT INSULATION A. ACCEPTABLE MANUFACTURERS: PROVIDE PRODUCTS OF THE FOLLOWING MANUFACTURES, COMPLYING WITH SPECIFIED REQUIREMENTS. EQUIVALENT PRODUCTS OF OTHER MANUFACTURERS WILL BE CONSIDERED. OWENS - CORNING FIBERGLAS CORP.
- MANVILLE PRODUCTS CORP. CERTAINTEED CORE B. ALL INSULATION MATERIAL SHALL COMPLY WITH APPLICABLE ENERGY CONSERVATION REGULATION FOR PROJECT LOCATION. C. PROVIDE COMPOSITE MECHANICAL INSULATION (INSULATION, JACKET, COVERINGS, SEALERS, MASTICS, AND ADHESIVES) WITH
- D. PROVIDE STAPLES, BANDS, WIRES, TAPE, ANCHORS, CORNER ANGLES AND SIMILAR ACCESSORIES AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED. E. PROVIDE CEMENTS, ADHESIVES, COATINGS, SEALERS, PROTECTIVE FINISHES, AND SIMILAR COMPOUNDS AS RECOMMENDED

FLAME - SPEED INDEX OF 25 OR LESS, AND SMOKE - DEVELOPED INDEX OF 50 OR LESS, AS TESTED BY ASTM E84 (NFPA 255)

A. REFRIGERANT PIPING TO BE COPPER SEAMLESS, VACUUM PACKED TUBING. B. ALL SUCTION LINES TO SLOPE BACK TOWARDS CONDENSING UNIT.

BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.

HVAC EQUIPMENT SCHEDULE

THYBAR SPRING ISOLATED CURB - 1,588 LBS

FILTERS - 2.4 FLA 3 MCA 15 MOCP - 351 LBS

MOCP - 268 LBS

AAON #RN-010-8-0-EB09-3L9:M000-U00-DCD-AGC-0DV0H0F-00-F000000VB

DEDICATED OUTSIDE AIR SYSTEM 3,200 CFM @1"WC ESP - DUCT SMOKE

DETECTOR - DX COOLING 126.5 MBH TOTAL COOLING 12.1 EER 15.2 IEER

210 MBH NATURAL GAS 168 MBH OUT 81%TE - 45 FLA 53 MCA 80 MOCP -

105.0/72.0 EAT 66.4/69.5 LAT - DX-REHEAT 28.3 MBH 75.0/62.6 LAT - GAS HEAT

GREENHECK #USF-15-B6 LABORATORY HOOD EXHAUST FAN 1,000 CFM 1"WC

ESP - DIRECT 1/2HP 208V 3PH MOTOR - SPARK RESISTANT CLASS C - ALL

BASE ISOLATION HARDWARE - DANFOSS VLT DRIVE FC BASIC 101 & EMI

GREENHECK #USF-10 LABORATORY EXHAUST FAN 600 CFM 1.8"WC ESP -

DIRECT 1/2HP 208V 3PH MOTOR - UB DISCHARGE CW WHEEL - FACTORY BASE

ISOLATION HARDWARE - DANFOSS VLT DRIVE FC BASIC 101 - 2.4 FLA 3 MCA 15

STAINLESS STEEL CONSTRUCTION UB DISCHARGE CW WHEEL - FACTORY

TYPE CONSTRUCTED AND INSTALLED AS PER SMACNA.

- C. ALL SUCTION LINES HEADING UP TOWARDS CONDENSING UNIT SHALL HAVE A 'P' TRAP. D. PROVIDE SIGHT GLASS AND FILTER DRIER ON LIQUID LINES AT CONDENSING UNITS. E. ALL REFRIGERANT PIPING UNDERGROUND TO BE CONTAINED IN A PVC SLEEVE.
- F. REFRIGERANT PIPING TO BE SIZED AND INSTALLED AS PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS. G. REFRIGERANT PIPING TO BE INSULATED WITH ARMAFLEX INSULATION. H. INSTALL AIREX PRO-SYSTEM KIT AIR-TIGHT SEALING WITH A WALL-MOUNTED PIPING OUTLET AND A UV/VAPOR RETARDER
- PIPING INSULATION PROTECTOR FOR EXTERIOR APPLICATIONS OF HVAC REFRIGERANT PIPING WALL PENETRATIONS AND OUTDOOR INSULATION. NO "ARMAFLEX" ALLOWED

2.7 HVAC CONTROLS A. SHALL BE AS INDICATED ON THE DRAWINGS. B. ELECTRIC AND ELECTRONIC HVAC CONTROLS - COMPONENTS AND OPERATING FEATURES AS INDICATED ON THE DRAWINGS. MINIMUM OUTDOOR AIR IN CLASSROOM IS DESIGNED TO 0.38 CFM PER SF OR 15 CFM PER OCCUPANT, WHICHEVER IS GREATER. WITH OCCUPANT SENSOR VENTILATION CONTROL DEVICE PER CEC 120.2(E)3.

- C. THERMOSTAT SHALL BE PROGRAMMED ON SITE TO ENSURE MINIMUM AIR RATE IS SUPPLIED TO SPACE AT ALL OCCUPIED TIMES AND PROVIDE PRE-OCCUPANCY PURGE ONE HOUR PRIOR TO BUILDING BEING OCCUPIED PER CEC 120.1(D)1. D. UPON SITE PLACEMENT THE OPERATION AND MAINTENANCE DOCUMENTATION FOR ALL MECHANICAL SYSTEMS AND CONTROLS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR AND CONTROLS CONTRACTOR OR GENERAL CONTRACTOR TO THE FACILITIES O&M OR OWNERS REP.
- E. HEAT PUMPS USING SUPPLEMENTARY ELECTRIC RESISTANCE HEATING MUST USE A THERMOSTAT DESIGNED FOR HEAT PUMPS PER SECTION 110.2(B). THERMOSTAT SHALL BE PROGRAMMED TO PREVENT SUPPLEMENTARY HEATER OPERATION WHEN THE HEATING LOAD CAN BE MET BY THE HEAT PUMP ALONE. THE CUT-ON TEMPERATURE FOR COMPRESSION HEATING MUST BE HIGHER THAN THE CUT-ON TEMPERATURE FOR SUPPLEMENTARY HEATING. AND THE CUT-OFF TEMPERATURE FOR COMPRESSION HEATING MUST BE HIGHER THAN THE CUT-OFF TEMPERATURE FOR SUPPLEMENTARY HEATING.

PART 3 - EXECUTION

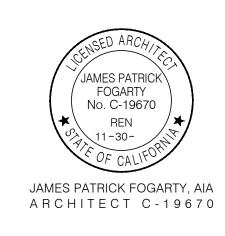
3.1 HVAC SYSTEM INSTALLATION, GENERAL SEQUENCE, COORDINATE, AND INTEGRATE THE VARIOUS ELEMENTS OF MECHANICAL

- SYSTEMS, MATERIALS, AND EQUIPMENT. COMPLY WITH THE FOLLOWING REQUIREMENTS A. COORDINATE MECHANICAL SYSTEMS, EQUIPMENT, AND MATERIALS WITH OTHER BUILDING COMPONENTS. B. VERIFY ALL DIMENSIONS BY FIELD MEASUREMENTS.
- . ARRANGE FOR CHASES, SLOTS, AND OPENINGS IN OTHER BUILDING COMPONENTS DURING PROGRESS OF CONSTRUCTION, TO ALLOW FOR MECHANICAL INSTALLATIONS.
- D. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES AND SLEEVES TO BE SET IN POURED IN PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE E. SEQUENCE, COORDINATE, AND INTEGRATE INSTALLATIONS OF MECHANICAL MATERIALS AND EQUIPMENT FOR EFFICIENT FLOW
- OF THE WORK. GIVE PARTICULAR ATTENTION TO LARGE EQUIPMENT REQUIRING POSITIONING PRIOR TO CLOSING IN THE F. WHERE MOUNTING HEIGHTS ARE NOT DETAILED OR DIMENSIONED, INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO
- PROVIDE THE MAXIMUM HEADROOM POSSIBLE. G. COORDINATE CONNECTION OF MECHANICAL SYSTEMS WITH EXTERIOR UNDERGROUND AND OVERHEAD UTILITIES AND SERVICES. COMPLY WITH REQUIREMENTS OF GOVERNING REGULATIONS, FRANCHISED SERVICE COMPANIES, AND CONTROLLING AGENCIES. PROVIDE REQUIRED CONNECTION FOR EACH SERVICE.
- H. INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT TO CONFORM WITH DRAWINGS AND SPECS, TO GREATEST EXTENT POSSIBLE CONFORM TO ARRANGEMENTS INDICATED BY THE CONTRACT DOCUMENTS, RECOGNIZING THAT PORTIONS OF THE WORK ARE SHOWN ONLY IN DIAGRAMMATIC FORM. WHERE COORDINATION REQUIREMENTS CONFLICT WITH INDIVIDUAL SYSTEM REQUIREMENTS, REFER CONFLICT TO THE CONTRACTOR FOR RESOLUTION PRIOR TO INSTALLATION.
- INSTALL SYSTEMS, MATERIALS, AND EQUIPMENT LEVEL AND PLUMB, PARALLEL AND PERPENDICULAR TO OTHER BUILDING SYSTEMS AND COMPONENTS, WHERE INSTALLED EXPOSED IN FINISHED SPACES OF EQUIPMENT COMPONENTS. AS MUCH AS J. INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT

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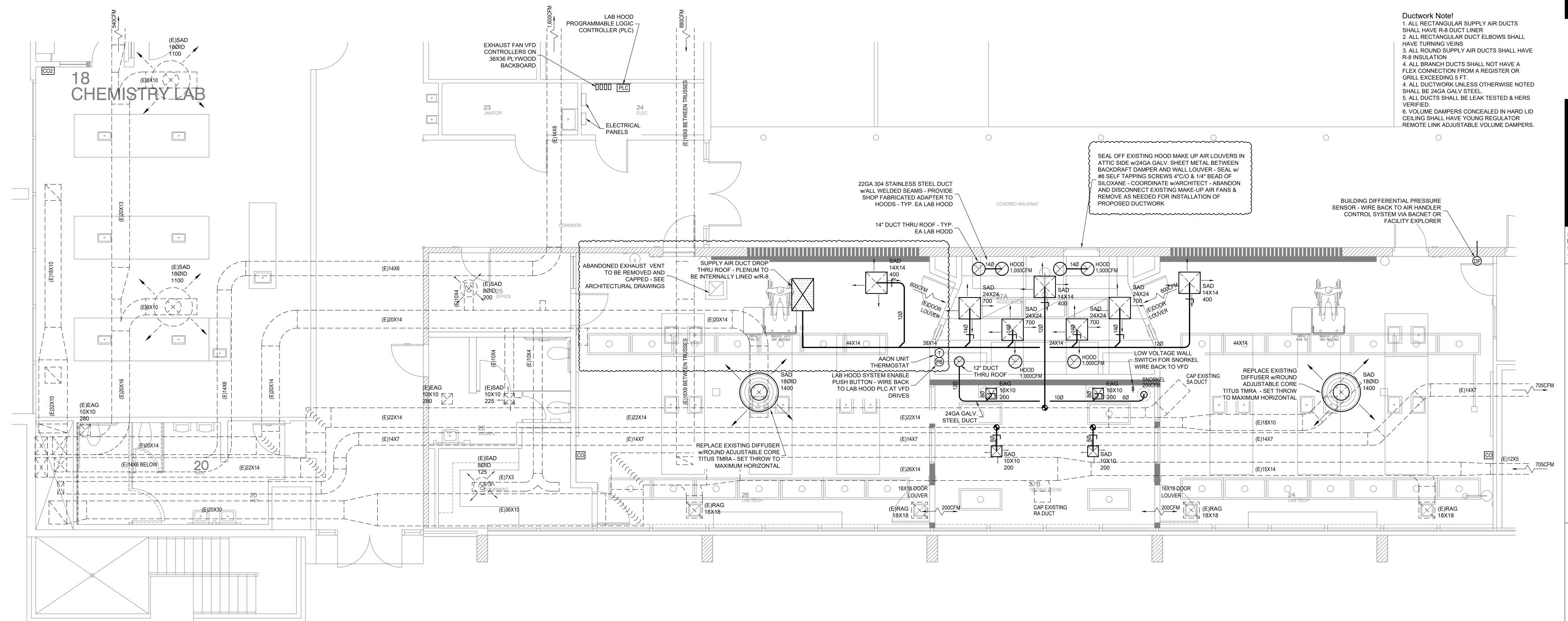
2130 F STREET BAKERSFIELD, CA 93301 TEL: (661) 324-5252 FAX: (661) 324-8439 Cantelmi@Cantelmi.NET PE ELECTRICAL #E18218 PE MECHANICAL #21190



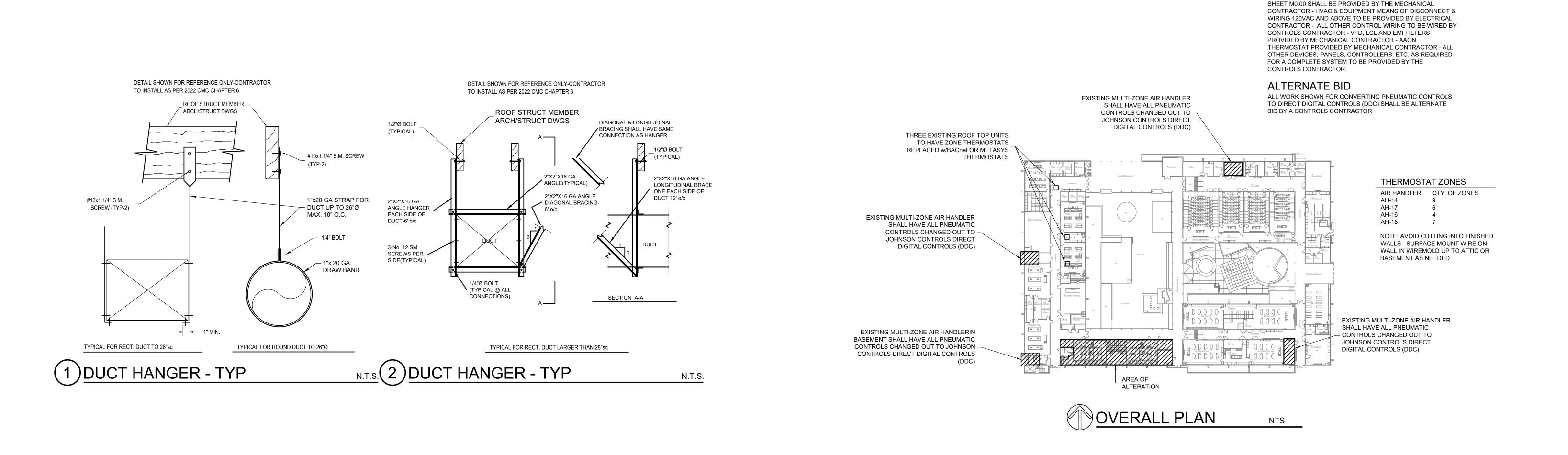
PROJECT INFO

| Project No | | 550-0047 | | | |
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| Date | | 2.9.2024 | | | |
| DSA File No |) | 15-C1 | | | |
| DSA No | | 03-123712 | | | |
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HVAC NOTES & SYMBOLS



ENLARGED FLOOR PLAN - HVAC 1/4"



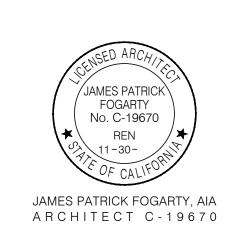


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BC LAB TECH BACHELORS PROGRAM

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CONSULTANT

TRADES SEPARATION OF SCOPE

HVAC & EQUIPMENT AS PER THE MECHANICAL SCHEDULE ON

CANTELMI ENGINEERING

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PE ELECTRICAL #E18218
PE MECHANICAL #21190



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 Date
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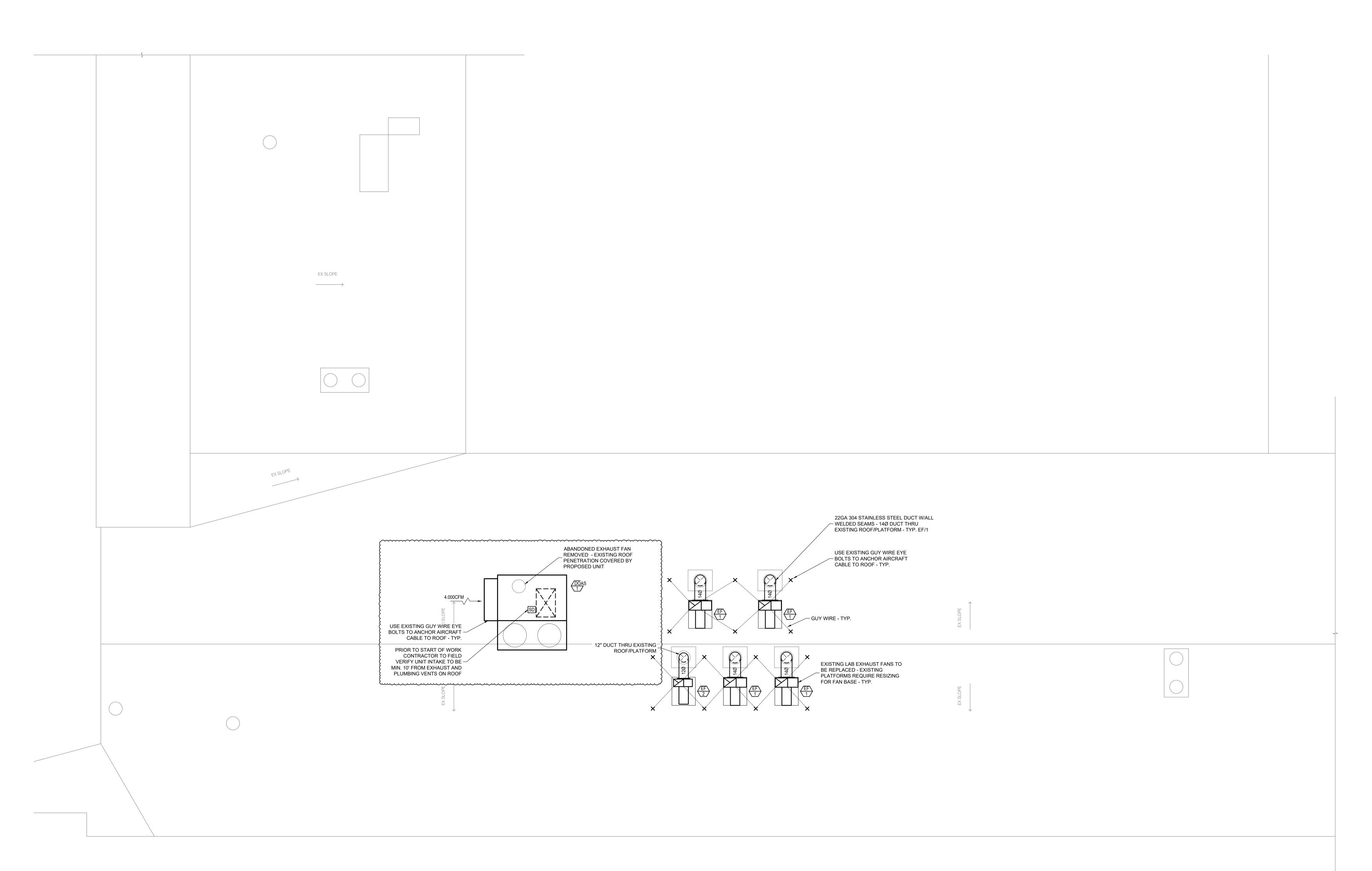
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HVAC PLANS

