REQUESTS FOR BIDS

CITY HALL HVAC BOILER REPLACEMENT

Deadline for submissions:
Monday, April 20, 2026

Please direct questions or comments to:

Daniel Ford, Facilities Maintenance Manager
dford@sandimasca.gov

City of San Dimas
Parks & Recreation Department
245 E. Bonita Avenue
San Dimas, CA 91773
(909) 394-6230

The City of San Dimas

The City of San Dimas is home to approximately 33,340 residents, who enjoy its beautiful open spaces and small-town charm. The City is a short commute to Los Angeles and other business centers in Southern California. It is a suburban City with planned business and shopping districts.

INTRODUCTION

The City of San Dimas ("City") is seeking bid proposals from qualified firms ("Bidder(s)") to remove and replace the HVAC boiler in the basement of the San Dimas City Hall. The Scope of Work for the project is listed in the Scope of Services section of this RFB document. Bids from qualified contractors must be received by email or post mail by Monday, April 20, 2026.

REQUIRED QUALIFICATIONS AND EXPERIENCE

At the time of submittal, bidders must meet the following requirements:

1. Possess a valid state contractor license C-4 Boiler or
2. B License with C-4 Boiler specialty license and
3. Registered with the Department of Industrial Relations
4. ASME Certification (American Society of Mechanical Engineers)
5. A minimum of 5-10 years of experience of installing or replacing similar type boilers, including hydronic heating boilers or boilers with similar capacity in BTU/hr. and system type. Completed 3-5 similar type projects within the last 5 years.

The Contractor shall provide evidence of compliance with applicable permits where specifically required in these specifications. Additional evidence (copies of permits, etc.) shall be provided if requested by the City. The Contractor shall obtain all necessary permits related to the services at its own expense. Once the bid has been awarded, contractor will be responsible for providing adequate certificate of insurance, bonds, site map and necessary timelines for completion of the project.

1. ATTACHMENTS

The attachments below are included with this Request for Bids (RFB) for your review and submittal:

Attachment A – Bidder's Information Form*
Attachment B – Cost Proposal Bid Form *
Attachment C – Scope of Services
Attachment D – Specifications & Plans

The items identified with an asterisk (*) shall be filled out, signed by the appropriate representative of the company and returned with submittal.

2. INSTRUCTIONS TO BIDDERS

2.1 Pre-Bid Job-Walk Meeting

A mandatory pre-bid meeting is scheduled for April 6, 2026, at 1:00pm
San Dimas City Hall 245 E Bonita Ave, San Dimas, CA 91773
*Only bids from attendees at the mandatory meeting will be considered.

2.2 Examination of Bid Documents

The submission of a bid shall be deemed a representation and certification by the Bidder that they:

2.2.1 Have carefully read and fully understand the information of this bid packet provided by the City to serve as the basis for submission of this bid.

2.2.2 Have the capability to successfully undertake and complete the responsibilities and obligations of the bid being submitted.

2.2.3 Represent that all information contained in the bid is true and correct.

2.2.4 Did not, in any way, collude; conspire to agree, directly or indirectly, with any person, firm, corporation or other Bidder in regard to the amount, terms or conditions of this bid.

2.2.5 Acknowledge that the City has the right to make any inquiry it deems appropriate to substantiate or supplement information supplied by Bidder, and Bidder hereby grants the City permission to make these inquiries, and to provide any and all related documentation in a timely manner.

No request for modification of the bid shall be considered after its submission on grounds that Bidder was not fully informed of any fact or condition.

2.3 Questions/Clarifications

Should discrepancies or omissions be found in this RFB or should there be a need to clarify this RFB, questions or comments regarding this RFB must be put in writing and emailed to dford@sandimasca.gov no later than Wednesday, April 8, 2026. Responses from City will be published in an Addendum on the City's website by April 15, 2026. Inquiries received after the date and time stated will not be accepted and will be returned to senders without response.

2.4 Submission of Bid Proposals

All Bid Proposals shall be submitted to:
City of San Dimas Parks & Recreation
Attn: Daniel Ford
245 E Bonita Ave., San Dimas, CA 91733 or dford@sandimasca.gov.

Bids must be received no later than Monday, April 20th, 2026.

2.5 Bidder Withdrawal of Bids

A Bidder may withdraw its bid at any time before the expiration of the time for submission of bids as provided in the RFB by emailing a written request for withdrawal signed by, or on behalf of, the Bidder.

2.6 Rights of the City of San Dimas

This RFB does not commit the City to enter into a contract, nor does it obligate the City to pay for any costs incurred in preparation and submission of Bids or in anticipation of a contract. The City reserves the right to:

- Make the selection based on its sole discretion;
- Reject any and all Bid proposals;
- Issue subsequent Requests for Bids;
- Postpone opening for its own convenience;
- Remedy technical errors in the Request for Bids process;
- Negotiate with any, all or none of the Bidders;
- Accept other than the lowest offer;
- Waive informalities and irregularities in the Bids and/or;
- Enter into an agreement with another Bidder in the event the originally selected Bidder defaults or fails to execute an agreement or provides the appropriate requirements with the City.

An agreement shall not be binding or valid with the City unless and until it is executed by authorized representatives of the City and of the Bidder.

3. PROPOSED TENTATIVE TIMELINE

RFB Issued	March 27, 2026
Mandatory Pre-Bid Job Walk Meeting	April 6, 2026
Pre-Bid Questions	April 8, 2026
Addendum	April 15, 2026
Bidder Proposals Due	April 20, 2026

4. INFORMATION TO BE SUBMITTED

These instructions outline the guidelines governing the format and content of the bid and the approach to be used in its development and presentation. The intent of the RFB is to encourage responses that clearly communicate the Bidder's understanding of the City's requirements and its approach to successfully provide the products and/or services on time and within budget. Only that information which is essential to an understanding and evaluation of the bid should be submitted. Items not specifically and explicitly related to the RFB and proposal, e.g. brochures, marketing material, etc. will not be considered in the evaluation.

1. Completed Bidder's Information Form (Attachment A)

2. Cost Proposal Bid Form (Attachment B)
   The fee information is relevant to a determination of whether the fee is fair and reasonable in light of the services to be provided. Provision for this information assists the City in determining the Contractor's understanding of the project, and provides staff with tools to negotiate the cost, provided in the table (See Table, Attachment B).
   Include any other cost and price information that would be contained in a potential agreement with the City (i.e. certificate of insurance, permits, bonds, materials, disposing waste, etc.).

***Attachment A - Bidder's Information Form**

*TO BE COMPLETED AND RETURNED BY APRIL 20, 2026

BIDDER (please print):

Company:_____

Address:_____

Telephone: _____ Fax: _____

Email: _____

Contact person, title and email: _____

_____

Bidder, if selected, intends to carry on the business as (check one):

Individual____Joint Venture____ Partnership____ Corporation ____Other ___

BIDDER'S SIGNATURE

No bid shall be accepted which has not been signed in ink in the appropriate space below: By signing below, the submission of a proposal shall be deemed a representation and certification by the Bidder that they have investigated all aspects of the RFB, that they are aware of the applicable facts pertaining to the RFB process, its procedures and requirements, and they have read and understand the RFB.

1. If Bidder is INDIVIDUAL, sign here: Date: _____

   Bidder's Signature:_____

   Bidder's name and title (Print):_____

2. If Bidder is PARTNERSHIP or JOINT VENTURE; at least two (2) Partners shall sign here:

   _____ _____ _____
   Signature of Member of the Partnership or Joint Venture Name (Print) Date

   _____ _____ _____
   Signature of Member of the Partnership or Joint Venture Name (Print) Date

3. If Bidder is a CORPORATION, the duly authorized officer shall sign as follows:

   _____ _____
   Signature Date

   _____ _____
   Print Name Title

4. BIDDER'S STATEMENT OF TECHNICAL ABILITY AND EXPERIENCE

The bidder is required to state what work of a similar character to that included in this proposed Contract he has successfully performed in Los Angeles County within the last five years and provide references which will enable the City Council to judge his responsibility, experience, skill and business standing. Said references shall include the name of the Supervisor responsible for the acceptance of the Work performed.

The undersigned submits herewith a statement of work which he has successfully performed of a character similar to that included in the proposed Contract.

1. PROJECT PERFORMED: _____

   CONTACT PERSON: _____ PHONE: (_____) _____

   PROJECT OWNER: _____ DATE: _____

2. PROJECT PERFORMED: _____

   CONTACT PERSON: _____ PHONE: (_____) _____

   PROJECT OWNER: _____ DATE: _____

3. PROJECT PERFORMED: _____

   CONTACT PERSON: _____ PHONE: (_____) _____

   PROJECT OWNER: _____ DATE: _____

4. PROJECT PERFORMED: _____

   CONTACT PERSON: _____ PHONE: (_____) _____

   PROJECT OWNER: _____ DATE: _____

5. PROJECT PERFORMED: _____

   CONTACT PERSON: _____ PHONE: (_____) _____

   PROJECT OWNER: _____ DATE: _____

***Attachment B – Cost Proposal Bid Form**

*TO BE COMPLETED AND RETURNED BY APRIL 20, 2026

Contractor is Responsible to Verify Quantities Per Plan.

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	Mobilization, demobilization, site delineation/ traffic control, material storage and NPDES compliance	1	LS	$	$
2	Installation of new boiler as per scope of services and plan design (attachment C & D)	1	LS	$	$
3	Temporary Boiler Operations	1	LS	$	$
				$	$
			TOTAL	**$**	**$**

TOTAL BID $_____

TOTAL BID IN WORDS: _____

_____

COMPANY NAME: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

PHONE: _____ EMAIL: _____

SUBMITTED BY (PRINT): _____

SUBMITTED BY (SIGN): _____

STATE CONTRACTOR'S LICENSE NO._____ CLASS:_____

DEPARTMENT OF INDUSTRIAL RELATIONS REGISTRATION NO. _____

Attachment C – Scope of Services

PROJECT DESCRIPTION

The City of San Dimas is requesting qualified Service Providers to submit Bids for the HVAC Boiler Replacement, located in the City Hall basement. The project will include but is not limited to the following: accessing recessed areas with specialized equipment, deconstruction and reconstruction of steel framing for basement access, temporary HVAC boiler provisions, BMS equipment modifications to achieve boiler replacement. The entire project is to take place at City Hall 245 E. Bonita Avenue and in the City of San Dimas, in accordance with the specifications and conditions specified in the Request for Bids issued by the City of San Dimas. Request for Bids documents are available on www.sandimasca.gov or by request to dford@sandimasca.gov. Bids shall be received via email or post mail in the City of San Dimas, Parks and Recreation Department at the above indicated address on or before Monday, April 20, 2026. After the issuance of the Notice to Proceed, the Contractor should be prepared to start within 5 business days. The work shall be completed within fifteen (15) working days.

SCOPE OF SERVICES

A. All Scope of Work details and specifications according to engineered plans.
B. All parts, material, equipment, components etc., and labor shall be furnished and provided as needed.
C. All demo and/or temporary operations shall protect the facility user's safety and prevent rodent intrusion for the duration of the job.
D. BMS System integration
    a. *Boiler Controller to be replaced with the new Alerton controller. Integrate the new Boiler Controller into the existing BMS.*
    b. *All services are to be done by an authorized and certified Alerton Representative.*
    c. *Demo existing Boiler Controller*
    d. *Provide point to point mapping and reconnect existing Boiler Points.*
    e. *Provide updated risers and panel drawings*
    f. *Reuse existing conduit and wiring.*
    g. *Temperature Sensors to be replaced.*
    h. *Valves and Actuators to be replaced based on Building Standards.*
    i. *Reuse existing Panel*
    j. *Reuse existing thermowells*

*Project scope includes staging and mobilization, all material, equipment and labor paid at DIR mandated prevailing wage rates.
Bidder shall abide by all requirements imposed by the State of California and Los Angeles County in regard to Standard Specifications and General Provisions for the construction materials and construction methods as set forth in the "Standard Specifications for Public Works Construction," 2012 Edition. Please see Attachment C for Specification & Plan.

LOCATION OF THE WORK

Notice is hereby given that the City of San Dimas, "City", Los Angeles County, California will receive bids for the replacement of one HVAC boiler and all appurtenances at San Dimas City Hall, 245 East Bonita Avenue, San Dimas, CA.

END OF SCOPE OF SERVICES

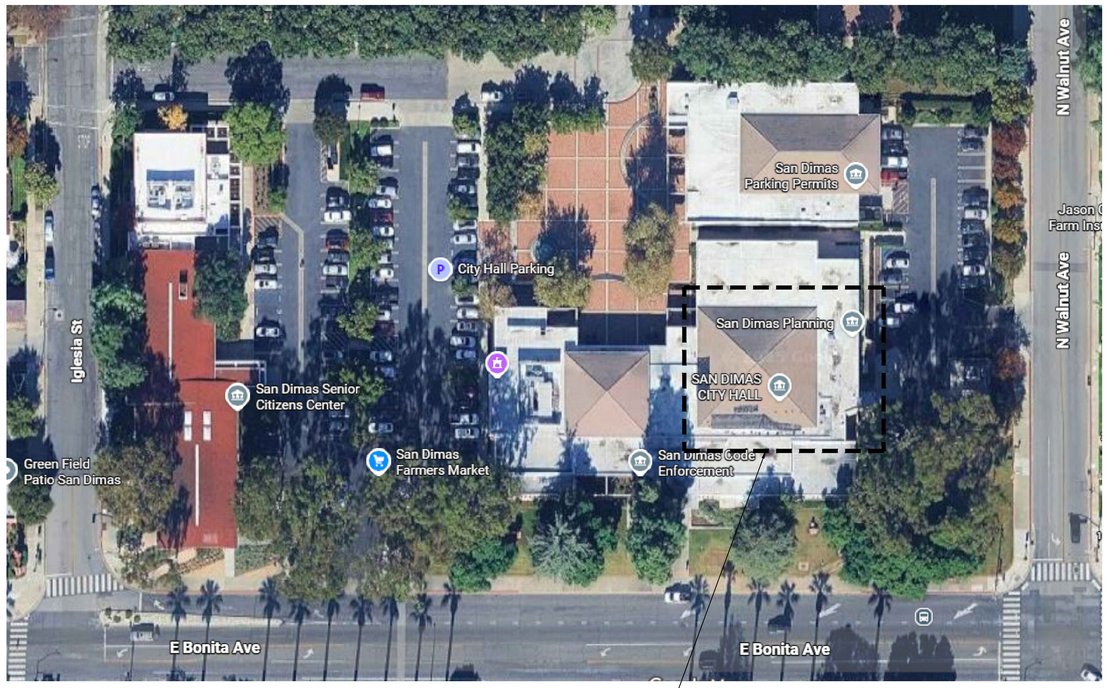
Attachment D- Specifications & Plans

[ON THE NEXT PAGE]

City of San Dimas

BOILER REPLACEMENT

VICINITY MAP



SCOPE OF WORK

ELECTRICAL:

1. SCOPE OF WORK IS TO REMOVE POWER CONNECTIONS FROM THE EXISTING BOILER AND RELATED APPURTENANCES, AND PROVIDE NEW POWER CONNECTIONS TO THE NEW BOILER, ALL RELATED APPURTENANCES AND TEMPORARY UNIT.

MECHANICAL:

1. BEFORE THE DEMOLITION WORK BEGINS, THE CONTRACTOR SHALL COORDINATE THE DEMOLITION AND REMODEL CONTRACTION SCHEDULE WITH THE OWNER TO DETERMINE A TEMPORARY HEATING HOT WATER SYSTEM IS REQUIRED.
2. DEMOLISH THE EXISTING BOILER AND ASSOCIATE PIPING, POWER SUPPLY, AND CONTROL.
3. DEMOLISH THE EXISTING HEATING SYSTEM CIRCULATING PUMP, EXPANSION TANK AND AIR SEPARATOR.
4. INSTALL NEW HOT WATER BOILER, NEW SYSTEM PRIMARY AND SECONDARY PUMPS, NEW EXPANSION TANK AND AIR SEPARATOR.
5. INTEGRATE THE BOILER, CIRCULATING PUMPS TO THE EXISTING BMS SYSTEM FOR CONTROL AND MONITOR.
6. RE-BALANCE BUILDING HEATING WATER SYSTEM.
7. PROVIDE HEATING WATER SYSTEM BALANCE REPORT FOR REVIEW.
8. PROVIDE TEMPORARY UNIT.

PLUMBING:

1. DISCONNECT EXISTING INDUSTRIAL WATER AND NATURAL GAS PIPING FROM EXISTING BOILER.
2. RECONNECT INDUSTRIAL WATER AND NATURAL GAS TO NEW BOILER.
3. PROVIDE GAS TO TEMPORARY UNIT.

PROJECT DIRECTORY

OWNER:

CITY OF SAN DIMAS
245 E BONITA AVE
SAN DIMAS, CA 91773
FACILITIES MAINTENANCE MANAGER
DANIEL FORD
TEL: 909-394-6228

MECHANICAL, ELECTRICAL AND PLUMBING:

PBS ENGINEERS
279 E ARROW HIGHWAY
SUITE 201
SAN DIMAS, CA. 91773
TEL: 626-650-0350 FAX: 626-650-0352
WEB PAGE: PBSENGINEERS.COM

SHEET INDEX

GENERAL

SHT.NO.	DESCRIPTION
T-0.01	TITLE SHEET

MECHANICAL

SHT.NO.	DESCRIPTION
M-0.01	MECHANICAL GENERAL NOTES, LEGEND AND APPLICABLE CODES
M-0.02	MECHANICAL SCHEDULES
M-0.03	MECHANICAL SPECIFICATIONS
M-0.04	MECHANICAL SPECIFICATIONS
M-0.05	T-24 FORMS
M-0.06	T-24 FORMS
M-1.00	MECHANICAL SITE PLAN
M-1.02	MECHANICAL TEMPORARY REMODEL PLANS
M-1.01	MECHANICAL ENLARGED BASEMENT DEMO AND REMODEL PLANS
M-3.00	MECHANICAL DETAILS
M-3.01	MECHANICAL DETAILS

ELECTRICAL

SHT.NO.	DESCRIPTION
E-0.01	ELECTRICAL GENERAL NOTES, SYMBOLS LIST AND APPLICABLE CODES
E-0.02	ELECTRICAL PARTIAL SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E-1.00	ELECTRICAL SITE PLAN
E-1.01	ELECTRICAL ENLARGED BASEMENT DEMO AND REMODEL PLANS
E-3.00	ELECTRICAL DETAILS

PLUMBING

SHT.NO.	DESCRIPTION
P-0.01	PLUMBING GENERAL NOTES, LEGEND, APPLICABLE CODES AND SHEET INDEX
P-1.00	PLUMBING SITE PLAN
P-1.01	PLUMBING ENLARGED BASEMENT DEMO, REMODEL & TEMPORARY PLANS
P-3.00	PLUMBING SITE PLAN

PBS ENGINEERS
279 East Arrow Highway, Suite 201
San Dimas, CA 91773
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2025-082-00

REGISTERED PROFESSIONAL ENGINEER
CHARLES A. CRUZ
M33827
EXP. 06-30-2027
MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS
BOILER REPLACEMENT
245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:

TITLE SHEET

Job No.	2025-082-00
Date:	2/13/2026
Scale:	NONE
Drawn By:	K.K.
Checked By:	R.C.

Sheet No:

T-0.01

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2022 ENERGY EFFICIENCY STANDARDS : MANDATORY MEASURES - HVAC

EQUIPMENT AND SYSTEMS EFFICIENCY

1. ANY APPLIANCE FOR WHICH THERE IS A CALIFORNIA STANDARD ESTABLISHED IN THE APPLIANCE EFFICIENCY STANDARDS MAY BE INSTALLED ONLY IF THE MANUFACTURER HAS CERTIFIED TO THE ENERGY COMMISSION, AS SPECIFIED IN THOSE REGULATIONS, THAT THE APPLIANCE COMPLIES WITH THE APPLICABLE STANDARD FOR THAT APPLIANCE. INCLUDED ARE ROOM AIR CONDITIONERS, CENTRAL AIR CONDITIONING HEAT PUMPS (REGARDLESS OF CAPACITY, EXCEPT THAT REQUIREMENTS FOR CENTRAL AIR CONDITIONING HEAT PUMPS WITH COOLING CAPACITY OF 135,000 BTU/HR OR MORE APPLY TO HEATING PERFORMANCE BUT NOT COOLING PERFORMANCE), OTHER CENTRAL AIR CONDITIONERS WITH A COOLING CAPACITY LESS THAN 135,000 BTU/HR, FAN TYPE CENTRAL FURNACES WITH INPUT RATE LESS THAN 400,000 BTU/HR, BOILERS WALL FURNACES, FLOOR FURNACES, ROOM HEATERS, UNIT HEATERS, AND DUCT FURNACES SHALL HAVE BEEN CERTIFIED TO THE ENERGY COMMISSION BY ITS MANUFACTURER TO COMPLY WITH THE APPLIANCE EFFICIENCY STANDARDS.

2. THE FOLLOWING SPACE CONDITIONING EQUIPMENT MAY BE INSTALLED ONLY IF THE MANUFACTURER HAS CERTIFIED THAT THE EQUIPMENT MEETS OR EXCEEDS ALL APPLICABLE EFFICIENCY REQUIREMENTS LISTED IN 112 OF THE ENERGY EFFICIENCY STANDARDS: ALL AIR CONDITIONERS, HEAT PUMPS AND CONDENSING UNITS > 135,000 BTU/HR; ALL WATER CHILLERS; ALL GAS-FIRED BOILERS > 300,000 BTU/HR; ALL OIL-FIRED BOILERS > 225,000 BTU/HR; AND ALL WARM AIR FURNACES AND COMBINATION WARM AIR FURNACES/AIR CONDITIONING UNITS > 225,000 BTU/HR. FAN TYPE CENTRAL FURNACES SHALL NOT HAVE A PILOT LIGHT.

3. PIPING, EXCEPT THOSE CONVEYING FLUIDS AT TEMPERATURES BETWEEN 60F AND 105F, OR WITHIN HVAC EQUIPMENT, SHALL BE INSULATED IN ACCORDANCE WITH STANDARDS 123.

4. AIR HANDLING DUCT SYSTEMS SHALL BE CONSTRUCTED, INSTALLED, SEALED, AND INSULATED AS PROVIDED IN CHAPTER 6 OF 2019 CALIFORNIA MECHANICAL CODE. DUCTWORK SHALL BE INSULATED AND INSULATION SHALL BE PROTECTED IN ACCORDANCE WITH STANDARDS 124.

CONTROLS

1. THERMOSTATS SHALL HAVE NUMERIC SETPOINTS IN F.

2. THERMOSTATS SHALL HAVE ADJUSTABLE SETPOINT STOPS ACCESSIBLE ONLY TO AUTHORIZED PERSONNEL.

VENTILATION

1. CONTROLS SHALL BE PROVIDED TO ALLOW OUTSIDE AIR DAMPERS OR DEVICES TO BE OPERATED AT THE VENTILATION RATES AS SPECIFIED IN THESE PLANS.

2. GRAVITY OR AUTOMATIC DAMPERS INTERLOCKED AND CLOSED ON FAN SHUTDOWN SHALL BE PROVIDED ON THE OUTSIDE AIR INTAKES AND DISCHARGES OF ALL SPACE CONDITIONING AND EXHAUST SYSTEMS.

3. ALL GRAVITY VENTILATING SYSTEMS SHALL BE PROVIDED WITH AUTOMATIC OR READILY ACCESSIBLE MANUALLY OPERATED DAMPERS IN ALL OPENINGS TO THE OUTSIDE, EXCEPT FOR COMBUSTION AIR OPENINGS.

4. IF APPLICABLE, DEMAND CONTROL VENTILATION DEVICES APPROVED BY THE ENERGY COMMISSION SHALL BE PROVIDED FOR HVAC SYSTEMS SERVING ASSEMBLY AREAS, CONCENTRATED USE (WITHOUT FIXED SEATS)" OR "AUCTION ROOMS", AS IDENTIFIED IN CHAPTER 10 OF THE UBC, IF SUCH AREAS ARE SERVED BY SYSTEMS WITH DESIGN OUTDOOR CAPACITIES EQUAL TO OR EXCEEDING 3,000 CFM. THE DEVICE SHALL INCLUDE A SENSOR LOCATED IN THE SPACE.

5. IF APPLICABLE, DEMAND CONTROL VENTILATION DEVICES SHALL ALLOW THE RATE OF OUTDOOR AIR TO BE REDUCED TO 0.15 CFM PER SQUARE FOOT OF CONDITIONED AREA, IF THE DEMAND CONTROL VENTILATION DEVICE INDICATES THAT THE SPACE CONDITIONS ARE ACCEPTABLE. IF THE DEVICE IS A CARBON-DIOXIDE SENSOR, IT SHALL LIMIT THE CARBON DIOXIDE LEVEL TO NO MORE THAN 800 PPM WHILE THE SPACE IS OCCUPIED.

6. DESIGNATED OUTDOOR SMOKING AREA SHALL BE AT LEAST 25 FEET FROM AN OUTDOOR AIR INTAKE OR OPERABLE WINDOWS.

7. THE BUILDING SHALL MEET OR EXCEED THE PROVISIONS FOR MECHANICAL VENTILATION OF SECTION 402.3 OF THE CALIFORNIA MECHANICAL CODE.

8. IF APPLICABLE, BUILDING THAT USE DEMAND CONTROL VENTILATION SHALL HAVE C02 SENSORS AND VENTILATION CONTROLS INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT EDITION OF THE CALIFORNIA ENERGY CODE, CCR, TITLE 24, PART 6, SECTION 121(C).

9. THE HVAC, REFRIGERATION, AND FIRE SUPPRESSION EQUIPMENT SHALL NOT CONTAIN CFC OR HALONS.

COMPLETION AND BALANCING

ALL VENTILATION SYSTEMS SHALL BE DOCUMENTED PER CALIFORNIA SAFETY CODE (TITLE 8, SECTION 5142 (b) TO BE PROVIDING THE MINIMUM REQUIRED VENTILATION RATE AS DETERMINED USING ONE OF THE FOLLOWING PROCEDURES:

1. AIR BALANCING: ALL SPACE CONDITIONING AND VENTILATION SYSTEMS SHALL BE BALANCED TO THE QUANTITIES SPECIFIED IN THESE PLANS, IN ACCORDANCE WITH THE ASSOCIATED AIR BALANCE COUNCIL (AABC) NATIONAL STANDARDS (1989). REFER TO SPECIFICATION SECTION 23 05 93.

2. OUTSIDE AIR CERTIFICATION: THE SYSTEM SHALL PROVIDE THE MINIMUM OUTSIDE AIR AS SHOWN ON THE MECHANICAL DRAWINGS, AND SHALL BE MEASURED AND CERTIFIED BY THE INSTALLING LICENSED C-20 MECHANICAL CONTRACTOR.

3. OUTSIDE AIR MEASUREMENT: THE SYSTEM SHALL BE EQUIPPED WITH A CALIBRATED LOCAL OR REMOTE DEVICE CAPABLE OF MEASURING THE QUANTITY OF OUTSIDE AIR ON A CONTINUOUS BASIS AND DISPLAYING THAT QUANTITY ON A READILY ACCESSIBLE DISPLAY DEVICE.

4. A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEMS SHALL BE COMPLETED PRIOR TO FINAL INSPECTION. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.

5. AN OPERATION AND SYSTEMS MANUAL SHALL BE PROVIDED TO THE FIELD INSPECTOR AT THE TIME OF FINAL INSPECTION.

6 ALL DUCT AND OTHER RELATED DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, OR SHEET METAL UNTIL FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT.

7. UNLESS SPECIFIED OTHERWISE, AN AIR FILTER WITH A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8 OR HIGHER SHALL BE INSTALLED IN THE MECHANICAL SYSTEM FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY.

8. PROCEDURE APPROVED BY THE ENERGY COMMISSION.

CALIFORNIA GREEN BUILDINGS STANDARDS CODE 2022

1. PROVIDE AIR FILTRATION MEDIA MINIMUM OF MERV-11 FOR OUTSIDE AND RETURN AIR PRIOR TO OCCUPANCY FOR REGULARLY OCCUPIED AREAS OF THE BUILDING AS PER 2022 CGBSC. SECTION 5.504.5.3 .

2. AT THE TIME OF ROUGH INSTALLATION OR DURING STORAGE ON THE CONSTRUCTION SITE AND UNTIL FINAL STARTUP OF THE HEATING AND COOLING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEET METAL OR OTHER METHODS ACCEPTABLE TO THE DEPARTMENT TO REDUCE THE AMOUNT OF DUST OR DEBRIS WHICH MAY COLLECT IN THE SYSTEM.

3. PROVIDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE DEPARTMENT.

4. PROVIDE THE BUILDING OWNER OR REPRESENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTIES/WARRANTIES FOR EACH NEW SYSTEM. O&M INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CCR, TITLE 8, SECTION 5142 AND OTHER RELATED REGULATIONS.

5. A FINAL REPORT FOR THE TESTING AND ADJUSTING OF ALL NEW SYSTEMS SHALL BE COMPLETED AND PROVIDED TO THE FIELD INSPECTOR PRIOR TO FINAL APPROVAL. THIS REPORT SHALL BE SIGNED BY THE INDIVIDUAL RESPONSIBLE FOR PERFORMING THESE SERVICES.

6. IN ADDITION TO TESTING AND ADJUSTING, BEFORE A NEW SPACE-CONDITIONING SYSTEM SERVING A BUILDING OR SPACE IS OPERATED FOR NORMAL USE, THE HVAC SYSTEM AND COMPONENTS WILL BE TESTED, ADJUSTED AND BALANCED IN ACCORDANCE WITH ONE OF THE FOLLOWING STANDARDS.

   - □ TABB's CONSTRUCTION SPECIFICATIONS INSTITUTE MASTERFORMAT (23 05 93)
   - □ AABC's NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE (6th EDITION)
   - □ ASHRAE's STANDARD 111-2008

7. PERFORM TESTING AND ADJUSTING PROCEDURES IN ACCORDANCE WITH INDUSTRY BEST PRACTICES AND APPLICABLE STANDARDS ON EACH SYSTEM AS DETERMINED BY THE BUILDING OFFICIAL.

8. DEVELOP A WRITTEN PLAN OF PROCEDURES FOR TESTING AND ADJUSTING NEW HVAC SYSTEMS AND CONTROLS.

9. AN OPERATION AND SYSTEMS MANUAL, SHALL BE PROVIDED TO THE FIELD INSPECTOR AT THE TIME OF FINAL INSPECTION.

10. INDOOR MOISTURE CONTROL SHALL BE IN COMPLY WITH TITLE 24 , PART2 SECTION 1203 AS PER 2022 CGBSC. SECTION 5.505.1.

11. PROVIDE TESTING AND ADJUSTING OF HVAC SYSTEMS. SEE PROJECT SPECIFICATION SECTION 23 05 93 "TESTING, ADJUSTING AND BALANCING FOR HVAC" AND SECTION 23 08 00 "COMMISSIONING OF HVAC" FOR DETAILED REQUIREMENTS RELATING TO TESTING, ADJUSTING AND BALANCING OF HVAC SYSTEMS, AS WELL AS RELATED TEST AND BALANCE PROCEDURES, REPORTING, EQUIPMENT OPERATION AND MAINTENANCE MANUALS, INSPECTIONS AND REPORTS."

12. PROVIDE TEMPORARY VENTILATION DURING CONSTRUCTION IN ACCORDANCE WITH SECTION 121 CALIFORNIA ENERGY CODE AND AS PER POLLUTION CONTROL SECTION OF 2022 CGBSC. SECTION: 5.714.4.1.

13. PROVIDE COVERS AND PROTECTION ON ANY DUCT OPENINGS AND MECHANICAL EQUIPMENTS AS PER 2022 CGBSC. SECTION: 5.504.3.

GENERAL NOTES

1. ALL PRODUCTS AND EXECUTION OF WORK SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND AS SHOWN ON PLANS.
2. IN THE EVENT OF A DISCREPANCY BETWEEN CONTRACT DRAWINGS AND SPECIFICATIONS, THE MOST STRINGENT SHALL GOVERN.
3. ALL WORK TO BE IN ACCORDANCE WITH REQUIREMENTS OF GOVERNING FIRE, BUILDING MECHANICAL, PLUMBING, AND ELECTRICAL CODES.
4. PRIOR TO SUBMISSION OF ANY BID, THE CONTRACTOR SHALL PERFORM A THOROUGH FIELD SURVEY OF THE EXISTING SITE CONDITIONS AND FEATURES. ANY SITE CONDITIONS WHICH MAY CAUSE SIGNIFICANT DEVIATION FROM THE DESIGN DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF OWNER AND ARCHITECT/ENGINEER OF RECORD FOR CLARIFICATION PRIOR TO SUBMISSION OF THE CONTRACTOR'S BID. VERIFY DIMENSIONS OF ALL PRODUCTS INCLUDING OWNER-FURNISHED EQUIPMENT TO ENSURE PROPER COORDINATION WITH CONSTRUCTION. CONTRACTOR SHALL BEAR ALL COSTS FOR RELOCATION OF EQUIPMENT, PIPE, DUCTS, ETC., FROM FAILURE TO ADVISE OF CONFLICT IN WRITING PRIOR TO SUBMISSION OF ANY BID, AND/OR FROM FAILURE TO PROPERLY COORDINATE INSTALLATIONS OF SYSTEMS.
5. IF ANY PART OF THIS CONTRACTOR'S WORK DEPENDS UPON THE WORK OF A SEPARATE CONTRACTOR, THIS CONTRACTOR SHALL INSPECT SUCH OTHER WORK AND PROMPTLY REPORT IN WRITING TO THE OWNER ANY DEFECTS IN SUCH OTHER WORK THAT RENDERS IT UNSUITABLE TO PERFORM THE WORK OF THIS CONTRACTOR. FAILURE OF THIS CONTRACTOR TO SO INSPECT AND REPORT SHALL CONSTITUTE AN ACCEPTANCE OF THE OTHER CONTRACTOR'S WORK, EXCEPT AS TO DEFECTS WHICH MAY DEVELOP IN OTHER CONTRACTOR'S WORK AFTER EXECUTION OF THIS CONTRACTOR'S WORK.
6. MECHANICAL CONTRACTOR SHALL BE COGNIZANT WITH BUILDING STRUCTURE AND CEILING SPACE. ALLOW FOR INSTALLATION OF EQUIPMENT PRIOR TO BID AND FOR PRICING ADDITIONAL OFFSETS OF DUCTS AND PIPING THAT ARE NOT SHOWN ON DRAWING.
7. VERIFY AT PROJECT SITE EXACT SIZE, LOCATION, INVERT ELEVATIONS, AND CLEARANCES OF ALL EXISTING SERVICES BEING RELOCATED, EXTENDED, CONNECTED TO, OR REMOVED.
8. CONTRACTOR SHALL REMOVE, RELOCATE, REPLACE WITH NEW AND/OR RECONNECT ALL EXISTING SERVICES AS REQUIRED BY NEW CONSTRUCTION.
9. INSTALL ALL PIPING AND DUCTWORK TO AVOID ARCHITECTURAL FRAMING, STRUCTURAL MEMBERS, AND OTHER OBSTRUCTIONS. COORDINATE PIPING AND DUCTWORK LOCATION WITH ALL APPLICABLE CONTRACT DRAWINGS , SHOP DRAWINGS AND INSTALLATION WORK OF OTHER TRADES PRIOR TO PLACING SLEEVES IN FLOORS OR WALLS.
10. SCHEDULE ALL WORK WITH THE FACILITY INCLUDING CONSTRUCTION ACCESS AND STORAGE. THE CONSTRUCTION SCHEDULE PROCEDURE SHALL BE APPROVED BY THE FACILITY PRIOR TO THE START OF CONSTRUCTION.
11. ALL UTILITIES REQUIRED FOR THE CONTINUOUS OPERATION OF ALL EXISTING FACILITIES MUST BE MAINTAINED IN SERVICE AT ALL TIMES EXCEPT AS REQUIRED FOR NEW SYSTEMS CONNECTION. COORDINATE SHUTDOWN WITH RESPONSIBLE FACILITY PERSONNEL.
12. CONTRACTOR SHALL PROVIDE DUST COVERS AS REQUIRED TO CONTAIN DUST AND DEBRIS WITHIN CONSTRUCTION AREA. BROOM CLEAN ALL AREAS EACH DAY. KEEP DIRT AND DUST TO A MINIMUM.
13. ALL REMOVED ITEMS DEEMED TO HAVE VALUE BY THE OWNER SHALL BE DELIVERED TO A PLACE OF STORAGE AT THE SITE AS DIRECTED. ALL OTHER ITEMS MUST BE DISPOSED OF OFF-SITE IN A LEGAL MANNER.
14. WHERE EXISTING CONSTRUCTION IS CUT, DAMAGED, OR REMODELED, PATCH WITH MATERIALS TO MATCH IN KIND, QUALITY, AND PERFORMANCE.
15. WORK SHALL BE EXECUTED IN A CAREFUL AND ORDERLY MANNER WITH THE LEAST POSSIBLE DISTURBANCE TO PUBLIC AND OCCUPANTS OF THE FACILITY.
16. CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR SAFETY OF ALL PERSONS ON OR ABOUT THE CONSTRUCTION SITE, IN ACCORDANCE WITH APPLICABLE LAWS AND CODES. GUARD ALL HAZARDS IN ACCORDANCE WITH THE SAFETY PROVISIONS OF THE LATEST MANUAL OF ACCIDENT PREVENTION PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA AND OSHA.
17. SECURELY FASTEN ALL PIPING AND DUCTWORK WITHIN STRUCTURES TO THE BUILDING CONSTRUCTION BY MEANS OF HANGERS, SUPPORTS, GUIDE ANCHORS, AND SWAY BRACE SEISMIC RESTRAINTS TO MAINTAIN ALIGNMENT, TO PREVENT SAGGING, AND TO PREVENT NOISE AND EXCESSIVE STRAIN DUE TO MOVEMENT UNDER OPERATING CONDITIONS. COORDINATE ANCHORING POINTS TO ASSURE STRUCTURAL INTEGRITY DURING NORMAL OPERATION AND SEISMIC EVENTS.
18. PROVIDE PIPE SUPPORTS NOT MORE THAN 12 INCHES FROM THE POINT OF CHANGE OF DIRECTION OF A PIPE RUN IN BOTH HORIZONTAL AND VERTICAL PLANES.
19. DO NOT SUPPORT PIPING OR VALVES FROM PUMPS OR OTHER PIECES OF EQUIPMENT.
20. PROVIDE UNIONS OR FLANGES ON EACH SIDE OF CONTROL VALVES. PIPING ASSEMBLIES SHALL BE MADE SO AS TO MAKE EVERY VALVE AND PIECE OF EQUIPMENT EASILY REMOVABLE. MANUAL SHUT-OFF AND BYPASS VALVES ARE EXCEPTED FROM THIS REQUIREMENT.
21. CLEAN ALL EXPOSED SURFACES AND NEW EQUIPMENT AFTER COMPLETION OF INSTALLATION.
22. PROVIDE A TIGHT SEAL OF FIRE STOP RATED MATERIAL AROUND ALL DUCTWORK AND PIPING WHICH PENETRATE FIRE SEPARATIONS.
27. THE CONTRACTOR SHALL GUARANTEE THAT ALL WORK DONE UNDER THIS CONTRACT WILL BE FREE FROM FAULTY MATERIALS OR WORKMANSHIP AND HEREBY AGREES TO REPAIR OR REPLACE WITHOUT COST TO THE OWNER AND TO HIS SATISFACTION ALL DEFECTS OR IMPERFECTIONS APPEARING IN SAID WORK WITHIN A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY THE OWNER OF ALL WORK DONE UNDER THIS CONTRACT.

MECHANICAL LEGEND

SYMBOL	ABBREV.	DESCRIPTION
	(L)	NEW SQUARE OR RECTANGULAR DUCT W/1" THK. DUCT LINER (UNO)
	(L)	NEW ROUND DUCT W/1" THK. DUCT LINER (UNO)
		EXISTING SQUARE, RECTANGULAR OR ROUND DUCT
		EXISTING DUCT OR EQUIPMENT TO REMAIN
		NEW FLEXIBLE ROUND DUCT
UP (OR DN)		DUCT SLOPE DIRECTION
		DUCT UP OR DOWN
		EXISTING DUCT OR EQUIPMENT TO BE REMOVED
		RADIUS ELBOW (FIG. 2-2) ✳
		RECTANGULAR/SQUARE DUCT THROAT ELBOW WITH VANES (FIG. 2-2) ✳
OR		SQUARE 45 DEGREE ENTRY BRANCH CONNECTION (FIG. 2-8) ✳
		ROUND DUCT WYE FITTING (FIG. 3-5) ✳
OR		RECTANGULAR DUCT PARALLEL FLOW BRANCH (FIG. 2-7) ✳
*TH OR *TH		THROAT SIZE ON RECTANGULAR DUCT SPLIT
OR		DUCT TAKE-OFF FROM BOTTOM
OR		DUCT TAKE-OFF FROM TOP
	F.D.	NEW FIRE DAMPER
	FD-SD	NEW FIRE DAMPER/SMOKE DAMPER
	M.V.D.	MANUAL VOLUME DAMPER
	MD	NEW MOTORIZED DAMPER
		NEW BAROMETRIC DAMPER
	CR	CEILING REGISTER (RETURN OR OUTSIDE AIR)
	CD	CEILING DIFFUSER (SUPPLY)
	CR	CEILING REGISTER (EXHAUST AIR)
		SUPPLY AIR DUCT SECTION
		RETURN OR OUTSIDE AIR DUCT SECTION
		EXHAUST AIR DUCT SECTION
		SUPPLY AIR DUCT UP THRU FLOOR OR ROOF
		RETURN/OUTSIDE AIR/RELIEF DUCT UP THRU FLOOR OR ROOF
		EXHAUST AIR DUCT UP THRU FLOOR OR ROOF
T	T'STAT.	THERMOSTAT WITH ZONE NUMBER MOUNTED AT 48" AFF
(S) CO2		DEMAND CONTROL VENTILALTION CO2 SENSOR
	TEMP.	TEMPERATURE
	TYP.	TYPICAL
2 L	LVR.	DOOR LOUVER AND SQUARE FOOR AREA
XX Y		EQUIPMENT NUMBER
		UNDERCUT DOOR 3/4 "
	S.P.	STATIC PRESSURE
ϕ	DIA.	ROUND(DIAMETER)
	RL	REFRIGERANT LIQUID
	RS	REFRIGERANT SUCTION
	IBJS	IN BETWEEN JOIST SPACE
	W/CLG. F.D.	WITH CEILING FIRE DAMPER
	C.G.	CEILING GRILLE
	CFM	CUBIC FEET OF AIR PER MINUTE
	E. OR EXH.	EXHAUST
	O.S.A.	OUTSIDE AIR
	R. OR RET.	RETURN
	S. OR SUPP.	SUPPLY
	POR	POINT OF REMOVAL
	POC	POINT OF CONNECTION
	(E)	EXISTING
	UNO	UNLESS NOTED OTHERWISE
SD		SMOKE DUCT DETECTOR (BY FIRE ALARM CONTRACTOR)
HWS	HWS	HEATING HOT WATER SUPPLY
HWR	HWR	HEATING HOT WATER RETURN
CD	CD	CONDENSATE PIPE
RL	RL	REFRIGERANT LIQUID LINE
RS	RS	REFRIGERANT SUCTION LINE
MP	MP	DUCT TRAVERSE AIR FLOW MEASURE POINT
		BALL VALVE
		GLOBE VALVE
		BALANCING COCK
		CHECK VALVE
PRV-X		PRESSURE REDUCING VALVE
		FLOW CONTROL VALVE (NON-MOTORIZED)
		PUMP
		THERMOMETER
	PRV	PRESSU. RELIEF VALVE WITH DISCHARGE TO FLR SINK OR OUTSIDE
EJ-X		PIPING EXPANSION JOINT
		PRESSURE GAUGE WITH GAUGE COCK
MV	MV	MANUAL AIR VENT
		PLUG COCK
		PIPING FLEXIBLE CONNECTION
TH		THERMOMETER WELL
	A.A.V.	AUTOMATIC AIR VENT WITH DISCH. TO FLR SINK OR OUTSIDE

✳ REFERS TO "SMACNA" HVAC DUCT CONSTRUCTION STANDARDS

SHEET INDEX

SCOPE OF WORK

WORK SCOPE AS BELOW:

1. BEFORE THE DEMOLITION WORK BEGINS, THE CONTRACTOR SHALL COORDINATE THE DEMOLITION AND REMODEL CONTRACTION SCHEDULE WITH THE OWNER TO DETERMINE A TEMPORARY HEATING HOT WATER SYSTEM IS REQUIRED.
2. THE TEMPORARY HEATING HOT WATER BOILER SYSTEM SHALL INCLUDE HOT WATER BOILER, SYSTEM PUMP, EXPANSION TANK AND AIR SEPARATOR AND INSTALLED ON A TRAILER.
3. DEMOLISH THE EXISTING BOILER AND ASSOCIATE PIPING, POWER SUPPLY, AND CONTROL.
4. , DEMOLISH THE EXISTING HEATING SYSTEM CIRCULATING PUMP, EXPANSION TANK AND AIR SEPARATOR.
5. INSTALL NEW HOT WATER BOILER, NEW SYSTEM PRIMARY AND SECONDARY PUMPS, NEW EXPANSION TANK AND AIR SEPARATOR.
6. INTEGRATE THE BOILER, CIRCULATING PUMPS TO THE EXISTING BMS SYSTEM FOR CONTROL AND MONITOR.
7. RE-BALANCE BUILDING HEATING WATER SYSTEM.
8. PROVIDE HEATING WATER SYSTEM BALANCE REPORT FOR REVIEW.

APPLICABLE CODES

THE CONSTRUCTION OF THIS PROJECT SHALL CONFORM TO THE REQUIREMENTS OF:

2022 CALIFORNIA BUILDING STANDARD ADMINISTRATIVE CODE PART 1. TITLE 24 C.C.R.

2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R.

2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R. WITH 2022 CITY OF COSTA MESA AMENDMENTS.

2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 C.C.R. WITH 2022 CITY OF COSTA MESA AMENDMENTS.

2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R. WITH 2022 CITY OF COSTA MESA AMENDMENTS.

2022 BUILDING ENERGY EFFICIENCY STANDARDS (CALIFORNIA ENERGY CODE) PART 6, TITLE 24, C.C.R.

2022 CALIFORNIA FIRE CODE, PART 9, TITLE 24 C.C.R.

2022 CALIFORNIA EXISTING BUILDING CODE, PART 10, TITLE 24 C.C.R.

2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 C.C.R.

2022 TITLE 19, C.C.R. PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.

2022 CALIFORNIA GREEN BUILDING STANDARD CODE, C.C.R. TITLE 24, PART 11

2022 CALIFORNIA ENERGY CODE, C.C.R. TITLE 24, PART 6

2022 ASHRAE STANDARD 55-2023 THERMAL ENVIRONMENTAL CONDITIONS FOR HUMAN OCCUPANCY

2022 ASHRAE STANDARD 62.1.-2022 VENTILATION FOR ACCEPTABLE INDOOR AIR QUALITY

2022 ASHRAE STANDARD 90.1-2022: ENERGY STANDARD FOR BUILDINGS EXCEPT LOW-RISE RESIDENTIAL BUILDINGS

EQUIPMENT ANCHORAGE NOTES

ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE HORIZONTAL AND VERTICAL FORCES PRESCRIBED IN THE 2022 CBC. SECTION 1614A 1.12 & 1614A.1.13 AND ASCE 7-05 SECTIONS 13.3, 13.4 & 13.6.

THE ATTACHMENT OF THE FOLLOWING ITEMS SHALL BE DESIGNED TO RESIST THE FORCES PRESCRIBED ABOVE, BUT NEED NOT BE DETAILED ON THE PLANS.

A. EQUIPMENT WEIGHING LESS THAN 400 POUNDS SUPPORTED DIRECTLY ON THE FLOOR OR ROOF.
B. TEMPORARY OR MOVABLE EQUIPMENT.
C. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUPPORTED BY VIBRATION ISOLATORS.
D. EQUIPMENT WEIGHING LESS THAN 20 POUNDS SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

FOR THOSE ELEMENTS THAT DO NOT REQUIRE DETAILS ON THE APPROVED DRAWINGS, THE INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE MECHANICAL/ELECTRICAL ENGINEER AND THE FIELD ENGINEER OF THE DIVISION OF THE STATE ARCHITECT.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO RESIST THE FORCES PRESCRIBED IN ASCE 7-05 SECTION 13.3 AS DEFINED IN ASCE 7-05 SECTION 13.6.8, 13.6.7. AND 13.4.5.5., ITEM 6. RESPECTIVELY.

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REGISTERED PROFESSIONAL ENGINEER — CHARLES E. CRUZ — M33827 — EXP. 06-30-2027 — MECHANICAL — STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

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1	80% Review Set	12/02/25
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MECHANICAL GENERAL NOTES, LEGEND & APPLICABLE CODES

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HOT WATER BOILER SCHEDULE

ITEM NO.	MANUFACTURER AND MODEL NO.	LOCATION	SERVICE	BOILER TYPE	FUEL TYPE	INPUT MBTUH	OUTPUT MBTUH	THERMAL EFFICIENCY	OPERATING TEMPERATURES IN °F	OPERATING TEMPERATURES OUT °F	FLOW GPM	PRESSURE DROP FT	MIN. FLOW GPM	ELECT.-DATA V-Ø-HZ 120 -1-60 MCA	ELECT.-DATA V-Ø-HZ 120 -1-60 MOCP	VOLTAGE CONTROL	OPERATING WEIGHT LBS.	ANCHORAGE DETAIL	REMARKS
B 1	LOCHINVAR POWER-FIN PBN1302	BOILER ROOM	BUILDING 253/245 HEATING SYSTEMS	STAINLESS STEEL WATER TUBE	NAT. GAS	1300	1105	85%	140	180	60	9.5	56	6.7	-	24	700	4 / M-3.00	1 2 3 4 5 6 7 8 9

REMARKS:

1. PROVIDE BACNET MSTP COMMUNICATIONS UNIT CONTROLS/MONITORING SHALL BE CONFIGURED FOR SEAMLESS COMMUNICATIONS WITH THE INTEGRATED BUILDING SYSTEM BACNET BAS.
2. SYSTEM SENSOR SHIPPED LOOSE, FIELD MOUNTED AND WIRED BY CONTRACTOR.
3. MODULATING BURNER WITH UP TO 5:1 TURNDOWN.
4. PROVIDE RELIEF VALVE PRESSURE RATING: 50 PSI
5. PROVIDE FACTORY SUPPLIED GAS REGULATOR .
6. PROVIDE WITH CONDENSATE NEUTRALIZATION KIT FOR VENTING, SS P-TRAP AND LINE FROM VENT TO THE NEUTRALIZER
7. PROVIDE SELF-CONTAINED, LOW TEMPERATURE VALVE (LTV) FOR COLD WATER START.
8. PROVIDE WITH CALIBRATED BALANCE VALVE B&G CIRCUIT SETTER, CB-2-1/2, NPT. INSTALLED DOWNSTREAM FROM BOILER OUTLET.
9. BOILER PRIMARY PUMP, FACTORY PROVIDED AND SHIPPED LOOSE. PIPED AND WIRED BY CONTRACTOR. BOILER WILL CONTROL PUMP, POWER SUPPLIED SEPARATELY. REFER TO SMP-1 SCHEDULE.

* BASIS OF DESIGN OR APPROVED EQUAL.

SYSTEM CIRCULATION PUMP SCHEDULE

ITEM NO.	MANUFACTURER AND MODEL NO.	LOCATION	SYSTEM SERVED	TYPE	OPER. POINT - SELECTION GPM	OPER. POINT - SELECTION TOTAL HEAD FT.	ELECTRICAL DATA VOLT	ELECTRICAL DATA PH	ELECTRICAL DATA HZ	ELECTRICAL DATA MOTOR (HP)	ELECTRICAL DATA FLA (A)	PUMP EFFICY. (%)	PUMP INLET SIZE (IN)	PUMP OUTLET SIZE (IN)	WEIGHT PUMP (LBS.)	ANCHORAGE DETAIL	ACCESSORIES:
PWP 1	LOCHINVAR/TACO PUM30001	BOILER ROOM	PRIMARY HOT WATER SYSTEM	CLOSE-COUPLED INLINE CENTRIFUGAL	60	19	115	1	60	0.5	5.8	-	2	2	70	-	1
SWP 1	BELL & GOSSETT e-80X 1.5x9.5B	BOILER ROOM	SECONDARY WATER SYSTEM	CLOSE-COUPLED INLINE CENTRIFUGAL	60	70	480	3	60	3	4.6	46	1.5	1.5	160	3 / M-3.00	2 3

ACCESSORIES:

1. PROVIDE BY BOILER FACTORY. SHIPPED LOOSE. PIPED AND WIRED BY CONTRACTOR. BOILER WILL CONTROL PUMP, POWER SUPPLIED SEPARATELY
2. ELECTRONICALLY COMMUTATED MOTOR (ECM).
3. UNIT MOUNTED VARIABLE SPEED DRIVE. COMMUNICATION PROTOCOLS : BACNET MS/TP.

* BASIS OF DESIGN OR APPROVED EQUAL.

AIR SEPARATOR SCHEDULE

ITEM NO.	MANUFACTURER AND MODEL NO.	LOCATION	SERVICE	CAPACITY GPM (MAX)	TANK DIMENSIONS, IN. DIAMETER (IN)	TANK DIMENSIONS, IN. HEIGHT (IN)	SYSTEM CONN. FLANGED IN.	FLOOD WT. LESS BRACKETS, LBS.	ANCHORAGE DETAIL	REMARKS
AS 1	BELL & GOSSETT ROLAIRTROL AIR SEPARATOR RL - 2 1/2	BOILER ROOM	HOT WATER	180	8-3/8	17-3/8	2 1/2"	120	7 / M-3.00	1 2

REMARKS:

1. PROVIDE FULL SIZE DRAIN PIPE AND SOV.
2. ASME MAX WORKING PRESSURE 125 PSI.

* BASIS OF DESIGN OR APPROVED EQUAL.

EXPANSION TANK SCHEDULE

ITEM NO.	MANUFACTURER AND MODEL NO.	SIZE (IN)	TYPE	LOCATION	SERVICE	ACCEPTABLE CAPACITY GALLONS	TANK FILL PRESSURE PSIG	RELIEF VALVE PRESSURE PSIG	OPERATING WEIGHT LBS	ANCHORAGE DETAIL	REMARKS
ET 1	BELL & GOSSETT EXPANSION TANK B35	12"Ø	BLADDER	BOILER ROOM	HOT WATER SYSTEM	10	15	50	150	8 / M-3.00	1 2 3

REMARKS:

1. PROVIDE SEISMIC RESTRAINTS.
2. ASME MAX WORKING PRESSURE 125 PSI
3. HORIZONTAL INSTALLATION.

* BASIS OF DESIGN OR APPROVED EQUAL.

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MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

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BOILER REPLACEMENT
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MECHANICAL SCHEDULES

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MECHANICAL SPECIFICATIONS

SECTION 23 00 00 - BASIC MECHANICAL REQUIREMENTS

1.1 SUBMITTALS: SUBMIT FOR REVIEW 6 COPIES OF SHOP DRAWINGS, BROCHURES (CATALOG DATA), AND LISTS OF PROPOSED MATERIALS GIVING MANUFACTURERS' NAMES, CATALOG NUMBER, TRADE NAMES, CUTS AND DETAILED DESCRIPTION. WHEN MORE THAN ONE ITEM OF ITS KIND APPEARS ON SUBMITTAL DATA, CAREFULLY DESIGNATE PARTICULAR ARTICLE SELECTED BY TYPE AND SIZE. SUBMITTED DATA SHEETS SHALL CONTAIN ALL INFORMATION AND PRODUCT CHARACTERISTICS SCHEDULED AND SPECIFIED.

1.2 THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE ON ALL MATERIALS, EQUIPMENT AND WORKMANSHIP, FOR A PERIOD OF 1 YEAR FROM DATE OF ACCEPTANCE OF THE WORK BY THE OWNER.

1.3 SCALE AND FIGURED DIMENSIONS ARE APPROXIMATE AND ARE FOR ESTIMATING PURPOSE ONLY. BEFORE PROCEEDING WITH THE WORK, THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR THE FITTINGS OF HIS MATERIAL AND EQUIPMENT TO OTHER PARTS OF THE EQUIPMENT AND STRUCTURE.

1.4 WHERE APPARATUS AND EQUIPMENT HAVE BEEN INDICATED ON DRAWINGS, THE DIMENSIONS HAVE BEEN TAKEN FROM THE SPECIFIED MANUFACTURER. THE CONTRACTOR SHALL MAKE CHANGES IN PIPING CONTROLS TO SUIT ACTUAL INSTALLED TYPES WITHOUT ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL CHECK THE DRAWINGS TO SEE THAT THE EQUIPMENT HE CONTEMPLATES INSTALLING WILL FIT THE SPACES PROVIDED.

1.5 ALL WORK NOT SHOWN IN COMPLETE DETAIL SHALL BE INSTALLED IN CONFORMANCE WITH ACCEPTED STANDARD PRACTICE.

1.6 PIPING AND OTHER EQUIPMENT SHOWN AS EXISTING HAVE BEEN TAKEN FROM OWNER'S DRAWINGS. CONTRACTOR SHALL VERIFY EXACT LOCATION AND SIZES IN THE FIELD.

1.7 BEFORE BIDDING THE PROJECT THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE CLEARANCES AVAILABLE TO BRING THE SPECIFIED EQUIPMENT AND MATERIAL TO THE SITE.

1.8 THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC TO THE EXTENT THAT ALL OFFSETS, BENDS, SPECIAL FITTINGS AND LOCATIONS ARE NOT EXACTLY LOCATED. MECHANICAL TRADES SHALL FOLLOW THESE DRAWINGS IN LAYING OUT THEIR WORK, CONSULT GENERAL CONSTRUCTION DRAWINGS TO FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THEIR WORK AND SHALL VERIFY SPACES IN WHICH THEIR WORK WILL BE INSTALLED. WHERE JOB CONDITIONS REQUIRE CHANGES IN INDICATED LOCATIONS AND ARRANGEMENT, MAKE SUCH CHANGES AT NO ADDITIONAL COST TO THE OWNER.

1.9 THIS CONTRACTOR SHALL COMPLY WITH ALL CONTRACT DOCUMENTS IN LAYING HIS WORK AND EQUIPMENT. HE SHALL COORDINATE THE WORK OF THIS SECTION WITH THE WORK OF OTHER TRADES AND ALL JOB CONDITIONS.

1.10 WHERE MATERIAL IS SHOWN ON DRAWINGS BUT NOT SPECIFIED, IT SHALL BE OF SAME TYPE AND QUALITY AS EXISTING MATERIAL. SUBMIT DATA FOR APPROVAL.

1.11 UPON COMPLETION AND BEFORE FINAL ACCEPTANCE OF THE WORK, ALL DEBRIS, TEMPORARY PROTECTIVE COVERINGS, RUBBISH, LEFTOVER MATERIALS, TOOLS AND EQUIPMENT SHALL BE REMOVED FROM THE SITE.

1.12 THE ENTIRE INSTALLATION SHALL BE LEFT IN A NEAT, CLEAN AND USABLE CONDITION.

PROJECT RECORD DOCUMENTS: RECORD ACTUAL LOCATIONS OF MECHANICAL SYSTEMS, PIPING, CONTROLS, ETC. & SUBMIT TO OWNER AT SUBSTANTIAL COMPLETION OF PROJECT.

OPERATION AND MAINTENANCE DATA: SUBMIT INSTRUCTIONS FOR INSTALLATION ON MECHANICAL SYSTEMS TO OWNER AT SUBSTANTIAL COMPLETION OF PROJECT.

1.13

WARRANTY: SUBMIT WARRANTIES FOR ALL MECHANICAL SYSTEMS ETC. DESCRIBED ON DRAWINGS AND SPECIFICATIONS TO OWNER AT SUBSTANTIAL COMPLETION OF PROJECT.

1.14

SECTION 23 05 29 - HANGERS AND SUPPORT FOR HVAC PIPING

1. MECHANICAL SUPPORTING DEVICES
   - A. GENERAL: MECHANICAL EQUIPMENT AND MATERIALS ARE NOT TO BE SUSPENDED OR SUPPORTED FROM PIPE, ELECTRICAL CONDUIT, CEILING SYSTEMS OR ANY NON-STRUCTURAL MEMBER.
   - B. DUCT HANGERS: IN ACCORD WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE.
2. SEISMIC BRACING: PIPES, DUCTS, AND CONDUITS SHALL BE SUPPORTED AND BRACED IN ACCORDANCE WITH ISAT APPLICATIONS AND DESIGN MANUAL.

SECTION 23 05 53 - IDENTIFICATION FOR HVAC PIPING

PART 1 GENERAL

1.1 SUMMARY

A. SECTION INCLUDES:
1. PAINTED IDENTIFICATION MATERIALS
2. PLASTIC PIPE MARKERS
3. PLASTIC TAPE
4. VALVE TAGS
5. DIAGRAM AND SCHEDULE FRAMES
6. ENGRAVED PLASTIC LAMINATE SIGNS
7. PLASTIC EQUIPMENT MARKERS
8. PLASTICIZED TAGS

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

B. MANUFACTURERS:
1. CRAFTMARK IDENTIFICATION SYSTEMS
2. OR EQUAL

2.2 NAMEPLATES

A. PRODUCT DESCRIPTION: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED BLACK LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR.

2.3 MECHANICAL IDENTIFICATION MATERIALS

A. GENERAL: PROVIDE MANUFACTURER'S STANDARD PRODUCTS OF CATEGORIES AND TYPES REQUIRED FOR EACH APPLICATION AS REFERENCED IN OTHER DIVISION 21, 22 AND 23 SECTIONS. WHERE MORE THAN SINGLE TYPE IS SPECIFIED FOR APPLICATION, SELECTION IS INSTALLER'S OPTION BUT PROVIDE SINGLE SELECTION FOR EACH PRODUCT CATEGORY.

2.4 PLASTIC PIPE MARKERS

A. SNAP-ON TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, SEMI-RIGID SNAP-ON, COLOR-CODED PIPE MARKERS, PREFORMED TO FIT AROUND PIPE OR PIPE COVERING, COMPLYING WITH ANSI A13.1. LARGER SIZES MAY HAVE MAXIMUM SHEET SIZE WITH SPRING FASTENER.

B. PRESSURE SENSITIVE TYPE: PROVIDE MANUFACTURER'S STANDARD PRE-PRINTED, PERMANENT ADHESIVE, COLOR CODED, PRESSURE SENSITIVE VINYL PIPE MARKERS, COMPLYING WITH ANSI A13.1.

C. INSULATION: FURNISH 1 INCH THICK MOLDED FIBERGLASS INSULATION WITH JACKET FOR EACH PLASTIC PIPE MARKER TO BE INSTALLED ON UN-INSULATED PIPES SUBJECT TO FLUID TEMPERATURE OF 125 DEGREE F OR GREATER. CUT LENGTH TO EXTEND 2 INCHES BEYOND EACH END OF PLASTIC PIPE MARKER.

D. SMALL PIPES: FOR EXTERNAL DIAMETERS LESS THAN 6 INCH (INCLUDING INSULATION IF ANY), PROVIDE FULL BAND PIPE MARKERS, EXTENDING 360 DEGREE AROUND PIPE AT EACH LOCATION, FASTENED BY ONE OF THE FOLLOWING METHODS:
1. SNAP-ON APPLICATION OF PRE-TENSIONED SEMI-RIGID PLASTIC PIPE MARKER.
2. ADHESIVE LAP JOINT IN PIPE MARKER OVERLAP.
3. LAMINATED OR BONDED APPLICATION OF PIPE MARKER TO PIPE (OR INSULATION).
4. TAPED TO PIPE (OR INSULATION) WITH COLOR-CODED PLASTIC ADHESIVE TAPE, NOT LESS THAN 3/4 INCH WIDE; FULL CIRCLE AT BOTH ENDS OF PIPE MARKER, TAPE LAPPED 1-1/2 INCH.

2.6 VALVE TAGS

A. BRASS VALVE TAGS: PROVIDE 19 GAGE POLISHED BRASS VALVE TAGS WITH 1-1/2 IN DIA. WITH SEQUENTIAL NUMBERING.
1. PROVIDE 1-1/2 INCH DIAMETER TAGS, EXCEPT AS OTHERWISE INDICATED.

B. VALVE TAG FASTENERS: PROVIDE MANUFACTURER'S STANDARD SOLID BRASS CHAIN (WIRE LINK OR BEADED TYPE), OR SOLID BRASS S-HOOKS OF THE SIZES REQUIRED FOR PROPER ATTACHMENT OF TAGS TO VALVES, AND MANUFACTURED SPECIFICALLY FOR THAT PURPOSE.

C. ACCESS PANEL MARKERS:
1. PROVIDE MANUFACTURER'S STANDARD SOLID BRASS CHAIN (WIRE LINK OR BEADED TYPE), OR SOLID BRASS S-HOOKS OF THE SIZES REQUIRED FOR PROPER ATTACHMENT OF TAGS TO VALVES, AND MANUFACTURED SPECIFICALLY FOR THAT PURPOSE.
2. PROVIDE MANUFACTURER'S STANDARD 1/16 INCH THICK ENGRAVED PLASTIC LAMINATE ACCESS PANEL MARKERS, WITH ABBREVIATIONS AND NUMBERS CORRESPONDING TO CONCEALED VALVE. INCLUDE 1/8 INCH CENTER HOLE TO ALLOW ATTACHMENT.

2.7 DIAGRAM AND SCHEDULE FRAMES

A. GENERAL: FOR EACH PAGE OF SCHEDULE AND/OR DIAGRAMS, PROVIDE GLAZED DISPLAY FRAME, WITH SCREWS FOR REMOVABLE MOUNTING ON MASONRY WALLS. PROVIDE FRAMES OF EXTRUDED ALUMINUM, WITH SSB GRADE SHEET GLASS.

2.8 ENGRAVED PLASTIC LAMINATE SIGNS

A. GENERAL: PROVIDE ENGRAVING STOCK MELAMINE PLASTIC LAMINATE, COMPLYING WITH FS L-P-387, IN THE SIZES AND THICKNESS INDICATED, ENGRAVED WITH ENGRAVER'S STANDARD LETTER STYLE OF THE SIZES AND WORDING INDICATED, WHITE WITH BLACK CORE (LETTER COLOR) EXCEPT AS OTHERWISE INDICATED, PUNCHED FOR MECHANICAL FASTENING EXCEPT WHERE ADHESIVE MOUNTING IS NECESSARY BECAUSE OF SUBSTRATE.

B. THICKNESS: 1/16 INCH FOR UNITS UP TO 20 SQUARE INCHES OR 8 INCH LENGTH, 1/8 INCH FOR LARGER UNITS.

C. FASTENERS: SELF TAPPING STAINLESS STEEL SCREWS, EXCEPT CONTACT TYPE PERMANENT ADHESIVE WHERE SCREWS CANNOT OR SHOULD NOT PENETRATE THE SUBSTRATE.

2.9 LETTERING AND GRAPHICS

A. GENERAL: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN MECHANICAL IDENTIFICATION WORK, WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERS, LETTERING AND WORDING AS INDICATED, AS RECOMMENDED BY MANUFACTURERS OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION/MAINTENANCE OF MECHANICAL SYSTEMS AND EQUIPMENT.

B. MULTIPLE SYSTEMS: WHERE MULTIPLE SYSTEMS OF SAME GENERIC NAME ARE SHOWN AND SPECIFIED, PROVIDE IDENTIFICATION WHICH INDICATES INDIVIDUAL SYSTEM NUMBER AS WELL AS SERVICE (AS EXAMPLES; BOILER NO. 3, AIR SUPPLY NO. 1H, STANDPIPE F12).

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

A. COORDINATION: WHERE IDENTIFICATION IS TO BE APPLIED TO SURFACES WHICH REQUIRE INSULATION, PAINTING OR OTHER COVERING OR FINISH, INCLUDING VALVE TAGS IN FINISHED MECHANICAL SPACES, INSTALL IDENTIFICATION AFTER COMPLETION OF COVERING AND PAINTING.

3.2 PIPING SYSTEM IDENTIFICATION

A. GENERAL: INSTALL PIPE MARKERS OF ONE OF THE FOLLOWING TYPES ON EACH SYSTEM INDICATED TO RECEIVE IDENTIFICATION, AND INCLUDE ARROWS TO SHOW NORMAL DIRECTION OF FLOW. PLASTIC PIPE MARKERS, WITH APPLICATION SYSTEM AS INDICATED UNDER "MATERIALS" IN THIS SECTION. INSTALL ON PIPE INSULATION SEGMENT WHERE REQUIRED FOR HOT NON-INSULATED PIPES.