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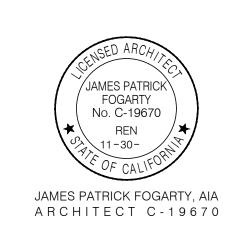


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PROGRAM

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| DSA No | 03-123712 |
| DSA File No | 15-C1 |
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HVAC PLAN VIEWS

M1.02

| PL | UMBING ABI | SYMBOLS | | | |
|-------------------|---|-----------------|--|---|--------------------------------|
| & | AND | GL | GLASS | SYMBOL | DESCRIPTION |
| ∠ @ | ANGLE AT | GR GRD | GRADE GROUND | <u> — : </u> | BALL VALVE |
| @ #L Ø | CENTER LINE PROPERTY LINE | HB HD | HOSE BIBB HEAD | | BRANCH TOP CONNECTION |
| Ø (E) | DIAMETER or ROUND EXISTING | HDWE HI. | HARDWARE HIGH | | |
| (N) | NEW PERPENDICULAR | HORIZ HP | HORIZONTAL HIGH PRESSURE | | BRANCH BOTTOM CONNECTION |
| # | POUND or NUMBER | HR HT | HOUR HEIGHT |] | CAPPED PIPE |
| A/C AC | AIR CONDITIONING ACCESSIBLE | HVAC | HEATING, VENTILATING, AIR CONDITIONING | — | CHECK VALVE |
| AP AD. | ACCESS PANEL AREA DRAIN | ID | INSIDE DIAMETER (DIM.) | ├ | CLEANOUT |
| ADJ ADMIN | ADJUSTABLE ADMINISTRATION | INSUL INT | INSULATION INTERIOR | Φ | CLEANOUT TO GRADE |
| AGGR AL | AGGREGATE ALUMINUM | IW | IRIGATION WATER | | CIRCULATING PUMP |
| APPROX APPT | APPOINTMENTS | LAV LPG | LAVATORY LIQUID PETROLEUM GAS | | |
| ARCH. ASB | ARCHITECTURAL ASBESTOS | M MACH | MEN MACHINE | | CONDENSATE DRAIN |
| ASPH ASST | ASPHALT ASSISTANT | MATL MAX. | MATERIAL MAXIMUM | ⊙••- | CONDENSATE "P" TRAP |
| AUTO. BD | AUTOMATIC BOARD | MECH MS | MECHANICAL MOP SINK | | DOMESTIC COLD WATER |
| (BF) (BG) | BELOW FINISH FLOOR BELOW FINISH GRADE | MTL MFGR | METAL MANUFACTURER | | DOMESTIC HOT WATER |
| BLDG BLKG | BUILDING BLOCKING | MH MIN | MANHOLE MINIMUM | | DOMESTIC HOT WATER RETURN |
| BM BOT | BEAM BOTTOM | MISC MONIT | MISCELLANEOUS MONITOR | | |
| BV | BALL VALVE | N | NORTH | | EXISTING WASTE OR SOIL & WASTE |
| CB CD | CATCH BASIN CONDENSATE DRAIN | NIC NO. or # | NOT IN CONTRACT NUMBER | 4 | FIRE HYDRANT |
| CEM CER | CEMENT CERAMIC | NOM NTS | NOMINAL NOT TO SCALE | Φ | FLOOR CLEANOUT |
| CI CJ | CAST IRON CONTROL JOINT | OA OAV | OVERALL OXYGEN, AIR & VACUUM | | FLOOR SINK |
| CLG CLKG | CEILING CAULKING | OC | ON CENTER | | GAS |
| CLR CO | CLEAR CLEANOUT | OVHD OX. | OVERHEAD OXYGEN | | |
| COL COMP | COLUMN COMPRESSED | PTN PHYS | PARTITION PHYSICAL | ⊕₩- | GAS COCK |
| CONC CONF | CONCRETE CONFERENCE | PR PVC | PRESSURE REGULATOR POLY-VINYL CLORIDE PIPE | ₹.> | GAS PRESSURE REGULATOR |
| CONN CONST | CONNECTION CONSTRUCTION | PLAS PLYWD | PLASTER PLYWOOD | - ⋈ - · - | GATE VALVE |
| CONT | CONTINUOUS CORRIDOR | POC PREFAB | POINT OF CONNECTION PREFABRICATED | O+ | HOSE BIBB |
| COTG CP | CLEANOUT TO GRADE CIRCULATING PUMP | PREP PT | PREPARATION PLUGGED TEE | | PIPE RISER (ELBOW) |
| CKS CTR | COUNTERSUNK CENTER | PW | PROCESSED WATER | | , |
| CV | CHECK VALVE | R RAD. | RISER RADIUS | Θ | PIPE DROP (ELBOW) |
| DBL DCW | DOUBLE DOMESTIC COLD WATER | RD REF | ROOF DRAIN REFERENCE | | PIPE DROP OR RISER |
| DEPT DET | DEPARTMENT DETAIL | REINF REQD | REINFORCED REQUIRED | — | POINT OF CONNECTION |
| DF DHW | DRINKING FOUNTAIN DOMESTIC HOT WATER | RM RWL | ROOM RAINWATER LEADER | | PROCESS WASTE |
| DHWR DIA or Ø | DOMESTIC HOT WATER RETURN DIAMETER | S | SINK or SOUTH | | SHUT-OFF VALVE |
| DIR DN | DIRECTOR DOWN | SA SB | WATER HAMMER ARRESTER SPLASH BLOCK | | |
| DR DS | DOOR DOWNSPOUT | SCHD SDL | SCHEDULE STORM DRAIN LINE | | SHUT-OFF VALVE IN YARDBOX |
| DSP DTW | DRY STANDPIPE DOMESTIC TEMPERED WATER | SECT. SH | SECTION SHOWER | | SOIL & WASTE |
| DWG E | DRAWING EAST | SHT SIM | SHEET SIMILAR | | TRAP ARM |
| EA EDF | EACH ELECTRIC DRINKING FOUNTAIN | SL SPEC | SPRINKLER LINE SPECIFICATION | (| TRAP PRIMER |
| ELEC ELEV | ELECTRICAL ELEVATION | SOV SS | SHUT-OFF VALVE SERVICE SINK | | VENT |
| EMER ENCL | EMERGENCY ENCLOSURE | SST STD | STAINLESS STEEL STANDARD | | VENT OFFSET |
| EO EP | ELECTRICAL OUTLET ELECTRICAL PANEL | STL STOR | STEEL STORAGE | • | VENT THRU ROOF |
| EQ EQUIP | EQUAL EQUIPMENT | STRUCT SUPV | STRUCTURAL SUPERVISOR | Q, | WALL CLEANOUT |
| (E) EXP | EXISTING EXPANSION | SUSP S&W | SUSPENDED SOIL & WASTE | ×, | WASTE |
| EXPO. EXT | EXPOSED EXTERIOR | TA | TRAP ARM | | |
| FA | FIRE ALARM | TC TEL | TOP OF CURB TELEPHONE | | WATER HAMMER |
| FCO FD | FLOOR CLEANOUT FLOOR DRAIN | TER THK | TERRAZZO THICK | | |
| FDN FE | FOUNDATION FIRE EXTINGUISHER | TOC TP | TOP OF CONCRETE TRAP PRIMER | | |
| FEC FH | FIRE EXTINGUISHER CABINET FIRE HYDRANT | TRANS TREAT. | TRANSCRIPTION TREATMENT | | |
| FHC FHMS | FIRE HOSE CAB. FLAT HEAD METAL SCREW | TYP TV | TYPICAL TEMPERING VALVE | | |
| FIN. FL | FINISH FLOOR | UL | UNDERWRITERS LABORATORIES | | |
| FLASH. FM | FLASHING FIRE MAIN | UON UR | UNLESS OTHERWISE NOTED URINAL | | |
| FOC FOF | FACE OF CONCRETE FACE OF FINISH | V VA | VENT VALVE | | |
| FOF FR FRPF | FRAME FIREPROOFING | VC VTR | VITRIFIED CLAY VENT THRU ROOF | | |
| FS FSH | FIREPROOFING FLOOR SINK FIRE SPRINKLER HEAD | VO | VENT OFFSET | | |
| FSL | FIRE SPRINKLER LINE | W W/ | WASTE LINE WITH | | |
| FTR FUNC | FLUE THRU ROOF FUNCTION | WC WCO | WATER CLOSET WALL CLEANOUT | | |
| FURR FUT | FURRING FUTURE | WH WHA | WATER HEATER WATER HAMMER ARRESTOR | | |
| | | | WITHOUT | 1 | |
| G GA | GAS LLINE GAUGE | W/O WMF | WITHOUT WASHING MACHINE FITTING | | |

GENERAL PLUMBING NOTES

SECTION 1 BASIC PLUMBING MATERIALS AND METHODS

PART 1 - GENERAL

- A. LABOR, MATERIALS, TOOLS, AND SERVICES FOR A COMPLETE INSTALLATION OF EQUIPMENT AND SYSTEM CONTAINED
- WITHIN THE CONTRACT DOCUMENTS
- B. PRINCIPAL FEATURES OF THE WORK INCLUDED ARE:
 - PLUMBING SYSTEM AND RELATED PIPING INSULATION. DOMESTIC WATER PIPING, VALVES, CONNECTIONS AND RELATED PIPING INSULATION.
 - LIMITED AREA FIRE PROTECTION (SPRINKLER SYSTEMS)
 - EXCAVATING AND BACKFILLING FOR MECHANICAL WORK; COORDINATE WITH APPROPRIATE TRADE.
 - ANCHOR BOLTS, SLEEVES. SUPPORTS AND SIMILAR ITEMS TO BE BUILT INTO CONCRETE OR MASONRY. PREPARATION AND SUBMITTAL OF SHOP DRAWING AND PRODUCT DATA.
- MAINTAINING A RECORD SET OF BLUE LINE PRINTS AND MAKING THEM TO INDICATE LOCATIONS OF CONCEALED ITEMS, AND DEVIATIONS MADE TO SUIT CONDITIONS AND PRODUCTION OF MECHANICAL AS-BUILT (RECORD) DRAWINGS.
- 1.2 JOB CONDITIONS. A. SUBMITTAL OF BID IMPLIES BIDDER HAS READ APPLICABLE PARAGRAPHS OF THE SPECIFICATIONS AND WILL BE BOUND BY THEIR CONDITIONS.

1.3 LOCAL CONDITIONS

A. CONFORM WITH LOCAL CONDITIONS. COORDINATE WITH LOCAL UTILITIES ON SIZE OF UTILITY SERVICE.

- A. THE CONTRACT DOCUMENTS (DRAWINGS AND SPECIFICATIONS) DESCRIBE THE PLUMBING WORK OF THIS PROJECT ANY ITEMS MENTIONED IN ONE PART SHALL BE AS BINDING AS THOUGH MENTIONED IN BOTH.
- B. THE CONTRACT DOCUMENTS FORM A GUIDE FOR A COMPLETE PLUMBING INSTALLATION. WHERE AN ITEM IS REASONABLY NECESSARY BUT NOT
- SPECIFICALLY MENTIONED, SUCH AS PIPING OFFSETS, DRAINS, ETC., FOR A COMPLETE SYSTEM, PROVIDE SAME. C. PLUMBING LAYOUTS INDICATED ON DRAWINGS ARE DIAGRAMMATIC ONLY. EXACT LOCATIONS OF PIPES, AND EQUIPMENT SHALL BE GOVERNED BY THE DRAWINGS OF RELATED TRADES.
- A. NO DEVIATIONS FROM SPECIFICATIONS AND DRAWINGS SHALL BE MADE WITHOUT FULL KNOWLEDGE AND WRITTEN CONSENT FROM THE DIVISION OF STATE ARCHITECT.
- B. SHOULD CONTRACTOR FIND. DURING PROGRESS OF WORK. CONDITIONS WHICH DICTATE A MODIFICATION OF ANY PARTICULAR REQUIREMENTS. REPORT SUCH ITEM PROMPTLY FOR DECISION OF INSTRUCTIONS.
- 1.6 QUALITY ASSURANCE

C. EQUIPMENT OR MATERIALS MAY NOT VARY FROM THE APPROVED PLANS.

- A. COMPLY WITH APPLICABLE LOCAL, STATE AND FEDERAL CODES. B. COMPLY WITH APPLICABLE REQUIREMENTS OF RECOGNIZED INDUSTRY ASSOCIATIONS WITH PROMULGATE STANDARDS FOR THE VARIOUS TRADES.
- (SEE DIVISIONS 21 THRU 23) C. EMPLOY ONLY QUALIFIED JOURNEYMEN FOR THIS WORK. EMPLOY COMPETENT, QUALIFIED PLUMBERS TO SUPERVISE THE WORK.

- 1.7 CODES AND STANDARDS A. PERFORM WORK SPECIFIED IN DIVISIONS 21 THRU 23 IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS LISTED BELOW, AND SUCH STANDARDS THAT MAY BE SPECIFIED IN OTHER SECTIONS. WHEN THESE SPECIFICATIONS ARE MORE STRINGENT, THEY TAKE PRECEDENCE. IN CASE OF CONFLICT, OBTAIN A DECISION FROM THE PLUMBING ENGINEER.
 - NFPA 54: NATIONAL FUEL AND GAS CODE.
 - NFPA 101: LIFE SAFETY CODE. APPLICABLE STATE BUILDING CODE.
 - NATIONAL STANDARD PLUMBING CODE (OR APPLICABLE STATE PLUMBING CODE).
 - ACCESSIBILITY REQUIREMENTS ANSI A117.1, ADA, AND CBC CHAPTER 11-B APPLICABLE STATE ENERGY CODE.
- AGA: AMERICAN GAS ASSOCIATION. ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE.
- ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS.
- MSS: MANUFACTURER'S STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY. NEMA: NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
- NFPA: NATIONAL FIRE PROTECTION ASSOCIATION.
- 13. UL: UNDERWRITERS' LABORATORIES. INC.

- A. BEFORE STARTING ANY WORK CONTRACTOR SHALL CAREFULLY EXAMINE SPECIFICATIONS AND DRAWINGS TO BE THOROUGHLY FAMILIAR WITH ITEMS WHICH REQUIRE PLUMBING AND COORDINATION.
- B. BEFORE STARTING ANY WORK SITE CIVIL ENGINEER SHALL PROVIDE UTILITIES TO THE BUILDING LOCATION BASED ON CAPACITY OF CALCULATIONS LISTED ON DRAWINGS. HE SHALL THOROUGHLY EXAMINE THE BUILDING SPECIFICATIONS AND DRAWINGS FOR COORDINATION OF ALL WORK AND REPORT TO THE ARCHITECT IN WRITING ANY AND ALL CONDITIONS WHICH MIGHT ADVERSELY AFFECT THIS PROJECT.
- C. COORDINATE WITH OTHER DIVISIONS TO LEAVE PROPER CHASES AND OPENINGS. PLACE OUTLETS, ANCHORS, SLEEVES, AND SUPPORTS PRIOR TO POURING CONCRETE OF INSTALLATION OF MASONRY WORK.

1.9 SUBMITTALS

- A. SUBMITTALS ARE ONLY REQUIRED FOR SPECIFIC ITEMS OF EQUIPMENT OR MATERIAL LISTED IN INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. B. WITHIN 15 DAYS AFTER AWARD OF CONTRACT FOR THIS WORK, SUBMIT A LIST OF PROPOSED MANUFACTURERS (OF EQUIPMENT OR MATERIAL TO BE USED) FOR APPROVAL. SUBMIT THIS LIST BEFORE SUBMITTAL OF SHOP DRAWINGS AND PRODUCT DATA, AND OBTAIN APPROVAL BEFORE
- SUBMITTING REQUIRED ITEMS. SHOP DRAWINGS (NOT REQUIRED FOR OWNER FURNISHED EQUIPMENT).

1.10 DELIVERY AND STORAGE

A. INSOFAR AS POSSIBLE, DELIVER ITEMS IN MANUFACTURER'S ORIGINAL UNOPENED PACKAGING. WHERE THAT IS NOT PRACTICAL. COVER ITEMS WITH PROTECTIVE MATERIALS TO KEEP THEM FROM BEING DAMAGED. USE CARE IN LOADING, TRANSPORT, UNLOADING, AND STORAGE TO KEEP ITEMS FROM BEING DAMAGED.

1.11 FIRE RATINGS

- A. MATERIALS USED ANYWHERE IN THE WORK MUST HAVE NFPA RATINGS AS FOLLOWING:
 - FLAME SPREAD NOT OVER 25 SMOKE DEVELOPED - NOT OVER 50
- FUEL CONTRIBUTED NOT OVER 25 B. MATERIALS SHALL BE "SELF EXTINGUISHING"

1.12 PERMITS AND FEES

A. OBTAIN, PAY FOR, AND DELIVER PERMITS, CERTIFICATION OF INSPECTION, AND OTHER SUCH ITEMS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION. DELIVER CERTIFICATION TO THE CONSTRUCTION MANAGER PRIOR TO FINAL ACCEPTANCE OF THE WORK. AN INSPECTION CERTIFICATE FOR EACH CLASS OF WORK REQUIRING INSPECTION MUST BE SUBMITTED PRIOR TO OR WITH THE FINAL PAYMENT INVOICE. THE RESPONSIBLE TRADE CONTRACTOR MUST MAKE APPLICATION FOR THE INSPECTION, COORDINATE SAME AND PAY THE REQUIRED INSPECTION FEE.

1.13 EXTENDED WARRANTIES

A. WORK FURNISHED UNDER THE CONTRACT SHALL BE WARRANTED AGAINST DEFECTS IN WORKMANSHIP AND (CONTRACTOR FURNISHED) MATERIALS FOR A PERIOD OF NOT LESS THAT ONE (1) YEAR, OR AS OTHERWISE SPECIFIED, FROM THE DATE OF FINAL ACCEPTANCE OF THE INSTALLATION, DEFECTS OF WORKMANSHIP DEVELOPING DURING THIS PERIOD SHALL BE REMEDIED, AND DEFECTIVE MATERIAL REPLACED, WITHOUT ADDITIONAL COST. WHEN DEFECTS IN A TRADE CONTRACTOR'S WORK CAUSES DAMAGE TO THE WORK OF THE OTHER TRADE CONTRACTORS, SUCH DAMAGE SHALL BE REPAIRED BY THE TRADE CONTRACTOR CAUSING DAMAGE AND WORK RESTORED TO ITS ORIGINAL CONDITION, AT THE EXPENSE OF THE TRADE CONTRACTOR THAT CAUSED THE DAMAGE.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. WITHIN THE CONTRACT DOCUMENTS RELATING TO PLUMBIMG WORK, MANUFACTURER'S NAMES, CATALOG NUMBERS, AND OTHER PROPRIETARY REFERENCES TO MATERIALS AND EQUIPMENT ARE MADE. SUCH REFERENCES ARE MADE TO ESTABLISH THE STANDARDS OF QUALITY AND TYPE REQUIRED, AND NOT TO LIMIT COMPETITION. ACCEPTABLE MANUFACTURER'S OF COMPETITIVE PRODUCTS ARE LISTED IN APPLICABLE SECTIONS AS "APPROVED EQUALS". REASONABLE REQUESTS FOR SUBSTITUTION OR ADDITIONS TO "APPROVED EQUALS" WILL BE CONSIDERED, BUT THE MECHANICAL ENGINEER WILL BE THE SOLE JUDGE OF ACCEPTABILITY OF ITEMS PROPOSED AS SUBSTITUTES.
- B. MATERIALS AND EQUIPMENT USED IN CARRYING OUT THESE SPECIFICATIONS SHALL BEAR UL OR OTHER RECOGNIZED TESTING LABORATORY LABEL WHEN SUCH LABELS ARE AVAILABLE.