B. LOCATE PIPE MARKERS AS FOLLOWS WHEREVER PIPING IS EXPOSED TO VIEW IN OCCUPIED SPACES, MACHINE ROOMS, ACCESSIBLE MAINTENANCE SPACES (SHAFTS, TUNNELS, PLENUMS) AND EXTERIOR NON-CONCEALED LOCATIONS.
1. NEAR EACH VALVE AND CONTROL DEVICE.
2. NEAR EACH BRANCH, EXCLUDING SHORT TAKE OFFS FOR FIXTURES AND TERMINAL UNITS; MARK EACH PIPE AT BRANCH, WHERE THERE COULD BE QUESTION OF FLOW PATTERN.
3. NEAR LOCATIONS WHERE PIPES PASS THROUGH WALLS OR FLOOR/S CEILINGS, OR ENTER NON-ACCESSIBLE TO ENCLOSURES.
4. AT ACCESS DOORS, MANHOLES SIMILAR ACCESS POINTS WHICH PERMIT VIEW OR CONCEALED PIPING.
5. NEAR MAJOR EQUIPMENT ITEMS AND OTHER PINTS OF ORIGINATION AND TERMINATION.
6. SPACED INTERMEDIATELY AT MAXIMUM SPACING OF 50' ALONG EACH PIPING RUN, EXCEPT REDUCE SPACING TO 25' IN CONGESTED AREAS OF PIPING AND EQUIPMENT.
7. ON PIPING ABOVE REMOVABLE ACOUSTICAL CEILINGS, EXCEPT OMIT INTERMEDIATELY SPACED MARKS.

3.3 VALVE IDENTIFICATION

A. GENERAL: PROVIDE VALVE TAG ON EVERY ISOLATION AND BALANCING VALVES; EXCLUDE COCK AND CONTROL VALVES, CHECK VALVES, VALVES WITHIN FACTORY FABRICATED EQUIPMENT UNITS AND HVAC TERMINAL DEVICES. LIST EACH TAGGED VALVE IN VALVE SCHEDULED FOR EACH PIPING SYSTEM.

B. MOUNT VALVE SCHEDULE FRAMES AND SCHEDULES IN MACHINE ROOMS WHERE INDICATED OR, IF NOT OTHERWISE INDICATED, WHERE DIRECTED BY ARCHITECT.

3.4 MECHANICAL EQUIPMENT IDENTIFICATION

A. GENERAL: INSTALL ENGRAVED PLASTIC LAMINATE SIGN OR PLASTIC EQUIPMENT MARKER ON OR NEAR EACH MAJOR ITEM OF MECHANICAL EQUIPMENT AND EACH OPERATIONAL DEVICE, AS SPECIFIED HEREIN IF NOT OTHERWISE SPECIFIED FOR EACH ITEM OR DEVICE. PROVIDE SIGNS FOR THE FOLLOWING GENERAL CATEGORIES OF EQUIPMENT AND OPERATIONAL DEVICES:
1. MAIN CONTROL AND OPERATING VALVES, GAGES, THERMOMETERS AND SIMILAR UNITS.
2. FAN COIL UNITS.

B. LETTERING SIZE: MINIMUM 1/4 INCH HIGH LETTERING FOR NAME OF UNIT WHERE VIEWING DISTANCE IS LESS THAN 2'-0", 1/2 INCH HIGH FOR DISTANCE UP TO 6'-0", AND PROPORTIONATELY LARGER LETTERING FOR GREATER DISTANCES. PROVIDE SECONDARY LETTERING OF 2/3 TO 3/4 OF SIZE OF THE PRINCIPAL LETTERING.

C. TEST OF SIGNS: IN ADDITION TO NAME OF IDENTIFIED UNIT, PROVIDE LETTERING TO DISTINGUISH BETWEEN MULTIPLE UNITS, INFORM OPERATOR OF OPERATIONAL REQUIREMENTS, INDICATE SAFETY AND EMERGENCY PRECAUTIONS, AND WARN OF HAZARDS AND IMPROPER OPERATIONS.

3.5 ADJUSTING AND CLEANING

A. ADJUSTING: RELOCATE ANY MECHANICAL IDENTIFICATION DEVICE WHICH HAS BECOME VISUALLY BLOCKED BY WORK OF THIS DIVISION OR OTHER DIVISIONS.

B. CLEANING: CLEAN FACE OF IDENTIFICATION DEVICES, AND GLASS FRAMES OF VALVE CHARTS.

SECTION 23 05 93 - TESTING, ADJUSTING AND BALANCING

1.1 TESTING AND BALANCING AGENCY

AGENCY QUALIFICATIONS: THE CONTRACTOR, AS PART OF THIS CONTRACT, SHALL OBTAIN THE SERVICES OF A QUALIFIED AGENCY TO PERFORM THE TESTING AND BALANCING WORK AS HEREIN SPECIFIED. THE CRITERIA FOR DETERMINING QUALIFICATIONS SHALL BE MEMBERSHIP IN THE AABC, OR CERTIFICATION BY THE NEBB, AND THE AGENCY SHALL HAVE NOT LESS THAN 5 YEARS EXPERIENCE ON PROJECTS OF SIMILAR SCOPE AND COMPLEXITY. THE AGENCY SHALL BE INDEPENDENT OF THE INSTALLING CONTRACTORS OR EQUIPMENT SUPPLIERS FOR THIS PROJECT.

1.2 GENERAL

A. REQUIREMENTS: ADJUST SYSTEMS AND COMPONENTS THEREOF TO PERFORM AS REQUIRED BY DRAWINGS AND SPECIFICATIONS.

B. INSTRUMENTATION: METHOD OF APPLICATION OF INSTRUMENTATION SHALL BE IN ACCORDANCE WITH THE APPROVED AGENCY. FURNISH ALL PERSONNEL, INSTRUMENTS, AND EQUIPMENT FOR TESTS SPECIFIED HEREIN.

C. ACCURACY OF INSTRUMENTS: INSTRUMENTS USED FOR MEASUREMENTS SHALL BE ACCURATE TO WITHIN THE REQUIREMENTS OF AABC. PROVIDE CALIBRATION HISTORIES FOR EACH INSTRUMENT FOR EXAMINATION.

D. TEST REPORTS: INDICATE DATA ON AABC MN-1 NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE FORMS CONTAINING INFORMATION INDICATED IN SCHEDULES. INDICATE DEFICIENCIES PREVENTING PROPER TESTING, ADJUSTING, AND BALANCING OF SYSTEMS AND EQUIPMENT TO ACHIEVE SPECIFIED PERFORMANCE.

SECTION 23 07 00 - HVAC INSULATION

1.1 PIPING INSULATION

A. GENERAL:
1. PIPING INSULATING MATERIAL SHALL BE FIRE RESISTANT, NON-CORROSIVE, SHALL NOT BREAK, SETTLE, SAG, PACK OR DISINTEGRATE UNDER VIBRATION, NOR ABSORB MORE THAN 1 PERCENT MOISTURE BY WEIGHT.
2. PIPING INSULATING MATERIAL SHALL BE FURNISHED WITH THICKNESS INDICATED IN TABLE 1, UNLESS OTHERWISE NOTED ON THE DRAWINGS, AND SHALL FURNISH THERMAL RESISTANCE IN THE RANGE OF R-4.0 TO 4.6 IN ACCORDANCE WITH INCH AT 75 DEGREES F. FOR ANY OTHER VALUE OF R, INSULATION THICKNESS SHALL BE CALCULATED ACCORDINGLY AND SUBMITTED FOR REVIEW.
3. ASBESTOS IN ANY QUANTITY IN INSULATING MATERIAL IS NOT PERMITTED.
4. PROVIDE INSULATION MATERIALS, ADHESIVES, COATINGS, SEALANTS, FITTING COVERS, AND OTHER ACCESSORIES WITH A FIRE HAZARD RATING NOT TO EXCEED 25 FOR FLAME SPREAD, 25 FOR FUEL CONTRIBUTED AND 50 FOR SMOKE DEVELOPED, EXCEPT FOR MATERIALS LISTED AS FOLLOWS:

A. NYLON ANCHORS FOR INSTALLING INSULATION TO DUCTS OR EQUIPMENT.

B. TREATED WOOD BLOCKS.

5. FLAME-PROOFING TREATMENTS SUBJECT TO MOISTURE DAMAGE ARE NOT PERMITTED.

TABLE 1 - MINIMUM PIPING INSULATION THICKNESS (1)

INSULATION THICKNESS REQUIRED (IN INCHES)

<u>HEATING WATER PIPING</u>: PIPE SIZE 1" & SMALLER - 1.5"

NOTES: (1) FOR PIPING EXPOSED TO AMBIENT TEMPERATURES, INCREASE THICKNESS BY 0.5 INCH.

B. LAGGING ADHESIVES: SHALL BE NONFLAMMABLE AND FIRE-RESISTANT AND SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND A MAXIMUM SMOKE DEVELOPED INDEX OF 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84. INSULATION FINISHED WITH CANVAS SHALL BE PROVIDED WITH LAPS ADHERED IN ACCORDANCE TO MANUFACTURER'S RECOMMENDATION. A FINISH COAT OF SAME MATERIAL SHALL BE APPLIED TO ENTIRE OUTER SURFACE OF LAGGING CLOTH AT COVERAGE SPECIFIED BY MANUFACTURER.

C. CANVAS JACKETS: FURNISH 6 OUNCE IN ACCORDANCE WITH SQUARE FOOT MINIMUM, 48 BY 48 THREAD COUNT CANVAS JACKETING.

D. INSULATION JACKETS:
1. EXTERIOR INSULATION EXPOSED TO WEATHER SHALL BE WEATHERPROOFED WITH CHILDERS ALUMINUM JACKETING AS BASIS OF DESIGN, OR PABCO, RPR, OR EQUAL. JACKETING SHALL BE MANUFACTURED FROM 1100, 3105 OR 5010 ALUMINUM ALLOY WITH 3/16 INCH CORRUGATIONS. SMOOTH OR EMBOSSED JACKETS MAY BE PERMITTED IN SPECIAL SITUATIONS TO MATCH AN EXISTING INSTALLATION. JACKETING SHALL BE FURNISHED WITH AN INTEGRALLY BONDED MOISTURE BARRIER OVER ENTIRE SURFACE IN CONTACT WITH INSULATION. A MINIMUM THICKNESS OF 0.016 ALUMINUM JACKETING IS TO BE PROVIDED ON DUCTS AND PIPING. A MINIMUM THICKNESS OF 0.020 SHALL BE PROVIDED ON TANKS, EQUIPMENT, AND HEAT EXCHANGERS.
2. INSULATED ELBOWS, OF 90 DEGREES AND 45 DEGREES, WITH A NOMINAL IRON PIPE SIZE OF ½ INCH TO 8 INCHES SHALL BE PROVIDED WITH CHILDERS ALUMINUM ELL-JACS INSULATION COVERS AS BASIS OF DESIGN, OR PABCO, RPR, OR EQUAL, MANUFACTURED FROM 1100 ALUMINUM ALLOY OF 0.024 INCH THICKNESS. INSULATED ELBOWS WITH A NOMINAL PIPE SIZE OF 10 INCHES TO 18 INCHES SHALL BE PROVIDED WITH CHILDERS 4-PIECE ALUMINUM ELL-JACS AS BASIS OF DESIGN, OR PABCO, RPR, OR EQUAL.
3. TEES, FLANGES, AND VALVE INSULATION IN CONJUNCTION WITH ALUMINUM JACKETING: FURNISH CHILDERS ALUMINUM SPECIAL FABRICATIONS INSULATION COVERS AS MANUFACTURED BY CHILDERS PRODUCTS COMPANY, PABCO, RPR, OR EQUAL.

E. ADHESIVES: ADHESIVES SHALL BE WATER BASED, UL CLASSIFIED, MEET THE REQUIREMENTS OF NFPA 90A AND NFPA 90B, HAVE BEEN TESTED ACCORDING TO RELEVANT ASTM REQUIREMENTS, AND BE ACCEPTABLE TO THE STATE FIRE MARSHAL. NAME, TYPE AND METHOD OF INSTALLATION SHALL BE SUBMITTED FOR REVIEW.

F. VALVE AND FITTING COVER: WHEN INSTALLED IN CONJUNCTION WITH PVC JACKETING, FURNISH ZESTON 25/50 RATED POLYVINYL CHLORIDE FITTING COVERS AS MANUFACTURED BY JOHNS MANVILLE, KNAUF INSULATION, SPEEDLINE, OR EQUAL.

SECTION 23 21 13 - HYDRONIC PIPING

PART 1 - GENERAL

1.1 SUMMARY

SECTION INCLUDES:HEATING WATER PIPING, ABOVE GROUND.
1. EQUIPMENT DRAINS AND OVER FLOWS.
2. UNIONS AND FLANGES.

PART 2 - PRODUCTS

2.1 HEATING WATER PIPING, ABOVE GROUND

STEEL PIPE: ASTM A53 / A53M, SCHEDULE 40 BLACK STEEL WITH PLAIN ENDS; WELDED AND SEAMLESS, GRADE B.

FITTINGS: ASME B16.3, CLASS 150, MALLEABLE IRON OR ASTM A234 / A234M, FORGED STEEL WELDING TYPE.

JOINTS: THREADED FOR PIPE 2 INCHES AND SMALLER; WELDED FOR PIPE 2-1/2 INCHES AND LARGER.

COPPER TUBING: ASTM B88, TYPE L DRAWN (ALTERNATE PIPE MATERIAL FOR COOLING WATER PIPING, NPS 2 AND SMALLER).

FITTINGS: ASME B16.18, CAST BRASS, OR ASME B16.22 SOLDER WROUGHT COPPER.

JOINTS: SOLDER, LEAD FREE, ASTM B32, BRAZE, AWS A5.8 BCUP SILVER/PHOSPHORUS/COPPER ALLOY WITH MELTING RANGE 1190 TO 1480 DEGREES F.

PRESS-CONNECT FITTINGS: BRONZE OR COPPER SHALL CONFORM TO THE MATERIAL REQUIREMENTS OF ASME B16.18 OR ASME B16.22, AND THE PERFORMANCE REQUIREMENTS OF IAPMO PS117, AND ICC/ANSI LC1002 AND NSF/ANSI 61-PW (IF USED IN A POTABLE WATER SYSTEM.) PRESS-CONNECT FITTINGS ½-INCH THRU 4-INCH FOR USE WITH ASTM B88 COPPER TUBE SHALL HAVE AN EPDM SEALING ELEMENT, AND AN UN-PRESSED FITTING, LEAK IDENTIFICATION FEATURE. 2-1/2-INCH THRU 4-INCH SHALL HAVE A 420 STAINLESS STEEL GRIP RING, PBT SEPARATOR RING, AND EPDM SEALING ELEMENT. SEALING ELEMENTS SHALL BE VERIFIED FOR THE INTENDED USE.

2.2 EQUIPMENT DRAINS AND OVERFLOWS

STEEL PIPE: ASTM A53 / A53M SCHEDULE 40, GALVANIZED.

FITTINGS: ASME B16.3, MALLEABLE IRON OR ASME B16.4, CAST IRON.

JOINTS: THREADED FOR PIPE 2 INCHES AND SMALLER; FLANGED FOR PIPE 2-1/2 INCHES AND LARGER.

COPPER TUBING: ASTM B88, TYPE DWV OR L, DRAWN (ALTERNATE PIPE MATERIAL FOR EQUIPMENT DRAINS AND OVERFLOWS, NPS 2 AND SMALLER).

FITTINGS: ASME B16.18, CAST BRASS, OR ASME B16.22 SOLDER WROUGHT COPPER.

JOINTS: SOLDER, LEAD FREE, ASTM B32.

2.3 UNIONS AND FLANGES

UNIONS FOR PIPE 2 INCHES AND SMALLER:

FERROUS PIPING: CLASS 150, MALLEABLE IRON, THREADED.

COPPER PIPING: CLASS 150, BRONZE UNIONS WITH SOLDERED JOINTS.

DISSIMILAR MATERIALS: BRASS BALL VALVE AND 6 INCH LONG BRASS NIPPLE.

FLANGES FOR PIPE 2-1/2 INCHES AND LARGER:

FERROUS PIPING: CLASS 150, FORGED STEEL, SLIP-ON FLANGES.

COPPER PIPING: CLASS 150, SLIP-ON BRONZE FLANGES.

GASKETS: 1/16 INCH THICK PREFORMED NEOPRENE GASKETS.

DISSIMILAR MATERIALS: BRASS BALL VALVE AND 6 INCH LONG BRASS NIPPLE.

PART 3 - EXECUTION

3.1 INSTALLATION - INSERTS

PROVIDE INSERTS FOR PLACEMENT IN CONCRETE FORMS.

PROVIDE INSERTS FOR SUSPENDING HANGERS FROM REINFORCED CONCRETE SLABS AND SIDES OF REINFORCED CONCRETE BEAMS.

PROVIDE HOOKED ROD TO CONCRETE REINFORCEMENT SECTION FOR INSERTS CARRYING PIPE 4 INCHES AND LARGER, CASTING ANCHOR OR ANCHOR INSERTS.

WHERE CONCRETE SLABS FORM FINISHED CEILING, LOCATE INSERTS FLUSH WITH SLAB SURFACE.

3.2 INSTALLATION - PIPE HANGERS AND SUPPORTS

SUPPORT PIPING IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 23 05 29, HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT.

A. INSTALL HANGERS FOR STEEL PIPING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD SIZES:

NPS 3/4: MAXIMUM SPAN, 7 FEET WITH 3/8-INCH ROD.
1. NPS 1: MAXIMUM SPAN, 7 FEET WITH 3/8-INCH ROD.
2. NPS 1-1/2: MAXIMUM SPAN, 9 FEET WITH 3/8-INCH ROD.
3. NPS 2: MAXIMUM SPAN, 10 FEET.
4. NPS 2-1/2: MAXIMUM SPAN, 11 FEET WITH 1/2-INCH ROD.
5. NPS 3: MAXIMUM SPAN, 12 FEET WITH 1/2-INCH ROD.
6. NPS 4: MAXIMUM SPAN, 12 FEET WITH 5/8-INCH ROD.
7. NPS 6: MAXIMUM SPAN, 12 FEET WITH 3/4-INCH ROD.
8. NPS 8 AND LARGER: MAXIMUM SPAN, 12 FEET WITH 7/8-INCH ROD.

B. INSTALL HANGERS FOR DRAWN-TEMPER COPPER PIPING WITH THE FOLLOWING MAXIMUM SPACING AND MINIMUM ROD SIZES:

NPS 3/4: MAXIMUM SPAN, 5 FEET; MINIMUM ROD SIZE, 1/4 INCH.
1. NPS 1: MAXIMUM SPAN, 6 FEET; MINIMUM ROD SIZE, 1/4 INCH.
2. NPS 1-1/4: MAXIMUM SPAN, 7 FEET; MINIMUM ROD SIZE, 3/8 INCH.
3. NPS 1-1/2: MAXIMUM SPAN, 8 FEET; MINIMUM ROD SIZE, 3/8 INCH.
4. NPS 2: MAXIMUM SPAN, 8 FEET; MINIMUM ROD SIZE, 3/8 INCH.
5. NPS 2-1/2: MAXIMUM SPAN, 9 FEET; MINIMUM ROD SIZE, 3/8 INCH.
6. NPS 3 AND LARGER: MAXIMUM SPAN, 10 FEET; MINIMUM ROD SIZE, 3/8 INCH.

INSTALL HANGERS TO PROVIDE MINIMUM 1/2 INCH SPACE BETWEEN FINISHED COVERING AND ADJACENT WORK.

PLACE HANGERS WITHIN 12 INCHES OF EACH HORIZONTAL ELBOW, 12 INCHES FROM END OF FITTING.

USE HANGERS WITH 1-1/2 INCH MINIMUM VERTICAL ADJUSTMENT. DESIGN HANGERS FOR PIPE MOVEMENT WITHOUT DISENGAGEMENT OF SUPPORTED PIPE.

SUPPORT VERTICAL PIPING AT EVERY FLOOR, ROOF AND AT 10 FOOT INTERVALS BETWEEN FLOORS. SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.

WHERE INSTALLING SEVERAL PIPES IN PARALLEL AND AT SAME ELEVATION, PROVIDE MULTIPLE PIPE HANGERS OR TRAPEZE HANGERS.

PROVIDE CLEARANCE IN HANGERS AND FROM STRUCTURE AND OTHER EQUIPMENT FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES AND FITTINGS.

3.3 INSTALLATION - ABOVE GROUND PIPING SYSTEMS
- a. ROUTE PIPING PARALLEL TO BUILDING STRUCTURE AND MAINTAIN GRADIENT.
- b. INSTALL PIPING TO CONSERVE BUILDING SPACE, AND NOT INTERFERE WITH USE OF SPACE.
- c. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
- d. SLEEVE PIPE PASSING THROUGH PARTITIONS, WALLS AND FLOORS.
- e. INSTALL FIRESTOPPING AT FIRE RATED CONSTRUCTION PERIMETERS AND OPENINGS CONTAINING PENETRATING SLEEVES AND PIPING.
- f. INSTALL PIPE IDENTIFICATION.
- g. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
- h. CONTRACTOR SHALL PROVIDE ACCESS WHERE VALVES AND FITTINGS ARE NOT EXPOSED.
- i. HORIZONTAL HYDRONIC PIPING TO RUN LEVEL. DRAIN SYSTEMS AT LOW POINTS. USE ECCENTRIC REDUCERS OR CONCENTRIC TO REDUCE PIPE, MAINTAIN TOP OF PIPE ALIGNED, WHEN POSSIBLE.
- j. WHERE PIPE SUPPORT MEMBERS ARE WELDED TO STRUCTURAL BUILDING FRAMING, SCRAPE, BRUSH CLEAN, AND APPLY ONE COAT OF ZINC RICH PRIMER TO WELDS.
- k. PRIME UNFINISHED PIPE, FITTINGS, SUPPORTS, AND ACCESSORIES, READY FOR FINISH PAINTING.
- l. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED.
- m. INSULATE PIPING AS REQUIRED.

3.4 FIELD QUALITY CONTROL

a. PERFORM THE FOLLOWING TESTS ON HYDRONIC PIPING:

VERIFY THAT PIPE IS CLEAN AND FREE OF DEBRIS AND HAS BEEN COMPLETED.

USE AMBIENT TEMPERATURE WATER AS A TESTING MEDIUM UNLESS THERE IS RISK OF DAMAGE DUE TO FREEZING. ANOTHER LIQUID THAT IS SAFE FOR WORKERS AND COMPATIBLE WITH PIPING MAY BE USED.

b. WHILE FILLING SYSTEM, USE VENTS INSTALLED AT HIGH POINTS OF SYSTEM TO RELEASE AIR. USE DRAINS INSTALLED AT LOW POINTS FOR COMPLETE DRAINING OF TEST LIQUID.

c. SUBJECT PIPING SYSTEM TO HYDROSTATIC TEST PRESSURE THAT IS NOT LESS THAN 1.5 TIMES THE SYSTEM'S WORKING PRESSURE. TEST PRESSURE SHALL NOT EXCEED MAXIMUM PRESSURE FOR ANY VESSEL, PUMP, VALVE, OR OTHER COMPONENT IN SYSTEM UNDER TEST. VERIFY THAT STRESS DUE TO PRESSURE AT BOTTOM OF VERTICAL RUNS DOES NOT EXCEED 90 PERCENT OF SPECIFIED MINIMUM YIELD STRENGTH OR 1.7 TIMES "SE" VALUE IN APPENDIX A IN ASME B31.9, "BUILDING SERVICES PIPING."

d. AFTER HYDROSTATIC TEST PRESSURE HAS BEEN APPLIED FOR AT LEAST 2 HOURS, WITH SYSTEM VALVES CAPPED AND PRESSURE APPARATUS DISCONNECTED, AND NO CHANGE IN TEST PRESSURE, EXAMINE PIPING, JOINTS, AND CONNECTIONS FOR LEAKAGE. ELIMINATE LEAKS BY TIGHTENING, REPAIRING, OR REPLACING COMPONENTS AND REPEAT HYDROSTATIC TEST UNTIL THERE ARE NO LEAKS.

e. PREPARE WRITTEN REPORT OF TESTING.

3.5 ADJUSTMENT AND CLEANING

a. CLEANING:

DURING CONSTRUCTION, PREVENT ENTRY OF FOREIGN MATTER, CLEAN PIPE, FITTINGS, AND VALVES INTERNALLY AND HAMMER WELDS TO REMOVE ALL LOOSE DIRT, MILL SCALE, METAL CHIPS, WELD BEADS RUST AND HARMFUL SUBSTANCES. FLUSH PIPING SYSTEM WITH CLEAR WATER PRIOR TO CONNECTION TO COILS, CONTROL VALVES AND EQUIPMENT. INSTALL TEMPORARY STRAINER OR BY-PASS PIPING AROUND FACTORY CLEANED COMPONENTS SUCH AS COILS, CONTROL VALVES AND EQUIPMENT WHERE PIPING SYSTEM IS NOT FLUSHED PRIOR TO CONNECTION. REMOVE TEMPORARY STRAINER OR BY-PASS PIPING BEFORE THE OWNER'S FINAL ACCEPTANCE.FLUSH WITH CLEAR WATER AND SEAL ENDS AFTER CLEANING.

b. WATER SYSTEMS:

OPEN ALL VALVES, DRAINS, VENTS AND STRAINERS AT ALL SYSTEM LEVELS.

REMOVE PLUGS, CAPS, SPOOL PIECES AND COMPONENTS TO FACILITATE EARLY DEBRIS DISCHARGE FROM SYSTEM.

ISOLATE OR PROTECT CLEAN SYSTEMS COMPONENTS INCLUDING PUMPS AND PRESSURE VESSELS AND REMOVE ANY COMPONENT THAT MAY BE DAMAGED. INSTALL TEMPORARY STRAINER WHERE NECESSARY.

c. FLUSH BOTTOMS OF RISERS.

AFTER START-UP FLUSHING, FILL WITH CLEAN WATER, ADD PRODUCTS RECOMMENDED BY WATER TREATMENT SUPPLIER TO REMOVE ADHERENT ORGANIC SOIL, HYDROCARBON FLUX, PIPE MILL VARNISH, JOINT COMPOUNDS, RUST AND HARMFUL SUBSTANCES NOT REMOVED BY INITIAL FLUSHING.

CIRCULATE WATER OF EACH SYSTEM AT RESPECTIVE DESIGN FLOW RATES FOR AT LEAST 8 HOURS.

AT END OF 8 HOUR PERIOD, REMOVE AND CLEAN STRAINERS AND BLOW OFF LOW POINT, THEN COMPLETELY DRAIN OUT ENTIRE SYSTEMS OF CLEANING SOLUTION. REFILL SYSTEMS WITH CLEAN WATER AND CIRCULATE FOR AN ADDITIONAL 4 HOUR PERIOD AND, AT THE END OF THAT INTERVAL, COMPLETELY DRAIN SYSTEMS, OPERATE ALL VALVES TO DISLODGE DEBRIS.

DRAIN, REFILL WITH CLEAR WATER AND CIRCULATE, AND PROVIDE WATER TREATMENT AS DIRECTED BY THE WATER TREATMENT COMPANY.

SECTION 23 21 16 - HYDRONIC PIPING SPECIALTIES

1.1 SUMMARY

A. SECTION INCLUDES:
1. PRESSURE GAGES AND PRESSURE GAGE TAPS.
2. THERMOMETERS AND THERMOMETER SUPPORTS.
3. TEST PLUGS
4. AIR VENTS.
5. STRAINERS.
6. FLOW CONTROLS/CIRCUIT SETTER.

1.2 SUBMITTALS

A. PRODUCT DATA: SUBMIT FOR MANUFACTURED PRODUCTS AND ASSEMBLIES USED IN THIS PROJECT.
1. MANUFACTURER'S DATA AND LIST INDICATING USE, OPERATING RANGE, TOTAL RANGE, ACCURACY, AND LOCATION FOR MANUFACTURED COMPONENTS.
2. SUBMIT PRODUCT DESCRIPTION, MODEL, DIMENSIONS, COMPONENT SIZES, ROUGH-IN REQUIREMENTS, SERVICE SIZES, AND FINISHES.
3. SUBMIT SCHEDULE INDICATING MANUFACTURER, MODEL NUMBER, SIZE, LOCATION, RATED CAPACITY, LOAD SERVED, AND FEATURES FOR EACH PIPING SPECIALTY.
4. SUBMIT ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS WHERE APPROPRIATE.

1.3 DELIVERY, STORAGE, AND HANDLING

A. PROVIDE TEMPORARY PROTECTIVE COATING ON CAST IRON AND STEEL VALVES.

B. PROTECT SYSTEMS FROM ENTRY OF FOREIGN MATERIALS BY TEMPORARY COVERS, CAPS AND CLOSURES, COMPLETING SECTIONS OF THE WORK, AND ISOLATING PARTS OF COMPLETED SYSTEM UNTIL INSTALLATION.

PART 2 - PRODUCTS

2.1 PRESSURE GAGES

A. MANUFACTURERS:
1. TRERICE.
2. OR EQUAL.

B. GAGE: ASME B40.1, UL LISTED WITH BOURDON TUBE, ROTARY BRASS MOVEMENT, BRASS SOCKET, FRONT CALIBRATION ADJUSTMENT, BLACK SCALE ON WHITE BACKGROUND.
1. CASE: STEEL.
2. BOURDON TUBE: BRASS.
3. DIAL SIZE: 2 INCH DIAMETER MINIMUM.
4. MID-SCALE ACCURACY: ONE PERCENT.
5. SCALE: PSI.

2.2 PRESSURE GAGE TAPS

A. MANUFACTURERS:
1. TRERICE.
2. OR EQUAL.

B. VALVE: BRASS, 1/4 INCH NPT FOR MINIMUM 300 PSI.

C. BALL VALVE: BRASS 1/4 INCH NPT FOR 250 PSI.

D. PULSATION DAMPER: PRESSURE SNUBBER, BRASS WITH 1/4 INCH NPT CONNECTIONS.

2.3 STEM TYPE THERMOMETERS

A. MANUFACTURERS:
1. TRERICE.
2. OR EQUAL.

B. THERMOMETER: ASTM E1, BLUE COLORED FILL TYPE, LENS FRONT TUBE, CAST ALUMINUM CASE WITH ENAMEL FINISH.
1. SIZE: 9 INCH SCALE.
2. WINDOW: CLEAR GLASS OR LEXAN.
3. STEM: BRASS, 3/4 INCH NPT LONG.
4. ACCURACY: ASTM E77 2 PERCENT.
5. CALIBRATION: DEGREES F.

C. THERMOMETER: ASTM E1, ADJUSTABLE ANGLE, BLUE COLORED FILL TYPE, LENS FRONT TUBE, CAST ALUMINUM CASE WITH ENAMEL FINISH, CAST ALUMINUM ADJUSTABLE JOINT WITH POSITIVE LOCKING DEVICE.
1. SIZE: 9 INCH SCALE.
2. WINDOW: CLEAR GLASS OR LEXAN.
3. STEM: BRASS, 3/4 INCH NPT LONG.
4. ACCURACY: ASTM E77 2 PERCENT.
5. CALIBRATION: DEGREES F.

2.4 THERMOMETER SUPPORTS

A. SOCKET: BRASS SEPARABLE SOCKETS FOR THERMOMETER STEMS WITH OR WITHOUT EXTENSIONS, AND WITH CAP AND CHAIN.

B. FLANGE: 3 INCH OUTSIDE DIAMETER REVERSIBLE FLANGE, DESIGNED TO FASTEN TO SHEET METAL AIR DUCTS, WITH BRASS PERFORATED STEM.

2.5 TEST PLUGS

A. MANUFACTURERS:
1. TRERICE.
2. OR EQUAL

B. 1/4 INCH NPT OR 1/2 INCH NPT BRASS FITTING AND CAP FOR RECEIVING 1/8 INCH OUTSIDE DIAMETER PRESSURE OR TEMPERATURE PROBE WITH:
1. NEOPRENE CORE FOR TEMPERATURES UP TO 200 DEGREES F.
2. NORDEL CORE FOR TEMPERATURES UP TO 350 DEGREES F.
3. VITON CORE FOR TEMPERATURES UP TO 400 DEGREES F.

C. TEST KIT:
1. CARRYING CASE, INTERNALLY PADDED AND FITTED CONTAINING:
A. TWO 2-1/2 INCH DIAMETER PRESSURE GAGES.

2.6 AIR VENTS

A. MANUFACTURERS:
1. BELL GOSSETT.
2. OR EQUAL.

B. MANUAL TYPE: SHORT VERTICAL SECTIONS OF 2 INCH DIAMETER PIPE TO FORM AIR CHAMBER, WITH 1/8 INCH BRASS NEEDLE VALVE AT TOP OF CHAMBER.

C. FLOAT TYPE:
1. BRASS OR SEMI-STEEL BODY, COPPER, POLYPROPYLENE, OR SOLID NON-METALLIC FLOAT, STAINLESS STEEL VALVE AND VALVE SEAT; SUITABLE FOR SYSTEM OPERATING TEMPERATURE AND PRESSURE; WITH ISOLATING VALVE.
2. CAST IRON BODY AND COVER, FLOAT, BRONZE PILOT VALVE MECHANISM SUITABLE FOR SYSTEM OPERATING TEMPERATURE AND PRESSURE; WITH ISOLATING VALVE.

D. WASHER TYPE:
1. BRASS WITH HYDROSCOPIC FIBER DISCS, VENT PORTS, ADJUSTABLE CAP FOR MANUAL SHUT-OFF, AND INTEGRAL SPRING LOADED BALL CHECK VALVE.

2.7 STRAINERS

A. MANUFACTURERS:
1. NIBCO.
2. OR EQUAL.

B. SIZE 2 INCH AND SMALLER:
1. SCREWED BRASS OR IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 1/32 INCH STAINLESS STEEL PERFORATED SCREEN.

C. SIZE 2-1/2 INCH TO 4 INCH:
1. FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 3/64 INCH STAINLESS STEEL PERFORATED SCREEN.

2.8 FLOW CONTROLS/CIRCUIT SETTER

A. MANUFACTURERS:
1. BELL GOSSETT
2. OR EQUAL.

B. CONSTRUCTION: BRASS OR BRONZE BODY WITH UNION ON INLET AND OUTLET, TEMPERATURE AND PRESSURE TEST PLUG ON INLET AND OUTLET COMBINATION BLOW-DOWN AND BACK-FLUSH DRAIN.

C. CALIBRATION: CONTROL WITHIN 5 PERCENT OF DESIGN FLOW OVER ENTIRE OPERATING PRESSURE.

D. CONTROL MECHANISM: STAINLESS STEEL OR NICKEL PLATED BRASS PISTON OR REGULATOR CUP, OPERATING AGAINST STAINLESS STEEL HELICAL OR WAVE FORMED SPRING.