PART 3 - EXECUTION

3.1 LOCATIONS

- A. PLUMBING LAYOUTS INDICATED ON DRAWINGS ARE DIAGRAMMATIC. EXACT LOCATIONS OF PIPES, AND EQUIPMENT MAY VARY BECAUSE OF CONFLICTS WITH WORK OF OTHER TRADES. WORK OUT CONFLICTS WHERE RELOCATION'S WILL NOT AFFECT OPERATION OR APPEARANCE OF SYSTEMS PER APPROVAL OF THE ARCHITECT & ENGINEER OF RECORD.
- B. LOCATE EQUIPMENT REQUIRING PERIODIC SERVICING SO THAT IT IS READILY ACCESSIBLE. DO NOT BACK UP SERVICE SIDES TO WALLS, NOR PLACE IT TOO CLOSE TO OTHER EQUIPMENT TO MAKE SERVICE IMPRACTICAL. EQUIPMENT SERVICE CLEARANCE SHALL MEET MINIMUM ACCEPTABLE DISTANCE AS RECOMMENDED BY EQUIPMENT MANUFACTURER.

3.2 UTILITIES EXCAVATING AND BACKFILLING

- A. PERFORM TRENCHING, EXCAVATING, BACKFILLING FOR MECHANICAL WORK IN ACCORDANCE WITH THE APPROPRIATE SECTIONS AND AS SET FORTH BELOW
- PERFORM WORK NECESSARY FOR INSTALLATION OF MECHANICAL UTILITIES. 2. DEPTH OF EXCAVATION TO PROVIDE A MINIMUM OF 3' ABOVE TOP OF PIPE. EXCAVATION TO BE CARRIED TO A DEPTH OF AT LEAST 6" BELOW BOTTOM OF PIPE ELEVATION. FILL BELOW PIPE (6"), AROUND PIPE, AND A MINIMUM OF 12" ABOVE PIPE WIT SAND OR CLASS "B" CRUSHED STONE TAMPED FIRM AND EVEN. SEPARATE TOPSOIL DURING EXCAVATION. FINAL LAYER OR

25'. BACKFILLING SHALL BE DONE TO EXCLUDE USE OF ROCK OR STONE ABOVE SAND OR CRUSHED STONE.

DIRT (12" MINIMUM) TO BE TOPSOIL. TRENCHES TO BE AT LEAST 18" WIDER THAN PIPE WITH BATTER BOARDS PLACED EVERY

3.3 CUTTING AND PATCHING

- A. REPAIR OR REPLACE ROUTINE DAMAGE CAUSED BY CUTTING IN PERFORMANCE OF CONTRACT.
- B. PERFORM REPAIRS WITH MATERIALS WHICH MATCH EXISTING AND INSTALL IN ACCORDANCE WITH THE APPROPRIATE SECTION OF THESE SPECIFICATIONS OR THE BEST STANDARDS OF THE INDUSTRY.

3.4 CONNECTION TO EQUIPMENT

- A. CONNECT OR INSTALL EQUIPMENT SHOWN ON MECHANICAL DRAWINGS THAT REQUIRE PLUMBING. ROUGH - IN PIPING AND CONNECT EQUIPMENT
 - 2. PROVIDE PIPING, SHUTOFF VALVES, AND UNIONS REQUIRED FOR A COMPLETE INSTALLATION

3.5 SERVICE OF SYSTEM

- A. EMPLOY COMPETENT, QUALIFIED PERSONNEL IN OPERATION OF THE EQUIPMENT.
- B. PROVIDE FOR PROPER OPERATION AND CLEANLINESS. C. OPEN UP EQUIPMENT FOR INSPECTION AS DIRECTED BY THE SUPERINTENDENT

END OF SECTION

SECTION 2 PLUMBING

PART 1 - GENERAL

- A. FURNISHING OF ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, SERVICE, AND RELATED ITEMS NECESSARY TO COMPLETE THE INSTALLATION OF THE PLUMBING SYSTEM AS ILLUSTRATED ON THE DRAWING AND AS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
- HOT & COLD WATER SYSTEM WITH COMPLETE CONNECTIONS FROM METER TO ALL PLUMBING FIXTURES & EQUIPMENT REQUIRING WATER CONNECTIONS
- 4. SOIL, WASTE, VENT AND CONDENSATE SYSTEM LINES INSIDE AND OUTSIDE THE BUILDING. TRENCHING AND BACKFILLING.
- FINAL PLUMBING CONNECTIONS TO HEATING AND AIR CONDITIONING EQUIPMENT. GAS PIPING TO HEATING. WATER HEATERS AND ALL OTHER GAS BURNING EQUIPMENT

PART 2 - PRODUCTS

2.1 DESCRIPTION

- A. ALL SOIL, WASTE, AND VENT PIPING TO BE ABS OR PVC-DWV SCHEDULE 40 PIPE & FITTINGS. YARD PIPING, PIPE AND FITTINGS OR P.V.C. SCHEDULE 40 PIPE AND FITTINGS (AS APPROVED BY LOCAL AUTHORITY). EXCEPTION: ALL SOIL, WASTE & VENTS LOCATED WITHIN A FIRE RATED WALL SHALL BE METALLIC (STEEL, CAST IRON ECT., NO PVC). IT SHALL BE THE RESPONSIBILITY OF THE PLUMBER TO VERIFY ALL FIRE RATED WALLS AND CONSTRUCTION AS SHOWN ON THE ARCHITECTURAL DRAWINGS AND COORDINATE WITH THE GENERAL CONTRACTOR. ALL SOIL. WASTE AND VENTS SHALL BE INSTALLED AS PER CPC AND LOCAL CODES.
- B. HOT & COLD WATER PIPING ABOVE FLOOR: TYPE "L" COPPER, HARD DRAWN. BELOW GROUND OUTSIDE OF BUILDING: TYPE "K" SOFT DRAWN COPPER TUBING WITH OUT JOINTS.
- C. CONDENSATE DRAIN PIPING: TYPE "M" COPPER WITH 95-5 TIN ANTIMONY SOLDER AND ROUGH COPPER FITTINGS OR EQUAL.
- D. INDIRECT WASTE PIPING: TYPE "M" COPPER WITH 95-5 TIN ANTIMONY SOLDER AND WROUGHT COPPER FITTINGS OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY.

E. UNDERGROUND GAS PIPING: SCHEDULE 40 BLACK STEEL PIPE WITH LONG RADIUS STEEL WELDING FITTINGS INCLUDING CATHODIC PROTECTION OR POLYETHYLENE AS APPROVED BY LOCAL GAS COMPANY AND AUTHORITY HAVING JURISDICTION. INSTALLATION OF GAS SERVICE PIPING IN VENTED

CONDUIT AND MEETING WITH THE LOCAL GAS COMPANY'S APPROVAL.

- F. GAS PIPING ABOVE GROUND: SCHEDULE 40 BLACK STEEL WITH 150 POUND BLACK MALLEABLE IRON SCREWED FITTINGS. GAS PIPING COMPOUND AT JOINTS IN COMPLIANCE WITH NFPA BULLETIN #45 AND LOCAL APPLICABLE CODES AND SUITABLE FOR NATURAL GAS SERVICE. INSTALL MOISTURE TRAPS ON HVAC UNITS, WATER HEATERS, AND KITCHEN EQUIPMENT.
- G. STORM PIPING BELOW GROUND: STANDARD WEIGHT COATED CAST IRON PIPE AND STAINLESS STEEL/ NEOPRENE GASKET FITTING, LOCATIONS.
- H. STORM PIPING ABOVE GROUND: STANDARD WEIGHT COATED CAST IRON PIPE AND STAINLESS STEEL/ NEOPRENE GASKET FITTING.

I. TRAPS AND VENTS FOR SERVICE SINK: A.B.S. OR P.V.C. SCHEDULE 40, AS APPROVED BY LOCAL AUTHORITY

2.2 INSULATION

A. INSULATE ALL HOT AND COLD WATER COPPER PIPING WITH AT LEAST 1/2" THICK FOAM RUBBER OR FOAM PLASTIC TYPE PIPE INSULATION. B. ALL PIPE SYSTEMS SHALL BE INSULATED: SPACE COOLING SYSTEMS (ALL REFRIGERANT SUCTION, CHILLED WATER & FLUID DISTRIBUTION), SPACE

C. ALL WATER HEATERS TO HAVE R7.7 INSULATION ON HOT & COLD LINES FOR FIRST 8 FEET FROM WATER HEATER (TANK TYPE AND INSTANT).

HEATING SYSTEMS (ALL REFRIGERANT, STEAM, STEAM CONDENSATE & HOT WATER FLUID DISTRIBUTION) & SERVICE WATER-HEATING SYSTEMS.

2.3 FIXTURES F. ALL FIXTURES: AS INDICATED ON DRAWINGS WITH EQUAL PRODUCTS FURNISHED BY AMERICAN STANDARD, KOHLER, ELJER OR EQUAL.

2.4 CLEANOUTS, FLOOR DRAINS, FLOOR SINKS, AND ROOF DRAINS.

A. ALL ACCESSORIES, AS INDICATED ON DRAWING WITH EQUAL PRODUCTS FURNISHED BY WADE, JOSAM, OR ZURN BEING ACCEPTABLE.

2.5 EQUIPMENT

- A. SHUTOFF VALVES UNDERNEATH LAVATORIES, TANK TYPE WATER CLOSETS, AND KITCHEN EQUIPMENT WITH CHROME PLATED ANGLE STOP VALVES WITH CHROME PLATED ESCUTCHEON PLATES.
- B. HOSE BIBBS AS SCHEDULED ON DRAWINGS. C. VACUUM BREAKERS - AS SCHEDULED ON DRAWINGS

D. ALL RE-CIRCULATING LINES TO BE INSULATED.

D. BACKFLOW PREVENTERS - AS SCHEDULED ON DRAWINGS. E. GAS COCK - PLUG VALVE IRON BODY, BRONZE TAPERED PLUG, LUBRICATED, THREADED ENDS. RATED FOR 200 CWP, AGA AND UL LISTED.

3.1 PIPING A. RUN ALL PIPING CONCEALED EXCEPT WHERE OTHERWISE INDICATED ON DRAWINGS. B. INSTALL VALVES TRAPS CLEANOUT AND OTHER APPARATUS IN AN EASILY ACCESSIBLE LOCATION

PART 3 - INSTALLATION

3.2 PLUMBING FIXTURES

3.5 MAINTENANCE

- D. MAINTAIN HOT AND COLD WATER LINES AT LEAST 6 INCHES APART WHERE PIPING IS PARALLEL.
- C. INSTALL SOIL, WASTE VENT OFFSETS AND CONDENSATE DRAINS WITH A MINIMUM UNIFORM GRADE OF ONE QUARTER INCH TO THE FOOT.
- E. PROVIDE ESCUTCHEON PLATES WHERE ALL PIPES PASS THROUGH A FINISHED WALL.
- B. ALL FIXTURES: GRADE A, WHITE. C. EXPOSED PIPING TO FIXTURES: A PRODUCT OF THE FIXTURE MANUFACTURE. D. PROVIDE STOPS AS MANUFACTURED BY THE FIXTURE MANUFACTURER, WITH METAL - TO - SEAT FOR ALL FIXTURES AND EQUIPMENT.

A. FURNISH AND INSTALL ALL PLUMBING FIXTURES COMPLETE WITH ALL EQUIPMENT FITTINGS, TRIMMING, AND ACCESSORIES.

A. THE PLUMBING SYSTEM AND ASSOCIATED SYSTEM IS SUBJECT TO FINAL APPROVAL OF THE OWNER'S REPRESENTATIVE AND CODE AUTHORITIES

HAVING JURISDICTION. PERFORM ALL TESTS REQUIRED TO SHOW CODE COMPLIANCE AS DIRECTED.

3.4 CLEANING AND PROTECTION A. AFTER THE PLUMBING PIPING HAS BEEN INSTALLED, INSPECTED, AND APPROVED, FLUSH THE PIPING SYSTEM TO REMOVED ANY FOREIGN MATTER FROM THE PIPES.

A. MAINTAIN ALL PARTS OF THE PLUMBING FIXTURES AND ASSOCIATED EQUIPMENT THROUGHOUT THE GUARANTEE

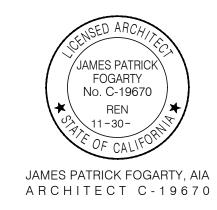
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PLUMBING NOTES & SYMBOLS

MEP COMPONENT ANCHORAGE NOTE

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

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.

DIRECTLY SUPPORT THE COMPONENT.

WEIGHT

YARD

GALVANIZED IRON

GENERAL

GEN

- 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 2022 CBC SECTIONS
- WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEX CABLE. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH

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

THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS: A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT

B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LEES THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR

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

PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW.

PIPING, DUCTWORK AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26

WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (EG. OSHPOD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM

INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO 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 THE LOADS. MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEM (E):

AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

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

☐ MP ☐ MD ☐ PP ☐ E OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVED (OPM #) #____

TITLE 24 CODES

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC) (PART 1, TITLE 24 CCR)

2022 CALIFORNIA ENERGY CODE (CEC). . . (PART 6, TITLE 24 CCR)

TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

REFERENCED CODE SECTIONS FOR APPLICABLE STANDARDS

2022 CALIFORNIA ELECTRICAL CODE (CEC) (PART 3, TITLE 24 CCR) (2020 NATIONAL ELECTRICAL CODE AND 2022 CALIFORNIA AMENDMENTS)

(2021 IAPMO UNIFORM MECHANICAL CODE AND 2022 CALIFORNIA AMENDMENTS) 2022 CALIFORNIA PLUMBING CODE (CPC) (PART 5, TITLE 24 CCR)

2022 CALIFORNIA FIRE CODE (CFC) (PART 9, TITLE 24 CCR)

2022 CALIFORNIA EXISTING BUILDING CODE (CEBC) (PART 10, TITLE 24 CCR) (2021 INTERNATIONAL EXISTING BUILDING CODE AND 2022 CALIFORNIA AMENDMENTS)

NFPA 14 - 2019 EDITION NFPA 13 - 2022 EDITION

UL 300 - 2005 EDITION (R2010) UL 464 - 2003 EDITION UL 521 - 1999 EDITION UL 1971 - 2002 EDITION ICC 300 - 2017 EDITION

NFPA 17 - 2021 EDITION NFPA 17A - 2021 EDITION NFPA 22 - 2023 EDITION NFPA 20 - 2019 EDITION NFPA 24 - 2019 EDITION NFPA 72 - 2022 EDITION NFPA 80 - 2019 EDITION NFPA 2001 - 2018 EDITION

2022 CBC, CHAPTER 35 & 2022 CFC, CHAPTER 80

2022 CALIFORNIA BUILDING CODE (CBC) (PART 2, TITLE 24 CCR) (2021 INTERNATIONAL BUILDING CODE, VOL. 1 & 2, AND 2022 CALIFORNIA AMENDMENTS)

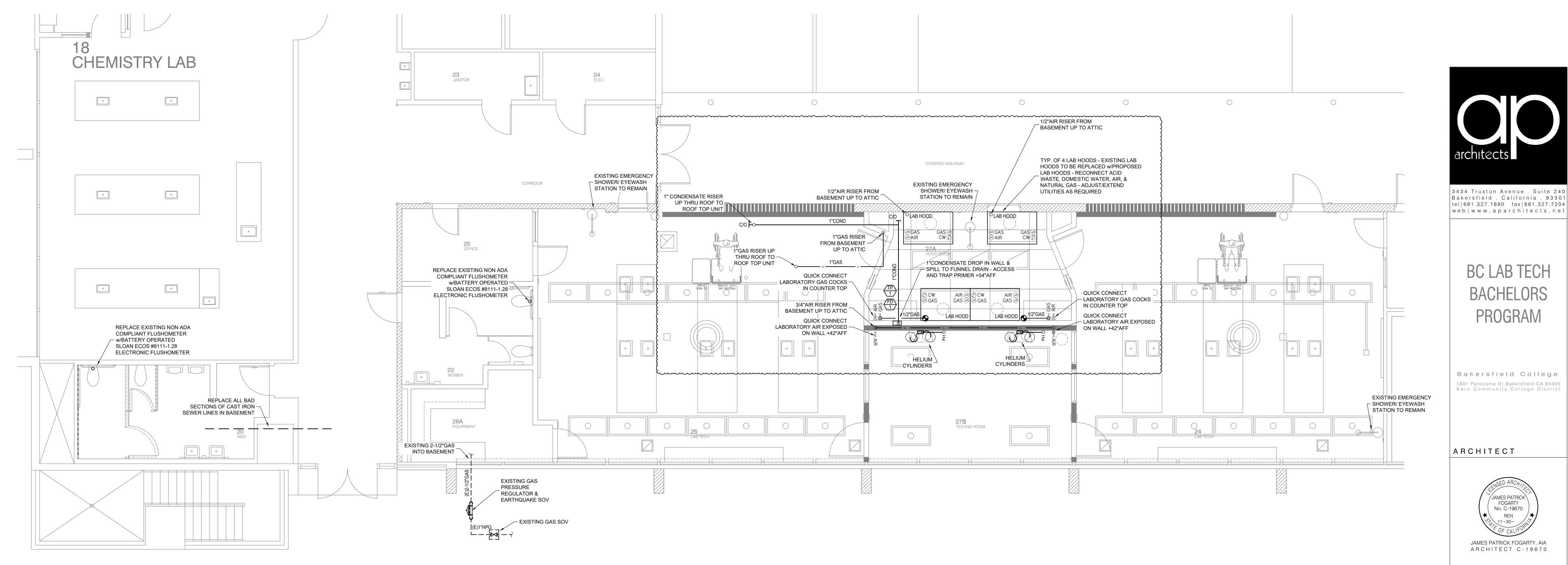
2022 CALIFORNIA MECHANICAL CODE (CMC) (PART 4, TITLE 24 CCR)

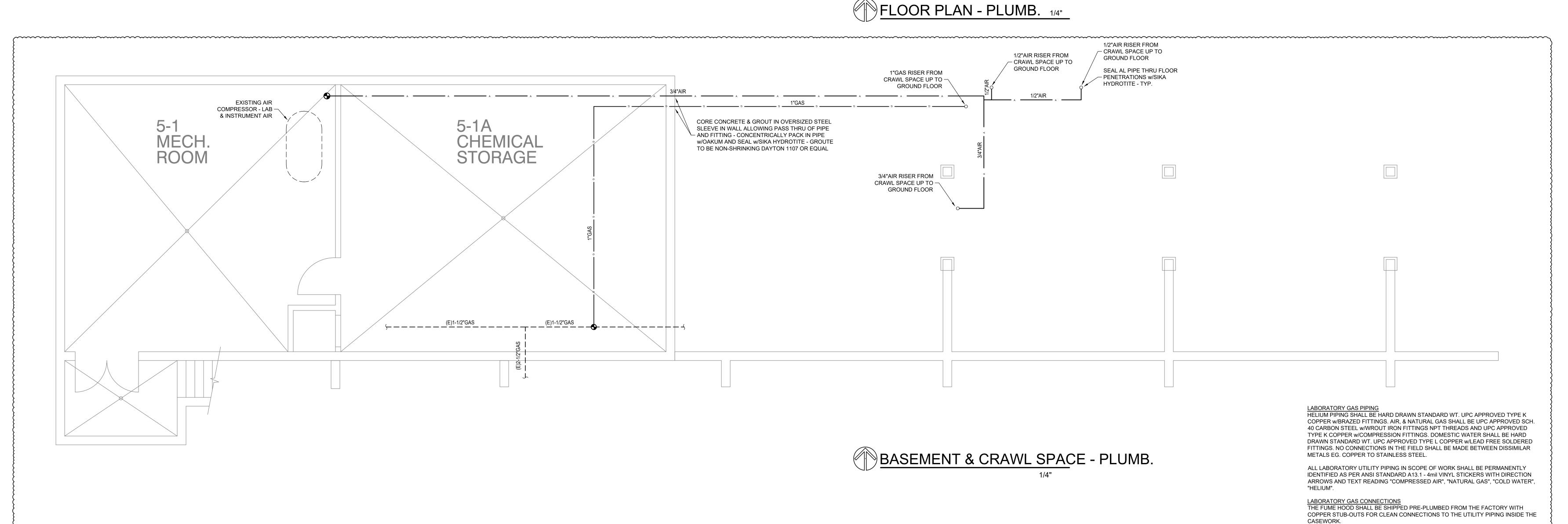
(2021 IAPMO UNIFORM PLUMBING CODE AND 2022 CALIFORNIA AMENDMENTS)

(2021 INTERNATIONAL FIRE CODE AND 2022 CALIFORNIA AMENDMENTS)

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (PART 11, TITLE 24 CCR)

2019 ASME A17.1/CSA B44-13 SAFETY CODE FOR ELEVATORS AND ESCALATORS. 2022 CALIFORNIA REFERENCED STANDARDS CODE (PART 12, TITLE 24 CCR)





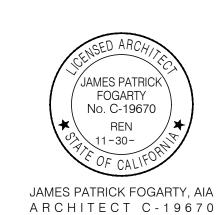


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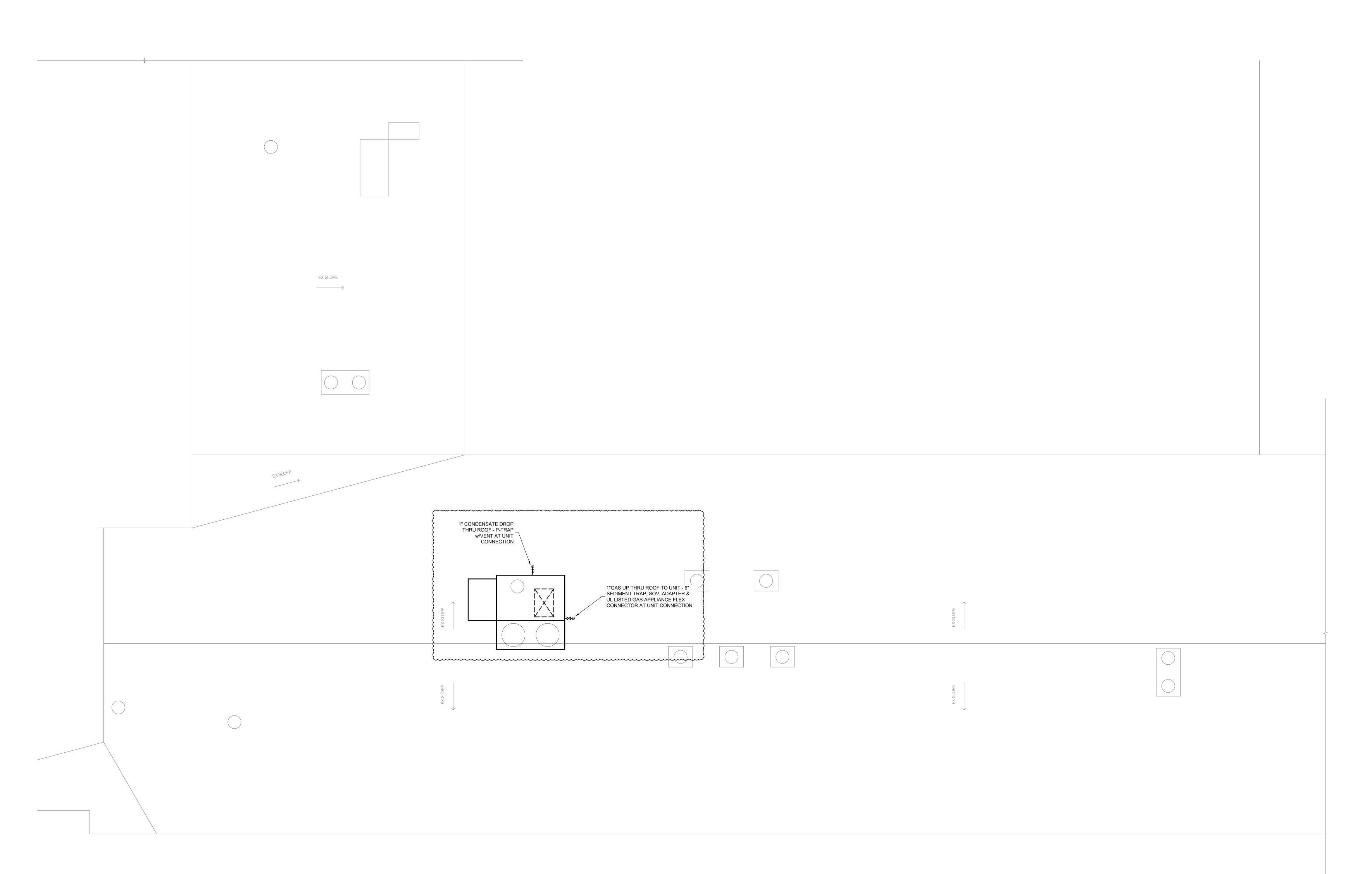


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PLUMBING PLAN **VIEWS**

COUNTER TOP AND WALL LABORATORY OUTLETS SHALL BE QUICK CONNECT TYPE WITH FACTORY INSTALLED COPPER STUB-OUTS FOR CLEAN CONNECTIONS TO THE

UTILITY PIPING.







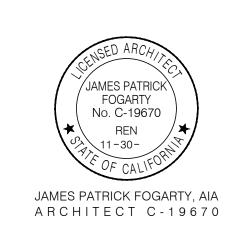
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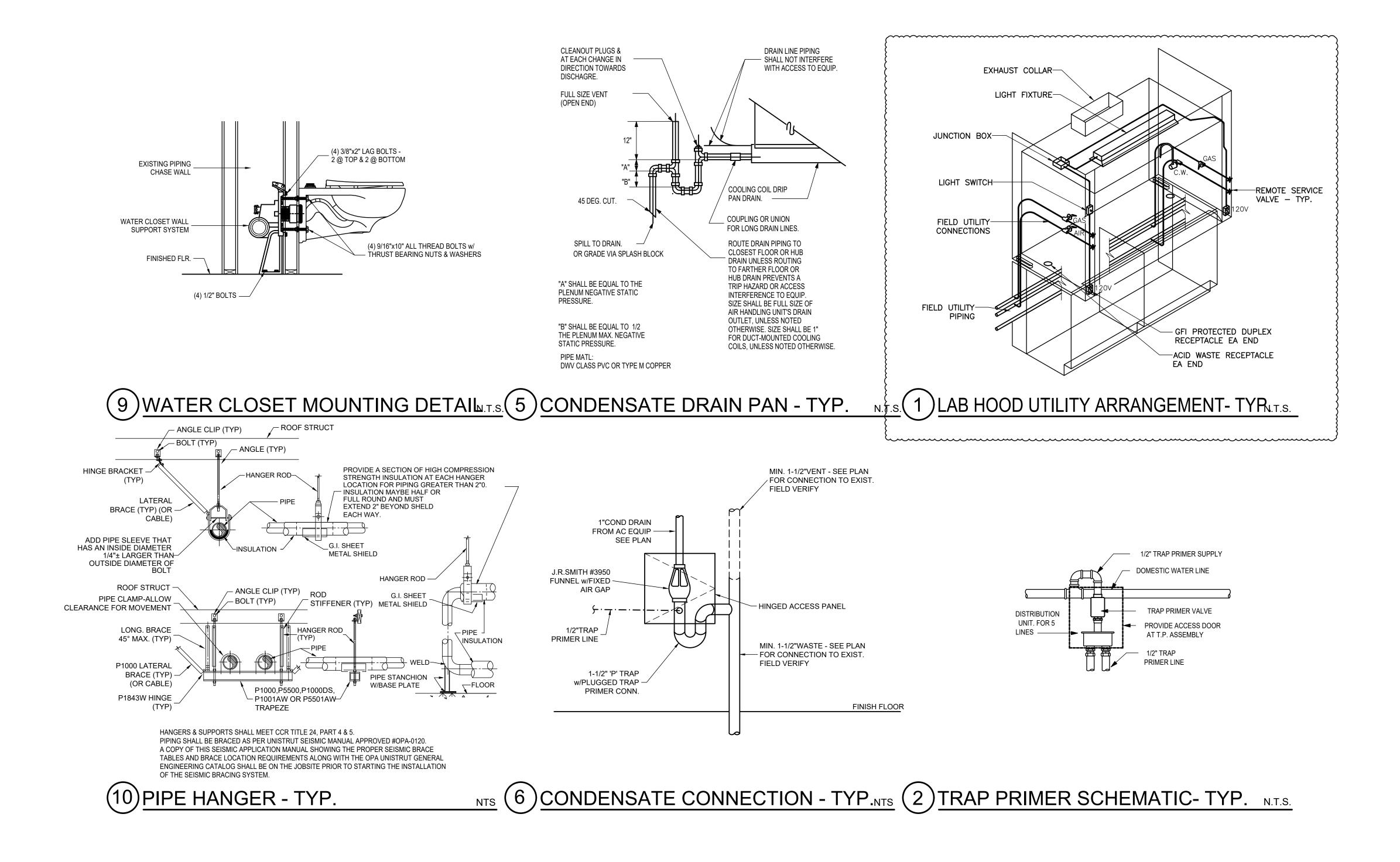
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| Date | 2.9.2024 |
| DSA File No | 15-C1 |
| DSA No | 03-123712 |
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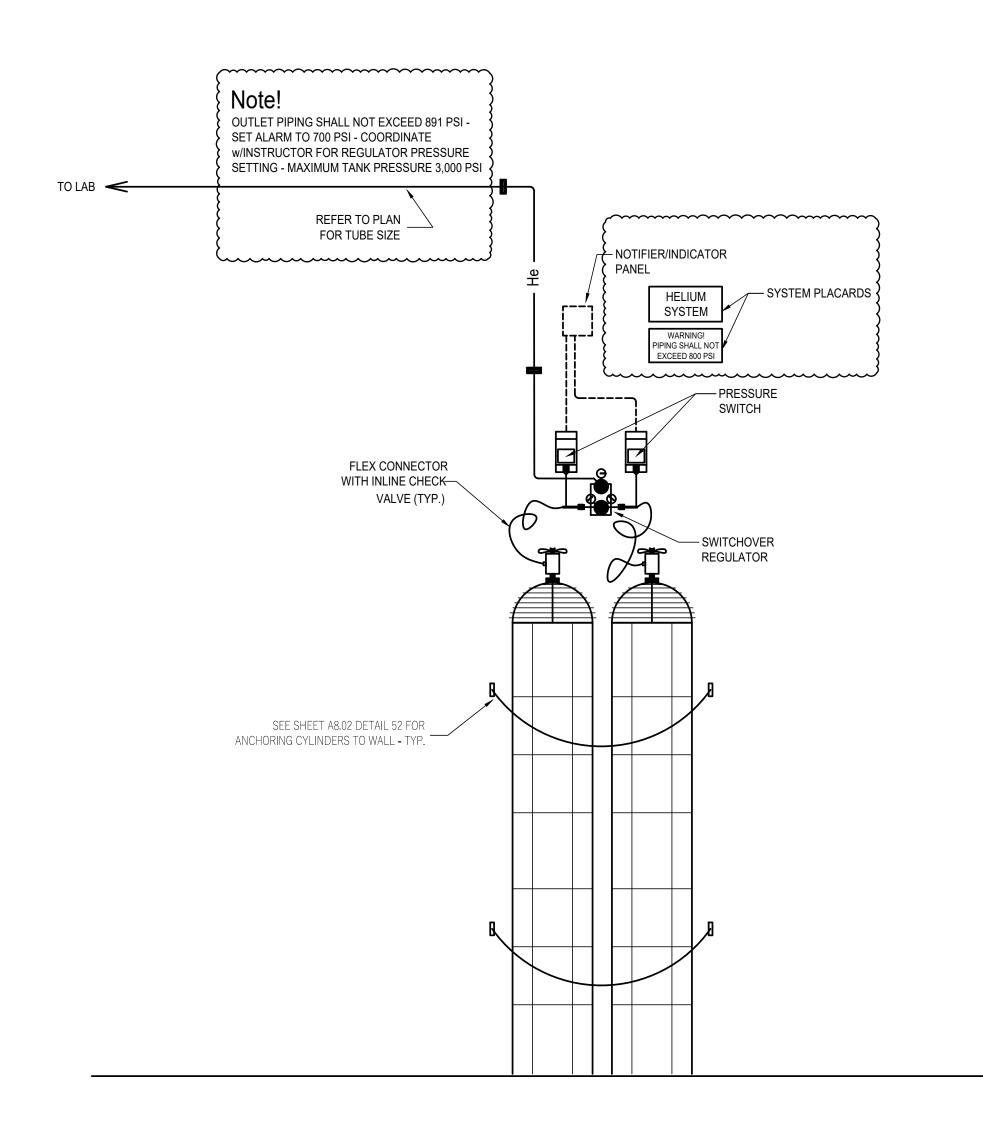
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PLUMBING PLAN VIEWS

P1.02



| | | | | | | PLUMBIN | NG FIXTURE SCHEDULE (LEEDS CERTIFIED LOW FLOW) |
|------|-----------------|------|-----|--------|--------|---------|--|
| MARK | FIXTURE | DCW | DHW | S&W | TRAP | VENT | DESCRIPTION |
| TP 1 | TRAP PRIMER | 1/2" | - | - | - | - | PRECISION PLUMBING #PR-500 TRAP PRIMER MOUNTED IN WALL BOX - COPPER PRIMER LINE CONNECT TO FUNNEL DRAIN P-TRAP |
| FD 1 | FUNNEL DRAIN | - | - | 1-1/2" | 1-1/2" | 1-1/2" | J.R.SMITH #3950 FUNNEL MOUNTED IN WALL BOX ON P-TRAP - FIXED AIR GAP - TRAP PRIMER CONNECTION - 1" INLET PIPE |



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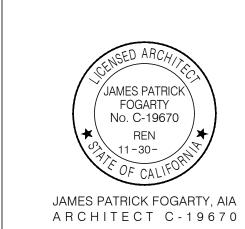
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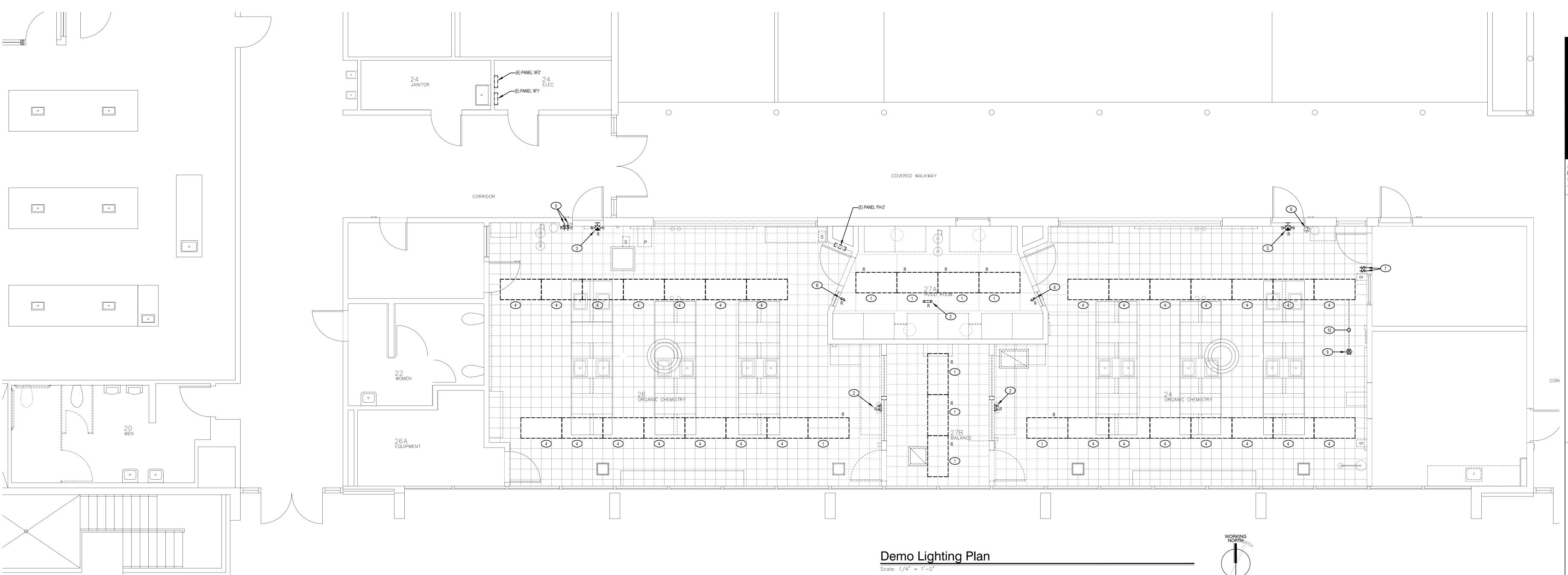
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PLUMBING DETAILS

P2.00



Applicable Code: 2022 CBC

Piping, Ductwork, and Electrical Distribution System Bracing Note

Piping, ductwork, and electrical distribution systems shall be braced to comply with the forces and displacements prescribed in ASCE 7-16 Section 13.3 as defined in ASCE 7-16 Sections 13.6.5, 13.6.6, 13.6.7, 13.6.8; and 2022 CBC, Sections 1617A.1.24, 1617A.1.25 and 1617A.1.26.