E. ACCESSORIES: IN-LINE STRAINER ON INLET AND BALL VALVE ON OUTLET.

PART 3 - EXECUTION

3.1 INSTALLATION - THERMOMETERS AND GAGES

A. INSTALL ONE PRESSURE GAGE FOR EACH PUMP, LOCATE TAPS BEFORE STRAINERS AND ON SUCTION AND DISCHARGE OF PUMP; PIPE TO GAGE.

B. INSTALL GAGE TAPS IN PIPING

C. INSTALL PRESSURE GAGES WITH PULSATION DAMPERS. PROVIDE NEEDLE VALVE OR BALL VALVE TO ISOLATE EACH GAGE. EXTEND NIPPLES TO ALLOW CLEARANCE FROM INSULATION.

D. INSTALL THERMOMETERS IN PIPING SYSTEMS IN SOCKETS IN SHORT COUPLINGS. ENLARGE PIPES SMALLER THAN 2-1/2 INCHES FOR INSTALLATION OF THERMOMETER SOCKETS. ALLOW CLEARANCE FROM INSULATION.

E. INSTALL THERMOMETER SOCKETS ADJACENT TO CONTROLS SYSTEMS THERMOSTAT, TRANSMITTER, OR SENSOR SOCKETS. WHERE THERMOMETERS ARE PROVIDED ON LOCAL PANELS, PIPE MOUNTED THERMOMETERS ARE NOT REQUIRED.

F. COIL AND CONCEAL EXCESS CAPILLARY ON REMOTE ELEMENT INSTRUMENTS.

G. PROVIDE INSTRUMENTS WITH SCALE RANGES SELECTED ACCORDING TO SERVICE WITH LARGEST APPROPRIATE SCALE.

H. INSTALL GAGES AND THERMOMETERS IN LOCATIONS WHERE THEY ARE EASILY READ FROM NORMAL OPERATING LEVEL. INSTALL VERTICAL TO 45 DEGREES OFF VERTICAL.

I. ADJUST GAGES AND THERMOMETERS TO FINAL ANGLE, CLEAN WINDOWS AND LENSES, AND CALIBRATE TO ZERO.

3.2 INSTALLATION - HYDRONIC PIPING SPECIALTIES

A. WHERE LARGE AIR QUANTITIES ACCUMULATE, PROVIDE ENLARGED AIR COLLECTION STANDPIPES.

B. INSTALL MANUAL AIR VENTS AT SYSTEM HIGH POINTS.

C. FOR AUTOMATIC AIR VENTS IN CEILING SPACES OR OTHER CONCEALED LOCATIONS, INSTALL VENT TUBING TO NEAREST DRAIN.

D. PROVIDE DRAIN AND HOSE CONNECTION WITH VALVE ON STRAINER BLOW DOWN CONNECTION.

3.3 PROTECTION OF INSTALLED CONSTRUCTION

A. DO NOT INSTALL HYDRONIC PRESSURE GAUGES UNTIL AFTER SYSTEMS ARE PRESSURE TESTED.

END OF SECTION 23 21 16

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M33827
EXP. 06-30-2027

REVIEWED BY

Name: -

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CITY OF SAN DIMAS
BOILER REPLACEMENT
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SAN DIMAS, CA 91773

ISSUED / REVISIONS:

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MECHANICAL SPECIFICATIONS

SECTION 23 5100 - CHIMNEYS, BREECHING, AND STACKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

B. THE CONTRACTOR'S ATTENTION IS SPECIFICALLY DIRECTED, BUT NOT LIMITED, TO THE FOLLOWING DOCUMENTS FOR ADDITIONAL REQUIREMENTS:

1. THE CURRENT VERSION OF THE UNIFORM GENERAL CONDITIONS FOR CONSTRUCTION CONTRACTS, STATE OF TEXAS, AVAILABLE ON THE WEB SITE OF THE TEXAS FACILITIES COMMISSION.
2. THE UNIVERSITY OF HOUSTON'S SUPPLEMENTAL GENERAL CONDITIONS AND SPECIAL CONDITIONS FOR CONSTRUCTION.

1.2 SUMMARY

A. THIS SECTION INCLUDES THE FOLLOWING:

1. LISTED DOUBLE-WALL CHIMNEYS.

1.3 SUBMITTALS

A. PRODUCT DATA: FURNISH PRODUCT DATA FOR THE FOLLOWING:

1. TYPE B .

B. DOCUMENTS:

1. SHOP DRAWINGS FOR VENTS, BREECHINGS, CHIMNEYS, AND STACKS. INCLUDE DRAWINGS, ELEVATIONS, SECTIONS, DETAILS, AND ATTACHMENTS TO OTHER WORK.
2. DETAILS OF EQUIPMENT ASSEMBLIES THAT INDICATE DIMENSIONS, WEIGHTS, LOADS, REQUIRED CLEARANCES, METHODS OF FIELD ASSEMBLY, COMPONENTS, HANGERS AND RESTRAINTS, INCLUDING THE LOCATION AND THE SIZE OF EACH FIELD CONNECTION.
3. FOR INSTALLED PRODUCTS INDICATED TO COMPLY WITH DESIGN LOADS, INCLUDE CALCULATIONS AND STRUCTURAL ANALYSIS DATA SIGNED AND SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION.

1.6 DELIVERY, STORAGE AND HANDLING

A. THE WORK OF THIS SECTION SHALL BE COORDINATED WITH OTHER TRADES AFFECTING, OR AFFECTED BY THIS WORK, TO ASSURE THE STEADY PROGRESS OF ALL WORK PERFORMED UNDER THE CONTRACT.

B. REPLACE ANY SECTIONS OR ASSEMBLIES DAMAGED DURING SHIPMENT, STORAGE OR HANDLING WITH NEW IDENTICAL FACTORY-SUPPLIED COMPONENTS.

C. PROTECT FINISHES FROM PHYSICAL DAMAGE BY LEAVING FACTORY PACKING CASES IN PLACE BEFORE INSTALLATION AND PROVIDING TEMPORARY PROTECTIVE COVERS AFTER INSTALLATION WITH ON-GOING CONSTRUCTION WITHIN THE PROJECT SITE.

1.7 WARRANTY

A. SPECIAL WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF VENTING SYSTEM THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. FAILURES INCLUDE, BUT ARE NOT LIMITED TO, STRUCTURAL FAILURES CAUSED BY EXPANSION AND CONTRACTION.

PART 2 - PRODUCTS

2.1 GENERAL

A. ALL MATERIALS SHALL MEET OR EXCEED ALL APPLICABLE REFERENCED STANDARDS, FEDERAL, STATE AND LOCAL REQUIREMENTS, AND CONFORM TO CODES AND ORDINANCES OF AUTHORITIES HAVING JURISDICTION.

2.2 MANUFACTURERS

A. SELKIRK INC.; SELKIRK AIR MATE.

B. OR EQUAL.

2.3 LISTED TYPE B VENTS

A. DESCRIPTION: DOUBLE-WALL METAL VENTS TESTED ACCORDING TO UL 441 AND RATED FOR 480 DEGREES F CONTINUOUSLY FOR TYPE B, WITH NEUTRAL OR NEGATIVE FLUE PRESSURE COMPLYING WITH NFPA 211 AND SUITABLE FOR CERTIFIED GAS-FIRED APPLIANCES.

B. CONSTRUCTION: INNER SHELL AND OUTER JACKET SEPARATED BY AT LEAST A 1/4-INCH AIRSPACE.

C. INNER SHELL: ASTM A 666, TYPE 430 STAINLESS STEEL.

D. OUTER JACKET: GALVANIZED STEEL.

E. ACCESSORIES: TEES, ELBOWS, INCREASERS, DRAFT-HOOD CONNECTORS, TERMINATIONS, ADJUSTABLE ROOF FLASHINGS, STORM COLLARS, SUPPORT ASSEMBLIES, THIMBLES, FIRESTOP SPACERS, AND FASTENERS; FABRICATED FROM SIMILAR MATERIALS AND DESIGNS AS VENT-PIPE STRAIGHT SECTIONS; ALL LISTED FOR SAME ASSEMBLY.

1. TERMINATION: STACK CAP DESIGNED TO EXCLUDE 90 PERCENT OF RAINFALL.
2. TERMINATION: ROUND CHIMNEY TOP DESIGNED TO EXCLUDE 98 PERCENT OF RAINFALL.

2.4 GUYING AND BRACING MATERIALS

A. CABLE: FOUR GALVANIZED, STRANDED WIRES OF THE FOLLOWING THICKNESS:

1. MINIMUM CABLE SIZE: 1/4 INCH IN DIAMETER.
2. FOR STACK ID SIZES 4 TO 15 INCHES: USE 5/16 INCH.
3. FOR STACK ID SIZES 18 TO 24 INCHES: USE 3/8 INCH.

B. PIPE: TWO GALVANIZED STEEL, NPS 1-1/4.

C. ANGLE IRON: TWO GALVANIZED STEEL, 2 BY 2 BY 0.25 INCH.

PART 3 - EXECUTION

3.1 PREPARATION

A. EXAMINE AREAS AND CONDITIONS FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS THAT MAY AFFECT PERFORMANCE OF WORK.

B. CONTRACTOR SHALL FURNISH SUPERVISION AND PROVIDE LABOR FOR INSTALLATION OF THE WORK. CONTRACTOR SHALL FIELD CHECK THE WORK PRIOR TO START-UP AND COMMISSIONING OF EQUIPMENT OR APPLIANCE CONNECTED TO THE WORK SUCH AS VENTS, BREECHINGS, CHIMNEYS, GREASE DUCTS OR STACKS.

3.2 INSTALLATION

A. VENTS AND CHIMNEYS:

1. LOCATE TO COMPLY WITH MINIMUM CLEARANCES FROM COMBUSTIBLES AND MINIMUM TERMINATION HEIGHTS ACCORDING TO PRODUCT LISTING OR NFPA 211, WHICHEVER IS MOST STRINGENT.
2. SEAL BETWEEN SECTIONS OF POSITIVE-PRESSURE VENTS ACCORDING TO MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, USING SEALANTS RECOMMENDED BY MANUFACTURER.
3. SUPPORT VENTS AT INTERVALS RECOMMENDED BY THE MANUFACTURER TO SUPPORT WEIGHT OF VENTS AND ALL ACCESSORIES, WITHOUT EXCEEDING APPLIANCE LOADING.
4. PROPERLY SLOPE BREECHINGS IN ACCORDANCE WITH MANUFACTURER'S OR ARCHITECT/ENGINEER RECOMMENDATIONS, AND INSTALL CONDENSATE A DRAIN CONNECTION AT THE LOWEST POINT AND PIPED TO NEAREST DRAIN.
5. CONNECT BASE SECTIONS OF CHIMNEYS TO FOUNDATION USING ANCHOR LUGS OF SIZE AND NUMBER RECOMMENDED BY MANUFACTURER OR ARCHITECT/ENGINEER.
6. JOIN SECTIONS WITH ACID-RESISTANT JOINT CEMENT TO PROVIDE CONTINUOUS JOINT AND SMOOTH INTERIOR FINISH.
7. ERECT STACKS PLUMB TO FINISH TOLERANCE OF NO MORE THAN 1.5 INCH OUT OF PLUMB FROM TOP TO BOTTOM.

3.3 CLEANING

A. AFTER COMPLETING SYSTEM INSTALLATION, INCLUDING OUTLET FITTINGS AND DEVICES, INSPECT EXPOSED FINISH. REMOVE BURRS, DIRT, AND CONSTRUCTION DEBRIS AND REPAIR DAMAGED FINISHES.

B. CLEAN BREECHINGS INTERNALLY, DURING AND AFTER INSTALLATION, TO REMOVE DUST AND DEBRIS. CLEAN EXTERNAL SURFACES TO REMOVE WELDING SLAG AND MILL FILM. GRIND WELDS SMOOTH AND APPLY TOUCHUP FINISH TO MATCH FACTORY OR SHOP FINISH.

C. PROVIDE TEMPORARY CLOSURES AT ENDS OF BREECHINGS, CHIMNEYS, AND STACKS THAT ARE NOT COMPLETED OR NOT COMPLETELY CONNECTED TO EQUIPMENT OR APPLIANCE.

END OF SECTION 23 5100

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MECHANICAL SPECIFICATIONS

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STATE OF CALIFORNIA
Mechanical Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
This document is used to demonstrate compliance for mechanical systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, or 141.0(b)2 for alterations.	
Project Name: City of San Dimas Boiler Replacement	**Report Page:** (Page 1 of 6)
Project Address: 245 E. Bonita Ave.	**Date Prepared:** 12/16/2025

A. GENERAL INFORMATION

01	Project Location (city)	SAN DIMAS	04	Total Conditioned Floor Area	0
02	Climate Zone	9	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

B. PROJECT SCOPE

This table includes mechanical systems or components that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in 140.4, 170.2(b) or 141.0(b)2 and 180.2(b)2 for alterations.

01 Air System(s)	02 Wet System Components	03 Dry System Components
☐ Heating Air System	☐ Water Economizer	☐ Air Economizer
☐ Cooling Air System	☒ Pumps	☐ Electric Resistance Heat
Mechanical Controls	☐ System Piping	☐ Fan Systems
☐ Mechanical Controls (existing to remain, altered or new)	☐ Cooling Towers	☐ Ductwork (existing to remain, altered or new)
	☐ Chillers	☐ Ventilation
	☒ Boilers	☐ Zonal Systems/ Terminal Boxes

STATE OF CALIFORNIA
Mechanical Systems
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C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with mechanical requirements. This table is not editable by the user. If this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D., or the table indicated as not compliant for guidance.

01		02		03		04		05		06		07		08	09
System Summary 110.1, 110.2, 140.4, 170.2(c)	AND	Pumps 140.4(k), 170.2(c)4I	AND	Fans/ Economizers 140.4(c), 140.4(e), 170.2(c)	AND	System Controls 110.2, 120.2, 140.4(f), 170.2(c)	AND	Ventilation 120.1, 160.2	AND	Terminal Box Controls 140.4(d), 170.2(c)4B	AND	Distribution 120.3, 140.4(l), 160.2, 160.3	AND	Cooling Towers 110.2(e)2	Compliance Results
(See Table F)		(See Table G)		(See Table H)		(See Table I)		(See Table J)		(See Table K)		(See Table L)		(See Table M)	
Yes	AND	Yes	AND		AND		AND		AND		AND		AND		COMPLIES
Mandatory Measures Compliance (See Table Q for Details)												COMPLIES			

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Boiler Efficiency and Controls

Boiler System Serving	0

01	02	03	04	05	06	07	08	09	10
Boiler Name or Item Tag	Equipment Type[1]	Qty	Rated Input Capacity (Btu/h)[2,3]	Rated Efficiency	Minimum Efficiency Required per 110.2	Efficiency Unit	Boiler Controls per 140.4(k), 170.2(c)iii		High Capacity Boiler Exceptions
							Isolation Valve	Temperature Reset	

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F. HVAC SYSTEM SUMMARY (DRY & WET SYSTEMS)

Boiler Efficiency and Controls

Lochinvar PBN 1302	Hot Water, Gas-Fired	1	1,300,000	0.85	0.84	TE	NA: only 1 boiler in plant	Yes	No Exceptions Apply
System Efficiency			0.85	Minimum System Efficiency for High Capacity Boilers per 140.4(k)8A					

[1] *FOOTNOTES: Use NRCC-PLB to document compliance with domestic hot water and service water heating systems.*
[2] *Maximum capacity- minimum and maximum ratings as provided for and allowed by the unit's controls*
[3] *Includes oil-fired (residual)*

G. PUMPS

This table is used to demonstrate compliance with Prescriptive hydronic system requirements found in 140.4(k) 170.2(c)4I applicable to pumps < 5hp.

01	02	03	04	05	06	07	08
Name or Item Tag	Equipment Type	Qty	HP	Controls per 140.4(k) & 170.2(c)4I			
				Variable Flow	Hydronic Heat Pump Isolation	VSD on Pumps > 5HP	Differential Pressure Sensor
HW	Primary heating hot water	1	3.5	Yes	NA: No hydronic heat pump	Yes	Required

H. FAN SYSTEMS & AIR ECONOMIZERS

This section does not apply to this project.

I. SYSTEM CONTROLS

This section does not apply to this project.

J. VENTILATION AND INDOOR AIR QUALITY

This section does not apply to this project.

STATE OF CALIFORNIA
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K. TERMINAL BOX CONTROLS

This section does not apply to this project.

L. DISTRIBUTION (DUCTWORK and PIPING)

This section does not apply to this project.

M. COOLING TOWERS

This section does not apply to this project.

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRC/

Form/Title
NRCI-MCH-01-E - Must be submitted for all buildings

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in previous tables of this document. If any selection needs to be changed, please explain why in Table E Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCA/

Form/Title	Systems/Spaces To Be Field Verified
NRCA-MCH-08-A Valve Leakage Test	Lochinvar PBN 1302;
NRCA-MCH-09-A Supply Water Temperature Reset Controls	Lochinvar PBN 1302;
NRCA-MCH-10-A Hydronic System Variable Flow Controls	Lochinvar PBN 1302;

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P. DECLARATION OF REQUIRED CERTIFICATES OF VERIFICATION

There are no NRCV forms required for this project.

Q. MANDATORY MEASURES DOCUMENTATION LOCATION

This table is used to indicate where mandatory measures are documented in the plan set or construction documentation.

01		02
		Plan sheet or construction document location
Compliance with Mandatory Measures documented through MCH Mandatory Measures Note Block	Yes	M-Sheets

STATE OF CALIFORNIA
Mechanical Systems
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CERTIFICATE OF COMPLIANCE	NRCC-MCH-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:** (Page 6 of 6)
Project Address: 245 E. Bonita Ave.	**Date Prepared:** 12/16/2025

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Gary Yang	Documentation Author Signature: G.Y.
Company: PBS Engineers	Signature Date: 2025-12-16
Address: 279 E ARROW HWY, SUITE 201	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: SAN DIMAS CA 91773	Phone: 626.691.3558

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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

Responsible Designer Name: Tariq Hassan	Responsible Designer Signature:
Company: PBS Engineers	Date Signed: 2025-12-16
Address: 279 E ARROW HWY, SUITE 201	License: M33827
City/State/Zip: SAN DIMAS CA 91773	Phone: 626.691.3558

STATE OF CALIFORNIA
Process Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-PRC-E
This form is used to document any process systems that are within the scope of the permit application and are demonstrating compliance with mandatory requirements in 120.6/ 160.7 or prescriptive requirements in 140.9. This compliance document is used for newly constructed, addition and alteration projects.	
Project Name: City of San Dimas Boiler Replacement	**Report Page:** (Page 1 of 5)
Project Address: 245 E. Bonita Ave.	**Date Prepared:** 12/16/2025

A. GENERAL INFORMATION

01	Project Location (city)	SAN DIMAS	04	Total Conditioned Floor Area	0
02	Climate Zone	9	05	Total Unconditioned Floor Area	0
03	Occupancy Types Within Project:		06	# of Stories (Habitable Above Grade)	1

● All Other Occupancies

B. PROJECT SCOPE

This table includes process systems that are within the scope of the permit application and are demonstrating compliance with mandatory requirements in 120.6 / 160.7 or prescriptive requirements in 140.9.

My project consists of: (check all that apply):

01	02
☐ Refrigerated Spaces <3,000 ft² Total (no Title 24, Pt6 requirements)	☐ Escalator & Moving Walkway Speed Controls (mandatory 120.6(g))
☐ Refrigerated Spaces >=3,000 ft² Total (mandatory 120.6(a))	☐ Computer Rooms (mandatory 120.6(j) and prescriptive 140.9(a))[1]
☐ Food /Beverage Stores >8,000 ft² cfa (mandatory 120.6(b))	☐ Commercial Kitchen Ventillation/Exhaust (prescriptive 140.9(b))[1]
☐ Enclosed Parking Garage Exhaust >=10,000 cfm (mandatory 120.6(c))	☐ Laboratory Exhaust/Factory Exhaust & Fume Hood (prescriptive 140.9(c))[1]
☒ Newly Installed Process Boilers (mandatory 120.6(d))	☐ Pool/Spa (mandatory 110..4 / 160.7)
☐ Compressed Air Systems Combined HP >= 25 (mandatory 120.6(e))	☐ Controlled Environment Horticulture (mandatory 120.6(h))
☐ Elevator Lighting & Ventilation Controls (mandatory 120.6(f) / 160.7)	☐ New Steam Traps (mandatory 120.6(i))

[1] *FOOTNOTES: These building features can comply using the performance method. If using the performance method for these features, compliance should be demonstrated on the NRCC-PRF-E.*

STATE OF CALIFORNIA
Process Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-PRC-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:** (Page 2 of 5)
	Date Prepared: 12/16/2025

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through R. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Refrigerated Warehouse / Space 120.6(a) (See Table F)	Commercial Refrigeration 120.6(b) (See Table G)	Parking Garage Exhaust 120.6(c) (See Table H)	Process Boilers 120.6(d) (See Table I)	Compressed Air Systems 120.6(e) (See Table J)	Elevators 120.6(f) / 160.7 (See Table K)	Escalators & Moving Walkways 120.6(g) (See Table L)	Computer Rooms 140.9(a) (See Table M)	Commercial Kitchens 140.9(b) (See Table N)	Laboratory/ Factory Exhaust 140.9(c) (See Table O)	Controlled Environment Horticulture 120.6(h) (See Table P)	Steam Traps 120.6(i) (See Table Q)	Multifamily Pool/Spa 160.7 (See Table R)	**Compliance Results**
													COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

F. REFRIGERATED WAREHOUSES/SPACES

This section does not apply to this project.

G. COMMERCIAL REFRIGERATION

This section does not apply to this project.

H. ENCLOSED PARKING GARAGE EXHAUST

This section does not apply to this project.

STATE OF CALIFORNIA
Process Systems
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-PRC-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:** (Page 3 of 5)
	Date Prepared: 12/16/2025

I. PROCESS BOILER

This section does not apply to this project.

J. COMPRESSED AIR SYSTEMS

This section does not apply to this project.

K. ELEVATOR LIGHTING AND VENTILATION

This section does not apply to this project.

L. ESCALATORS AND MOVING WALKWAYS SPEED CONTROLS

This section does not apply to this project.

M. COMPUTER ROOM SYSTEM SUMMARY

This section does not apply to this project.

N. COMMERCIAL KITCHEN EXHAUST AND VENTILATION

O. LABORATORY AND FACTORY EXHAUST AND FUME HOODS

This section does not apply to this project.

P. CONTROLLED ENVIRONMENT HORTICULTURE

This section does not apply to this project.

PBS ENGINEERS
279 East Arrow Highway, Suite 201
San Dimas, CA 91773
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2025-082-00

REGISTERED PROFESSIONAL ENGINEER
TARIQ HASSAN
M33827
EXP. 06-30-2027
MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:
T-24 FORMS

Job No.	2025-082-00
Date:	2/13/2026
Scale:	NONE
Drawn By:	K.K.
Checked By:	K.K.

Sheet No:
M-0.05

P:_PROJECTS\P-2025\20\2025-082-00 City of San Dimas Boiler Replacement\10_BIM-CAD\CAD\Sheets\M-0.05.dwg 2/13/2026 2:30 PM Charles Cruz

STATE OF CALIFORNIA
Process Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PRC-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 4 of 5)**
	Date Prepared:	12/16/2025

Q. STEAM TRAPS IN INDUSTRIAL FACILITIES

This section does not apply to this project.

R. Pool & SPAs

This section does not apply to this project.

S. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selections have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Form/Title
NRCI-PRC-01-E - Covered Process

T. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no NRCA forms required for this project.

STATE OF CALIFORNIA
Process Systems CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-PRC-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 5 of 5)**
Project Address: 245 E. Bonita Ave.	**Date Prepared:**	12/16/2025

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Gary Yang	Documentation Author Signature: G.Y.
Company: PBS Engineers	Signature Date: 2025-12-16
Address: 279 E ARROW HWY, SUITE 201	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: SAN DIMAS CA 91773	Phone: 626.691.3558

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

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

Responsible Designer Name: Tariq Hassan	Responsible Designer Signature:
Company: PBS Engineers	Date Signed: 2025-12-16
Address: 279 E ARROW HWY, SUITE 201	License: M33827
City/State/Zip: SAN DIMAS CA 91773	Phone: 626.691.3558

STATE OF CALIFORNIA
Nonresidential Building Commissioning CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-CXR-E
This document is used to demonstrate compliance with mandatory commissioning requirements in 120.8 for nonresidential buildings and hotel/motel or mixed-use buildings with nonresidential spaces. This document does not demonstrate compliance with commissioning requirements within Title 24, Part 11, which need to be documented separately if they apply.		
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 1 of 6)**
Project Address: 245 E. Bonita Ave.	**Date Prepared:**	12/16/2025

A. GENERAL INFORMATION

01	Project Location (city)	SAN DIMAS	04	Building Size (ft²)	0
02	Occupancy Type	Nonresidential	05		< 10,000 ft²
03	Project Type	Newly constructed	06		Unitary or packaged equipment each serving one zone
			07	Climate Zone	9

B. PROJECT SCOPE

Based on project information provided in Table A, Table B indicates which commissioning related requirements apply per 120.8. Table B is not editable by the user.

Commissioning Requirements per 120.8			
01	Table F: Design Review Kickoff	120.8(d)1 and 120.8(d)2	The design review kickoff meeting establishes who will play the role of the design reviewer, the project schedule and identify owner's requirements. This meeting should be conducted during schematic design.
02	Table G: Owner's Project Requirements (OPR)	120.8(b)	This requirement does not apply.
03	Table H: Basis of Design (BOD)	120.8(c)	This requirement does not apply.
04	Table I: Design Review	120.8(d) and 120.8(e)	The design reviewer(s) reviews the construction documents for clarity, completeness, and adherence to the owner's goals. Commissioning measures must be included in the construction documents to facilitate the design review and commissioning process. For projects with >= 10,000 ft² of nonresidential conditioned floor area, the design review is for adherence with the Owner's Project Requirements (OPR) and Basis of Design (BOD). This should be conducted during design.
05	Table J: Commissioning Plan	120.8(f)	This requirement does not apply.
06	Table K: Functional Performance Testing	120.8(g)	This requirement does not apply.
07	Table L: Documentation and Training	120.8(h)	This requirement does not apply.
08	Table M: Commissioning Report	120.8(i)	This requirement does not apply.

STATE OF CALIFORNIA
Nonresidential Building Commissioning CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-CXR-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 2 of 6)**
	Date Prepared:	12/16/2025

C. COMPLIANCE RESULTS

Table C will indicate if the project data input into the compliance document is compliant with commissioning requirements per 120.8. This table is not editable by the user. If any cell on this table says "DOES NOT COMPLY" or "COMPLIES with Exceptional Conditions" refer to Table D. for guidance.

01	02	03	04	05	06	07	08	09
Design Kickoff Review	Owner's Project Requirements	Basis of Design	Design Review	Commissioning Plan	Functional Performance Testing	Documentation and Training	Commissioning Report	
Table F	Table G	Table H	Table I	Table J	Table K	Table L	Table M	
Yes	Yes							COMPLIES
10								COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

STATE OF CALIFORNIA
Nonresidential Building Commissioning CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-CXR-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 3 of 6)**
	Date Prepared:	12/16/2025

F. DESIGN REVIEW KICKOFF MEETING

This table indicates that the design reviewer meets the qualification requirements per Title 24, Part 1 Section 10-103(a)1 and demonstrates compliance with design review kickoff requirements per 120.8(d)2. This meeting should occur during the Schematic Design phase of the project.

Design Review Kickoff Meeting Details

01	Date of Design Review Kickoff Meeting	0001-01-01		
02	Meeting Attendees: (one person may play multiple roles)			
☐	Owner/Facility Manager:	☒	Design Reviewer(s)	Designer
☐	Project Manager:	☐	Design Architect/ Engineer(s):	
☐	Contractor:	☐	Certified Acceptance Test Tech(s):	
☐	Commissioning Provider:	☐	Energy/ T24 Part 6 Consultant:	

Design Reviewer Qualifications per Title 24 Part 1 Section 10-103(a)1

	The design reviewer(s) must be licensed professional engineers or licensed architects, or licensed contractors representing services performed by or under the direct supervision of a licensed engineer or architect, as specified in the provisions of Division 3 of the Business and Professions Code.	Do the Design Reviewer(s) meet these qualifications? Yes	No
03	In addition, for buildings with >= 10,000 ft² but < 50,000², the design reviewer(s) shall be a qualified in-house engineer or architect with no other project involvement or a third party engineer, architect, or contractor	●	○
04	The design reviewer(s) for this project will be:	Designer	

Preliminary Construction Schedule

		Start Date	Completion Date
05	Schematic Design	0001-01-01	0001-01-01
06	Design Development	0001-01-01	0001-01-01
07	Construction Documents	0001-01-01	0001-01-01
08	Construction	0001-01-01	0001-01-01
09	Building Turnover	0001-01-01	0001-01-01

Project Goals Related to Energy Efficiency

10	Operational Costs	
11	Desired Building Lifespan	
12	Equipment Lifecycle	
13	Project Energy Efficiency Goals	

STATE OF CALIFORNIA
Nonresidential Building Commissioning CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-CXR-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 4 of 6)**
	Date Prepared:	12/16/2025

F. DESIGN REVIEW KICKOFF MEETING

14	Envelope Goals	
15	HVAC System Goals	
16	Indoor Lighting System Goals	
17	Outdoor Lighting System Goals	
18	Water Heating System Goals	
19	Equipment and System Specifications	
20	Operations and Maintenance	

G. OWNER'S PROJECT REQUIREMENTS (OPR)

This section does not apply to this project.

H. BASIS OF DESIGN (BOD)

This section does not apply to this project.

I. CONSTRUCTION DOCUMENT DESIGN REVIEW CHECKLIST

This table is only completed if a design review document is not attached to permit application to demonstrate compliance with 120.8(b) and 120.8(e). For buildings with >= 10,000 ft² conditioned floor area, the design review will ensure the construction documents meet the Owner's Project Requirements (Table G.) and the Basis of Design Documents (Table H.). For buildings with < 10,000 ft² conditioned floor area, the design review will ensure the construction documents meet the goals documented in Table F. during the Design Review Kickoff.

		YES	NO
01	Attaching Completed Design Review Documentation?	●	○

J. COMMISSIONING PLAN

This section does not apply to this project.

STATE OF CALIFORNIA
Nonresidential Building Commissioning CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-CXR-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 5 of 6)**
	Date Prepared:	12/16/2025

K. FUNCTIONAL PERFORMANCE TESTING

This section does not apply to this project.

L. DOCUMENTATION AND TRAINING

This section does not apply to this project.

M. COMMISSIONING REPORT

This section does not apply to this project.

N. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

There are no forms required for this project.

O. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

There are no forms required for this project.

STATE OF CALIFORNIA
Nonresidential Building Commissioning CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE		NRCC-CXR-E
Project Name: City of San Dimas Boiler Replacement	**Report Page:**	**(Page 6 of 6)**
Project Address: 245 E. Bonita Ave.	**Date Prepared:**	12/16/2025

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

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

Documentation Author Name: Gary Yang	Documentation Author Signature: G.Y.
Company: PBS Engineers	Signature Date: 2025-12-16
Address: 279 E ARROW HWY, SUITE 201	CEA/ HERS Certification Identification (if applicable):
City/State/Zip: SAN DIMAS CA 91773	Phone: 626.691.3558

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

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3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
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Responsible Designer Name: Tariq Hassan	Responsible Designer Signature:
Company: PBS Engineers	Date Signed: 2025-12-16
Address: 279 E ARROW HWY, SUITE 201	License: M33827
City/State/Zip: SAN DIMAS CA 91773	Phone: 626.691.3558

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San Dimas, CA 91773
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2025-082-00

REGISTERED PROFESSIONAL ENGINEER
TARIQ A. HASSAN
M33827
EXP. 06-30-2027
MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

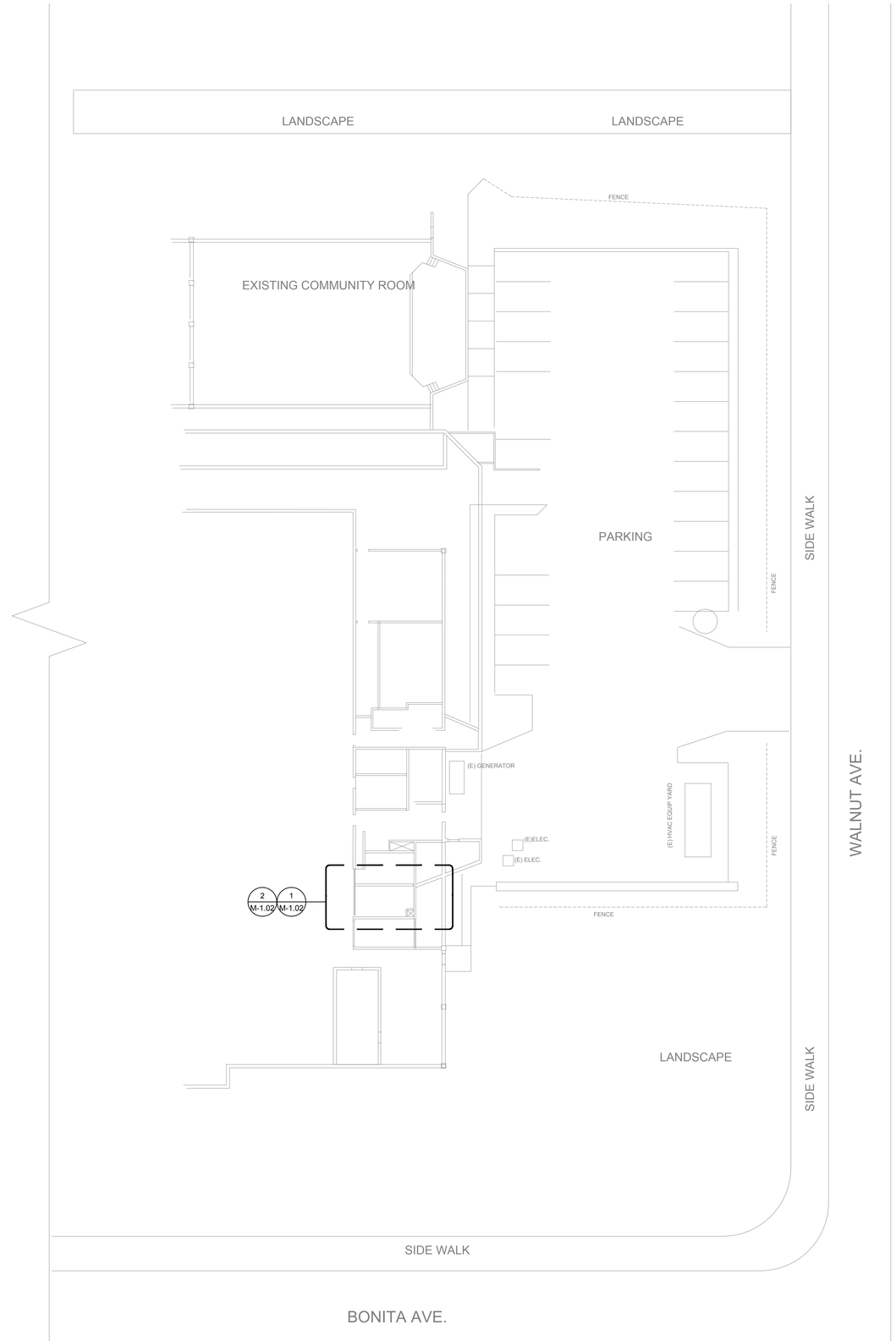
No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:
T-24 FORMS

Job No.	2025-082-00
Date:	2/13/2026
Scale:	NONE
Drawn By:	K.K.
Checked By:	K.K.