The method of showing bracing and attachments to the structure for the identified distribution system are as noted below. When bracing and attachments are based on a preapproved installation guide (e.g., HCAi OPM for 2013 CBC or later), copies of the bracing system installation guide or manual shall be available on the jobsite prior to the start of and during the hanging and bracing of the distribution systems. The Structural Engineer of Record shall verify the adequacy of the structure to support the hanger and brace loads.

Mechanical Piping (MP), Mechanical Ducts (MD), Plumbing Piping (PP), Electrical Distribution Systems (E):

MP ■ MD ■ PP ■ E ■ Option 1: Detailed on the approved drawings with project specific notes and details.

MP☐ MD☐ PP☐ E☐ Option 2: Shall comply with HCAi (OSHPD) Preapproval (OPM #) #_ as included in these drawings with project-specific notes and details.

DEMO LIGHTING PLAN NOTES:

- 1 REMOVE EXISTING LIGHTS AND RELATED CONDUIT AND WIRING.
- 2 REMOVE EXISTING EMERGENCY LIGHT AND RELATED CONDUIT AND WIRING.
- REMOVE EXISTING EMERGENCY EXIT SIGN WITH TWIN EMERGENCY LIGHT. REPLACE WITH NEW EMERGENCY LIGHT ON NEW FURRED WALL. REFER TO LIGHTING PLAN FOR REQUIREMENT.
- LIGHT FIXTURES TO BE RETROFITTED WITH LED LIGHT KIT. EXISTING CONDUIT, WIRING AND CONTROLS TO REMAIN.

 5 REMOVE EXISTING LIGHT SWITCH. REPLACE WITH NEW SWITCHES ON FURRED WALL. REFER TO LIGHTING PLAN FOR
- REQUIREMENT.

 6 REMOVE EXISTING LIGHT SWITCH. REPLACE WITH DIMMER SWITCH. REFER TO LIGHTING PLAN FOR REQUIREMENT.
- 7 EXISTING SWITCHES AND RELATED CONDUIT AND WIRING TO REMAIN.
- 8 REMOVE SURFACE CONDUIT, SWITCH BOX AND RELATED CONDUIT AND WIRING THAT IS NO LONGER BEING USED. VERIFY WORK REQUIRED IN FIELD.
- EXISTING OCCUPANCY SENSOR TO RMAIN.

 SURFACE WIREMOLD AND WIRING TO REMAIN.

10 SURFACE WIREMOLD AND WIRING TO REMAIN.

GENERAL ELECTRICAL DEMOLITION NOTES:

- ELECTRICAL CONTRACTOR SHALL REFER TO ALL CONSTRUCTION DOCUMENTS FOR ADDITIONAL ELECTRICAL DEMOLITION WORK REQUIRED. ALL ELECTRICAL DEMOLITION WORK SHALL BE DONE AS DIRECTED BY ARCHITECT AND/OR OWNER. VERIFY ALL WORK REQUIRED IN FIELD PRIOR TO SUBMITTING BID AND PRIOR TO STARTING WORK.
- 2. ALL EXISTING ELECTRICAL IN REMODEL AREA, INCLUDING BUT NOT LIMITED TO LIGHTING FIXTURES, ELECTRICAL DEVICES, OUTLET BOXES, CONDUITS AND WIRING, WHETHER OR NOT SHOWN ON DRAWINGS, IF NOT NOTED ON DRAWINGS TO BE DELISED SHALL BE DEMOVED.
- ALL EXISTING FIXTURES NOT REUSED SHALL BE RETURNED TO OWNER, OR DISPOSED OF, AND REMOVED FROM SITE AS DIRECTED BY OWNER.
- 4. WHERE EXISTING LIGHTING FIXTURES, ELECTRICAL DEVICES AND EQUIPMENT THAT REMAIN ARE NOTED TO BE RECONNECTED, CONTRACTOR SHALL BE PERMITTED TO REUSE EXISTING CONDUITS IF AVAILABLE. OTHERWISE PROVIDE NEW CONDUITS AND WIRING AS REQUIRED.
- 5. U.O.N., WHERE EXISTING ELECTRICAL IS TO BE AND/OR NOTED TO BE REMOVED, CONTRACTOR SHALL REMOVE ALL EXISTING CONNECTION, DEVICES, OUTLET BOXES, CONDUITS AND WIRING. PATCH WALLS AND/OR CEILINGS AS DIRECTED BY ARCHITECT. WHERE LOCATED IN BLOCK WALLS, CONTRACTOR SHALL REMOVE EXISTING DEVICES AND WIRING. BLANK OFF EXISTING OUTLETS. WHERE EXISTING CONDUITS ARE RUN UNDERGROUND, CONTRACTOR SHALL REMOVE EXISTING WIRING AND REMOVE PORTION OF CONDUITS ABOVE GRADE. EXISTING UNDERGROUND CONDUITS SHALL BE ABANDONED IN PLACE.



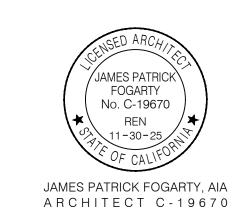
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Tel (559) 578-6049

Date
DSA File No

11.08.23

03-123712

REVISIONS

PROJECT INFO

No Date Item

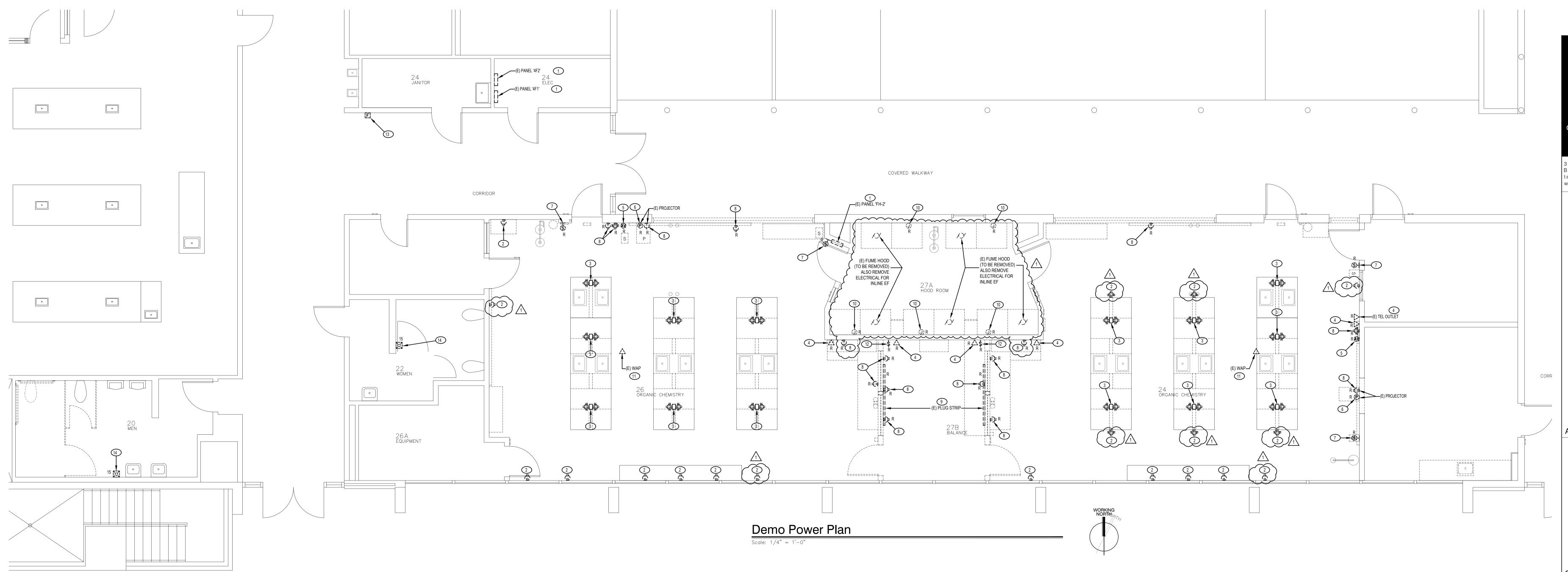
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DEMO LIGHTING PLAN

E1.00



DEMO POWER PLAN NOTES:

- 1 EXISTING PANEL TO REMAIN AND TO BE REUSED.
- 2 EXISTING RECEPTACLE AND RELATED CONDUIT AND WIRING TO REMAIN.
- 3 EXISTING TOMB STONE RECEPTACLES AT LAB TABLE TO REMAIN. RUN NEW CIRCUITS TO LAB TABLES PER POWER PLAN.
- 4 REMOVE TEL/DATA OUTLET AND RELATE CONDUIT AND CABLING.
- 5 REMOVE EXISTING AUDIO/VISUAL CONTROLS AND RELATED CONDUIT, WIREMOLD, AND CABLING.
- 6 REMOVE EXISTING PROJECTOR OUTLET AND RELATED CONDUIT, WIREMOLD, AND CABLING.
- 7 REMOVE EXISTING SPEAKER OUTLET AND RELATED CONDUIT, WIREMOLD, AND CABLING.
- 8 REMOVE EXISTING RECEPTACLE AND RELATED CONDUIT AND WIRING.
- REMOVE EXISTING PLUG STRIP AND RELATED CONDUIT AND WIRING. 10 REMOVE CONNECTION TO HOOD, AND RELATED CONDUIT AND WIRING.
- 11) EXISTING CEILING MOUNTED WIRELESS ACCESS POINT TO REMAIN.
- 12 REMOVE SWITCH, DEVICES, OUTLET BOXES, AND RELATED WIRING.
- 13 EXISTING FIRE ALARM PULL STATION AND RELATED CONDUIT AND WIRING TO REMAIN.
- 14 EXISTING FIRE ALARM STROBE LIGHT AND RELATED CONDUIT AND WIRING TO REMAIN.

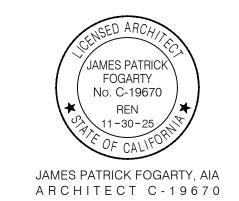


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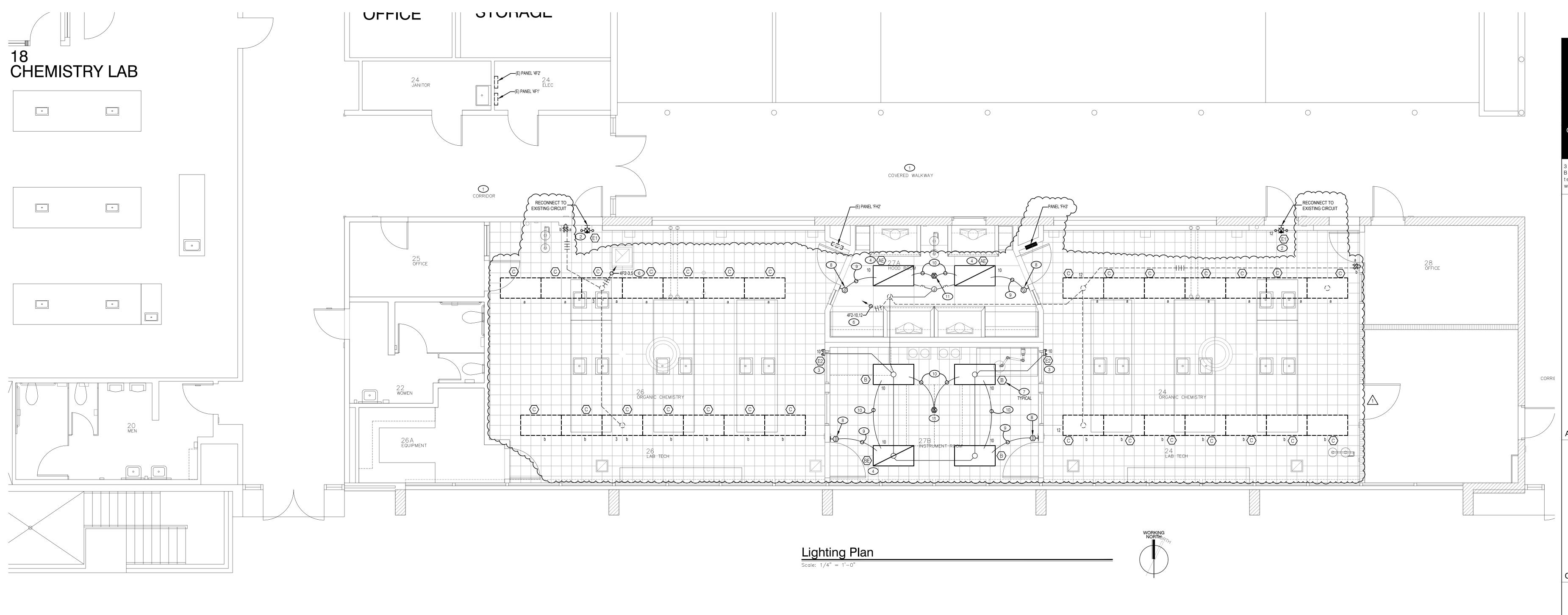
| Project No | 550-0047 |
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| Date | 11.08.23 |
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DEMO POWER PLAN



LIGHTING PLAN NOTES:

- EXISTING LIGHTS AND EMERGENCY LIGHTS OUTSIDE OF CLASSROOMS TO REMAIN.
- TYPICAL: TYPE 'E2' SHALL BE EMERGENCY EXIT SIGN WITH BATTERY PACK AND TWIN HEADS. MOUNT ON WALL ABOVE DOOR. CONNECT TO UNSWITCHED LIGHTING CIRCUIT.
- TYPICAL: TYPE 'E5' SHALL BE EMERGENCY LIGHT FIXTURE. MOUNT ON WALL. CONNECT TO UNSWITCHED LIGHTING CIRCUIT.
- TYPICAL: TYPE 'AE' AND 'BE' ARE LIGHTS WITH INTEGRAL BATTERY PACK TO BE USED AS EMG LIGHTING. CONNECT EMERGENCY BATTERY PACK ON UNSWITCHED HOT LEG OF THE LIGHTING CIRCUIT.
- TYPICAL OF TYPE 'C' FIXTURES: RETROFIT WITH LED LIGHT KIT PER FIXTURE SCHEDULE. EXISTING CONDUIT, WIRING AND CONTROLS TO REMAIN.
- TYPICAL: VERIFY EXISTING CONDUIT, WIRING, AND CIRCUITING IN FIELD. PROVIDE NEW CONDUIT AND WIRING AS REQUIRED.
- TYPICAL: TYPE 'AE', 'B' AND 'BE' FIXTURES SHALL HAVE 0-10V DIMMING DRIVER. FIXTURE SHALL ALSO HAVE INTEGRATED nLIGHT CONTROLS.
- 8 LOW VOLTAGE WALL DIMMER SWITCHES SHALL BE SENSOR SWITCH nPODMA-DX.
- 9 PROVIDE 3/4"C FROM DIMMER INTO ACCESSIBLE ATTIC. RUN CAT-5E CABLE WITH RJ45 CONNECTORS BETWEEN DIMMER SWITCH AND LIGHT FIXTURE. nLIGHT CAT-5E CABLING TO BE RUN IN 3/4" CONDUIT IN NON-ACCESSIBLE
- 10) TYPICAL: PROVIDE CAT-5E CABLE WITH RJ45 CONNECTORS BETWEEN nLIGHT DEVICES. nLIGHT CAT-5E CABLING TO BE RUN IN 3/4" CONDUIT WHEN ATTIC IS NOT ACCESSIBLE.
- 11) LOW VOLTAGE WALL DIMMER SWITCH WITH OCCUPANCY SENSOR SHALL BE SENSOR SWITCH NWSX-PDT-LV-DX. SET OCCUPANCY SENSOR TIME DELAY TO 20-MINUTES.
- LINE VOLTAGE OCCUPANCY SENSOR SHALL BE SENSOR SWITCH #CMR-PDT-9. WIRE FOR CONTROL OF LIGHTS IN ROOM. PROVIDE OCTAGONAL BOX IN CEILING. SET OCCUPANCY SENSOR TIME DELAY TO 20-MINUTES.



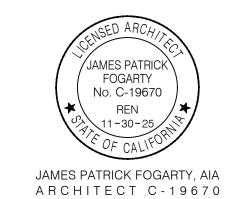
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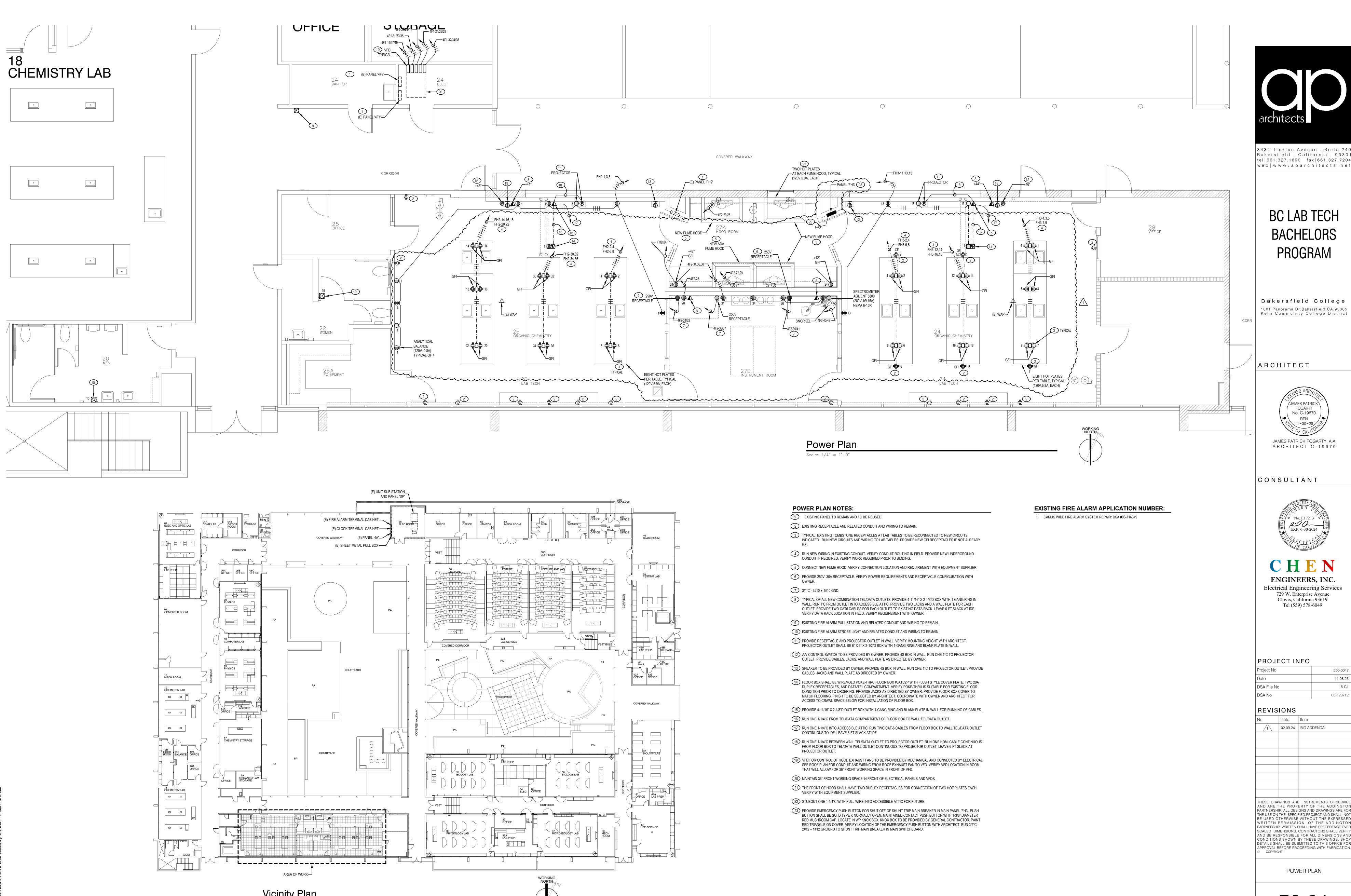
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LIGHTING PLAN

APPROVAL BEFORE PROCEEDING WITH FABRICATION.
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E2.00

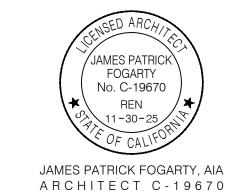


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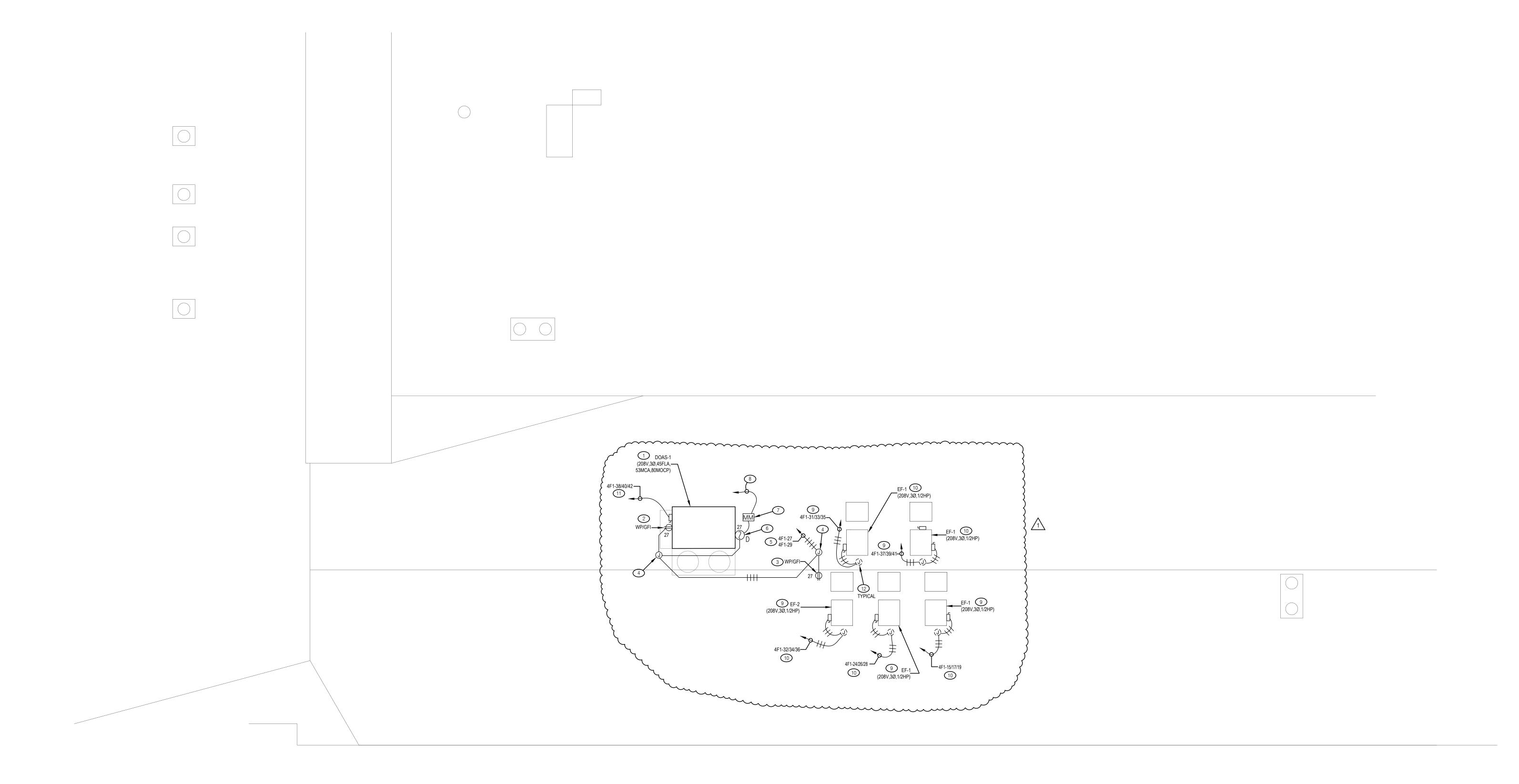
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POWER PLAN



Roof Electrical Plan

Scale: 3/16" = 1'-0"

ROOF ELECTRICAL PLAN NOTES:

- ELECTRICAL CONTRACTOR SHALL PROVIDE POWER AND CONTROL CONDUITS, WIRING AND CONNECTION FOR HVAC EQUIPMENT AS DIRECTED BY MECHANICAL CONTRACTOR. VERIFY LOCATION AND CONNECTION REQUIREMENT PRIOR TO ROUGH-IN. PROVIDE WP FUSED DISCONNECT SWITCH ON AC UNIT HOUSING.
- HOUSING. RECEPTACLE SHALL BE LISTED WEATHER-RESISTANT TYPE. RECEPTACLE SHALL HAVE "WEATHERPROOF WHILE IN USE EXTRA-DUTY HOOD". A RECEPTACLE SHALL BE WITHIN 25-FT OF ALL ROOF TOP
- PROVIDE WEATHERPROOF/GFI RECEPTACLE. VERIFY MOUNTING AND LOCATION WITH OWNER. RECEPTACLE SHALL BE LISTED WEATHER-RESISTANT TYPE. RECEPTACLE SHALL HAVE "WEATHERPROOF WHILE IN USE
- PROVIDE JUNCTION BOX IN ACCESSIBLE ATTIC. RUN ALL CONDUITS FOR ROOF EQUIPMENT IN ATTIC.
- Tun Separate hot and Neutral for Duct Smoke Detector Circuit.
- 6 120V DUCT SMOKE DETECTOR AT SUPPLY AIR PLENUM SHALL BE FURNISHED AND INSTALLED BY CONTROL CONTRACTOR. VERIFY LOCATION AND CONNECTION REQUIREMENT IN FIELD.
- PROVIDE NEW ADDRESSABLE MONITOR MODULE IN ATTIC AT DUCT SMOKE DETECTOR LOCATION. MONITOR MODULE SHALL BE COMPATIBLE WITH EXITING FIRE ALARM SYSTEM. INCLUDE IN BID THE PROGRAMMING AT EXISTING FIRE ALARM CONTROL PANEL FOR THE ADDRESSABLE DEVICE BY SCHOOLS FIRE ALARM CONTRACTOR. VERIFY WORK REQUIRED PRIOR TO BIDDING.
- 8 RUN 1"C WITH TWO ADDRESSABLE CABLE (LOOP) TO EXISTING INITIATION DEVICE. VERIFY WORK REQUIRED PRIOR
- 9 CONNECT EXHAUST FAN. PROVIDE WP FUSED DISCONNECT SWITCH ON UNIT AS DISCONNECT.
- RUN CONDUIT AND WIRING TO VFD IN ELECTRICAL ROOM. SEE SHEET E2.01 FOR LOCATION. VERIFY WORK REQUIRED WITH MECHANICAL.
- 11 1-1/4"C 3#2 + 1#8 GND.
- 12 TYPICAL: REUSE ROOF JUNCTION BOX AND CONDUIT INTO ROOF FOR CONNECTION OF NEW EXHAUST FAN. VERIFY WORK REQUIRED IN FIELD.



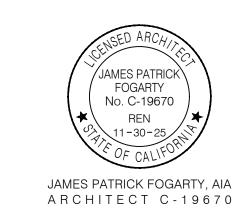
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Tel (559) 578-6049

PROJECT INFO

| Project No | 550-0047 |
|-------------|-----------|
| Date | 11.08.23 |
| DSA File No | 15-C1 |
| DSA No | 03-123712 |
| REVISIONS | |

REVISIONS

No Date Item

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| 1 | 02.09.24 | BID ADDENDA |
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THESE DRAWINGS ARE INSTRUMENTS OF SERVICE AND ARE THE PROPERTY OF THE ADDINGTON PARTNERSHIP. ALL DESIGNS AND DRAWINGS ARE FOR THE USE ON THE SPECIFIED PROJECT AND SHALL NOT BE USED OTHERWISE WITHOUT THE EXPRESSED WRITTEN PERMISSION OF THE ADDINGTON PARTNERSHIP. WRITTEN SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS SHOWN BY THESE DRAWINGS. SHOP DETAILS SHALL BE SUBMITTED TO THIS OFFICE FOR APPROVAL BEFORE PROCEEDING WITH FABRICATION.

ROOF ELECTRICAL PLAN

E3.00

ELECTRICAL MATERIAL SPECIFICATIONS:

CONDUITS:

- 1. ALL UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40. ALL UNDERGROUND CONDUITS RUN UNDERNEATH BLDGS SHALL BE
- RUN BELOW SLAB. ALL UNDERGROUND CONDUITS RUN OUTSIDE OF BLDGS SHALL HAVE MIN 24" COVER. 2. ALL CONDUITS IN BLDGS SHALL BE CONCEALED IN WALL OR ATTICS. CONDUITS SHALL BE EMT, OR METALLIC FLEX CONDUITS FOR
- CONNECTION TO LIGHTING FIXTURES IN SUSPENDED ACCESSIBLE CEILINGS, MOTORS OR MOTORIZED EQUIPMENT. 3. ALL CONDUITS RUN ON ROOF OR EXPOSED TO WEATHER SHALL BE EMT OR LIQUID-TIGHT FLEX CONDUITS WITH WATER-TIGHT
- CONNECTION AND FITTINGS. 4. ALL CONDUIT PENETRATION THROUGH ROOF SHALL HAVE ROOF JACKS WITH LEAD FLASHINGS FOR WATER-TIGHT INSTALLATION.
- 5. MC CABLE IS NOT ACCEPTABLE TO BE USED ON THIS PROJECT. CONDUCTORS: ALL CONDUCTORS SHALL BE THHN/THWN-2, COPPER, 90-DEGEES CELSIUS TEMPERATURE RATED CONDUCTORS.

OUTLET BOXES: ALL OUTLETS BOXES SHALL BE STANDARD ONE OR TWO PIECE GALVANIZED STEEL KNOCK-OUT OUTLET BOXES. CONVENIENCE OUTLETS: 15A/20A 3P GROUNDING DUPLEX RECEPTACLES WITH GREY FINISH. VERIFY FINISH WITH ARCHITECT. LIGHT SWITCHES: 15A/20A QUIET TYPE, MATCH RECEPTACLE'S FINISH.

WALL PLATES: 0.04-INCH THICK, TYPE 302, SATIN-FINISHED STAINLESS STEEL. VERIFY FINISH WITH ARCHITECT.

ELEMENT TYPE AS RECOMMENDED BY EQUIPMENT SUPPLIER.

DISCONNECT SWITCHES: HORSEPOWER RATED FUSIBLE TYPE WITH EXTERNAL OPERABLE HANDLE, U.O.N. FUSES SHALL BE DUAL

MC CABLE WITH AN INTERNAL GROUND BOND MAY BE USED ONLY WHERE USE OF EMT OR FLEX IS NOT PRACTICAL OR POSSIBLE E.G. IN MILLWORK, ETC. MC CABLE SHALL NOT BE UTILIZED FOR ANY BRANCH CIRCUITRY IN THIS BUILDING.

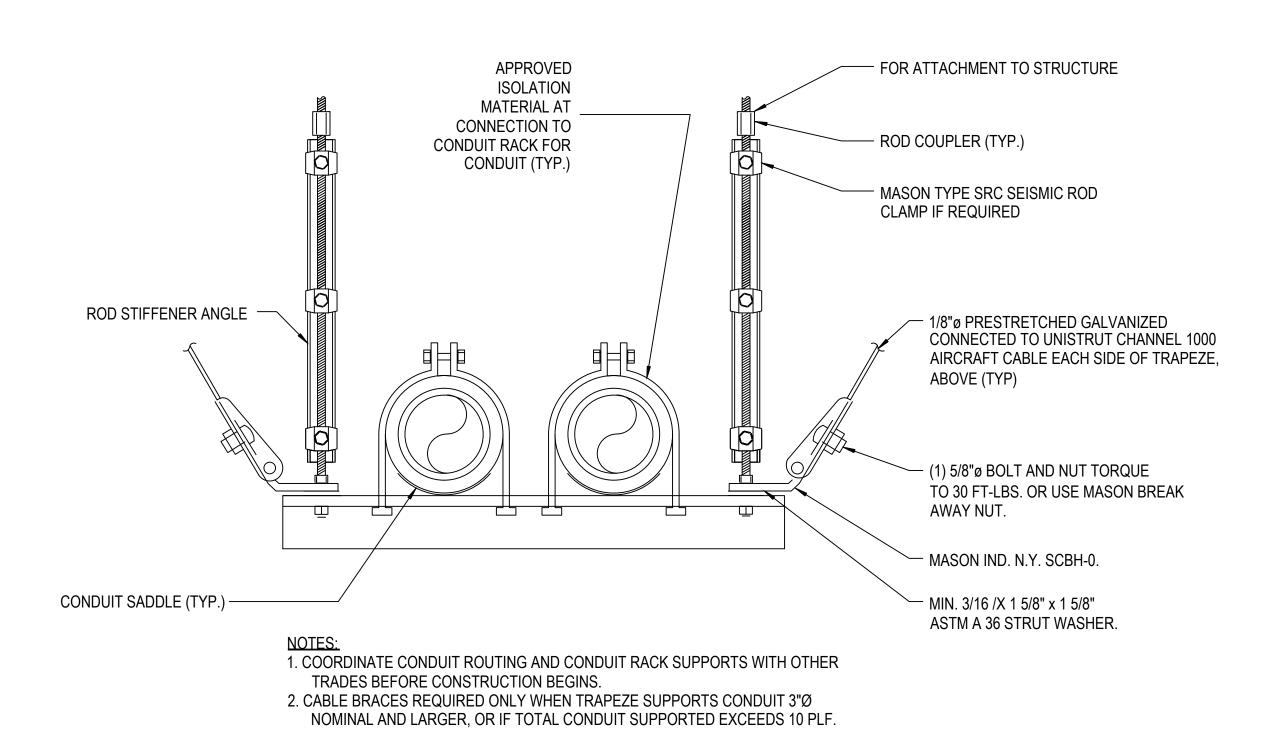
FIRE RATED AREAS NOTES:

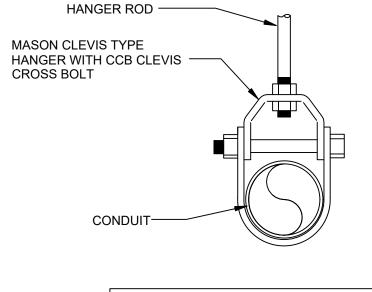
WHERE LIGHT FIXTURES, CABINETS, OR BOXES ARE SHOWN LOCATED IN RATED CEILINGS AND/OR WALLS, PROVIDE FIRE RATED ENCLOSURE AROUND THE LIGHT FIXTURES, CABINETS, OR BOXES. RATING OF ENCLOSURE SHALL MATCH OR EXCEED RATING OF AREA PENETRATED.

PROVIDE CONDUIT SLEEVE FOR POWER, TEL AND DATA CABLE THAT PASS THRU FIRE RATED WALL. WHERE CONDUIT SLEEVE PENETRATE FIRE RATED CEILINGS, WALLS OR FLOORS, PROVIDE FIRE STOPS AT PENETRATION. RATING OF FIRE STOP SHALL MATCH OR EXCEED RATING OF AREA PENETRATED.

STEEL ELECTRICAL BOXES THAT DO NOT EXCEEDING 16 SQUARE INCHES IN AREA SHALL BE PERMITTED TO BE UNPROTECTED, PROVIDED THAT THE AREA OF SUCH OPENINGS DOES NOT EXCEED 100 INCHES FOR ANY 100 SQUARE FEET OF WALL AREA. UNPROTECTED OUTLET BOXES ON OPPOSITE SIDES OF THE WALL SHALL BE SEPARATED BY A HORIZONTAL

VERIFY LOCATION OF FIRE RATED AREAS WITH ARCHITECTURAL DRAWINGS AND WITH GENERAL CONTRACTOR. SUBMIT METHOD OF FIRE STOPPING TO BUILDING INSPECTOR FOR APPROVAL PRIOR TO INSTALLATION.