Sheet No:
M-0.06

P:_PROJECTS\P-2025\20\2025-082-00 City of San Dimas Boiler Replacement\10_BIM-CAD\CAD\Sheets\M-0.06.dwg 2/13/2026 2:30 PM Charles Cruz



GENERAL NOTES

KEY NOTES

MECHANICAL SITE PLAN

SCALE: NTS | 1

N

PBS ENGINEERS
279 East Arrow Highway, Suite 201
San Dimas, CA 91773
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2025-082-00

REGISTERED PROFESSIONAL ENGINEER
CHARLES A. CRUZ
M33827
EXP. 06-30-2027
MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title: MECHANICAL SITE PLAN

Job No.	2025-082-00
Date:	2/13/2026
Scale:	AS SHOWN
Drawn By:	K.K.
Checked By:	K.K.

Sheet No: M-1.00

P:_PROJECTS\P--2025\20\2025-082-00 City of San Dimas Boiler Replacement\10_BIM-CAD\CAD\Sheets\M-1.00.dwg 2/13/2026 2:30 PM Charles Cruz

TEMPORARY HEATING HOT WATER SYSTEM SCHEDULE

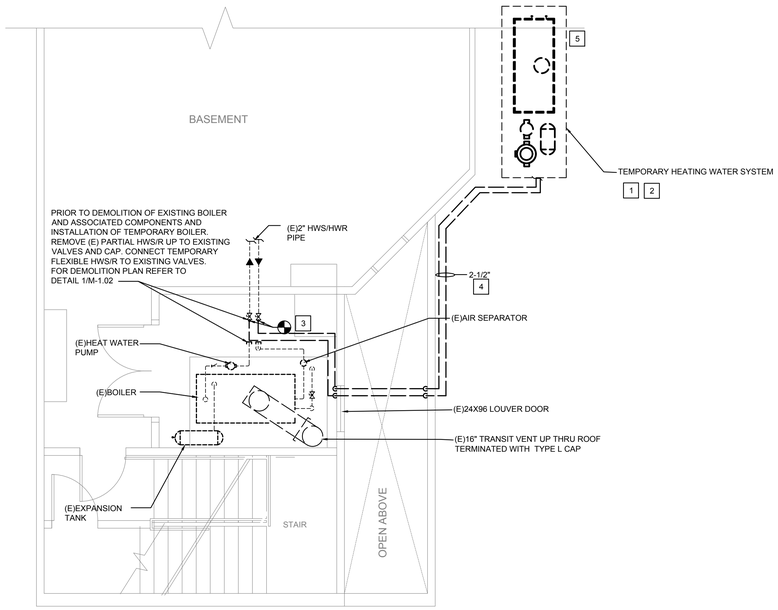
(FOR PREFERENCE ONLY)

ITEM	BOILER TYPE	FUEL TYPE	INPUT MBTUH	OUTPUT MBTUH	THERMAL EFFICIENCY	OPERATING TEMPERATURES		FLOW GPM	PRESSURE DROP FT	MIN. FLOW GPM	ELECT.-DATA V-Ø-HZ 120 -1-60		OPERATING WEIGHT LBS.	REMARKS
						IN °F	OUT °F				MCA	MOCP		
BOILER	-	NAT. GAS	1300	1105	-	140	180	60	-	-	6.7	-	-	

ITEM	SERVICE	TYPE	OPER. POINT - SELECTION		ELECTRICAL DATA					PUMP EFFICY. (%)	PUMP INLET SIZE (IN)	PUMP OUTLET SIZE (IN)	WEIGHT PUMP (LBS.)	REMARKS
			GPM	TOTAL HEAD FT.	VOLT	PH	HZ	MOTOR (HP)	FLA (A)					
PUMP	SYSTEM WATER PUMP	-	60	70	480	3	60	3	4.6	-	-	-	-	

ITEM	SERVICE	CAPACITY GPM (MAX)	TANK DIMENSIONS, IN.		SYSTEM CONN. FLANGED IN.	FLOOD WT. LESS BRACKETS, LBS.	REMARKS
			DIAMETER (IN)	HEIGHT (IN)			
AIR SEPARATOR	HOT WATER	180	-	-	2 1/2"	-	ASME MAX WORKING PRESSURE 125 PSI.

ITEM	SIZE (IN)	TYPE	SERVICE	ACCEPTABLE CAPACITY GALLONS	TANK FILL PRESSURE PSIG	RELIEF VALVE PRESSURE PSIG	OPERATING WEIGHT LBS	REMARKS
EXPANSION TANK	-	-	HOT WATER SYSTEM	10	15	50	-	ASME MAX WORKING PRESSURE 125 PSI.



N

MECHANICAL TEMPORARY REMODEL PLAN

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

1

REMODEL GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE WITH ALL SUBCONTRACTOR FOR ALL DISCIPLINE WORK.
2. SUBCONTRACTOR SHALL REVIEW ALL MEP DRAWINGS FOR THEIR BIDS.
3. PLUMBING AND ELECTRICAL WORK DESCRIPTION IS INDICATED MECHANICAL DRAWINGS AND EACH DISCIPLINE IS RESPONSIBLE TO REVISE ALL DRAWINGS.
4. IN CASE OF DEVIATION FROM BASIS OF DESIGN THAT IS NOT AND ADDED OR REVISED SCOPE, CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL COST AND EXTRA EFFORT.
5. ALL ITEMS WITHOUT (E) SHALL BE NEW UNLESS NOTED OTHERWISE.

REMODEL KEY NOTES

1. PRIOR TO THE DEMOLITION WORK BEGINS, THE CONTRACTOR SHALL COORDINATE THE DEMOLITION AND REMODEL CONSTRUCTION SCHEDULE WITH THE OWNER.

   REFER TO THE TEMPORARY HEATING WATER SYSTEM SCHEDULE ON THIS SHEET FOR RENTAL PREFERENCE..

   RENTAL VENDORS INFORMATION:
   1. PBS "PORTER BOILER SERVICE". TEL: 562 561 2709
   2. TEM TEMPORARY COOLING AND HEATING SOLUTIONS. TEL :1-877-266-0120
2. FILED VERIFY THE TEMPORARY HEAT SYSTEM EXACT LOCATION AND UNIT DIMENSIONS.
3. POINT OF CONNECT (POC) TO EXISTING PIPING AS SHOWN ON PLAN. FIELD VERIFY THE EXACT LOCATION.
4. 2-1/2" TEMPORARY HEAT HOT WATER PIPE.
5. FOR GAS SUPPLY AND ELECTRICITY SUPPLY, REFER TO PLUMBING AND ELECTRICAL DRAWINGS.

PBS ENGINEERS
279 East Arrow Highway, Suite 201
San Dimas, CA 91773
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2025-082-00

REGISTERED PROFESSIONAL ENGINEER
TRAVIS E. PORTER
M33827
EXP. 06-30-2027
MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS
BOILER REPLACEMENT
245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:

MECHANICAL TEMPORARY REMODEL PLAN

Job No.	2025-082-00
Date:	2/13/2026
Scale:	AS SHOWN
Drawn By:	K.K.
Checked By:	K.K.

Sheet No:

M-1.01

P:_PROJECTS\P-2025\20\2025-082-00 City of San Dimas Boiler Replacement\10_BIM-CAD\CAD\Sheets\M-1.01.dwg 2/13/2026 2:30 PM Charles Cruz

COMBUSTION AIR CALCULATION

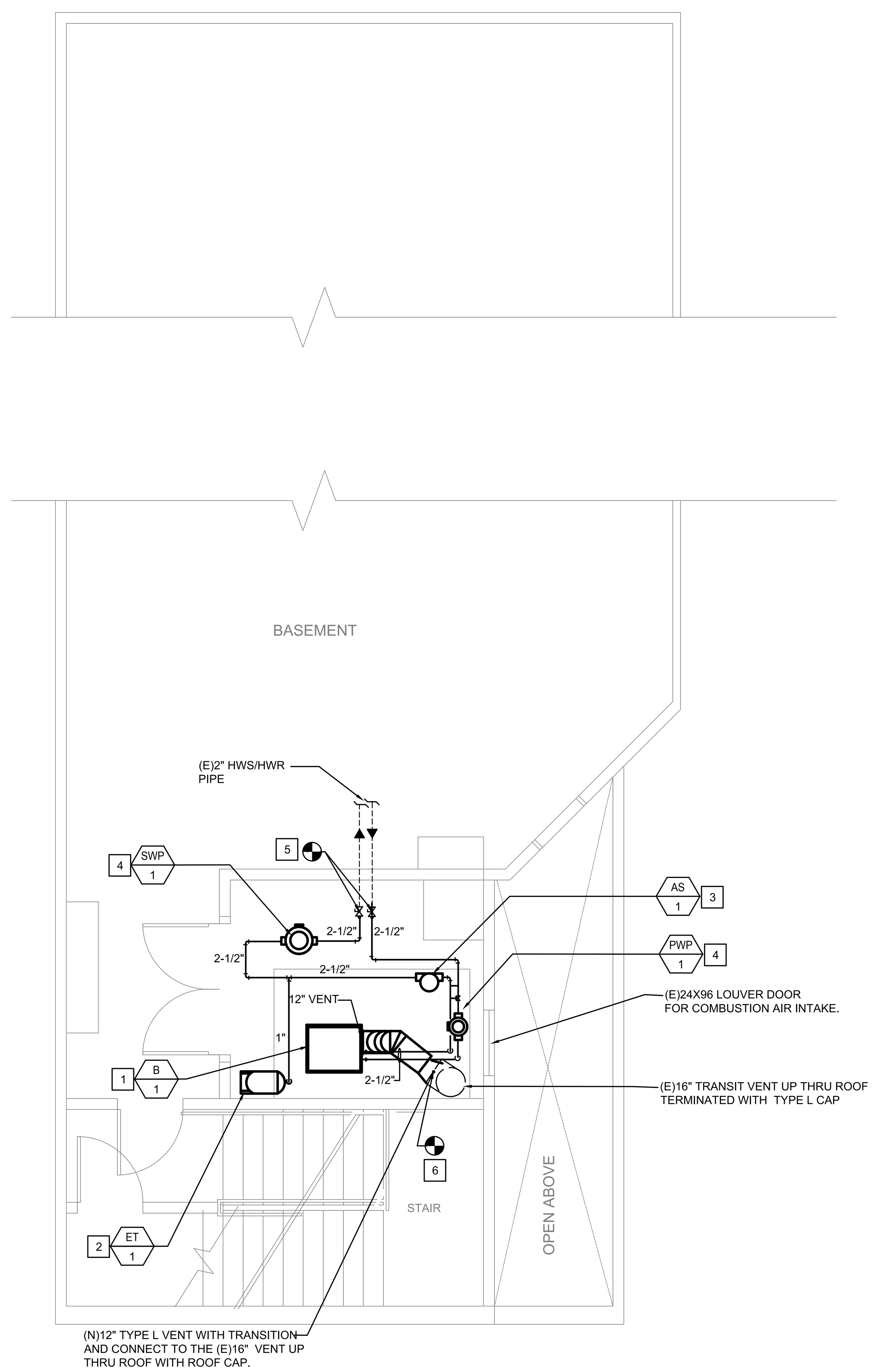
PER 2022 CMC 710.6.2 ONE PERMANENT OPENING FOR COMBUSTION AIR INTAKE

BOILER B-1 GAS INPUT CAPACITY: 1350 MBH

MIN. ONE OPEN SIZE PER CODE: 1 SQIN X 1350,000 Btu/H/ 3000 Btu/h = 450 SQIN. CODE REQUIRED.

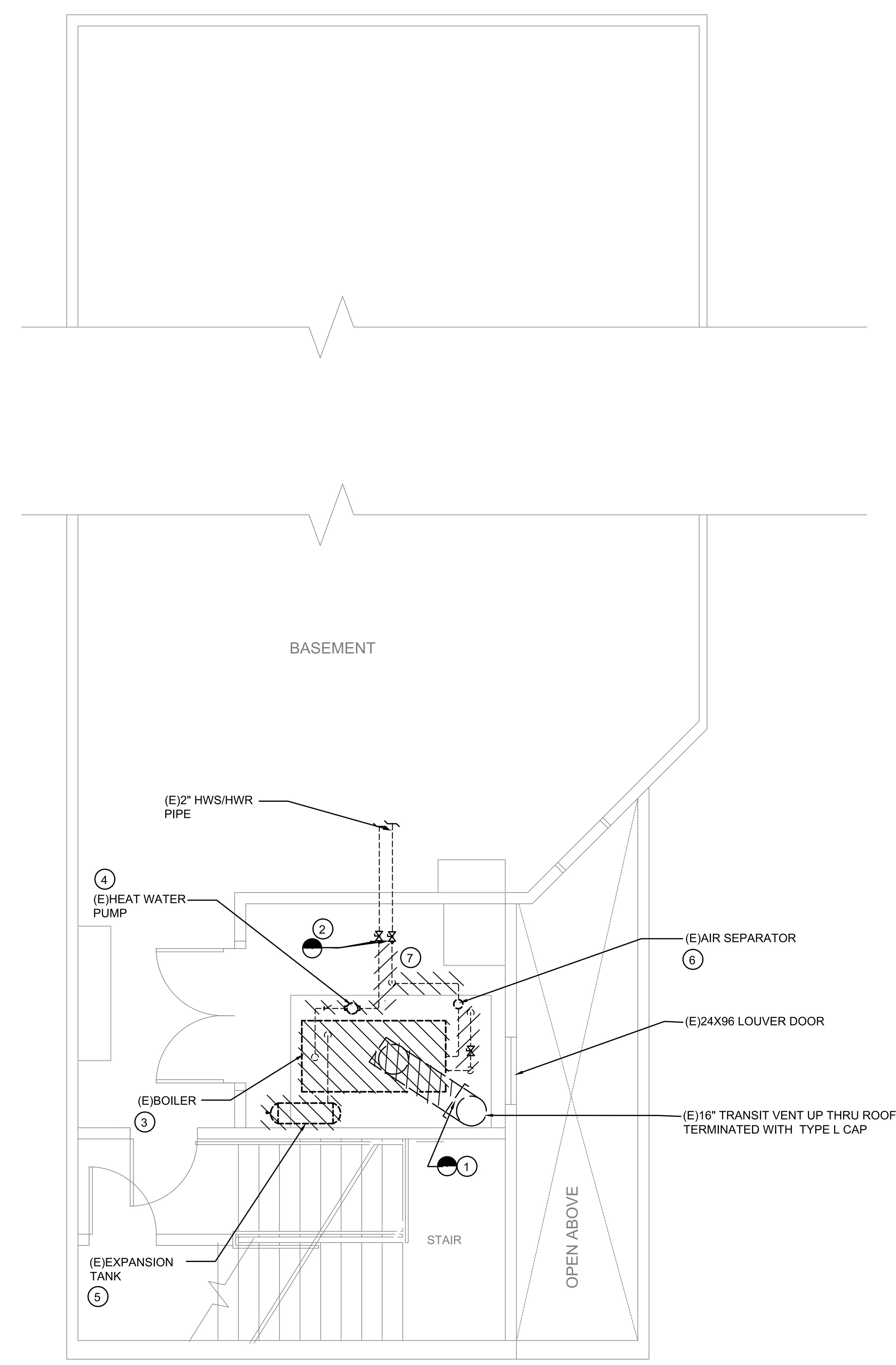
EXISTING LOUVER DOOR 24"X96" (MIN. 50% NET OPENING) AS ONE PERMANENT OPENING FOR COMBUSTION AIR INTAKE, 24"X96"X50% = 1152 SQIN > 450 SQIN

THE EXISTING LOUVER DOOR FOR COMBUSTION AIR INTAKE DESIGN COMPLIES WITH THE CODE REQUIRED.



MECHANICAL ENLARGED BASEMENT REMODEL PLAN

SCALE: 1/4" = 1'-0" | 2



MECHANICAL ENLARGED BASEMENT DEMO PLAN

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

DEMOLITION GENERAL NOTES

1. COORDINATE DEMOLITION WORK WITH ALL RELATED DISCIPLINES INCLUDING ELECTRICAL AND PLUMBING.
2. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATIONS OF MECHANICAL EQUIPMENT.
3. CONTRACTOR IS RESPONSIBLE FOR REMOVAL/RE-INSTALLATION OF WALL OPENINGS, AS NECESSARY, TO ACCOMMODATE PROPOSED WORK. REPLACE AND PATCH THE WALL OPENING AS REQUIRED.

DEMO KEY NOTES (#)

1. REMOVE EXISTING DUCTWORK @ POINT OF REMOVAL AS SHOWN ON PLAN. REFER TO REMODEL PLAN FOR CONTINUATION.
2. REMOVE EXISTING PIPING @ POINT OF REMOVAL AS SHOWN ON PLAN. REFER TO REMODEL PLAN FOR CONTINUATION.
3. REMOVE THE EXISTING BOILER AND ASSOCIATED PIPING AND POWER SUPPLY AND CONTROL.
4. REMOVE THE EXISTING HEATING WATER PUMP AND ASSOCIATED POWER SUPPLY AND CONTROL.
5. REMOVE THE EXISTING EXPANSION TANK AND ASSOCIATED PIPING.
6. REMOVE THE EXISTING AIR SEPARATOR AND ASSOCIATED PIPING.
7. REMOVE THE HEATING WATER PIPE.
8. REMOVE PARTIAL FLUE DUCT.

REMODEL GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE WITH ALL SUBCONTRACTOR FOR ALL DISCIPLINE WORK.
2. SUBCONTRACTOR SHALL REVIEW ALL MEP DRAWINGS FOR THEIR BIDS.
3. PLUMBING AND ELECTRICAL WORK DESCRIPTION IS INDICATED MECHANICAL DRAWINGS AND EACH DISCIPLINE IS RESPONSIBLE TO REVISE ALL DRAWINGS.
4. IN CASE OF DEVIATION FROM BASIS OF DESIGN THAT IS NOT AND ADDED OR REVISED SCOPE, CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL COST AND EXTRA EFFORT.
5. ALL ITEMS WITHOUT (E) SHALL BE NEW UNLESS NOTED OTHERWISE.

REMODEL KEY NOTES [#]

1. NEW HOT WATER BOILER. REFER TO MANUFACTURE INSTALLATION MANUAL FOR THE BOILER INSTALLATION.
REFER TO DETAIL #4/M-3.00 FOR THE BOILER ANCHORAGE.
2. NEW EXPANSION TANK. REFER TO DETAIL #9/M-3.00 FOR INSTALLATION.
3. NEW AIR SEPARATOR. REFER TO DETAIL #7/M-3.00 FOR INSTALLATION.
4. SYSTEM PRIMARY/SECONDARY PUMP. REFER TO DETAIL #3/M3.00 FOR INSTALLATION.
5. POINT OF CONNECT (POC) TO EXISTING PIPING AS SHOWN ON PLAN. FIELD VERIFY THE EXACT LOCATION.
6. POINT OF CONNECT (POC) TO EXISTING VENT AS SHOWN ON PLAN. FIELD VERIFY THE EXACT LOCATION.

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REGISTERED PROFESSIONAL ENGINEER M33827 EXP. 06-30-2027 MECHANICAL STATE OF CALIFORNIA

REVIEWED BY

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Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

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SAN DIMAS, CA 91773

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MECHANICAL ENLARGED BASEMENT DEMO & REMODEL PLANS

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Date:	2/13/2026
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Checked By:	K.K.

Sheet No:

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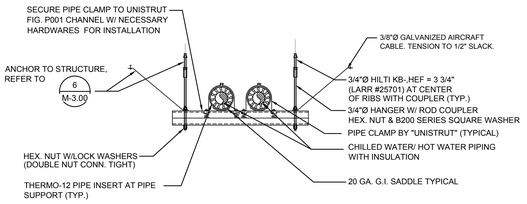
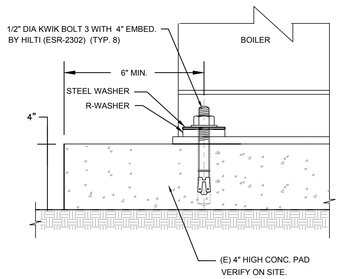


NOTES:

1. CONSTRUCTOR STRICTLY ADVICE TO SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION (TYP.)

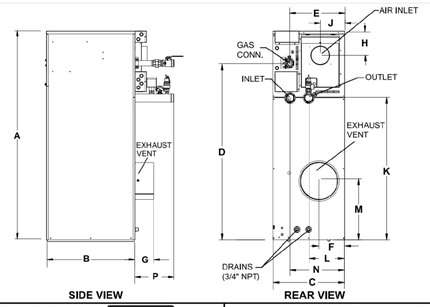
TRAPEZE PIPE SUPPORT DETAIL

NOT TO SCALE | 5



NOTES:

REFER TO MANUFACTURER INSTALLATION MANUAL.



SIDE VIEW REAR VIEW

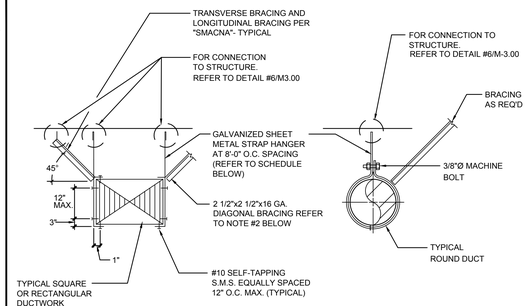
Power-Fin® Boiler — AHRI CERTIFIED — **Dimensions and Specifications**

Model No.	Input MBH	(B)/(F) Thermal Effidency	Output MBH	Net AHRI Rating MBH	(M) Thermal Effidency	Output MBH	Net AHRI Rating MBH	A	B	C	D	(B)/(F) E	(M) E	F	G
PBN1302	1,300	85.0%	1,105	961	85.0%	1,105	961	67-3/4"	28-1/2"	23-1/4"	57-1/4"	17"	18-3/4"	8-1/4"	10-1/4"

Model No.	H	J	K	L	M	N	(B)/(F) P	(M) P	Gas Conn.	Air Inlet	(B)/(F) Cat I	Vent Sizes (M)" Cat II	(M) Cat IV	Ship Wt. (lbs)
PBN1302	8"	7-3/4"	46-1/4"	11-1/2"	19-1/2"	17-1/2"	15-1/4"	15-1/4"	1-1/4"	6"	12"	12"	8"	652

BOILER MOUNTING DETAIL

NOT TO SCALE | 4



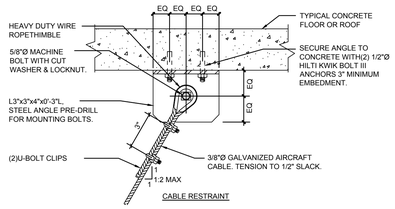
RECTANGULAR DUCT			ROUND DUCT		
MAX. HALF OF DUCT PERIMETER/IN.	PAIR AT 8 FT. SPACING	MAX. LOAD EACH HANGER/LBS.	DIAMETER /INCHES	STRAP AT 12 FT. SPACING	MAX. LOAD EACH HANGER/LBS.
P/2 =72	1"X 20 GA.	320	UP TO 24"	1"X 22 GA.	260
P/2 =96	1"X 18 GA.	420	25" TO 36"	1"X 20 GA.	320
P/2 =120	1"X 16 GA.	700	37" TO 50"	(2)1"X 20 GA.	320

NOTES:

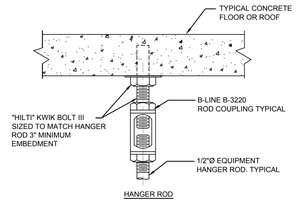
1. EXCERPT FROM TABLES A6-1-A AND A6-1-C OF APPENDIX A, STANDARD 6-1 OF THE 2019 CALIFORNIA MECHANICAL CODE
2. PROVIDE TRANSVERSE BRACING AT 40 FT. AND LONGITUDINAL BRACING AT 80 FT. (2006 SMACNA SEISMIC RESTRAINT MANUAL, 2ND EDITION)

DUCT HANGER DETAIL

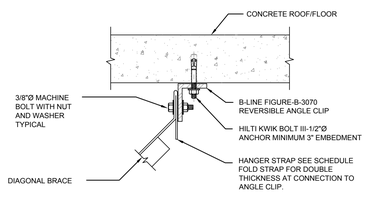
NOT TO SCALE | 1



CABLE RESTRAINT

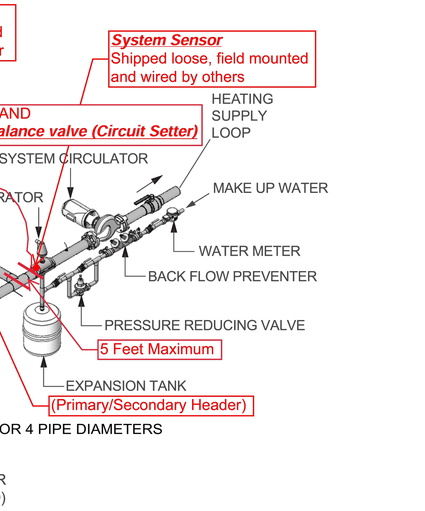


HANGER ROD



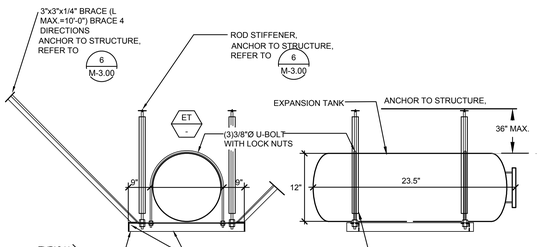
CONNECTION TO CONCRETE DECK FLOOR

NOT TO SCALE | 6



BOILER WATER PIPE RISER

NOT TO SCALE | 2

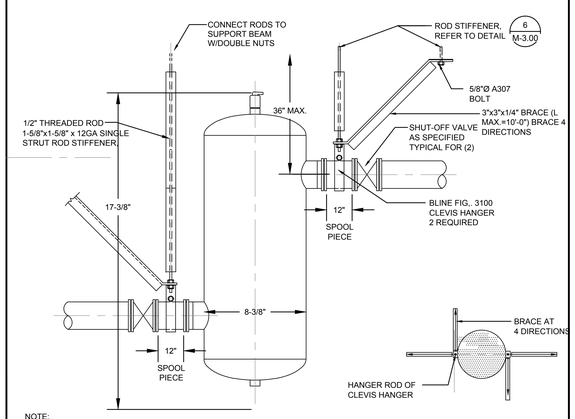


NOTE:

1. PROVIDE INSULATION FOR EXPANSION TANK.
2. EXPANSION TANK WEIGHT: 150 LBS.

EXPANSION TANK MOUNTING DETAIL

NOT TO SCALE | 8

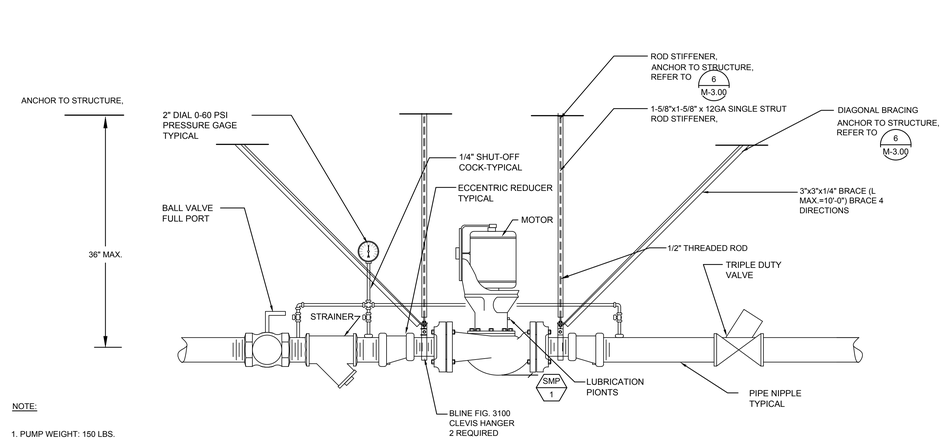


NOTE:

1. PROVIDE INSULATION FOR AIR SEPARATOR.
2. AIR SEPARATOR WEIGHT: 120 LBS.

AIR SEPARATOR MOUNTING DETAIL

NOT TO SCALE | 7



NOTE:

1. PUMP WEIGHT: 150 LBS.

SYSTEM SECONDARY INLINE PUMP MOUNTING DETAIL

NOT TO SCALE | 3

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REGISTERED PROFESSIONAL ENGINEER — TRAVIS E. ALLEN — M33827 — EXP. 06-30-2027 — MECHANICAL — STATE OF CALIFORNIA

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Date: -

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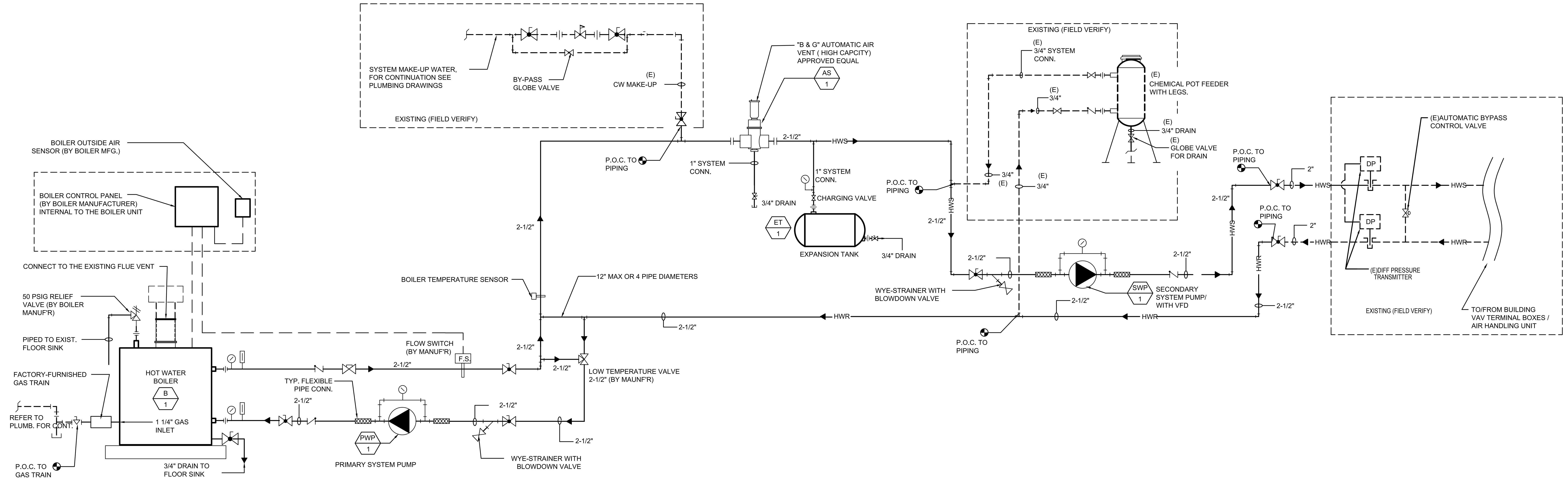
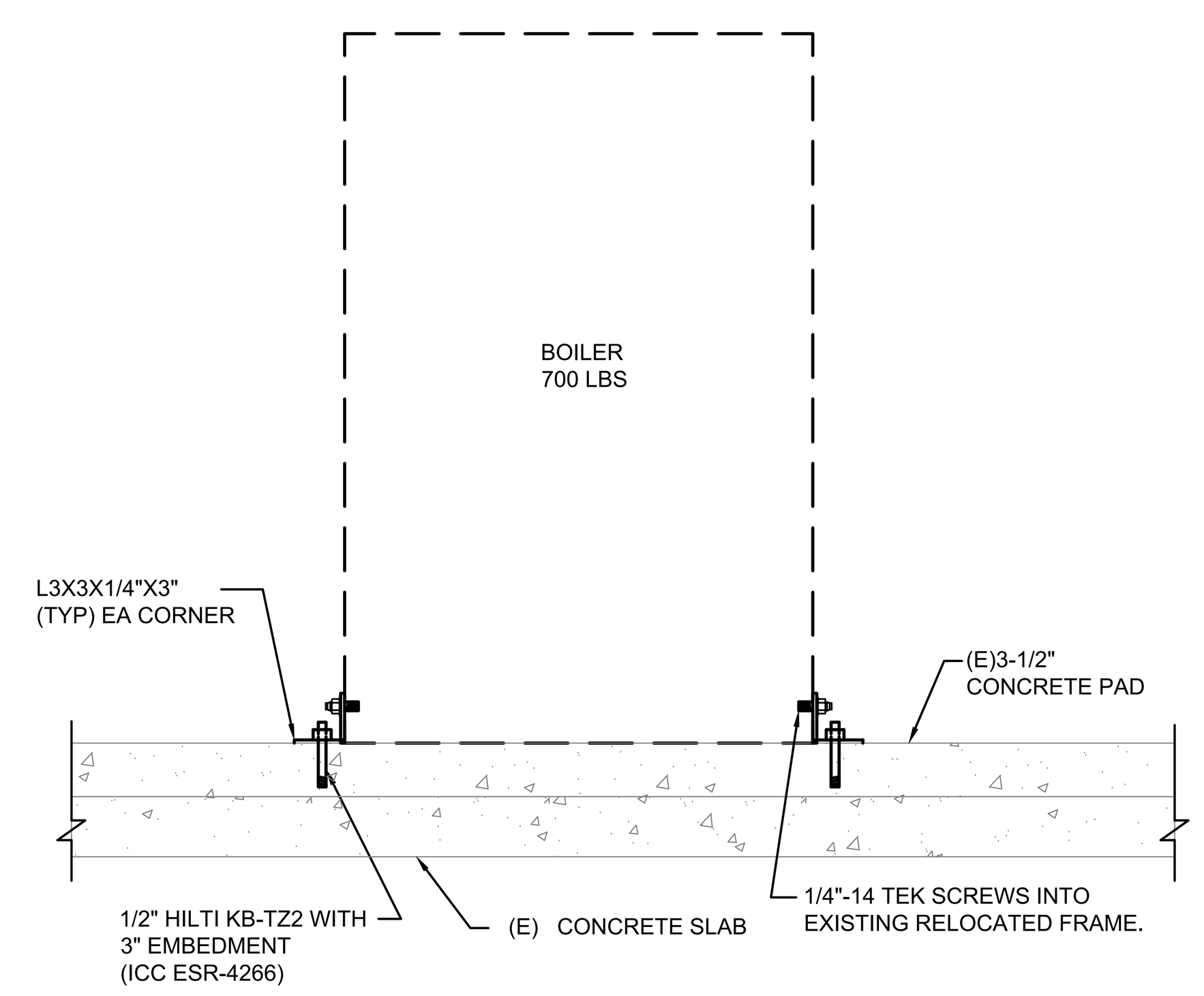