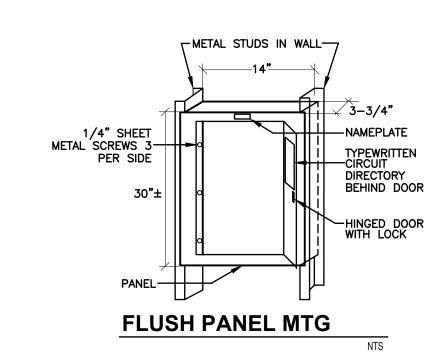




TRAPEZE HANGER

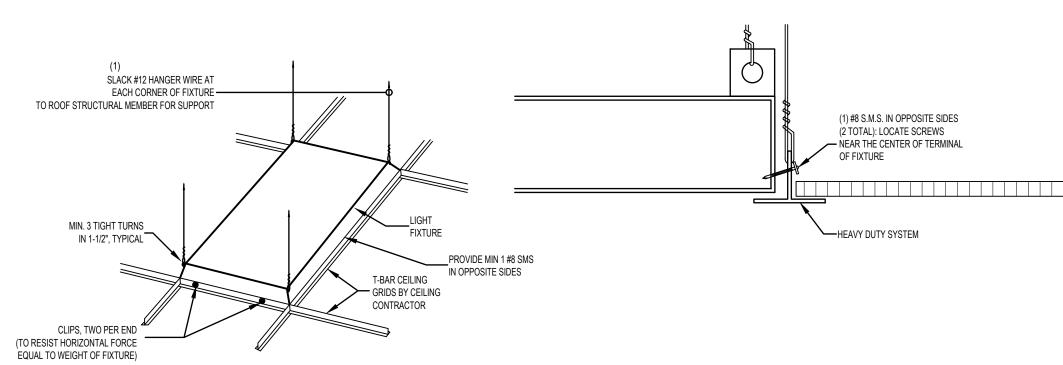
| HANGER ROD | SCHEDULE |
|--------------|----------|
| CONDUIT SIZE | ROD SIZE |
| 1/2" TO 4" | 3/8"Ø |
| 5" TO 8" | 1/2"Ø |
| 10" TO 12" | 5/8"Ø |
| | |

CONDUIT HANGER DETAIL



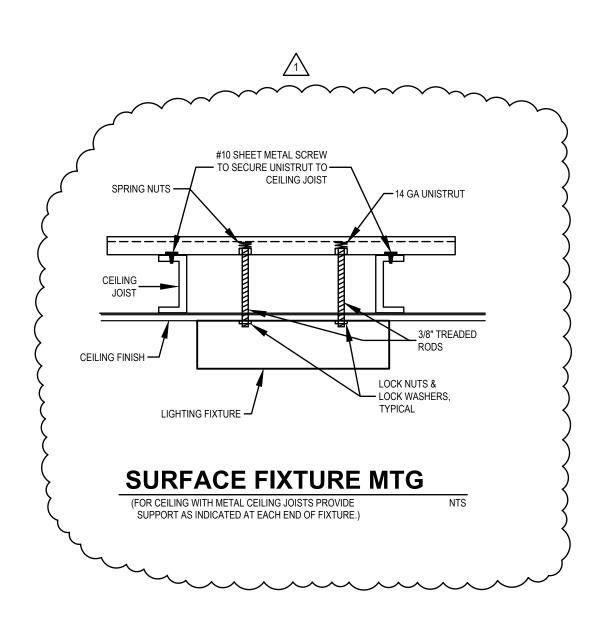
| | FIXTURE SCHEDULE | | | | | | | | | | | |
|------|------------------|------|----------|--------------|--|-------|--|---|--|--|--|--|
| TYPE | WATT | LAMP | VOLT | MANUFACTURER | CATALOG No. | MTG | NOTES | | | | | |
| AE | 47 | LED | 120 | LITHONIA | 2ALL4-60L-EZ1-LP840-N100- E10WLCP | REC. | 10W INTEGRAL EMERGENCY BATTERY PACK | 1 | | | | |
| В | | | | | 2ALLS4-60L-EZ1-LP840-N100 | SURF. | | | | | | |
| BE | | | | | 2ALLS4-60L-EZ1-LP840-N100-EL14L | | 1400 LUMEN EMERGENCY BATTERY PACK | 1 | | | | |
| С | 38 | • | | ORACLE | 24-OVHP-RTK-LED-3000L/4000L/5000L -DIM10-MVOLT-35K/40K/50K-85 | Į. | | 2 | | | | |
| E1 | 10 | INCL | | LITHONIA | LHQM-LED-R-HO | WALL | | 1 | | | | |
| E2 | Į , | , | , | V | ELM6L | V | | 1 | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

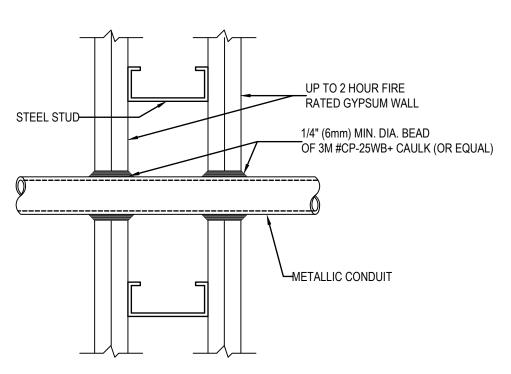
- 1) ALL EMERGENCY LIGHTING AND EXIT SIGNS SHALL BE PROVIDED FOR A MINIMUM OF 90 MINUTES AND SHALL CONSIST OF STORAGE BATTERIES AND SHALL BE IN ACCORDANCE WITH CBC CHAPTER 27.
- 2) TYPICAL: TYPE 'C' FIXTURES TO BE RETROFITTED WITH LED LIGHT KIT. VERIFY NEW RETROFIT KIT COMPATIBILITY WITH EXISTING FIXTURE PRIOR TO BIDDING.



RECESSED FIXTURE MOUNTING DUTY RATED CEILING SYSTEM. PROVIDE FOUR TAUT #12 WIRES,

ONE AT EACH CORNER, FOR INTERMEDIATE RATED CEILING SYSTEM OR IF THE FIXTURE WEIGHS MORE THAN 56 POUNDS.





- 1. THE CAULK IS TO BE FORCED INTO THE ANNULAR SPACE TO THE MAXIMUM EXTENT POSSIBLE FLUSH WITH THE EXTERIOR OF THE PENETRATION SURFACE
- 2. FINISH CAULKING WITH A 1/4" (6mm) MINIMUM BEAD OF CP-25WB+ CAULK APPLIED TO THE PERIMETER OF THE CONDUIT/PIPE AT ITS EGRESS FROM
- 3. THE MAXIMUM ANNULAR SPACE IS NOT TO EXCEED 3/16" (5mm).
- 4. INSTALL 3M FIRESTOP ON BOTH SIDES OF THE WALL.
- E-814 (UL 1479) FIRE TEST AND UL THROUGH-PENETRATION FIRESTOP SYSTEM #147 5. THESE RECOMMENDATIONS ARE BASED ON PRODUCT PERFORMANCE PER ASTM

FIRE RATED ASSEMBLY DETAIL

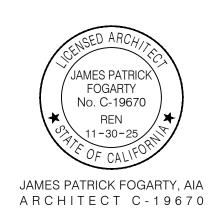
| | ELECTRICAL SYMBOLS |
|-------------------------|--|
| A | DENOTES LIGHTING FIXTURE TYPE |
| | ELECTRICAL HOMERUN (TO PANEL A, CIRCUIT #3), 3/4"C MINIMUM, U.O.N. |
| \vdash | CONDUIT RUN IN WALL / ATTIC (1/2"C - 2#12 + 1#12 GND, THHN/THWN-CU) |
| ۲۰۰۰۰۰ | CONDUIT RUN IN FLOOR OR UNDERGROUND (1/2"C - 2#12 + 1#12 GND, THHN/THWN-CU) |
| | HASH LINES DENOTE NUMBER OF #12 + 1#12 GND (THHN/THWN-CU), U.O.N. 1/2"C FOR UP TO 5#12 + 1#12 GND, 3/4"C FOR 6#12 |
| | TO 10#12 + 1#12 GND. |
| | FLEXIBLE CONDUIT CONNECTION |
| | ELECTRICAL PANEL |
| | TERMINAL CABINET |
| Ф | DUPLEX RECEPTACLE IN WALL (+15" BOTTOM OF BOX AFF) |
| ⊕ | QUADRUPLEX RECEPTACLE IN WALL (+15" BOTTOM OF BOX AFF) |
| Ф | 220V, 20A, 2P, 3W RECEPTACLE IN WALL (+15" BOTTOM OF BOX AFF) |
| • | SPECIAL OUTLET AS NOTED ON DRAWING (+15" BOTTOM OF BOX AFF) |
| ▼ | TELEPHONE OUTLET IN WALL (+15" BOTTOM OF BOX AFF) |
| V | COMBINATION TELEPHONE/DATA OUTLET, (+15" BOTTOM OF BOX AFF) |
| ∇ | DATA OUTLET, (+15" BOTTOM OF BOX AFF) |
| • | FLUSH FLOOR BOX |
| | FLUSH FLOOR BOX WITH ELECTRICAL DEVICE AS INDICATED |
| | JUNCTION BOX |
| <u>ش</u> | JUNCTION BOX WITH FLEX CONNECTION |
| \sim | |
| \sim | MOTOR OUTLET |
| | FUSED DISCONNECT SWITCH, BY ELECTRICAL CONTRACTOR, U.O.N. |
| \bigcirc | CEILING MOUNTED LIGHTING FIXTURE WITH LIGHTING OUTLET |
| 오 | WALL MOUNTED LIGHTING FIXTURE WITH LIGHTING OUTLET |
| | RECESSED MOUNTED LIGHTING FIXTURE WITH LIGHTING OUTLET |
| | LIGHTING FIXTURE |
| | LIGHTING FIXTURE WITH LIGHTING OUTLET |
| | "1" DENOTES CIRCUIT NUMBER, "a" DENOTES SWITCHING |
| \$ | SINGLE POLE SWITCH (+48" TOP OF BOX AFF) |
| \$ 3 | 3-WAY SWITCH (+48" TOP OF BOX AFF) |
| \$\$ \$ | TWO SINGLE POLE SWITCHES, GANGED IN SAME BOX (+48" TOP OF BOX AFF) |
| 100 | TELEVISION OUTLET (+15" U.O.N.) |
| 60 | PH0TOCONTROL (ROOF MOUNTED, U.O.N.) |
| 1) | ELECTRICAL NOTE #1 (REFER TO ELECT NOTES ON SAME SHEET) |
| WP | WEATHERPROOF |
| U.O.N. | UNLESS OTHERWISE NOTED |
| NL | NIGHT LIGHT (LIGHT TO REMAIN ON 24/7) |
| ENL | EXTERIOR NIGHT LIGHT (CONTROLLED VIA PHOTOCELL ON, PHOTOCELL OFF) |
| GFI | GROUND FAULT CIRCUIT INTERRUPTER |
| - | |
| AFF | ABOVE FINISHED FLOOR |
| (E) | EXISTING EXTERIOR WALL MOUNTED WE EMERGENCY LIGHT |
| <u> </u> | EXTERIOR WALL MOUNTED WP EMERGENCY LIGHT |
| H@ | WALL DIMMER SWITCH WITH OCCUPANCY SENSOR, (+48" TOP OF BOX AFF) |
| H® | LIGHTING CONTROL OCCUPANCY SENSOR, (+48" TOP OF BOX AFF) |
| Ю | DIMMER SWITCH, (+48" TOP OF BOX AFF) |
| HØ . | VACANCY SENSOR SWITCH, (+48" TOP OF BOX AFF) |
| \$к | KEYED SWITCH, (+48" TOP OF BOX AFF) |
| (S) | LIGHTING CONTROL OCCUPANCY SENSOR, CEILING MOUNTED |
| (AD) | AUTOMATIC DAYLIGHTING SENSOR, CEILING MOUNTED |
| P | LIGHTING CONTROL POWER PACK, ACCESSIBLE ATTIC |
| (PL) | PLUG LOAD POWER PACK, ACCESSIBLE ATTIC |
| • | POWER OUTLET WITH ONE CONTROLLED DUPLEX RECEPTACLE AND ONE |
| | NON-CONTROLLED DUPLEX RECEPTACLE (+15" BOTTOM OF BOX A.F.F.) |
| | EXISTING ELECTRICAL |
| | EXISTING CONDUIT & WIRING |
| | 'R' DENOTES EXISTING ELECTRICAL TO BE REMOVED |
| \square R \square R | |
| [| 'RL' DENOTES EXISTING ELECTRICAL TO BE RELOCATED |
| R Ф ^R R | `RL' DENOTES EXISTING ELECTRICAL TO BE RELOCATED |
| | 'RL' DENOTES EXISTING ELECTRICAL TO BE RELOCATED |



3434 Truxtun Avenue . Suite 240 Bakersfield . California . 93301 tel|661.327.1690 fax|661.327.7204 web|www.aparchitects.net

Bakersfield College 1801 Panorama Dr.Bakersfield.CA.93305 Kern Community College District

ARCHITECT



CONSULTANT



ENGINEERS, INC. Electrical Engineering Services

729 W. Enterprise Avenue Clovis, California 93619 Tel (559) 578-6049

| PROJECT INFO | |
|--------------|-----------|
| Project No | 550-004 |
| Date | 11.08.20 |
| DSA File No | 15-C |
| DSA No | 03-123712 |
| | |

REVISIONS Date Item

02.09.24 BID ADDENDA

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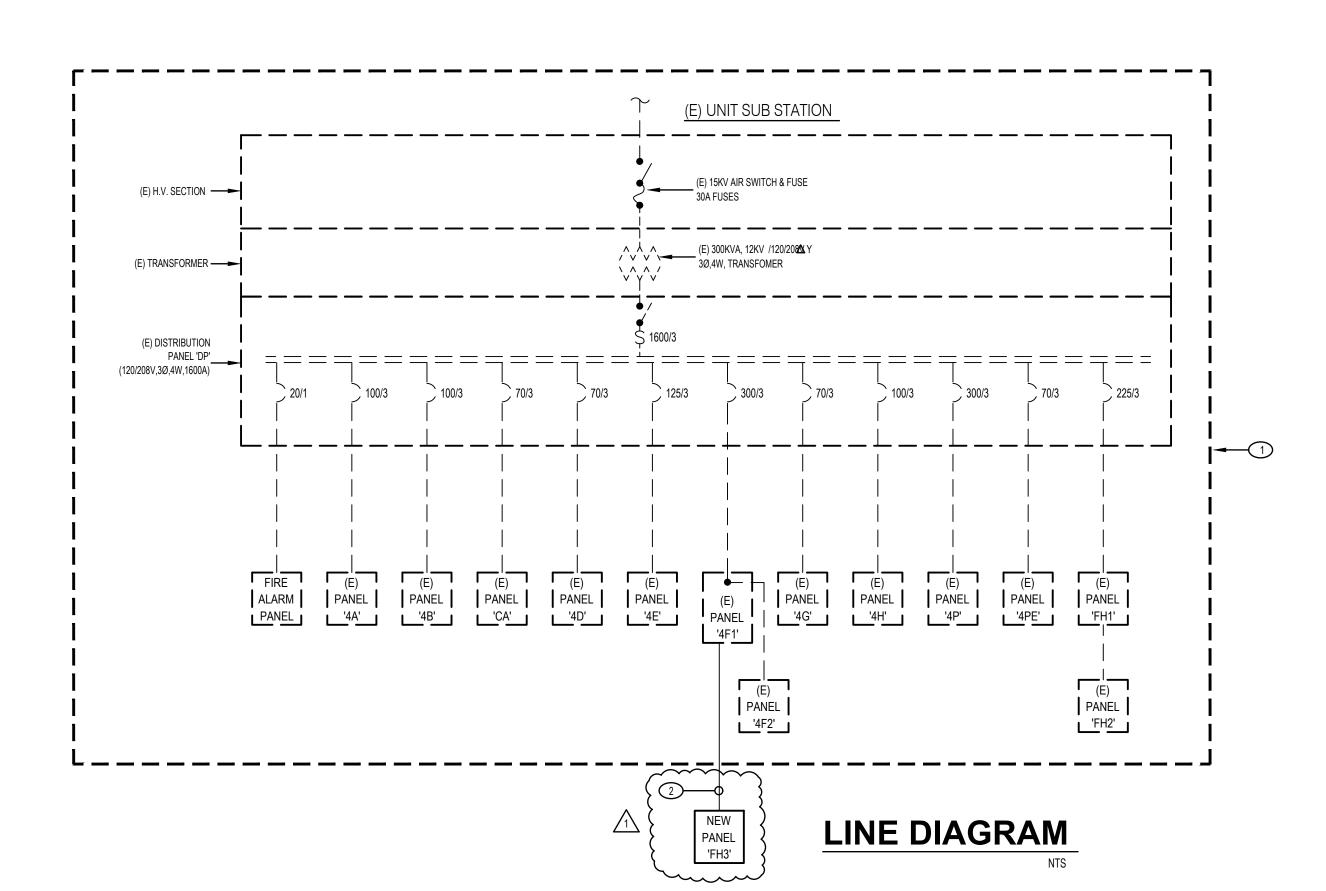
SYMBOLS, SCHEDULES, DETAILS

| | _ | 120/208 225 | | | | HASE 4 WIRE | - | | | | AKER | |
|----|------------|----------------|--------------|---------|----------|---------------------------------------|-----------------------------------|---------|---------|----------|--------|-------|
| | _ | 42 | | BUSSING | NO | A. MAIN BREAKER | (4) | FLUSH | MAX. | ENCL. DE | | |
| | _ | SIEMEN | | CUIT | | (E) PANEL_ | FH2 | 1 20011 | | | _ MOUN | ITING |
| CI | R | BKR | 10 | AD (VA) | | <u> </u> | | 10 | AD (VA) | | BKR | CIR |
| | o. | AMP | PHASE | PHASE | PHASE | DESCRIPTION | DESCRIPTION | PHASE | PHASE | PHASE | AMP / | NO. |
| _ | 1 | 20 1 | A 540 | В | <u> </u> | ROOM 26 WALL RECEPTACLES | ROOM 26 EAST ISLAND COUNTER | 1400 | В | C | 20 1 | 2 - |
| - | 3 | | | 1000 | | PROJECTOR RM. 26 | | | 1400 | | | 4 - |
| - | 5 | | | | 360 | FLOOR BOX RM. 26 | | | | 1400 | | 6 - |
| | 7 | | 300 | | | CONTROLLED ENVIRON. RM WEST WALL | ļ , | 1400 | | | | 8 - |
| | 9 | | | | | SPARE | ROOM 24 LIGHTS | | 500 | | | 10 - |
| 1 | 11 | | | | 864 | ROOM 26 EXHAUST FAN | \ | | | 500 | | 12 - |
| 1 | 13 | | 864 | | | ROOM 29 EXHAUST FAN | ROOM 26 CENTER ISLAND | 1400 | | | | 14 - |
| 1 | 15 | | | 360 | | ROOM 26 RECEPTACLES | | | 1400 | | | 16 - |
| 1 | 17 | | | | 360 | | | | | 1400 | | 18 - |
| 1 | 19 | | 360 | | | DOOM 20 | | 1400 | | | | 20 - |
| 2 | 21 | 4 | | 360 | | ROOM 26 OVEN SOUTH WALL ROOM 24 | RECEPTACLES- | | 1400 | | | 22 - |
| | 23 | 4 | | | 360 | OVEN SOUTH WALL ROOM 26 & 24 | HOOD COUNTER CONTROLLED ENVIRON. | | | 600 | | 24 |
| | 25 | 4 | 360 | | | SOUTH WALL RECEPT. | RM EAST WALL | 300 | | | | 26 |
| | 27 | | | | 4000 | SPARE STORAGE RM. | SPARE ROOM 26 WEST | | | 1100 | | 28 |
| | 29 | | 1000 | | 1000 | COMPRESSOR | ISLAND COUNTER | 1400 | | 1400 | | 30 - |
| | 31 33 | | 1000 | 360 | | STORAGE RM. | | 1400 | 1400 | | | 34 - |
| | 35 | | | 000 | 360 | RECEPTACLE | | | 1700 | 1440 | | 36 - |
| | 37 | | | | | SPARE | SPARE | | | | | 38 |
| | 39 | | | | | | | | | | | 40 |
| | 4 1 | | | | | | | | | | | 42 |
| | PH4 | Z I | = 9324 | | /A, Ph | MASE B = 9580 | VA, PHASE C = | 10084 | VA VA | | | |

- (1) EXISTING BREAKER, EXISTING LOAD.
- (2) NEW BREAKER, NEW LOAD. NEW CIRCUIT BREAKERS ADDED TO THE EXISTING PANEL SHALL BE OF THE SAME MANUFACTURE AND PROVIDED WITH THE OCPD AIC TO MATCH THE EXISTING PANEL'S AIC RATING.
- (3) PROVIDE BREAKER TIE FOR MULTIWIRE BRANCH CIRCUITS.
- (4) FIELD VERIFY EXISTING LOADS AND SPACE AVAILABILITY. PROVIDE NEW TYPEWRITTEN CIRCUIT DIRECTORY INSIDE PANEL COVER.
- (5) EXISTING BREAKER, NEW LOAD.

| | BOLT-ON | | | | (E) PANEL_ | <u>FH1</u> | | | | | _ |
|------------|---------|-------|------------|------------|--------------|-----------------------------|-------------|---------|-------|-------------|------|
| CIR NO. | BKR | PHASE | AD (VA) | PHASE | DESCRIPTION | DESCRIPTION | LO PHASE | AD (VA) | PHASE | BKR | |
| NO. | POLE | A | PHASE B | PHASE C | | | Ä | B | , iii | AMP POLE | , IN |
| 1 | 20 1 | 1130 | | | HOOD #1- EF | HOOD #5- MUF | 670 | | | 20 1 | 2 |
| 3 | | | 1130 | | HOOD #2- EF | HOOD #6- MUF | | 670 | | | 4 |
| 5 | | | | 1130 | HOOD #3- EF | HOOD #5- EF | | | 1130 | | |
| 7 | | 1130 | | | HOOD #4- EF | HOOD #6- EF | 1130 | | | | 8 |
| 9 | | | 670 | | HOOD #1- MUF | FLAMABLE CABINET EXH-FAN | | 830 | | | 1 |
| 11 | | | | 670 | HOOD #2- MUF | | | | 830 | | 1 |
| 13 | | 670 | | | HOOD #3- MUF | | 830 | | | | 1 |
| 15 | | | 670 | | HOOD #4- MUF | | | 830 | | | 1 |
| 17 | | | | 1200 | REFRIG. | | | | 830 | | 1 |
| 19 | | 1200 | | | ICE MACHINE | | 830 | | | | 2 |
| 21 | | | | | SPARE | | | 830 | | | 2 |
| 23 | | | | | | | | | 830 | | 2 |
| 25 | | | | | | <u> </u> | 830 | | | | 2 |
| 27 | | | | | | | | | | | 2 |
| 29 | | | | | | | | | | | 3 |
| 31 | | | | | | | | | | | 3 |
| 33 | | | | | | | | | | | 3 |
| 35 | | | | | | | | | | | 3 |
| 37 | | | | | | PANEL FH2 | 9324 | | | 100 3 | 3 |
| 39 | | | | | | | | 9580 | | / | 4 |
| 41 | | | | | | | | | 10084 | | 1 4 |

(1) EXISTING PANEL SHEDULE, SHOWN FOR REFERENCE ONLY.