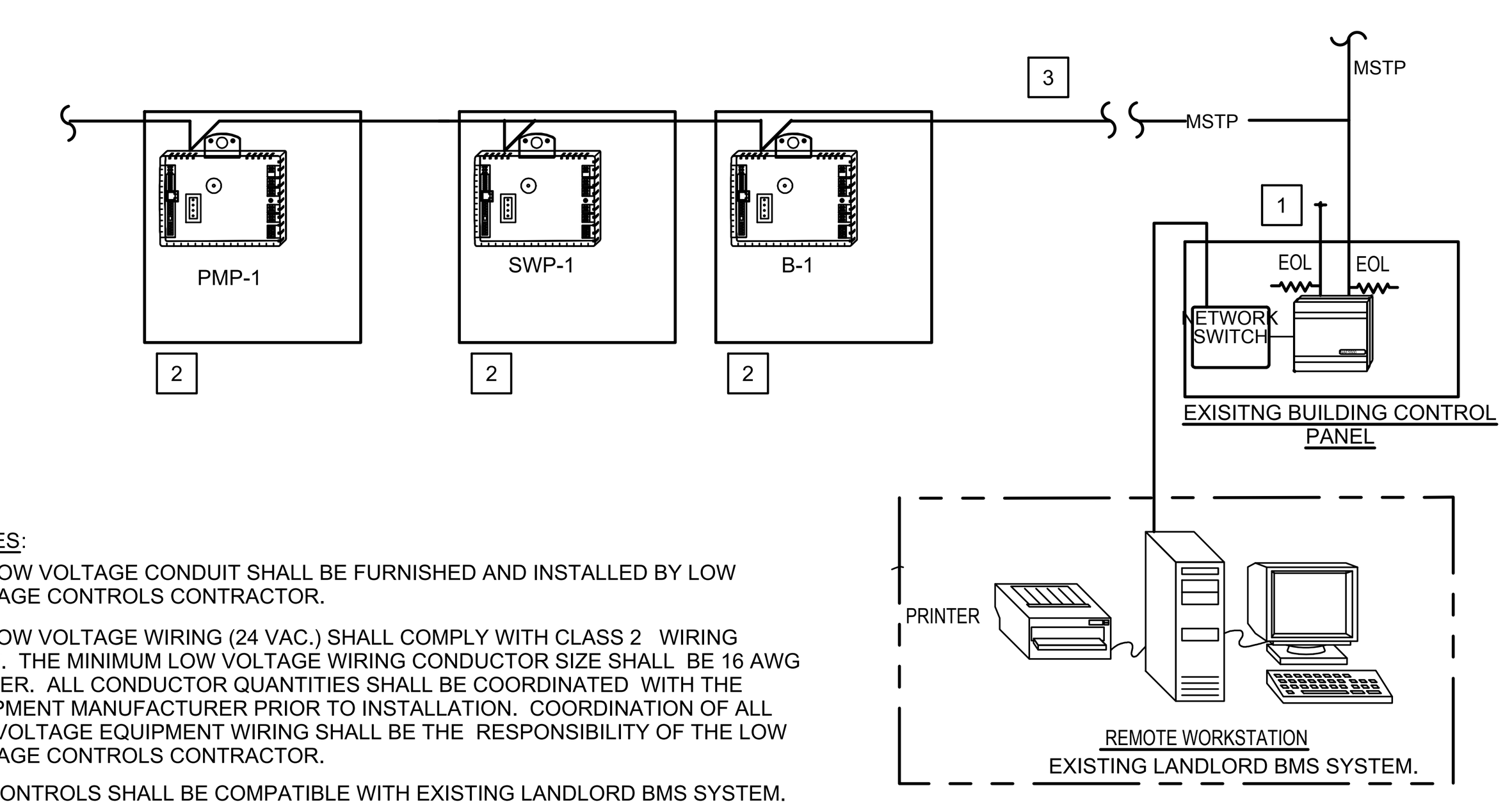
BOILER PIPING DIRGARM NOT TO SCALE **1**

NOT USED NOT TO SCALE **6**

NOT USED NOT TO SCALE **5**



BOILER ANCHORAGE TO CONC. SLAB NOT TO SCALE **4**



NOTES:

1. ALL LOW VOLTAGE CONDUIT SHALL BE FURNISHED AND INSTALLED BY LOW VOLTAGE CONTROLS CONTRACTOR.
2. ALL LOW VOLTAGE WIRING (24 VAC.) SHALL COMPLY WITH CLASS 2 WIRING CODE. THE MINIMUM LOW VOLTAGE WIRING CONDUCTOR SIZE SHALL BE 16 AWG COPPER. ALL CONDUCTOR QUANTITIES SHALL BE COORDINATED WITH THE EQUIPMENT MANUFACTURER PRIOR TO INSTALLATION. COORDINATION OF ALL LOW VOLTAGE EQUIPMENT WIRING SHALL BE THE RESPONSIBILITY OF THE LOW VOLTAGE CONTROLS CONTRACTOR.
3. ALL CONTROLS SHALL BE COMPATIBLE WITH EXISTING LANDLORD BMS SYSTEM.

BMS CONTROL DIAGRM **2**

SEQUENCE OF OPERATION

1. BOILER PLANT MANAGER
   THE DDC SYSTEM INCLUDES A BOILER PLANT MANAGER MASTER MODE SEQUENCE PROGRAM FOR AUTOMATIC CONTROL OF THE BOILER AND PRIMARY AND SECONDARY HEATING WATER PUMP.

2. SCHEDULING:
   THE BOILER SHALL BE ENABLED TO RUN WHENEVER:
   A DEFINABLE NUMBER OF HOT WATER COILS NEED HEATING
   AND THE OUTSIDE AIR TEMPERATURE IS LOWER THAN 74°F (ADJ.).

TO PREVENT SHORT CYCLING, THE BOILER SHALL RUN FOR AND BE OFF FOR MINIMUM ADJUSTABLE TIMES (BOTH USER DEFINABLE), UNLESS SHUTDOWN ON SAFETIES OR OUTSIDE AIR CONDITIONS.
THE BOILER SHALL RUN SUBJECT TO ITS OWN INTERNAL SAFETIES AND CONTROLS.

3. BOILER/PUMP START SEQUENCE
   UPON SYSTEM ENABLE, THE HW CIRCULATION PUMP IS COMMANDED ON. THE PUMP CURRENT SENSOR PROVIDES PROOF OF PUMP OPERATION. UPON PROOF OF CIRCULATION PUMP OPERATION THE BOILER IS COMMANDED TO START. THE PLANT CONTROLLER CONFIRMS BOILER OPERATING STATUS.

4. FAILURE OF BOILER/PUMP
   THE BOILER/PUMP START SEQUENCE IS ABORTED IF ANY OF THE FOLLOWING OCCURS:
   a. NO PROOF OF OPERATION OF BOILER CIRCULATION PUMP.
   b. FAILURE OF THE BOILER TO CONFIRM IT'S OPERATING STATUS AS ON.
   c. FAILURE OF HOT WATER SUPPLY TEMPERATURE TO REACH WITHIN 5 F OF SETPOINT (ADJ.) AFTER A 15 MINUTE (ADJ.) TIME DELAY.

   IF ANY OF THE ABOVE FAULTS OCCUR, THE BOILER PLANT MANAGER AUTOMATICALLY PROVIDES AN ALARM PRINTOUT AT THE CENTRAL WORKSTATION WITH DATE, TIME AND TYPE OF FAILURE.

5. HOT WATER DIFFERENTIAL PRESSURE CONTROL:
   THE CONTROLLER SHALL MEASURE HOT WATER DIFFERENTIAL PRESSURE AND MODULATE THE HOT WATER PUMP VFD TO MAINTAIN THE HOT WATER DIFFERENTIAL PRESSURE SETPOINT. THE FOLLOWING SETPOINTS ARE RECOMMENDED VALUES. ALL SETPOINTS SHALL BE FIELD ADJUSTED DURING THE COMMISSIONING PERIOD TO MEET THE REQUIREMENTS OF ACTUAL FIELD CONDITIONS.

   THE CONTROLLER SHALL MODULATE HOT WATER PUMP SPEEDS TO MAINTAIN A HOT WATER DIFFERENTIAL PRESSURE OF 12LBF/IN2 (ADJ.). THE VFDS MINIMUM SPEED SHALL NOT DROP BELOW 20% (ADJ.).

ALARMS SHALL BE PROVIDED AS FOLLOWS:
   HIGH HOT WATER DIFFERENTIAL PRESSURE: IF THE HOT WATER DIFFERENTIAL PRESSURE IS 25% (ADJ.) GREATER THAN SETPOINT.
   LOW HOT WATER DIFFERENTIAL PRESSURE: IF THE HOT WATER DIFFERENTIAL PRESSURE IS 25% (ADJ.) LESS THAN SETPOINT.

6. RUN TIME MONITORING
   THE CENTRAL WORKSTATION CONTROLS MONITORS THE RUN TIME FOR EACH PUMP AND RESETS THE RUN TIME FOR EACH UNIT TO ZERO MONTHLY.

7. SEQUENCE TO SHUT OFF FLOW THROUGH NON-OPERATING BOILER.
   THE HOT WATER PUMPS SHALL BE PROGRAMMED THROUGH EMS SYSTEM TO RUN 3 - 5 MINUTES AFTER BOILER SHUT DOWN TO DISSIPATE HEAT. THIS IS IN COMPLIANCE WITH ENERGY CODE NRCC-CXR-04-E 140.4(K)3.

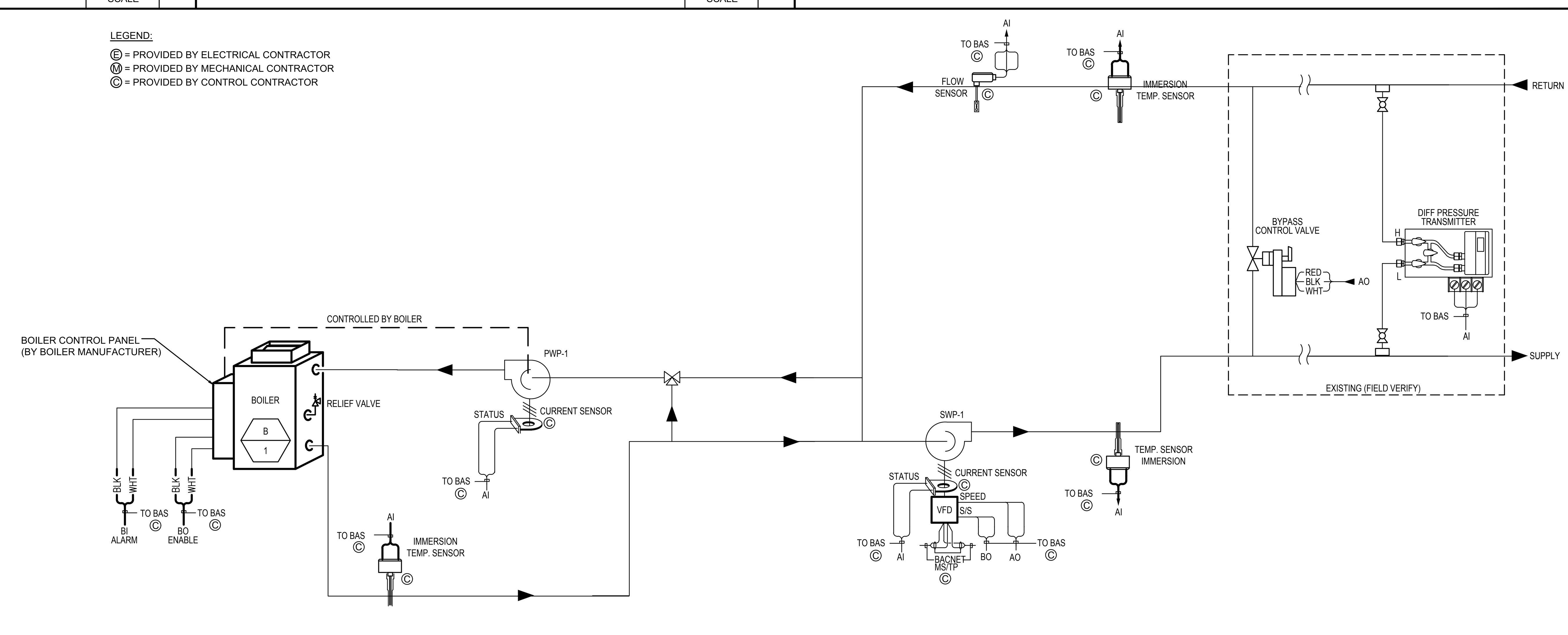
8. SEQUENCE FOR STATIC PRESSURE RESET
   THE STATIC PRESSURE RESET SERVING THE HEATING HOT WATER SYSTEM SHALL BE BASED ON THE VALVE REQUIRING THE MOST PRESSURE AND THE SETPOINT SHALL BE NO LESS THAN 80% OPEN. THIS IS IN COMPLIANCE WITH ENERGY CODE NRCC-CXR-04-E 140.4(K)6.B.

BMS INSTALLATION NOTES:

1. BOILER CONTROLLER TO BE REPLACE WITH THE NEW ALERTON CONTROLLER. INTEGRATE THE NEW BOILER CONTROLLER INTO THE EXISTING BMS.
2. ALL SERVICES TO BE DONE BY AN AUTHORIZED AND CERTIFIED ALERTON REPRESENTATIVE.
3. DEMO EXISTING BOILER CONTROLLER
4. PROVIDE POINT TO POINT MAPPING AND RECONNECT EXISTING BOILER POINTS.
5. PROVIDE UPDATED RISERS AND PANEL DRAWINGS
6. REUSE EXISTING CONDUIT AND WIRING.
7. TEMPERATURE SENSORS TO BE REPLACED.
8. VALVES AND ACTUATORS TO BE REPLACED BASED ON BUILDING STANDARDS.
9. REUSE EXISTING PANEL
10. REUSE EXISTING THERMOWELLS

LEGEND:

Ⓔ = PROVIDED BY ELECTRICAL CONTRACTOR
Ⓜ = PROVIDED BY MECHANICAL CONTRACTOR
Ⓒ = PROVIDED BY CONTROL CONTRACTOR



BOILER CONTROL SEQUENCE AND DIAGRAM NOT TO SCALE **3**

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DEMOLITION NOTES

1. IN GENERAL, THE DEMOLITION PLAN SHOWS ALL EXISTING EQUIPMENT TO BE REMOVED; HOWEVER, ELECTRICAL EQUIPMENT, WHETHER SHOWN ON THESE DRAWINGS OR NOT, THAT IS LOCATED IN REMOVED WALLS, FLOORS OR CEILINGS, SHALL BE REMOVED UNLESS OTHERWISE NOTED.
2. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO DISCONNECT AND REMOVE ALL EXISTING LIGHTING FIXTURES, RECEPTACLES, FIRE ALARM DEVICES, SECURITY AND PA SYSTEM DEVICES. ELECTRICAL EQUIPMENT, ETC., AFFECTED BY THE REMODELED AREA. THIS WILL INCLUDE REROUTING, OR THE EXTENSION OF, EXISTING CONDUIT AND FEEDERS WHERE NECESSARY TO MAINTAIN THE CONTINUITY OF EXISTING EQUIPMENT REMAINING.
3. EXISTING CONDUIT FEEDS UP THROUGH FLOOR SHALL BE CUT OFF AND PLUGGED FLUSH WITH FLOOR WHERE EXISTING WALL, ETC., IS REMOVED. REMOVE CONDUCTORS FROM THIS POINT BACK TO LAST OUTLET REMAINING IN SERVICE.
4. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS, EQUIPMENT, ETC., REMAINING IN OPERATION WHICH ARE BEING FED BY AN ABANDONED OUTLET. MAINTAINING CONTINUITY SHALL CONSIST OF REROUTING CONDUIT, WIRING, ETC., AS REQUIRED.
5. ALL ELECTRICAL FIXTURES, OUTLETS, DEVICES, ETC., THAT ARE REMOVED, SHALL BE REMOVED COMPLETELY, INCLUDING CONDUIT AND WIRING BACK TO THE LAST FIXTURE, OUTLET, DEVICE, ETC., REMAINING IN SERVICE.
6. EXISTING CIRCUITS WHICH ARE REMOVED AND NOT REUSED SHALL BE IDENTIFIED ON THE PANEL SCHEDULE AS "SPARE".
7. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO REMOVAL OF EXISTING ELECTRICAL EQUIPMENT, AND TURN OVER REMOVED EQUIPMENT THAT THE OWNER REQUESTS IN AN "AS- FOUND" CONDITION. EQUIPMENT THAT IS TO BE TURNED OVER SHALL BE BOXED AND TAGGED TO IDENTIFY THE SPECIFIC EQUIPMENT.
8. EXISTING CONDUIT MAY BE REUSED IF ADEQUATELY SIZED AND IF IT IS STILL OPERABLE AND IN GOOD CONDITION. EXISTING CONDUCTORS MAY BE REUSED FOR SPLICING, REFER TO DRAWINGS FOR LOCATIONS. PRIOR TO REUSE, THE ENTIRE LENGTH OF THE EXISTING CONDUIT SHALL BE MANDRELED TO VERIFY THE INTEGRITY OF THE INSTALLED CONDUIT.
9. IN SOME INSTANCES, IT MAY BE NECESSARY FOR THE ELECTRICAL CONTRACTOR TO TEMPORARILY RELOCATE, REROUTE, ETC., EXISTING ELECTRICAL EQUIPMENT. THIS SHALL BE DONE SO THAT THE SYSTEMS IN ALL PHASES (THOSE COMPLETED AND THOSE YET TO BEGIN), ARE IN COMPLETE, OPERABLE, CONDITION AS CONSTRUCTION PROCEEDS THROUGH EACH PHASE.
10. ALL LIGHTING FIXTURES REMOVED TO ACCOMPLISH DEMOLITION WORK SHALL BE REINSTALLED SIMILAR TO NEW WORK.
11. ALL IN SERVICE CIRCUITS INCLUDING FIRE ALARM, SECURITY, AND TELEPHONE THAT MAY BE INTERRUPTED AS PART OF THIS WORK SHALL BE COORDINATED WITH THE ENGINNER AND SAN DIMAS CITY HALL REPRESENTATIVE.
12. CONTRACTOR SHALL COORDINATE DEMOLITION WITH ADJACENT AREA AND ENSURE CONTINUITY OF OPERATION FOR ADJACENT SPACES INCLUDING LIGHTING, POWER, DATA, SECURITY, PA, AND FIRE ALARM. CONTRACTOR SHALL INVESTIGATE AND VERIFY EXISTING CONDITIONS PRIOR TO STARTING WORK.
13. CONTRACTOR SHALL INCLUDE IN THE BID ALL LABOR, MATERIALS, TOOLS, TRANSPORTATION, STORAGE COSTS, EQUIPMENT, INSURANCE, TEMPORARY PROTECTION, PERMITS, INSPECTIONS, TAXES AND ALL NECESSARY AND RELATED ITEMS REQUIRED TO PROVIDE COMPLETE DEMOLITION AND RESTORATION OF EXISTING SYSTEMS.
14. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND COORDINATING PHASED ACTIVITIES AND CONSTRUCTION METHODS THAT MINIMIZE DISRUPTION OF OPERATIONS AND PROVIDE COMPLETE AND OPERATIONAL SYSTEMS.
15. THE CONTRACTOR SHALL COORDINATE INTERFACES TO EXISTING SYSTEMS THAT ARE BEING DEMOLISHED IN ORDER TO MINIMIZE DISRUPTION TO THE EXISTING SYSTEMS OPERATIONS. ANY SYSTEMS OUTAGES SHALL BE APPROVED IN ADVANCE AND SCHEDULED WITH THE SAN DIMAS CITY HALL REPRESENTATIVE.
16. ALL ELECTRICAL BUILDING INFRASTRUCTURE COMPONENTS INCLUDING CONDUITS, CONDUCTORS, SUPPORTS, BOXES, CONNECTORS, ETC. TO BE DEMOLISHED, NOT LEFT ABANDON IN PLACE, IF NOT CURRENTLY BEING USED AND/OR SCHEDULED FOR USE OR REUSE.

GENERAL NOTES

1. ALL ELECTRICAL PREFABRICATED EQUIPMENT SHALL BE DESIGNED AND CONSTRUCTED IN SUCH A MANNER THAT ALL PORTIONS, ELEMENTS, SUB-ASSEMBLIES AND/OR PARTS OF SAID EQUIPMENT, AND THE EQUIPMENT AS A WHOLE INCLUDING ITS ATTACHMENTS, WILL RESIST A LOAD WHICH EXCEEDS THE FORCE LEVEL USED TO RESTRAIN AND ANCHOR THE EQUIPMENT TO THE SUPPORTING STRUCTURE.
2. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND BEAR THEIR LABEL, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING:

   AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
   INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
   NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
   AMERICAN STANDARD ASSOCIATION (ASA)
   NATIONAL FIRE PROTECTION AGENCY (NFPA)
   AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)
   CALIFORNIA ELECTRICAL CODE (CEC) - LATEST EDITION
   CALIFORNIA CODE OF REGULATIONS TITLE 24 (CCR)
   INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
   ALL LOCAL CODES HAVING JURISDICTION.

   WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS, THE MOST STRINGENT RULE SHALL APPLY.
3. THE CONTRACTOR SHALL VISIT THE SITE INCLUDING ALL AREAS INDICATED ON THE DRAWINGS. HE SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND BY SUBMITTING A BID, ACCEPTS THE CONDITIONS UNDER WHICH HE SHALL BE REQUIRED TO PERFORM HIS WORK.

   IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS, ADDENDA, DRAWINGS AND SPECIFICATIONS. HE SHALL CHECK THE DRAWINGS OF THE OTHER TRADES AND SHALL CAREFULLY READ THE ENTIRE SPECIFICATIONS AND DETERMINE HIS RESPONSIBILITIES. FAILURE TO DO SO SHALL NOT RELEASE THE CONTRACTOR FROM DOING THE WORK IN COMPLETE ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

   THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, CHARGES, AND INCIDENTAL COSTS NECESSARY FOR EXECUTION AND COMPLETION OF ELECTRICAL WORK, INCLUDING ALL CHARGES BY STATE, COUNTY AND LOCAL GOVERNMENTAL AGENCIES.

   THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES AT THE SITE. ANY COSTS TO INSTALL WORK TO ACCOMPLISH SAID COORDINATION WHICH DIFFERS FROM THE WORK AS SHOWN ON THE DRAWINGS SHALL BE INCURRED BY THE CONTRACTOR. ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ ENGINEER DURING BID TIME FOR CLARIFICATION. ANY SUCH CONFLICTS NOT CLARIFIED PRIOR TO BID SHALL BE SUBJECT TO THE INTERPRETATION OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.

   THE CONTRACTOR SHALL PROVIDE AND KEEP UP-TO-DATE A COMPLETE RECORD SET OF DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE. UPON COMPLETION OF THE WORK, ALL CHANGES AS NOTED ON THE RECORD SET OF DRAWINGS SHALL BE INCORPORATED ON REPRODUCIBLE VELLUM WITH BLACK INK IN A NEAT, LEGIBLE, UNDERSTANDABLE AND PROFESSIONAL MANNER. FAILURE TO KEEP RECORD DRAWINGS UP-TO-DATE SHALL CONSTITUTE CAUSE FOR WITHHOLDING OF PROGRESS PAYMENTS.
4. IN SOME INSTANCES, IT MAY BE NECESSARY TO DEFER WORK IN CERTAIN AREAS AND LOCATIONS UNTIL SUCH TIME AS EXISTING FACILITIES CAN BE TEMPORARILY OR PERMANENTLY REARRANGED BY THE OWNER. THEREFORE, WHENEVER IT BECOMES NECESSARY FOR THE CONTRACTOR TO PERFORM WORK UNDER THIS CONTRACT IN EXISTING AREAS IN WHICH THE OWNER'S WORK IS BEING PERFORMED, THE CONTRACTOR SHALL ADVISE THE ARCHITECT/ ENGINEER AND THE OWNER RELATIVE TO THIS REQUIREMENT AND SHALL FOLLOW CLOSELY THE DIRECTIVE ISSUED BY THE ARCHITECT/ ENGINEER INSOFAR AS TIME AND PROCEDURE ARE CONCERNED. THE CONTRACTOR SHALL INCLUDE IN HIS BID ALL PREMIUM TIME TO WHICH HE MAY BE SUBJECTED FOR PERFORMING WORK IN SUCH PROCEDURE AND AT SUCH TIMES AS MAY BE NECESSARY TO CAUSE THE LEAST INTERFERENCE WITH THE OPERATIONS OF THE OWNER.
5. ALL INTERRUPTION OF ELECTRICAL POWER SHALL BE KEPT TO A MINIMUM. HOWEVER, WHEN AN INTERRUPTION IS NECESSARY, THE SHUTDOWN MUST BE COORDINATED WITH THE OWNER AND ENGINEER 14 DAYS PRIOR TO THE OUTAGE. ANY OVERTIME PAY AND WORK REQUIRED TO BE ACCOMPLISHED ON WEEKENDS SHALL BE INCLUDED IN THE CONTRACTOR'S BID. WORK IN EXISTING SWITCHBOARDS OR PANELBOARDS SHALL BE COORDINATED WITH THE OWNER PRIOR TO REMOVING ACCESS PANELS OR DOORS.
6. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY POWER FACILITIES AND CONNECTIONS FOR ALL FEEDERS OR SYSTEMS BEING DISCONNECTED IN ORDER TO MAINTAIN SYSTEMS IN OPERATION OR WHERE SAID FEEDERS OR SYSTEMS REQUIRE EMERGENCY STANDBY POWER.
7. SHOP DRAWINGS SHALL BE SUBMITTED WITHIN THIRTY DAYS AFTER AWARD OF THE CONTRACT. THE CONTRACTOR SHALL SUBMIT EIGHT COPIES OF A COMPLETE LIST OF MATERIALS AND EQUIPMENT INCLUDING MANUFACTURER AND MODEL NUMBER PROPOSED FOR THE JOB. SHOP DRAWINGS SHALL INCLUDE JOB DESCRIPTION, ARCHITECT AND ENGINEER IDENTIFICATION, AND ALL DATA WITH CAPACITIES, SIZES, DIMENSIONS, CATALOG NUMBERS, AND MANUFACTURER'S BROCHURES. SHOP DRAWINGS SHALL BE SUBMITTED FOR ITEMS LISTED IN SPECIFICATIONS. PARTIAL, INCOMPLETE, OR UNBOUND SUBMITTALS WILL BE RETURNED WITHOUT REVIEW. CONTRACTOR SHALL SUBMIT A SCHEDULE OF ALL SHOP DRAWINGS AND SUBMITTALS WHICH ARE TO BE REVIEWED WITHIN 15 DAYS OF CONTRACT AWARD.
8. AFTER ALL REQUIREMENTS OF THE SPECIFICATIONS AND/OR THE DRAWINGS HAVE BEEN FULLY COMPLETED, REPRESENTATIVES OF THE OWNER WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO DEMONSTRATE THE OPERATION OF ANY ITEM OR SYSTEM TO THE FULL SATISFACTION OF EACH REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE OWNER AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.
9. THE CONTRACTOR SHALL FURNISH A ONE YEAR WRITTEN GUARANTEE OF MATERIALS AND WORKMANSHIP FROM THE DATE OF SUBSTANTIAL COMPLETION.
10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW AND TO COORDINATE WITH THE MECHANICAL, FIRE PROTECTION AND PLUMBING DRAWINGS FOR DUCTS, LINES AND EQUIPMENT.
11. ALL FINAL CONNECTIONS TO OWNER FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.
12. COORDINATE WITH OTHER TRADES AS TO THE EXACT LOCATION OF THEIR RESPECTIVE EQUIPMENT. SUPPLY POWER AND MAKE CONNECTION TO MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS INDICATED ON THE SINGLE LINE DIAGRAM, ELECTRICAL DRAWINGS, AND DRAWINGS OF OTHER TRADES. REVIEW THE DRAWINGS OF OTHER TRADES FOR CONTROL DIAGRAMS, SIZE AND LOCATION OF EQUIPMENT. DISCONNECT SWITCHES, STARTERS, WIRING, CONTROLS, AND CONDUIT FOR MECHANICAL AND PLUMBING OPERATIONS SHALL BE PROVIDED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING MANUFACTURER'S SHOP DRAWINGS PRIOR TO ROUGHING IN ALL CONDUIT TO THIS EQUIPMENT.
13. EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE WALLS OR FLOORS OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE STRUCTURAL ENGINEER. PERFORM CORING, SAWCUTTING, PATCHING, AND REFINISHING OF EXISTING WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR OR CEILING. EXACT METHOD AND LOCATIONS OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE UL APPROVED. ALL FLOOR PENETRATIONS MUST BE X-RAYED BEFORE ANY CORING IS DONE.
14. CONNECTIONS TO MECHANICAL EQUIPMENT, VIBRATING EQUIPMENT AND SEISMIC SEPARATIONS:

    LIQUID-TIGHT FLEXIBLE STEEL CONDUIT IN DRY INTERIOR LOCATIONS. LIQUID-TIGHT FLEXIBLE STEEL CONDUIT IN AREAS EXPOSED TO WEATHER, DAMP LOCATIONS, CONNECTIONS TO TRANSFORMER ENCLOSURES, AND FINAL CONNECTIONS TO MOTORS

    PROVIDE A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN ALL FLEXIBLE CONDUIT RUNS. MAXIMUM LENGTH SHALL BE SIX FEET UNLESS OTHERWISE NOTED.
15. UTILITY PENETRATIONS OF ANY KIND IN FIRE AND SMOKE PARTITIONS AND CEILING ASSEMBLIES, SHALL BE FIRE-STOPPED AND SEALED WITH AN APPROVED MATERIAL SECURELY INSTALLED. STEEL ELECTRICAL OUTLET BOXES WHICH DO NOT EXCEED 16 SQUARE INCHES IN AREA, NEED NOT BE PROTECTED IN ONE HOUR OR TWO HOUR FIRE RATED WALLS, PARTITIONS, CEILINGS, OR AREA SEPARATION UNLESS THEY:

    OCCUR ON OPPOSITE SIDES OF THE WALL WITHIN 24 INCH HORIZONTAL DISTANCE OF ONE ANOTHER. IN THIS CASE, ONLY ONE OUTLET BOX NEED TO PROTECTED BY AN APPROVED FIRESTOP MATERIAL OR DETAIL TO CORRECT THIS CONDITION

    OCCUR IN COMBINATION WITH OUTLET BOXES OF ANY SIZE SUCH THAT THE AGGREGATE AREA OF UNPROTECTED OUTLET BOXES EXCEEDS 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL AREA. IN THIS CASE, ONLY A SUFFICIENT NUMBER OF OUTLET BOXES NEED BE PROTECTED BY AN APPROVED MATERIAL OR DETAIL TO DECREASE THE AGGREGATE AREA OF UNPROTECTED UTILITY BOXES TO LESS THAN 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL.

    CABLE TRAY PENETRATIONS THROUGH FIRE RATED WALLS SHALL COMPLY TO U.L. SYSTEM NO. W-L-4003.

    STEEL ELECTRICAL OUTLET BOXES WHICH EXCEED 16 SQUARE INCHES IN AREA, AND ALL OTHER STEEL UTILITY OUTLET BOXES REGARDLESS OF SIZE, SHALL BE PROTECTED BY AN APPROVED FIRESTOP MATERIAL AS LISTED OR EQUAL.

    FIRESTOPPING MATERIAL: MPP-1 MOLDABLE PUTTY PADS 3M
    CONTRACTOR PRODUCTS
    MINNEAPOLIS, MN 3M TEST

    REPORT NO. 1167 DATED AUGUST 21, 1987
    FSP FIRESTOP PUTTY PADS HEVI-DUTY

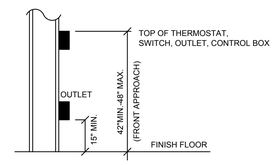
    NELSON PRODUCTS TULSA, OK

    FLAMESAFE FSP 1077 FIRESTOP PADS

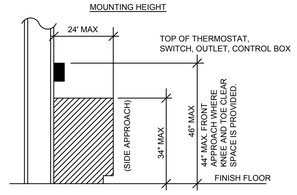
    INTERNATIONAL PROTECTIVE COATINGS
    OAKHURST, NJ
    STEEL UTILITY BOXES WHICH EXCEED 100 SQUARE INCHES IN AREA SHALL BE PROTECTED BY ENCASEMENT.

    UTILITY AND ELECTRICAL OUTLETS OR BOXES SHALL BE SECURELY FASTENED TO THE STUD OF FRAMING OF THE WALL, PARTITION OR CEILING ASSEMBLY. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT SO THAT THE CLEARANCE BETWEEN THE BOX AND THE GYPSUM BOARD DOES NOT EXCEED 1/8 INCH. IN SMOKE WALLS OR PARTITIONS, THE 1/8 INCH CLEARANCE SHALL BE FILLED WITH AN APPROVED FIRE-RATED SEALANT.
16. EQUIPMENT OUTLETS, LIGHTING FIXTURES, CONDUIT, WIRE, AND CONNECTION METHODS IN HVAC AIR-PLENUMS SHALL BE APPROVED FOR USE IN PLENUMS AND SHALL CONFORM TO THE CEC.
17. ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
18. PROVIDE SEPARATE NEUTRALS FOR EACH SINGLE PHASE SYSTEMS AND ALL THE MULTI-WIRE DEDICATED BRANCH CIRCUITS. REFER TO C.E.C. ARTICLES 215.4 AND 225.7 FOR ADDITIONAL REQUIREMENTS.
19. DRAWINGS ARE DIAGRAMMATIC ONLY. ALL (GFCI) RECEPTACLES ARE TO BE LOCATED IN A READILY ACCESSIBLE LOCATION, PER C.E.C. ARTICLE 210.8 (A) THRU (C).
20. ALL FLEXIBLE METAL CONDUIT AND LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL INCLUDE AN "EQUIPMENT BONDING JUMPER", PER C.E.C. ARTICLE 501.30(B).
21. ELECTRICAL CONTRACTOR SHALL UPDATE THE PANEL TYPE WRITTEN DIRECTORIES TO REFLECT FINAL CONDITION OF ELECTRICAL SYSTEM TO COMPLY WITH CEC 408.4 (NOTE: CIRCUITS RENDERED AS SPARES TO BE IDENTIFIED).

ADA ACCESSIBILITY GUIDELINE



MOUNTING HEIGHT

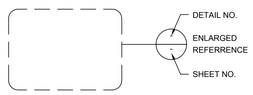


OVER OBSTRUCTION

FORWARD OR FRONT APPROACH FOR DEVICES MOUNTED ABOVE COUNTER ASSUMES THAT DIRECTLY BELOW THE DEVICE, THE COUNTER HAS A 30" MIN. WIDTH X 27" MIN. HIGH X 19" MIN. DEEP CLEAR OPENING.

ELECTRICAL SYMBOLS LIST

E	EQUIPMENT WITH "E" ADJACENT IS EXISTING TO REMAIN.
R	EQUIPMENT WITH "R" ADJACENT IS EXISTING TO BE COMPLETELY DISCONNECTED AND REMOVED.
RR	EQUIPMENT WITH "RR" ADJACENT IS EXISTING TO BE DISCONNECTED, REMOVED AND RELOCATED TO NEW LOCATION AND RECONNECTED AS REQUIRED.
ER	EQUIPMENT WITH "ER" ADJACENT IS RELOCATED EQUIPMENT SHOWN IN NEW LOCATION.
Ⓙ E	JUNCTION BOX IN ACCESSIBLE CEILING SPACE OR FLUSH IN WALL WITH BLANK COVER PLATE TO MATCH DEVICE PLATES. WITH "E" ADJACENT IS EXISTING TO REMAIN.
———	CONDUIT RUN, CONCEALED IN CEILING, WALLS OR UNDER FLOORS.
- - - - - - -	CONDUIT RUN EXPOSED.
———]	CONDUIT STUBBED OUT AND CAPPED. PULL LINE IN PLACE.
—E—	EXISTING CONDUIT RUN TO REMAIN. EXISTING CONDUCTORS TO REMAIN UNLESS NOTED OTHERWISE ON DRAWINGS.
—R—	EXISTING CONDUIT AND WIRE RUN TO BE COMPLETELY DISCONNECTED AND REMOVED BACK TO LAST REMAINING OUTLET OR DEVICE.
B-1,3	CONDUIT HOMERUN TO PANELBOARD. LETTER AND NUMERALS INDICATE ELECTRICAL PANEL AND CIRCUIT NUMBER.
	SURFACE MOUNTED BRANCH CIRCUIT PANELBOARD.
	RECESSED BRANCH CIRCUIT PANELBOARD.
(P1)	PANEL DESIGNATION.
- 100A	SINGLE LINE PANELBOARD DESIGNATION. PANEL NAME AND AMPERAGE SPECIFIED ON DRAWINGS. REFER TO DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
T	VOLTAGE TRANSFORMER. FLOOR MOUNTED, COPPER WOUND, DRY TYPE UNLESS SPECIFIED OTHERWISE.
⏚	GROUND, "GRD".
	DUPLEX GROUNDING TYPE RECEPTACLE, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE.
	DOUBLE DUPLEX GROUNDING TYPE RECEPTACLES IN 4S BOX, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE.
	DUPLEX GROUND FAULT INTERRUPTING TYPE RECEPTACLE, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE.
	SINGLE GROUNDING TYPE RECEPTACLE, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE.
	DUPLEX GROUNDING TYPE RECEPTACLE, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE. RED FINISH. CONNECTED TO EMERGENCY CIRCUIT.
	DOUBLE DUPLEX GROUNDING TYPE RECEPTACLES IN 4S BOX, 20 AMP, 125 VOLT, 2 POLE, 3 WIRE. RED FINISH. CONNECTED TO EMERGENCY CIRCUIT.
○ E 1a	CEILING LED LIGHT FIXTURE AND OUTLET. LOWER CASE LETTER INDICATES CONTROLLING SWITCH, NUMERAL INDICATES CIRCUIT. SHADED CIRCLE DENOTES FIXTURE WITH EMERGENCY PROVISIONS. EQUIPMENT OR DEVICE WITH "E" ADJACENT IS EXISTING TO REMAIN.
E 1a	2'X2' LED LIGHT FIXTURE OUTLET. LOWER CASE LETTER INDICATES CONTROLLING SWITCH, NUMERAL INDICATES CIRCUIT. SHADED CIRCLE DENOTES FIXTURE WITH EMERGENCY PROVISIONS. EQUIPMENT OR DEVICE WITH "E" ADJACENT IS EXISTING TO REMAIN.
E 1a	2'X4' LED LIGHT FIXTURE OUTLET. LOWER CASE LETTER INDICATES CONTROLLING SWITCH, NUMERAL INDICATES CIRCUIT. SHADED CIRCLE DENOTES FIXTURE WITH EMERGENCY PROVISIONS. EQUIPMENT OR DEVICE WITH "E" ADJACENT IS EXISTING TO REMAIN.
1a	FLUORESCENT STRIP FIXTURE. LOWER CASE LETTER INDICATES CONTROLLING SWITCH. NUMERAL INDICATES CIRCUIT. SHADED CIRCLE DENOTES FIXTURE WITH EMERGENCY POWER PROVISIONS. EQUIPMENT OR DEVICE WITH "E" ADJACENT IS EXISTING TO REMAIN.
⊗↑ E	ILLUMINATED EXIT LIGHT FIXTURE. SIDE, BACK, CEILING, OR PENDANT MOUNTED, SINGLE OR DOUBLE FACED AS NOTED BY SHADED ARC, WITH OR WITHOUT DIRECTIONAL ARROW AS NOTED ON THE DRAWINGS. NOT TO BE USED AS JUNCTION BOX OR "THROUGH-WIRE" DEVICE. "E" ADJACENT IS EXISTING TO REMAIN.
Sa^{3k}	SWITCH. LOWER CASE LETTER AT BOTTOM INDICATES OUTLETS CONTROLLED. CAPITAL SUPERSCRIPT INDICATES SWITCH TYPE. NO SUPERSCRIPT - SINGLE POLE SWITCH 2 - DOUBLE POLE 3 - THREE WAY 4 - FOUR WAY
S	TOGGLE SWITCH
D	0-10V LIGHTING DIMMER SWITCH.
S	WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR. MOUNT AT +48 INCHES. PROVIDE CEILING MOUNTED NPP20PL POWER PACK AND CONNECTIONS.
OS	CEILING MOUNTED OCCUPANCY SENSOR COMPLETE WITH ALL POWER SUPPLIES, RELAY PACK AND CONNECTORS WHERE REQUIRED REFER TO SPECIFICATIONS FOR TYPE AND DESCRIPTION.
ST	EM SHUNT
M	E-MON D-MON METER, WITH C.T.s, CLIPS, ETC.
GFP	GROUND FAULT PROTECTION DEVICE
100AF/70AT 3P	MOLDED CASE CIRCUIT BREAKER. "AF" INDICATES AMPERE FRAME, "AT" INDICATES AMPERE TRIP RATING AND NUMBER OF POLES AS INDICATED. SUBSCRIPT INDICATES TYPE. NO SUBSCRIPT THERMAL MAGNETIC NA NON-AUTOMATIC MO MAGNETIC ONLY CL CURRENT LIMITING SS SOLID STATE EM ELECTRONIC METERING PACKING
	SINGLE PHASE FRACTIONAL OR INTEGRAL HORSEPOWER MOTOR.
S^M	MOTOR STARTER.
100AS	NON-FUSED DISCONNECT SWITCH. "AS" INDICATES SWITCH AMPERE RATING.
100AS/60AFU F	FUSED DISCONNECT SWITCH. "AS" INDICATES SWITCH AMPERE RATING. "AFU" INDICATES FUSE AMPERE RATING.
☒	COMBINATION MAGNETIC MOTOR STARTER AND NON-FUSED DISCONNECT SWITCH.
☒ VFD II	MAGNETIC MOTOR STARTER. ROMAN NUMERAL INDICATES NEMA STARTER SIZE. ADDITIONAL SUBSCRIPTS INDICATE STARTER TYPE AND SIZE. (TYPICAL FOR ALL MAGNETIC STARTER SYMBOLS.) NO SUBSCRIPT - FULL VOLTAGE, NON REVERSING PR - PRIMARY RESISTOR REDUCED VOLTAGE AT - AUTOTRANSFORMER REDUCED VOLTAGE WD - WYE-DELTA REDUCED VOLTAGE PW - PART WINDING REDUCED VOLTAGE SS - SOLID STATE REDUCED VOLTAGE CH - CONSTANT HORSEPOWER CT - CONSTANT TORQUE VT - VARIABLE TORQUE VFD - VARIABLE FREQUENCY DRIVE
FSD , ◆- - -	FIRE SMOKE DAMPER
X XX	MECHANICAL EQUIPMENT IDENTIFICATION.
#	ELECTRICAL EQUIPMENT IDENTIFICATION.
-	TYPICAL REMODEL KEYNOTE SYMBOL
(-)	TYPICAL DEMOLITION KEYNOTE SYMBOL



SHEET INDEX

SHT.NO.	DESCRIPTION
E-0.01	ELECTRICAL GENERAL NOTES, SYMBOLS LIST AND APPLICABLE CODES
E-0.02	ELECTRICAL PARTIAL SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E-1.00	ELECTRICAL SITE PLAN
E-1.01	ELECTRICAL ENLARGED BASEMENT DEMO AND REMODEL PLANS
E-3.00	ELECTRICAL DETAILS

SCOPE OF WORK

ELECTRICAL SCOPE OF WORK CONSISTS:

- REMOVE EXISTING BOILER,
- PROVIDE POWER CONNECTION TO TEMPORARY HEATING HOT WATER BOILER SYSTEM AS REQUIRED.
- EXTEND CONDUIT/WIRES TO NEW LOCATION.

APPLICABLE CODES

CALIFORNIA BUILDING CODE 2022 - TITLE 24, PART 2 VOLUME 1 & 2
ADOPTS INTERNATIONAL BUILDING CODE 2021 (IBC 2021) WITH AMENDMENTS.
CALIFORNIA EXISTING BUILDING CODE 2022 - TITLE 24, PART 10
ADOPTS INTERNATIONAL EXISTING BUILDING CODE 2021 (IEBC 2021) WITH AMENDMENTS.

CALIFORNIA PLUMBING CODE 2022 - TITLE 24, PART 5
ADOPTS UPC 2021 WITH AMENDMENTS.
CALIFORNIA MECHANICAL CODE 2022 - TITLE 24, PART 4
ADOPTS UMC 2021 WITH AMENDMENTS.
CALIFORNIA FIRE CODE 2022 - TITLE 24, PART 9
ADOPTS INTERNATIONAL FIRE CODE 2021 (IFC 2021) WITH AMENDMENTS,
CALIFORNIA ADMINISTRATIVE CODE 2022 - TITLE 24, PART 1,
CALIFORNIA REFERENCED STANDARDS CODE 2022 - TITLE 24, PART 12,
CALIFORNIA ENERGY CODE 2022 - TITLE 24, PART 6,
CALIFORNIA ELECTRICAL CODE 2022 - TITLE 24, PART 3
ADOPTS NFPA 70, 2020 WITH AMENDMENTS.
NATIONAL FIRE ALARM AND SIGNALING CODE 2022 OF CALIFORNIA
ADOPTS NFPA 72, 2022 WITH AMENDMENTS.

ENFORCEMENT INCLUDES ALL OTHER CODES REFERENCED IN THE ABOVE MODEL CODES, I.E., N.E.C. MAKES REFERENCE TO NUMEROUS N.F.P.A. PAMPHLETS.

SEISMIC BRACING NOTES

1. DISTRIBUTION SYSTEM (HVAC DUCTS, PIPES, AND ELECTRICAL RACEWAYS) SEISMIC SUPPORTS AND ATTACHMENTS OPMS:

   A. LAYOUT DRAWINGS OF THE SUPPORTS, ATTACHMENTS, AND BRACING SYSTEMS IN ACCORDANCE WITH THE PREAPPROVAL SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD/REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE OF THE PROJECT FOR REVIEW TO VERIFY THAT THE DETAILS ARE IN CONFORMANCE WITH THE CODE REQUIREMENTS. THE LAYOUT DRAWINGS SHALL AS A MINIMUM SATISFY THE REQUIREMENTS OF ASCE 7 SECTION 13.6 AS MODIFIED BY THE 2022 CBC SECTION 1616A.

      A.A. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THAT THE SUPPORTING STRUCTURE IS ADEQUATE FOR THE FORCES IMPOSED ON IT BY THE SUPPORTS, ATTACHMENTS, AND BRACES INSTALLED IN ACCORDANCE WITH THE PREAPPROVAL IN ADDITION TO ALL OTHER LOADS.
      A.B. THE STRUCTURAL ENGINEER SHALL FORWARD THE SUPPORTS, ATTACHMENTS, AND BRACING DRAWINGS (INCLUDING CONSTRUCTION DOCUMENTS FOR SUPPLEMENTARY FRAMING WHERE REQUIRED) TO THE DRAWINGS HAVE BEEN REVIEWED AND ARE IN GENERAL CONFORMANCE WITH THE PREAPPROVAL AND THE DESIGN OF THE PROJECT.
      A.C. A REVIEW STAMP SHALL BE PERMITTED TO BE USED, BY THE STRUCTURAL ENGINEER OF RECORD, TO INDICATE COMPLIANCE WITH THIS REQUIREMENT.
      A.D. THE REGISTERED DESIGN PROFESSIONAL OTHER THAN STRUCTURAL ENGINEER OF RECORD MAY PROVIDE THE REVIEW STAMP FOR SMALL PROJECTS UCLA.

   B. THE LAYOUT DRAWINGS, WITH THE REVIEW STAMP, SHALL BE SUBMITTED TO HCAI, AS PART OF ORIGINAL CDS OR AS DEFERRED SUBMITTAL ITEMS IN ACCORDANCE WITH 2022 CAC SECTION 7-126 AND 2022 CBC SECTION 107.3.4.1 FOR VERIFICATION THAT:

      B.A. STRUCTURE SUPPORTING THE DISTRIBUTION SYSTEM HAS ADEQUATE CAPACITY;
      B.B. SEISMIC DESIGN FORCES (Fp) ARE IN ACCORDANCE WITH THE 2022 CBC; AND
      B.C. SUBMITTAL IS WITHIN THE SCOPE OF THE OPM:
         B.C.A. SIZE OF DISTRIBUTION SYSTEM COMPONENTS,
         B.C.B SPACING OF BRACING AND FLEXIBLE JOINTS, AND
         B.C.C. SUBSTRATE FOR ATTACHMENTS

   C. THE LAYOUT DRAWINGS, WITH THE REVIEW STAMP, SHALL BE KEPT ON THE JOBSITE TO BE USED FOR INSTALLATION OF THE SUPPORT AND BRACING.

      C.A. THE APPROVED AGENCY/INSPECTOR OF RECORD SHALL PROVIDE INSPECTION IN ACCORDANCE WITH CBC SECTION 1704 OR 1704A/CAC SECTION 7-145.
      C.B. HCAI FIELD STAFF WILL REVIEW/INSPECT THE INSTALLATION IN ACCORDANCE WITH CAC SECTION 7-147.

   D. THE STRUCTURAL ENGINEER OF RECORD SHALL DESIGN ANY SUPPLEMENTARY FRAMING THAT IS NEEDED TO RESIST THE LOADS, MAINTAIN STABILITY AND/OR IS REQUIRED FOR INSTALLATION OF PREAPPROVED SYSTEM.

      D.A. THE SUPPLEMENTARY FRAMING SHALL BE SUBMITTED TO UCLA AS PART OF ORIGINAL CONSTRUCTION DOCUMENTS OR AS A DEFERRED SUBMITTAL ITEM; DEFERRED SUBMITTAL ITEMS SHALL BE LISTED ON THE COVER PAGE OF THE ORIGINAL CONSTRUCTION DOCUMENTS.

   E. A COPY OF THE CHOSEN BRACING SYSTEM(S) INSTALLATION GUIDE MANUAL SHALL BE ON THE JOBSITE PRIOR TO STARTING THE INSTALLATION OF HANGERS AND/OR BRACES.
      E.A. THE APPROVED AGENCY.INSPECTOR SHALL MAINTAIN AN APPROVED COPY OF THE OPM (OBTAINED FROM HCAI WEBSITE) IN ACCORDANCE WITH CAC SECTION 7-145 ITEM #4.

   F. COMPONENTS OF TWO OR MORE PREAPPROVED BRACING SYSTEMS SHALL NOT BE MIXED.
      F.A. ONLY ONE PREAPPROVED BRACING SYSTEM MAY BE USED FOR A RUN OF PIPE, DUCT, OR RACEWAY.
      F.B. ANY SUBSTITUTION OF COMPONENT THE OPM SYSTEM SHALL REQUIRE UCLA REVIEW AND APPROVAL.
2. OVERSTRENGTH FACTOR (Ωo) FOR OPMS SHALL BE IN ACCORDANCE WITH ASCE 7, AS AMENDED IN CBC SECTION 1616A.1.23.
3. THE REGISTERED DESIGN PROFESSIONAL SHALL SUBMIT VERIFIED COMPLIANCE REPORTS IN ACCORDANCE WITH CAC SECTION 7-151, THAT SATISFY THE REQUIREMENTS OF THE APPROVED TESTING, INSPECTION, AND OBSERVATION PROGRAM IN ACCORDANCE WITH CAC SECTION 7-141.

BRACING NOTES

1. PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN 2022 CBC, CHAPTER 16A PART 2 AND COMPLY WITH ASCE STANDARDS AS REQUIRED.
2. COPIES OF THE MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF HANGING AND BRACING OF THE PIPE, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS.
3. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

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E17249
EXP. 06-30-2026

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No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:

ELECTRICAL GENERAL NOTES, SYMBOLS LIST & APPLICABLE CODES

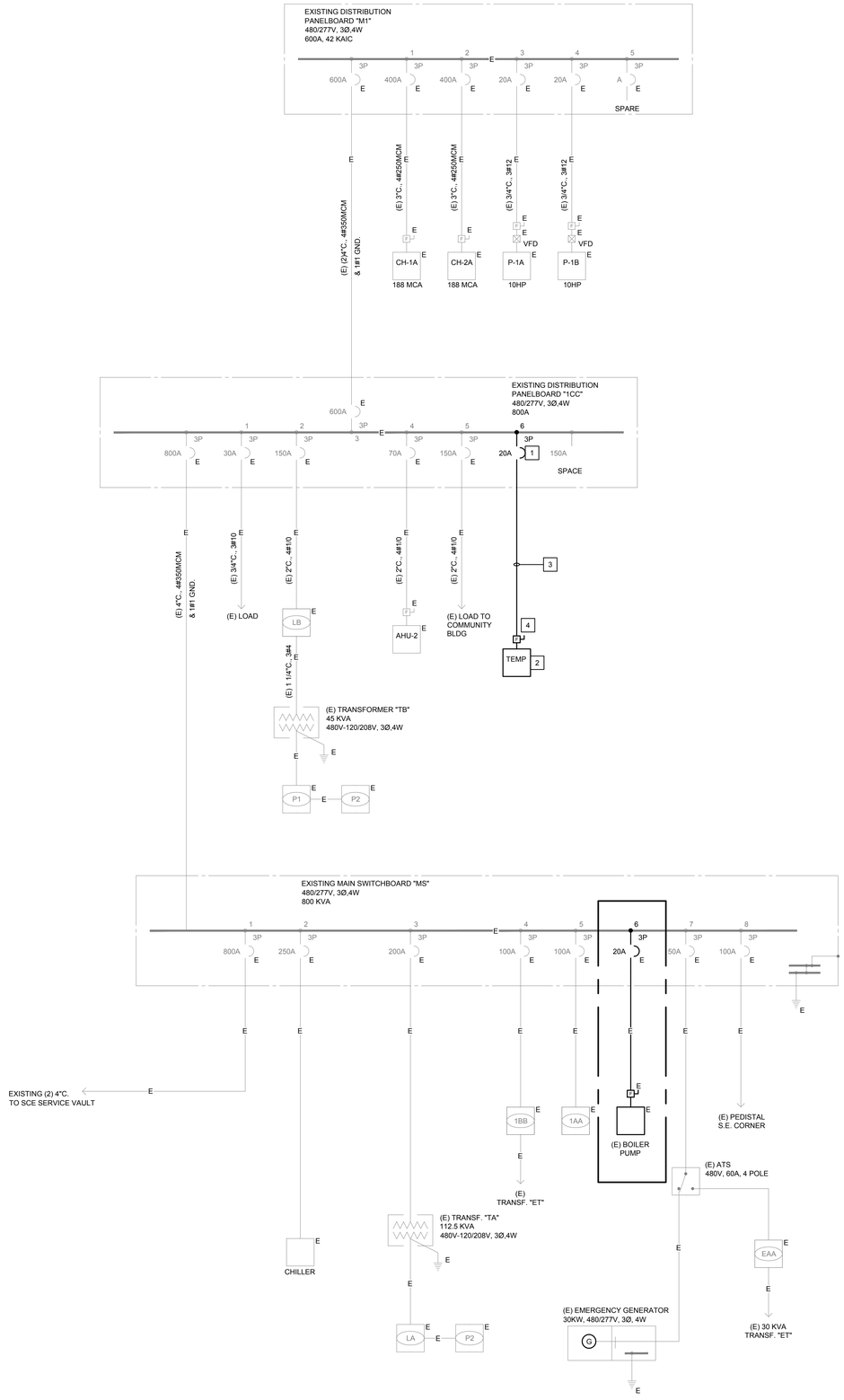
Job No. 2025-082-00
Date: 2/13/2026
Scale: NONE
Drawn By: K.K.
Checked By: R.A

Sheet No:

E-0.01

KEY NOTES [#]

1. PROVIDE 20A-3P, 480V CIRCUIT BREAKER IN DISTRIBUTION BOARD "1CC" LOCATED ON THE BASEMENT.
2. TO TEMPORARY HEATING WATER SYSTEM. LOCATED AT CITY EMPLOYEES PARKING LOT. CONTRACTOR TO FIELD VERIFY EXACT LOCATION.
3. PROVIDE 1"C., 3#10 & 1#10 GND. THHW/CU. WIRE SIZE SHOWN IS MINIMUM SIZE. CONTRACTOR TO UPSIZE WIRE AND/OR CONDUIT BASED ON RUN LENGTH AND VOLTAGE DROP.
4. FUSIBLE DISCONNECT SWITCH, 3P30AS/20AFU, 600V, NEMA 3R WITH CURRENT LIMITING FUSE



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Sheet Title:

ELECTRICAL PARTIAL SINGLE LINE DIAGRAM APPLICABLE CODES & PANEL SCHEDULES

Job No.	2025-082-00
Date:	2/13/2026
Scale:	NONE
Drawn By:	K.K.
Checked By:	R.A

Sheet No:

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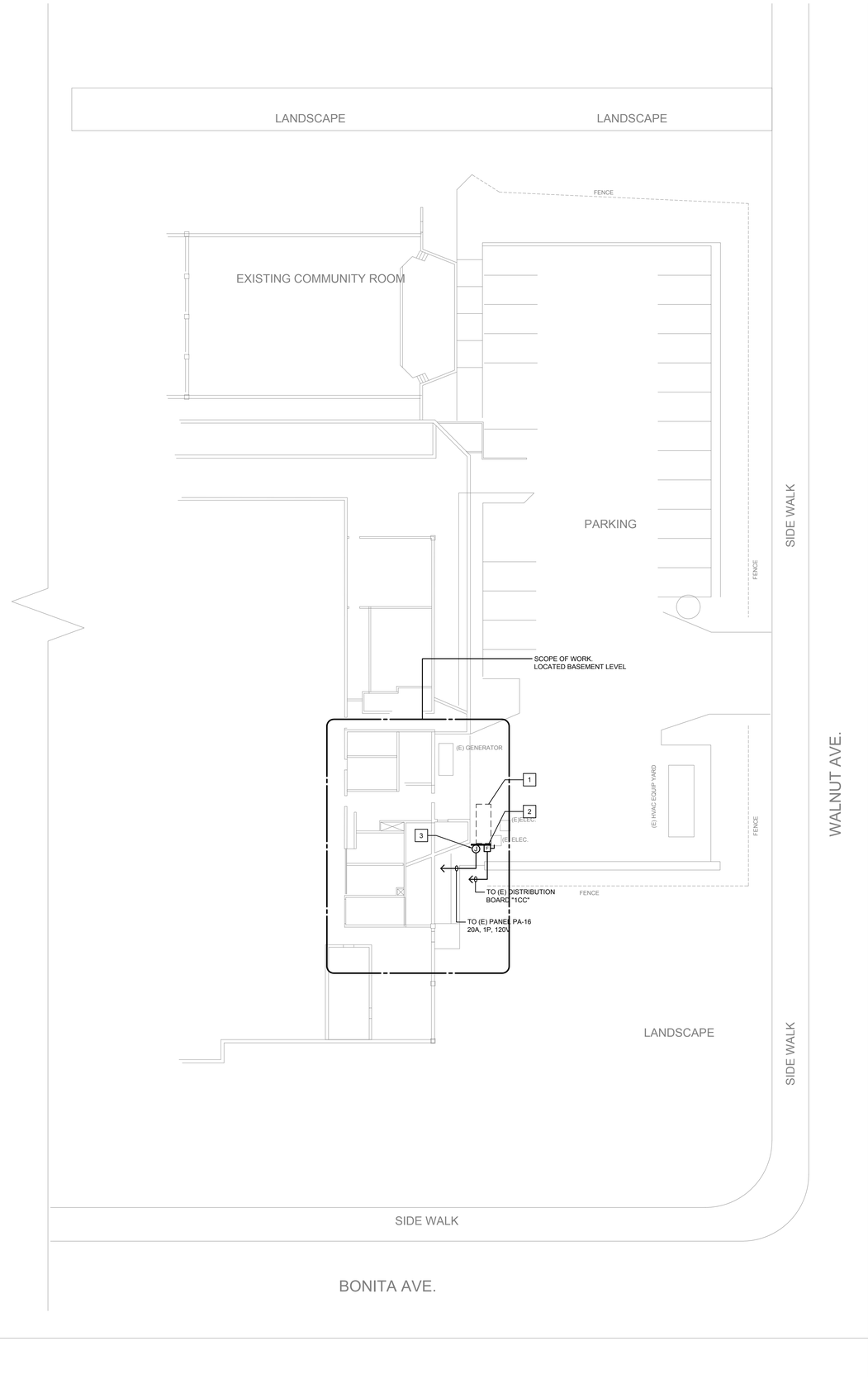

GENERAL NOTES

1. CONTRACTOR TO FIELD-VERIFY EXISTING CONDITION, DETERMINE FULL EXTENT OF DEMOLITION WORK TO ACCOMMODATE NEW DESIGN, SEE REMODEL PLANS FOR SCOPE OF WORK.
2. REFER TO DEMOLITION NOTES ON SHEET E-0.01 FOR ADDITIONAL INFORMATION.
3. DRAWING INFORMATION IS BASED ON AS BUILT DOCUMENTS AND IS SUBJECT TO FURTHER FIELD VERIFICATION.
4. CONTRACTOR SHALL BE RESPONSIBLE OF FIELD-VERIFYING EXISTING PANEL AND CIRCUIT INFORMATION SERVING THE SCOPE AREA.
5. ALL ABANDONED CONDUIT AND CONDUCTORS SHALL BE REMOVED.
6. CONTRACTOR TO ENSURE ALL POWER IN THE AREA ARE OFF BEFORE START OF DEMOLITION. FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES PER NFPA 70E.
7. CONTRACTOR TO DISCONNECT AND REMOVE POWER AND EQUIPMENT AND ASSOCIATES WITH BOILER. PRESERVED ALL EXISTING CONDUIT/WIRES FOR RECONNECTION. REFER TO REMODEL PLAN ON SHEET 2/E-1.00
8. CONTRACTOR TO INSPECTION CONDUCTOR/CONDUIT/WIRES TO TERMINE IF IT IS SUITABLE FOR REUSE.

KEY NOTES [#]

1. PROPOSED TEMPORARY HEATING WATER SYSTEM. LOCATED AT CITY EMPLOYEES PARKING LOT. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH CITY OF SAN DIMAS REPRESENTATIVE FOR EXACT LOCATION.
2. PROVIDE TEMPORARY POWER AND DISCONNECT SWITCH FOR TEMPORARY HEATING WATER SYSTEM. CONTRACTOR TO PROVIDE TEMPORARY UNISTRUT IF IT REQUIRED. 3P30AS/20AFU, 600V, NEMA 3R WITH CURRENT LIMITING FUSE.
3. INTERCEPT EXISTING CONDUIT AND WIRES WITH WEATHERPROOF JUNCTION BOX AND EXTEND CONDUIT AND WIRES TO TEMPORARY HEATING BWATER HEATER SYSTEM POWER CONNECTION.

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1	80% Review Set	12/02/25
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Sheet Title: ELECTRICAL SITE PLAN

Job No.	2025-082-00
Date:	2/13/2026
Scale:	AS SHOWN
Drawn By:	K.K.
Checked By:	R.A

Sheet No: E-1.00

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ELECTRICAL SITE PLAN

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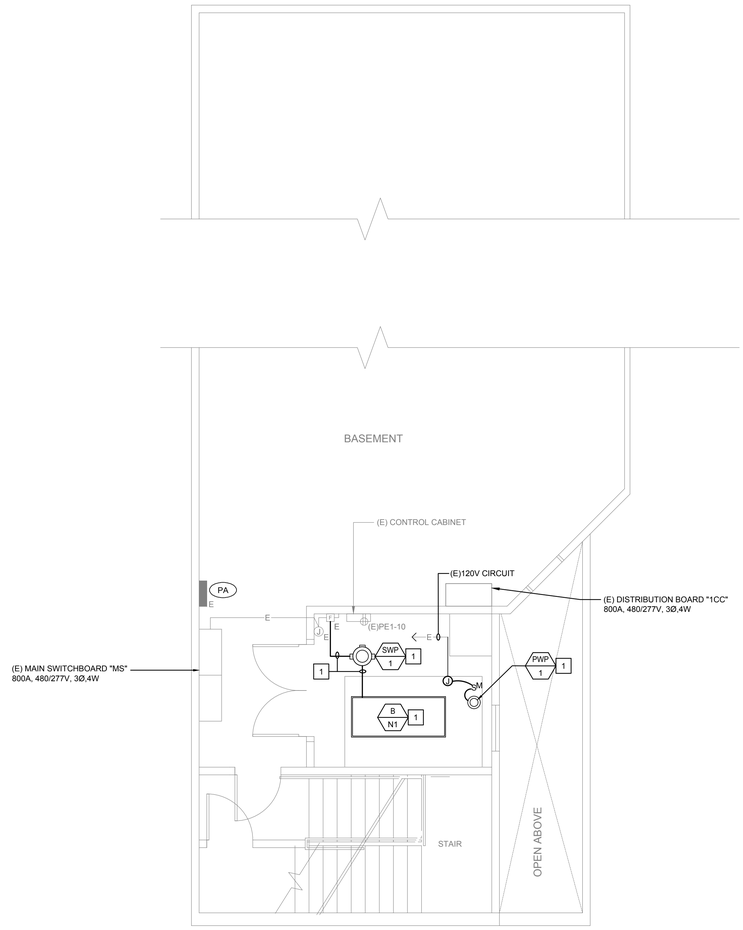
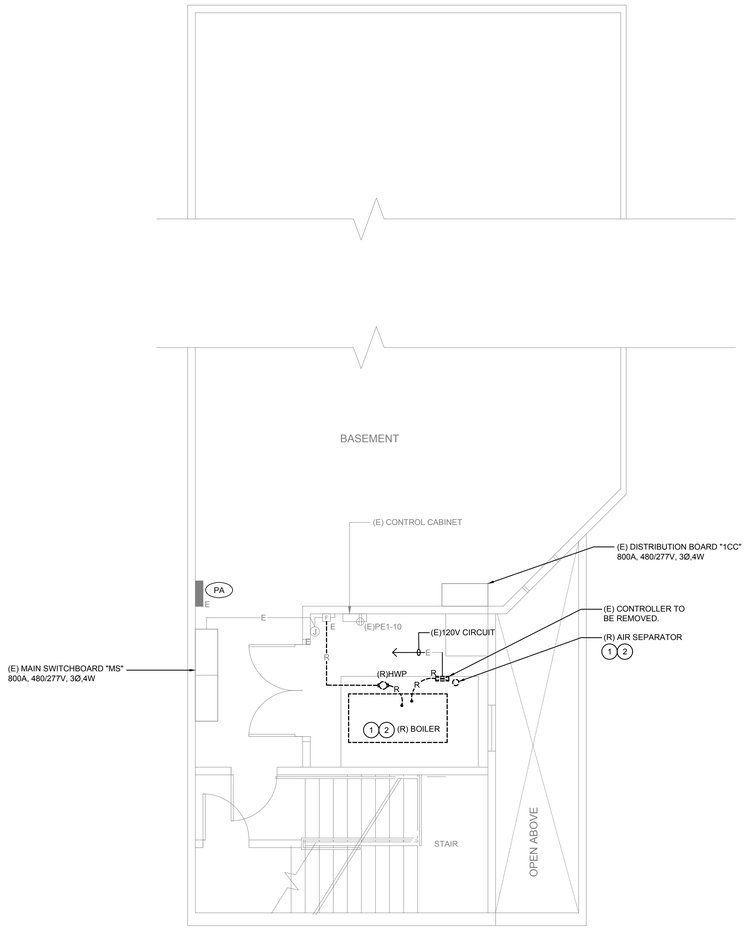


ELECTRICAL ENLARGED BASEMENT REMODEL PLAN

SCALE: 1/4" = 1'-0" | 2



ELECTRICAL ENLARGED BASEMENT DEMO PLAN

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

GENERAL NOTES

1. CONTRACTOR TO FIELD-VERIFY EXISTING CONDITION, DETERMINE FULL EXTENT OF DEMOLITION WORK TO ACCOMMODATE NEW DESIGN, SEE REMODEL PLANS FOR SCOPE OF WORK.
2. REFER TO DEMOLITION NOTES ON SHEET E-0.01 FOR ADDITIONAL INFORMATION.
3. DRAWING INFORMATION IS BASED ON AS BUILT DOCUMENTS AND IS SUBJECT TO FURTHER FIELD VERIFICATION.
4. ELECTRICAL ITEMS DESIGNATED WITH "E" ARE EXISTING AND ARE SHOWN FOR CLARIFICATION. ELECTRICAL ITEMS DESIGNATED WITH "R" ARE TO BE DISCONNECTED AND REMOVED, INCLUDING RESPECTIVE BRANCH CIRCUIT WIRING/CABLE TO SOURCE OF SUPPLY. ELECTRICAL ITEMS WITH "RR" ARE TO BE DISCONNECT & RELOCATED, INCLUDING RESPECTIVE CONDUIT AND BRANCH CIRCUIT WIRING/CABLING AS NOTED.
5. CONTRACTOR SHALL BE RESPONSIBLE OF FIELD-VERIFYING EXISTING PANEL AND CIRCUIT INFORMATION SERVING THE SCOPE AREA.
6. ALL ABANDONED CONDUIT AND CONDUCTORS SHALL BE REMOVED.
7. CONTRACTOR TO ENSURE ALL POWER IN THE AREA ARE OFF BEFORE START OF DEMOLITION. FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES PER NFPA 70E.
8. CONTRACTOR TO DISCONNECT AND REMOVE POWER AND EQUIPMENT AND ASSOCIATES WITH BOILER. PRESERVED ALL EXISTING CONDUIT/WIRES FOR RECONNECTION. REFER TO REMODEL PLAN ON THIS SHEET.
9. CONTRACTOR TO INSPECTION CONDUCTOR/CONDUIT/WIRES TO TERMINE IF IT IS SUITABLE FOR REUSE.