LINE DIAGRAM NOTES:

1) TYPICAL: UNLESS NOTED OTHERWISE, EXISTING ELECTRICAL TO REMAIN. 2 1-1/2"C - 4#1 + 1#6 GND.

| | | 120/208 400 42 SQUARE | A. [| BUSSING | NO | HASE <u>4</u> WIRE _ A. MAIN BREAKER (E) PANEL | 4F2 | BREAKER A.I.C. MAX. ENCL. DEPTH & WIDTH MOUNTING | | | | | | |
|--------------|------|--------------------------------|--------------------|------------|----------------------|--|-----------------------------------|--|------------|------------|-------------|-----|--|--|
| | CIR | BKR | LOAD (VA) | | | | | LO | LOAD (VA) | | | CIR | | |
| | NO. | AMP POLE | PHASE A | PHASE B | PHASE C | DESCRIPTION | DESCRIPTION | PHASE A | PHASE B | PHASE C | AMP POLE | NO. | | |
| | 1 | 20 | | | • | RECEPTACLES- RM 19 | RECEPTACLES- RM 18 | 1000 | | _ | 20 1 | 2 | | |
| (3) | - 3 | | | 500 | | LTS- RM 26 | | | 1000 | | | 4 | | |
| | - 5 | | | | 500 | ļ | | | | 1000 | | 6 | | |
| | 7 | | 500 | | | LTS- RM 12 | RECEPTACLES- RM 26 | 1000 | | | | 8 | | |
| | 9 | | | 500 | | | ANDOVER CONTROLS | | 400 | | | 10 | | |
| | 11 | | | | 500 | | REFRIGERATOR/ CHEMICAL-STORAGE | | | 1000 | | 12 | | |
| | 13 | | 500 | | | LTS- RM 1 | RM 17 CAB FAN | 600 | | | | 14 | | |
| | 15 | | | 500 | | ļ | | | | | | 16 | | |
| | 17 | | | | | SPARE | | | | | | 18 | | |
| | 19 | | 500 | | | LTS- RM 19 | RECEPTACLES- RM 17 | 1000 | | | | 20 | | |
| | 21 | | | 500 | | ļ <u></u> | | | 1000 | | | 22 | | |
| (3) <u>[</u> | - 23 | | | | 1400 | FUME HOOD RM 27A | • | | | 1000 | | 24 | | |
| (3) | 25 | | 1400 | | | | | | | | | 26 | | |
| - 1 | - 27 | | | 1400 | | | RECEPTACLES RM 27B | | 1000 | | | 28 | | |
| (3) | 29 | | | | 1400 | ļ <u></u> | | | | | | 30 | | |
| | 31 | 30 2 | 1000 | | | 250V RECEPTACLE RM. 27B | DRINKING FOUNTAIN | 700 | | | | 32 | | |
| | 33 | | | 1000 | | | RECEPTACLES RM 27B | | 1000 | | | 34 | | |
| | 35 | 30 2 | | | 1000 | 250V RECEPTACLE RM 27B | | | | 1000 | | 36 | | |
| | 37 | | 1000 | | | | | 1000 | | | | 38 | | |
| | 39 | 30 2 | | 1000 | | 250V RECEPTACLE RM 27B | SPECTROMETER | | 1000 | | 15 2 | 40 | | |
| | 41 | | | | 1000 | | | | | 1000 | | 42 | | |
| | | | = 11200 NNECTED | | VA, PH 800 | IASE B = 9800 VA) + 25% LCL (| VA, PHASE C = 1125 VA) = 3292 | 10800 | VA VA (| 91 | AMP) | | | |

- (1) EXISTING BREAKER, EXISTING LOAD.
- (2) NEW BREAKER, NEW LOAD. NEW CIRCUIT BREAKERS ADDED TO THE EXISTING PANEL SHALL BE OF THE SAME MANUFACTURE AND PROVIDED WITH THE OCPD AIC TO MATCH THE EXISTING PANEL'S AIC RATING.
- (3) PROVIDE BREAKER TIE FOR MULTIWIRE BRANCH CIRCUITS.
- (4) FIELD VERIFY EXISTING LOADS AND SPACE AVAILABILITY. PROVIDE NEW TYPEWRITTEN CIRCUIT DIRECTORY INSIDE PANEL COVER.
- (5) EXISTING BREAKER, NEW LOAD.

| _ | 42 | A. | A. BUSSING CIRCUIT | | HASE 4 WIRE A. MAIN BREAKER | BREAKER A.I.CMAX. ENCL. DEPTH & WIDTH MOUNTING | | | | | | |
|------------|--------|-------------|-----------------------|-------|-----------------------------|--|-------------|---------|-------------|------------|------------|---------------|
| _ | SQUARE | | | | (E) PANEL_ | <u>4F1</u> | | | | | | ⇃ |
| CIR NO. | BKR | LC PHASE | AD (VA) | PHASE | DESCRIPTION | DESCRIPTION | LO PHASE | AD (VA) | PHASE | BKR AMP | CIR NO. | l |
| NO. | POLE | A | B | C | | | A | B | C | POLE | NO. | ╁ |
| 1 | 20 1 | | | | | PANEL 'FH3' | 7540 | | | 125 3 | 2 | (|
| 3 | | | 300 | | BASEMENT LIGHTS | { | | 6200 | | / | 4 | |
| 5 | | | | | | \ | | | 5960 | | 6 | 1 |
| 7 | | 600 | - | | CORR. LTG. | EXHAUST FAN | 600 | | | 20 | 8 | ╀ |
| | | 000 | | | COMM. ETG. | | 000 | | | 1 | | 1 |
| 9 | | | 600 | | | CORR. LTG. | | 600 | | | 10 | ┨ |
| 11 | | | | 600 | | | | | 600 | | 12 | ١ |
| 13 | | | | | , | TIMECLOCK FOR EXHAUST FAN | 100 | | | | 14 | 1 |
| 15 | 15 3 | | 300 | | HOOD EF-1 FOR RM. 27A | AC UNIT RM 17 | | 2700 | | 40 3 | 16 | 1 |
| 17 | | | | 300 | | | | | 2700 | | 18 | 1 |
| 19 | | 300 | | | | | 2700 | | | | 20 | 1 |
| 21 | 20 1 | | 600 | | HOODS RM 17 | SPARE | | | | 20 1 | 22 | 1 |
| 23 | | | | | | HOOD EF-1 FOR RM. 27A | | | 300 | 15 3 | 24 | 1 |
| 25 | | 600 | - | | HOODS RM 17 | FOR RIVI. 27A | 300 | | | | 26 | 1 |
| 27 | | | 360 | | RECEPTACLES- | | | 300 | | | 28 | 1 |
| 29 | | | | 50 | ROOF DUCT SMOKE | RECEPTACLES- | | | 720 | 20 1 | 30 | 1 |
| 31 | 15 3 | 300 | | | DETECTOR HOOD EF-1 | RM 19 EF-2, 1/2HP | 300 | | | 15 3 | 32 | 1 |
| 33 | | | 300 | | FOR RM. 27A | FOR SNORKEL | | 300 | | -/- | 34 | 1 |
| 35 | | | | 300 | | | | | 300 | | 36 | 1 |
| 37 | 15 3 | 300 | | | HOOD EF-1 | DOAS-1, 45FLA | 5400 | | | 80 3 | 38 | 1 |
| 39 | | | 300 | | FOR RM. 27A | | | 5400 | | / | 40 | 1 |
| 41 | | | | 300 | | | | | 5400 | | 42 | 1 |
| | IASE A | = 1904 | | | JASE B = 18860 | VA, PHASE C = | 18730 | VA | | | | $\frac{1}{2}$ |

- (1) EXISTING BREAKER, EXISTING LOAD.
- (2) NEW BREAKER, NEW LOAD. NEW CIRCUIT BREAKERS ADDED TO THE EXISTING PANEL SHALL BE OF THE SAME MANUFACTURE AND PROVIDED WITH THE OCPD AIC TO MATCH THE EXISTING PANEL'S AIC RATING.
- (3) PROVIDE BREAKER TIE FOR MULTIWIRE BRANCH CIRCUITS.
- (4) FIELD VERIFY EXISTING LOADS AND SPACE AVAILABILITY. PROVIDE NEW TYPEWRITTEN CIRCUIT DIRECTORY
- (5) EXISTING BREAKER, NEW LOAD.

| | 120/208 200 42 | | | | | 3 PHASE 4 WIRE 125 A. MAIN BREAKER (2) PANEL FH3 | | | | | 22K (SERIES) BREAKER A.I.C. 3-3/4" x 14" MAX. ENCL. DEPTH & WIDTH FLUSH MOUNTING LOAD CENTER | | | | | |
|---|----------------------|---|---------------|---------|----------|---|------------|--------------------------------|------------|---------------|--|-------|------|----------|------------|----------------|
| | CIR NO. | BKR | LO PHASE | AD (VA) | PHASE | DESCRI | PTION | DESCRIPTION | | LOAD (VA | | PHASE | BKR | | CIR NO. | |
| Г | - 1 | 20 1 | A 1400 | В | <u> </u> | ROOM 24 | ND COUNTER | ROOM 24 WEST ISLAND COUNTER | | A 1400 | В | C | 20 | OLE 1 | 2 - | L |
| | - 3 | | | 1400 | | | | 112011021 | | | 1400 | | | | 4 - | |
| L | - 5 | | | | 1400 | | | | | | | 1400 | | | 6 - | <u> </u> П, |
|) | - 7 | | 1400 | | | | | | • | 1400 | | | | | 8 - | |
| | - 9 | | | 1400 | 360 | FLOOR BOX | x - | ROOM 24 C | | | | 1400 | | | 10 | |
| | - 13 | | 540 | | | RECEPTAC RM 24 | LES- | | | 1400 | | | | | 14 - | |
| L | - 15 | | | 600 | | PROJECTOR RM 24 | | | | | 1400 | | | | 16 - | |
| | 17 | | | | | SPARE | | | ļ | | | 1400 | | | 18 - | |
| | 19 | 19 | | | | SHUNT TRIP | | 100 | | | | | 20 | | | |
| | 21 | | | | | | | SPARE | | | | | | | 22 | |
| | 23 | | | | | | | | | | | | | | 24 | |
| | 25 | | | | | | | | | | | | | | 26 | |
| | 27 | | | | | | | | | | | | | | 28 | |
| | 29 | | | | | | | | | | | | | | 30 | |
| | 31 | | | | | | | | | | | | 1 | | 32 | |
| | 33 | | | | | | | | | | | | | | 34 | |
| | 35 | | | | | | | | | | | | | | 36 | |
| | 37 | | | | | | | | | | | | | | 38 | |
| | 39 | | | | | | | | | | | | | | 40 | |
| | 41 PH | ASF A | = 7540 | | /A PH | IASE R = | 6200 | VA PH | ASE C = | 5960 | VA | | | | 42 | |
| | | PHASE A = 7540 VA, TOTAL CONNECTED (19700 | | | | | 5% LCL (| | A) = 19700 | | VA (| 55 | AMP) |) | | |

GENERAL ELECTRICAL FIELD MARKING REQUIREMENT:

ARC-FLASH HAZARD WARNING:

PER CEC 110-16, ELECTRICAL EQUIPMENT SUCH AS SWITCHBOARDS, SWITCHGEAR, PANELBOARDS, INDUSTRIAL CONTROL PANELS., METER SOCKET ENCLOSURES, AND MOTOR CONTROL CENTERS, THAT ARE LIKELY TO REQUIRE EXAMINATION, ADJUSTMENT, SERVICING OR MAINTENANCE WHILE ENERGIZED SHALL BE FIELD OR FACTORY MARKED TO WARN QUALIFIED PERSONS OF POTENTIAL ELECTRICAL ARC FLASH HAZARDS. THE MARKING SHALL MEET THE REQUIREMENTS IN 110.21(B) AND SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING OR MAINTENANCE OF THE EQUIPMENT.

110.21(B) FIELD-APPLIED HAZARD MARKINGS: WHERE CAUTION, WARNING, OR DANGER SIGNS OR LABELS ARE REQUIRED BY THE CEC, THE LABELS SHALL MEET THE FOLLOWING REQUIREMENTS:

(1) THE MARKING SHALL ADEQUATELY WARN OF THE HAZARD USING EFFECTIVE WORDS AND/OR COLOR AND/OR SYMBOLS.

(2) THE LABEL SHALL BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD NAD SHALL NOT BE HAND WRITTEN. EXCEPTION TO (2): PORTIONS OF LABELS OR MARKINGS THAT ARE VARIABLE, OR THAT COULD BE SUBJECT TO CHANGES, SHALL BE PERMITTED TO BE HAND WRITTEN AND SHALL BE LEGIBLE.

(3) THE LABEL SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED. AVAILABLE FAULT CURRENT FIELD MARKING:

PER CEC ARTICLE 110.24(A) FIELD MARKING. SERVICE EQUIPMENT SHALL BE LEGIBLY MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT CURRENT. THE FIELD MARKING(S) SHALL INCLUDE THE DATE THE FAULT-CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.

PER CEC ARTICLE 110.24(B) MODIFICATIONS. WHEN MODIFICATIONS TO THE ELECTRICAL INSTALLATION OCCUR THAT AFFECT THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SERVICE, THE MAXIMUM AVAILABLE FAULT CURRENT SHALL BE VERIFIED OR RECALCULATED AS NECESSARY TO ENSURE THEE SERVICE EQUIPMENT RATINGS ARE SUFFICIENT FOR THE MAXIMUM AVAILABLE FAULT CURRENT AT THE LINE TERMINALS OF THE EQUIPMENT THE REQUIRED FIELD MARKING(S) IN 110.24(A) SHALL BE ADJUSTED TO REFLECT THE NEW LEVEL OF MAXIMUM AVAILABLE FAULT CURRENT.

EXCEPTION: THE FIELD MARKING REQUIREMENTS IN 110.24(A) AND 110.24(B) SHALL NOT BE REQUIRED IN INDUSTRIAL INSTALLATIONS WHERE CONDITIONS OF MAINTENANCE AND SUPERVISION ENSURE THAT ONLY QUALIFIED PERSONS SERVICE THE EQUIPMENT.

| Circu | uit Volts (V |) | 2% Vo Drop | | ; | 3% Voltage Drop (V) | | | Total Loss (V) | | | | |
|----------------|--------------|-------|--|-----|-----|------------------------|-----|----------------------------|----------------|------|------|--|--|
| | 120 | | 2. | 4 | | 3.6 | | | 6.0 | | | | |
| | 208 | | 4. | 2 | | 6.2 7.2 | | | 10.4 | | | | |
| | 240 | | 4. | 8 | | | | | 1 | 12.0 | | | |
| | 277 | | 5. | 5 | | 8.3 | | | 1 | 13.9 | | | |
| | 480 | | 9. | 6 | | 14.4 | | | | | | | |
| Table 8 | -5 Voltag | e Dro | op for Common Copper Wire Gauges and Current Loads | | | | | | | | | | |
| | Circuit | | Maximu | | | | | aximum Branch Circuit Leng | | | | | |
| Wire | Amps | 120 | 208 | 240 | 277 | 480 | 120 | 208 | 240 | 277 | 480 | | |
| 14* | 12 | 39 | 67 | 78 | 90 | 156 | 58 | 101 | 117 | 135 | 233 | | |
| 12* | 16 | 46 | 80 | 93 | 107 | 185 | 69 | 120 | 139 | 160 | 278 | | |
| 10 | 24 | 48 | 83 | 96 | 111 | 192 | 72 | 125 | 144 | 166 | 288 | | |
| 8 | 32 | 57 | 99 | 115 | 132 | 229 | 86 | 149 | 172 | 199 | 344 | | |
| 6 | 40 | 73 | 127 | 146 | 169 | 293 | 110 | 190 | 220 | 253 | 439 | | |
| 4 | 52 | 89 | 154 | 178 | 206 | 356 | 134 | 232 | 267 | 309 | 535 | | |
| 2 | 72 | 103 | 178 | 206 | 237 | 412 | 154 | 267 | 309 | 356 | 617 | | |
| 0 | 96 | 123 | 212 | 245 | 283 | 490 | 184 | 319 | 368 | 424 | 735 | | |
| 00 | 108 | 137 | 238 | 274 | 317 | 549 | 206 | 357 | 412 | 475 | 823 | | |
| 0000 | 144 | 163 | 283 | 327 | 377 | 654 | 245 | 425 | 490 | 566 | 980 | | |
| 250 (kcmil) | 164 | 170 | 294 | 340 | 392 | 679 | 255 | 441 | 509 | 588 | 1019 | | |
| 300 | 184 | 181 | 314 | 362 | 418 | 725 | 272 | 471 | 543 | 627 | 1087 | | |
| 350 | 200 | 195 | 338 | 390 | 450 | 779 | 292 | 506 | 584 | 675 | 1169 | | |
| 500 | 248 | 224 | 388 | 448 | 517 | 896 | 336 | 582 | 672 | 776 | 1344 | | |

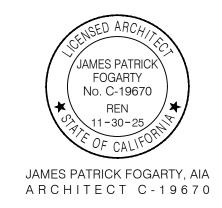


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PROJECT INFO

11.08.23 15-C1 DSA File No

03-123712

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REVISIONS

DSA No

Date Item 02.09.24 BID ADDENDA

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