DEMO KEY NOTES (#)

1. BOILER TO BE REMOVED. CONTRACTOR TO DISCONNECT AND REMOVE POWER AND EQUIPMENT AND ASSOCIATES WITH BOILER.
2. PRESERVE EXISTING CONDUIT AND WIRE FOR RECONNECTION. SEE DETAIL #2 ON THIS SHEET FOR RECONNECTION.

REMODEL KEY NOTES [#]

1. EXTEND CONDUIT/WIRES TO NEW LOCATION. CONTRACTOR TO COORDINATE IN THE FIELD FOR EXACT LOCATION.

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Sheet Title: ELECTRICAL ENLARGED BASEMENT DEMO & REMODEL PLANS

Job No.	2025-082-00
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CONDUIT PENETRATION THRU 1-HR FIRE WALL DETAIL
NOT TO SCALE | 1

1. Wall Assembly — The 1 or 2 hr fire rated wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.

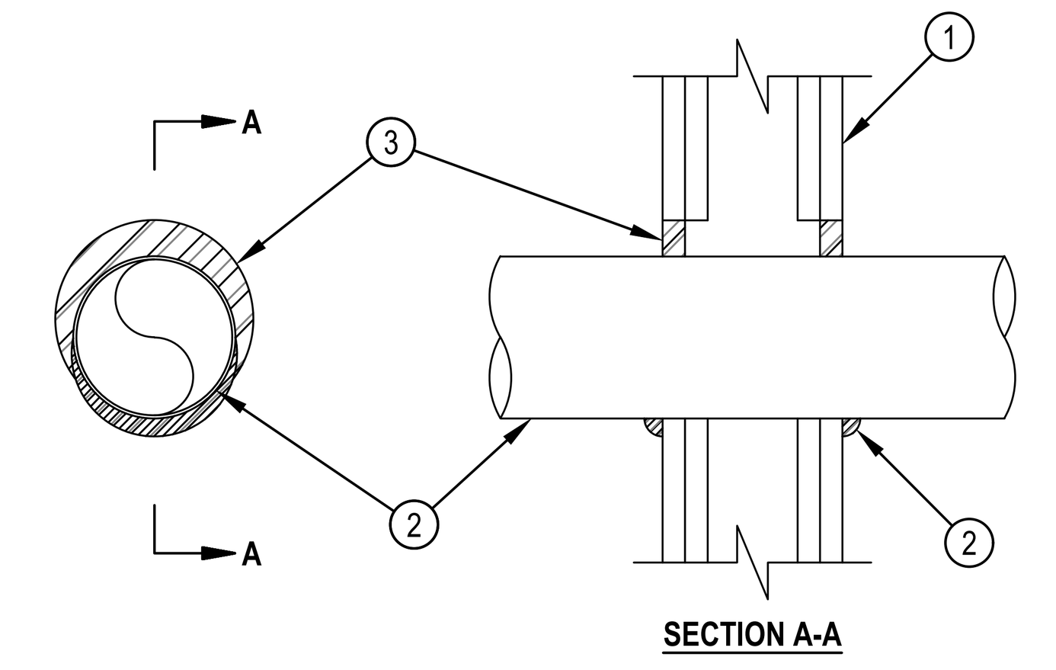
   A. Studs — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Gypsum Board* — Nom 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the Fire Resistance Directory. Max diam of opening is 5-1/2 in. The hourly F and T Ratings of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through Penetrant — One metallic tubing or conduit installed concentrically or eccentrically within the firestop system. Tube or conduit to be rigidly supported on both sides of wall assembly. The annular space between the tube or conduit and periphery of the steel sleeve shall be min 0 in. (point contact) to max 1 in. The following types and sizes of metallic tube or conduit may be used:

   A. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.

3. Fill Void or Cavity Material* — Putty — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At point contact location between penetrant and wall, a 1/4 in. crown of fill material shall be applied at the conduit/wall interface on both sides of the assembly, lapping 1/4 in. on the conduit and 1/4 in. beyond the periphery of the opening. HILTI INC — CP618 Putty Stick

*Bearing the UL Classification Mark



System No. W-L-1175
F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft
L Rating at 400 F - Less Than 1 CFM/sq ft

CONDUIT PENETRATION THRU 2-HR FIRE FLOOR DETAIL
NOT TO SCALE | 2

1. Floor or Wall Assembly -- Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks *. Max diam of opening is 12 in.

   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

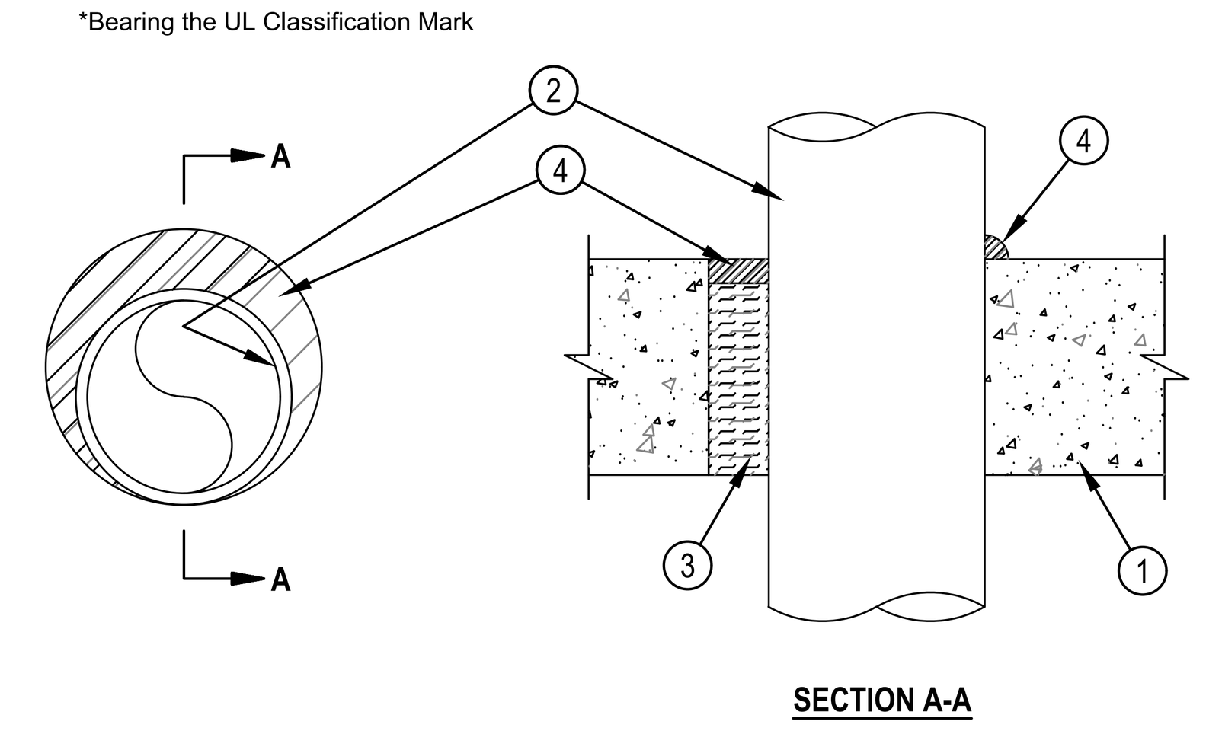
2. Through Penetrants -- One metallic pipe, conduit or tubing to be installed within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The annular space shall be 0 in. (point contact) to max 1-1/4 in. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. Steel Pipe -- Nom 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   B. Iron Pipe -- Nom 10 in. diam (or smaller) cast or ductile iron pipe.
   C. Conduit -- Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.
   D. Copper Tubing -- Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
   E. Copper Pipe -- Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.

3. Packing Material -- Min 3 in. thickness of min 4 pcf mineral wool batt insulation for nom 4 in. diam (and smaller) pipes, conduits or tubings and a min 4 in. thickness of min 4 pcf mineral wool batt insulation for pipe greater than nom 4 in. diam, firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.

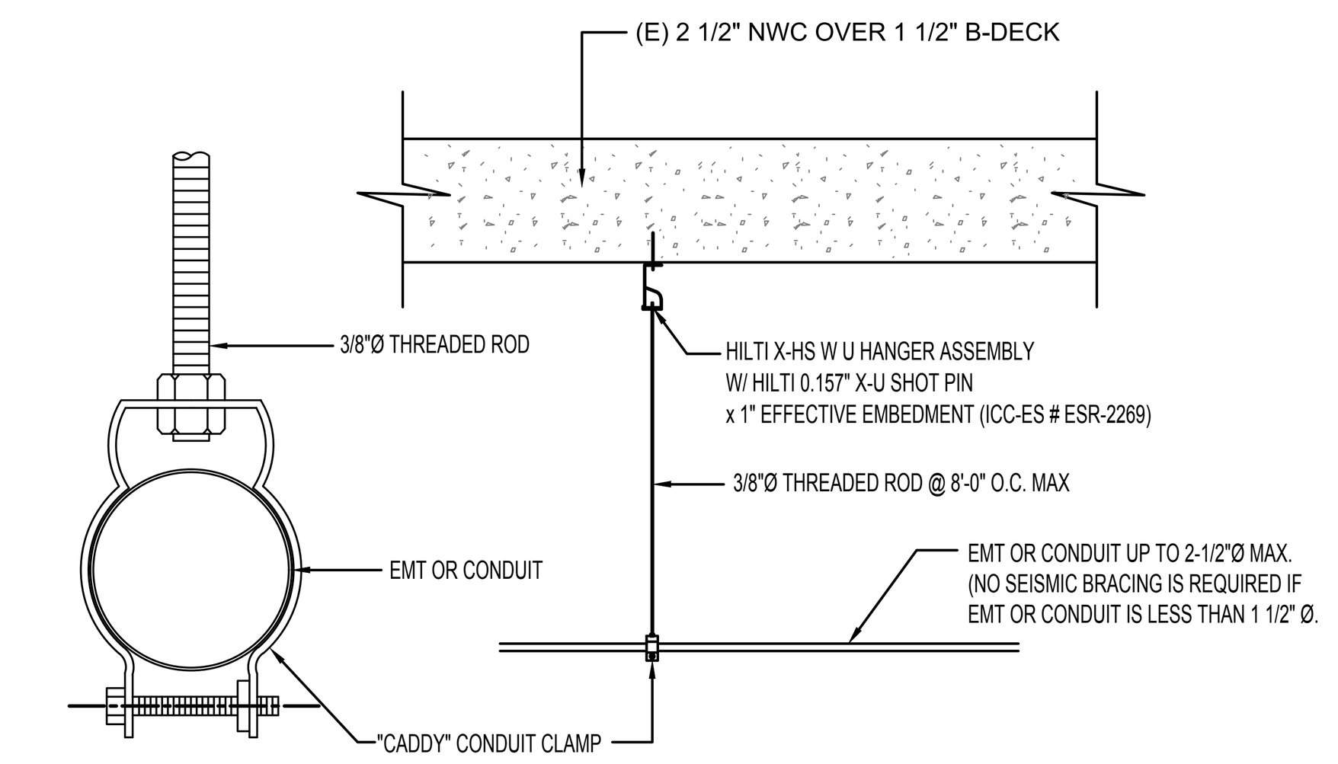
4. Fill, Void or Cavity Material* -- Sealant -- Min 1/2 in. thickness of fill material applied within the annulus, flush with the top surface of floor or both surfaces of wall. At the point of contact location between pipe and concrete, a min 1/2 in. diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall. W Rating applies only when CP601S or CP604 sealant is used. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP601S, CP604, CP606 or FS-ONE Sealant

*Bearing the UL Classification Mark

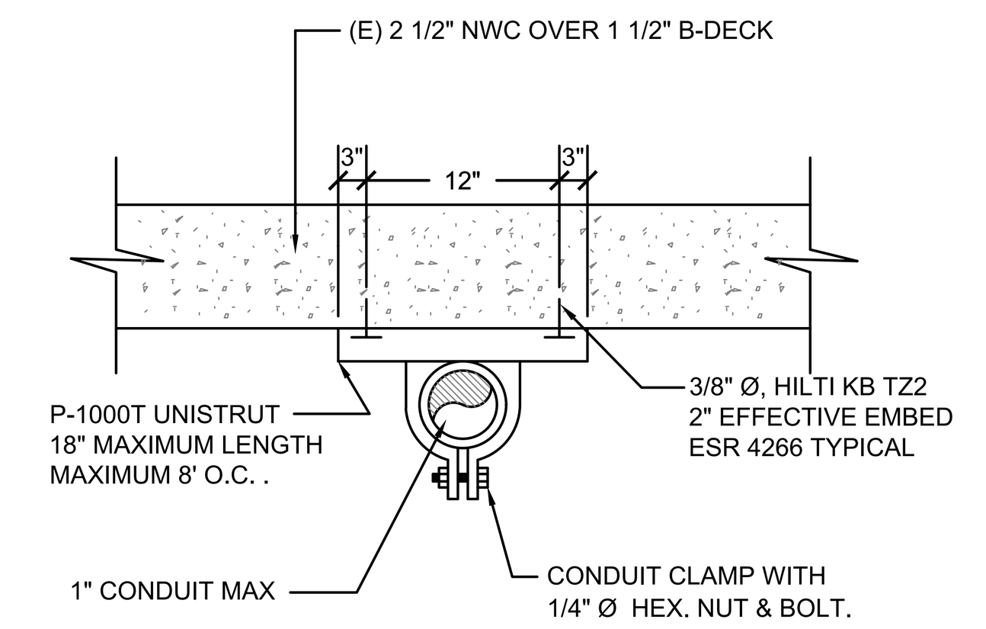


System No. C-AJ-1149
F Rating -- 2 Hr
T Rating -- 0 Hr
L Rating At Ambient -- Less Than 1 CFM/sq ft
L Rating At 400 F -- 4 CFM/sq ft
W Rating -- Class I (See Item 4)

SINGLE CONDUIT SUPPORT DETAIL
NOT TO SCALE | 3



EMT/CONDUIT SUPPORT DETAIL



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REGISTERED PROFESSIONAL ENGINEER E17249 EXP. 06-30-2026 ELECTRICAL STATE OF CALIFORNIA

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ELECTRICAL DETAILS

Job No.	2025-082-00
Date:	2/13/2026
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Drawn By:	K.K.
Checked By:	R.A

Sheet No:

E-3.00

GENERAL NOTES

1. PROVIDE ALL SYSTEM COMPONENTS AND APPURTENANCES FOR A FULLY OPERATIONAL, CODE COMPLIANT INSTALLATION.
2. ALL WORK AND MATERIALS INDICATED ON THE PLUMBING DRAWINGS SHALL BE NEW UNLESS OTHERWISE NOTED.
3. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURERS' RECOMMENDATIONS.
4. PRIOR TO BIDDING, CONTRACTORS SHALL BECOME FAMILIAR WITH ALL PROJECT DOCUMENTS AND SURVEY THE SITE TO BECOME AWARE OF ALL EXISTING CONDITIONS. NO EXTRA COMPENSATION SHALL BE AWARDED FOR THE CONTRACTOR'S FAILURE TO ALLOW FOR ANY EXISTING CONDITIONS THAT EFFECT HIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSIDERED EVIDENCE OF THE FACT THAT THE CONTRACTOR IS FULLY AWARE OF THESE CONDITION AND IS ABLE TO COMPLETE ALL WORK REQUIRED.
5. THE CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, CIVIL AND STRUCTURAL DRAWINGS. THE CONTRACTOR SHALL CONFIRM ALL NECESSARY DIMENSIONS, SYSTEM COMPONENT SPACE REQUIREMENTS, AND POINTS OF CONNECTIONS TO ALL EXISTING SYSTEM COMPONENTS, FIXTURES, AND EQUIPMENT.
6. THESE DRAWINGS AND LAYOUTS ARE DIAGRAMMATIC TO SHOW DESIGN INTENT AND INDICATE THE FINISHED REQUIREMENTS FOR THE PLUMBING SYSTEMS. IF NECESSARY, THE CONTRACTOR SHALL MAKE ANY MINOR ADJUSTMENTS TO THE SYSTEM OR ITS APPURTENANCES TO AVOID ANY CONFLICTS WITH BUILDING STRUCTURE OR THE WORK OF OTHER TRADES. IF DUE TO; ARCHITECTURAL, MECHANICAL, ELECTRICAL, OR STRUCTURAL INTERFERENCE, THE RETENTION OF EXISTING FACILITIES, OR FOR OTHER REASONS, THE CONTRACTOR MAY DESIRE TO INSTALL THE WORK IN A MANNER DIFFERENT FROM THAT SHOWN. SUCH CHANGES SHALL BE PRESENTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO IMPLEMENTATION.
7. THE CONTRACTOR SHALL COORDINATE WITH ALL TRADES TO ENSURE THAT THE PLUMBING AND FIRE PROTECTION SYSTEMS ARE FULLY COORDINATED WITH ALL OTHER TRADES, VERIFY ALL EXISTING UTILITIES; LOCATION, SIZE, DEPTH, PRESSURE AND AVAILABILITY PRIOR TO STARTING WORK.
8. COORDINATE WITH THE ELECTRICAL CONTRACTOR PRIOR TO ORDERING ANY PLUMBING EQUIPMENT REQUIRING AN ELECTRICAL CONNECTION FOR AVAILABLE VOLTAGES PRIOR TO PURCHASING SAID EQUIPMENT.
9. NO PLUMBING INSTALLATION THAT IS NOT DIRECTLY NECESSARY FOR ELECTRICAL ROOMS SHALL BE PLACED OR PASS THROUGH THE ELECTRICAL ROOM.
10. NO PLUMBING INSTALLATION THAT IS NOT DIRECTLY NECESSARY FOR MECHANICAL REFRIGERATION EQUIPMENT OPERATION SHALL BE PLACED OR PASS THROUGH THE MECHANICAL REFRIGERATION ROOM.
11. NO PLUMBING INSTALLATION THAT IS NOT DIRECTLY NECESSARY FOR EXIT PASSAGEWAY SHALL BE PLACED OR PASS THROUGH THE EXIT PASSAGEWAY.
12. THE CONTRACTOR SHALL IDENTIFY LOCATIONS OF EXISTING REBAR AT ANY PLUMBING OR FIRE PROTECTION SYSTEM PENETRATIONS THROUGH EXISTING CONCRETE STRUCTURAL ELEMENTS. THE CONTRACTOR SHALL SUBMIT A FULL SET OF PLANS AND ELEVATIONS INDICATING ALL PROPOSED LOCATIONS AND SIZES OF CORE DRILLING OR SAW CUTTING FOR REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER AND ARCHITECT. THE CONTRACTOR SHALL INDICATE ANY CONFLICTS BETWEEN THE PENETRATIONS AND EXISTING REBAR ON THE DRAWINGS. ALL CORING, SAW CUTTING AND DRILLING SHALL BE PATCHED TO MATCH THE SURROUNDING CONDITION OR AS REQUIRED TO SUIT FINISHED CONDITIONS.
13. PENETRATION OF RATED ASSEMBLIES SHALL BE FIRE STOPPED USING A UL APPROVED MATERIAL AND SHALL HAVE AN F OR T RATING AS DETERMINED BY TESTS CONDUCTED IN ACCORDANCE WITH UBC STANDARD 7-5.
14. PROVIDE PIPE SLEEVES FOR ALL PIPING PASSING THROUGH MASONRY OR CONCRETE WALLS. ALL ANNULAR SPACE SHALL BE CAULKED APPROPRIATELY.
15. THE CONTRACTOR SHALL COORDINATE ALL SHUT DOWN OF THE PLUMBING OR FIRE PROTECTION SYSTEMS WITH THE GENERAL CONTRACTOR AND/OR THE BUILDING ENGINEER AT A MINIMUM OF TWO WEEKS IN ADVANCE.
16. WHERE THERE IS A DISCREPANCY BETWEEN THE DRAWINGS AND THE PROJECT SPECIFICATIONS OR BUILDING STANDARDS, THE ARCHITECTS SHALL BE NOTIFIED OF THIS DISCREPANCY PRIOR TO PROCEEDING WITH THE WORK.
17. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, LICENSES, AND FEES REQUIRED FOR THE INSTALLATION AND APPROVAL OF THE FIRE PROTECTION AND PLUMBING WORK.
18. IF ANY EQUIPMENT OR MATERIAL FOR WHICH THE CONTRACTOR IS PLANNING ON UTILIZING IS DIFFERENT FROM THAT SPECIFIED SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL. THE SUBMITTAL SHALL INDICATE THAT THE SUBMITTED IS A SUBSTITUTION AND THE CREDIT DUE TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYMENT OF ALL OTHER CHANGES RESULTING FROM THE SUBSTITUTION INCLUDING CHANGES IN THE WORK OF OTHER TRADES NECESSARY TO ACCOMMODATE THE REQUESTED SUBSTITUTION.
19. THE CONTRACTOR SHALL PROVIDE A COORDINATED SET OF SHOP DRAWINGS AND PRODUCT DATA ACCORDING TO THE SPECIFICATIONS FOR REVIEW AND APPROVAL PRIOR TO THE STARTING OF WORK AND THE PROCUREMENT OF ANY MATERIALS.
20. THE CONTRACTOR SHALL PROVIDE COMPLETE AS-BUILT DRAWINGS PRIOR TO COMPLETION OF THE PROJECT FOR REVIEW BY THE ARCHITECT AND/OR ENGINEER.
21. ALL SYMBOLS SHOWN ON THE SYMBOL LIST ARE NOT NECESSARILY USED ON THIS PROJECT.
22. PAINT EXPOSED PIPING TO MATCH BACKGROUND OR AS DIRECTED BY THE ARCHITECT.
23. KEEP ALL PIPING CLEAR OF ALL LOAD BEARING FOOTINGS.
24. CONTRACTOR SHALL REVIEW AND COMPLY ALL REQUIREMENT GUIDELINES.
25. NATURAL GAS PIPE SIZING CALCULATIONS ARE BASED ON THE ASSUMPTION THAT ONE CUBIC FOOT OF GAS IS EQUAL TO 1,000 BTU'S.
26. WHERE POSSIBLE, USE SAME ACCESS PANEL FOR SHUT-OFF VALVES, MIXING VALVES, TRAP PRIMERS AND WATER HAMMER ARRESTORS AND/OR OTHER INTERIOR WALL COMPONENTS WHEN LOCATED DIRECTLY ADJACENT IN SAME IMMEDIATE VICINITY. SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHTS.
27. PENETRATIONS OF FIRE-RESISTIVE WALLS, FLOOR-CEILINGS AND ROOF-CEILINGS SHALL BE PROTECTED AS REQUIRED IN CBC SECTION 714.
28. DOMESTIC WATER PIPING AND COMPONENTS SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA AB 1953 LEGISLATION (EFFECTIVE JANUARY 1, 2010), WHICH LIMITS THE ALLOWABLE LEAD CONTENT IN CERTAIN DOMESTIC WATER SYSTEM COMPONENTS.
29. ALL WORK AND MATERIAL SHALL COMPLY WITH THE CODES SHOWN ON THE APPLICABLE CODES SECTION.
30. PROVIDE ROUGH-INS, EXTEND ALL PIPING (WASTE, VENT, COLD WATER, HOT WATER, ETC.) TO ALL FIXTURES AND APPLIANCES AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
31. RUN ALL PLUMBING PIPING AS HIGH AS POSSIBLE TO STRUCTURE AND COORDINATE ROUTING WITH OTHER TRADES.
32. PIPE BRANCH CONNECTIONS SHALL OFFSET. NO "BULL HEAD" CONNECTIONS WILL BE ALLOWED.
33. ALL BURRED ENDS OF WATER PIPING AND TUBING SHALL BE REAMED TO THE FULL BORE OF THE PIPE OR TUBE AND ALL CHIPS SHALL BE REMOVED ADDITIONALLY, TOOLS USED IN CUTTING OR REAMING SHALL KEPT FREE FROM OIL OR GREASE AND WHERE SUCH CONTAMINATION HAS OCCURRED, THE ITEMS AFFECTED SHALL BE REWORKED AND RINSED.
34. THE CONTRACTOR SHALL FURNISH AND INSTALL A SHUTOFF VALVE, PLUG COCK OR STOP AT EACH PIECE OF EQUIPMENT REQUIRING WATER OR GAS.
35. THE CONTRACTOR SHALL ENSURE THAT ALL SHUT-OFF VALVES, WATER HAMMER ARRESTERS, CLEANOUTS AND TRAP PRIMERS ARE ACCESSIBLE.
36. ROUGH-INS, CONNECTIONS AND TERMINATION OF PLUMBING WORK SHALL BE SEQUENCED IN COORDINATION WITH THE PROJECT SCHEDULE AND THE OWNERS OTHER CONTRACTORS AND VENDORS.
37. VENTS SHALL TERMINATE NOT LESS THAN 6" ABOVE ROOF. VENTS SHALL NOT TERMINATE BELOW OR WITHIN 10' HORIZONTALLY OF ANY DOOR, WINDOW, FRESH AIR INTAKE OR OTHER VENTILATION OPENING. WHERE 10' HORIZONTAL CLEARANCE CANNOT BE MAINTAINED, EXTEND VENT TO AT LEAST 3' ABOVE VENTILATION OPENING.
38. THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF ALL EXISTING UTILITY LINES PRIOR TO CONNECTION OR REMOVAL.
39. THE CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO EXISTING OCCUPIED AREAS OR PROVIDE TEMPORARY SERVICES AS REQUIRED.
40. THE CONTRACTOR SHALL SEAL AND FLASH WATERTIGHT ALL PIPE AND FLUE PENETRATIONS THROUGH ROOF.
41. NOT ALL OF THE ACCESS PANELS MAY BE IDENTIFIED ON THE PLANS. THE CONTRACTOR SHALL PROVIDE ACCESS PANELS IN WALLS AND HARD LID CEILINGS FOR SHUT-OFF VALVES, TRAP PRIMERS AND WATER HAMMER ARRESTERS. THE CONTRACTOR SHALL MAKE EVERY EFFORT NOT TO LOCATE ITEMS REQUIRING ACCESS ABOVE THE AREAS OF GYPSUM BOARD CEILING WITHOUT PRIOR APPROVAL OF THE ARCHITECT. PROPOSED ACCESS PANEL LOCATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
42. WRAP ALL IRON AND COPPER PIPE AND FITTINGS BELOW SLAB OR GRADE WITH 8 MIL POLYETHYLENE WRAP AND 6" MINIMUM ENVELOPE OF CLEAN SAND ALL AROUND PIPE IN ACCORDANCE WITH ANSI/AWWA STANDARD C105/A21.5-82.
43. ALL PIPE, FITTINGS, FIXTURES, ETC. THAT CONTACT POTABLE WATER FOR HUMAN CONSUMPTION SHALL SHOW APPROVAL TO NSF 61, ANNEX G.
44. GAS PIPING SHALL NOT BE RUN IN OR THROUGH SUPPLY AIR DUCTS, CLOTHES CHUTES, CHIMNEYS, VENTS, OR DUMBWAITERS.
45. VALVES, UNIONS OR RUNNING THREAD SHALL NOT BE LOCATED IN ANY AIR PLENUM.
46. PORTIONS OF GAS PIPING SYSTEMS INSTALLED IN CONCEALED LOCATIONS SHALL NOT HAVE UNIONS, TUBING FITTINGS, OR RUNNING THREADS.
47. PORTIONS OF THE GAS PIPING SYSTEM INSTALLED IN CONCEALED LOCATIONS SHALL BE TESTED BEFORE THE PIPING IS COMPLETELY CONCEALED.
48. THE GAS PIPING SYSTEM SHALL BE TESTED WITH AIR OR AN INERT GAS. THE SYSTEM SHALL BE TESTED TO A PRESSURE OF 1 1/2 TIMES THE SYSTEM WORKING PRESSURE, BUT NOT LESS THAN 10 PSI. GAS PIPING SYSTEMS SHALL MAINTAIN THE FULL-TEST PRESSURE FOR A PERIOD OF 10 MINUTES.
49. THE GAS PIPING SYSTEM SHALL BE PURGED TO A SAFE LOCATION. PIPING SHALL NOT BE PURGED INTO THE COMBUSTION CHAMBER OF AN APPLIANCE.
50. NEW AND REPAIRED POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE IN ACCORDANCE WITH THE METHOD SET FORTH IN THE APPLICABLE PLUMBING CODE OR AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION, WHICHEVER IS MORE RESTRICTIVE.
51. DOMESTIC WATER SYSTEMS SHALL BE HYDROSTATIC TESTED AT 150 PSI FOR NOT LESS THAN ONE HOUR.

PLUMBING EQUIPMENT BRACING AND ANCHORAGE

1. ALL PLUMBING PIPES SHALL BE INSTALLED WITH SEISMIC RESTRAINTS PER "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING SYSTEMS" PUBLISHED BY SMACNA.
2. WHERE BRACING AND ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE GUIDELINES, THE CONTRACTOR SHALL SUBMIT FOR REVIEW & APPROVAL SHOP DRAWINGS OF THE PROPOSED DETAIL WITH STAMP & SIGNATURE BY THE STRUCTURAL ENGINEER OF RECORD.
3. A COPY OF THE GUIDELINES PUBLISHED BY SMACNA SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB SITE AT ALL TIMES.

PIPE MATERIALS

DOMESTIC WATER:

ABOVE GRADE, NPS 2-1/2" AND SMALLER, SHALL BE THE FOLLOWING:

- HARD COPPER TUBE, ASTM B 88, TYPE L; CAST OR WROUGHT COPPER SOLDER-JOINT FITTINGS; AND SOLDERED JOINTS. SHALL BE LEAD FREE NSF/ANSI 61 COMPLIANT.
- HARD COPPER TUBE, ASTM B 88, TYPE L; GROOVED, WITH MATCHING FITTINGS; AND ROLL GROOVED JOINTS. SHALL BE LEAD FREE NSF/ANSI 61 COMPLIANT.

ABOVE GRADE DOMESTIC WATER PIPING, NPS 3" AND 4", SHALL BE ONE OF THE FOLLOWING:

- HARD COPPER TUBE, ASTM B 88, TYPE L; CAST OR WROUGHT COPPER BRAZE-JOINT FITTINGS; AND BRAZED JOINTS. SHALL BE LEAD FREE NSF/ANSI 61 COMPLIANT.
- HARD COPPER TUBE, ASTM B 88, TYPE L; GROOVED, WITH MATCHING FITTINGS; AND ROLL GROOVED JOINTS. SHALL BE LEAD FREE NSF/ANSI 61 COMPLIANT.
- DUCTILE IRON; WITH DUCTILE IRON FITTINGS, AND MECHANICAL OR GROOVED JOINTS. SHALL BE LEAD FREE NSF/ANSI 61 COMPLIANT.

NATURAL GAS:

ABOVE GRADE PIPING SHALL BE THE FOLLOWING:

- STEEL PIPE: ASTM A53/A53M BLACK STEEL, SCHEDULE 40 TYPE E OR S GRADE B. FITTINGS: ASME B16.3, MALLEABLE IRON, 150 PSIG. JOINTS: THREADED MALLEABLE IRON FITTING FOR PIPING 4 INCH AND SMALLER.

CONDENSATE DRAIN

ABOVE GRADE PIPING SHALL BE THE FOLLOWING:

- HARD COPPER TUBE, ASTM B 88, TYPE M OR L; CAST OR WROUGHT COPPER SOLDER-JOINT FITTINGS; AND SOLDERED JOINTS. PROVIDE INSULATION INSIDE THE BUILDING.

PLUMBING LEGEND

SYMBOL	ABBREV.	DESCRIPTION
CW	CW	COLD WATER
HW	HW	HOT WATER
HWR	HWR	HOT WATER RETURN
V	V	SANITARY VENT
W OR S	W OR S	WASTE ABOVE GRADE/FLOOR
W OR S	W OR S	WASTE OR SEWER BELOW GRADE/FLOOR
SD	SD	STORM DRAIN
OD	OD	OVERFLOW DRAIN
G	G	GAS
MPG	MPG	MEDIUM PRESSURE GAS
GW	GW	GREASE WASTE
GV	GV	GREASE VENT
CD	CD	CONDENSATE DRAIN
TP	TP	TRAP PRIMER
FW	FW	FILTERED WATER
TW	TW	TEMPERED WATER
IRR	IRR	IRRIGATION WATER
ICW	ICW	INDUSTRIAL COLD WATER
GRW	GRW	GRAY WATER
D	D	DRAIN LINE
CA	CA	COMPRESSED AIR
(E)	(E)	EXISTING (AS NOTED)
	SOV	SHUT OFF VALVE
		CHECK VALVE
	SOV/YB	SHUT OFF VALVE IN YARD BOX
		GAS COCK
		BALL VALVE
	HB	HOSE-BIBB
		PIPE-UP OR RISER
		PIPE-DOWN OR DROP
		UNION
		CAP OR PLUG
		FLOW ARROW
	POD	POINT OF DISCONNECTION
	POC	POINT OF CONNECTION
	COTG/YB	CLEANOUT TO GRADE IN YARD IN BOX
		PIPE CONTINUATION
	FCO	FLOOR CLEANOUT
	WCO	WALL CLEANOUT
#		REMODEL KEY NOTE
#		DEMOLITION KEY NOTE
	WHA	WATER HAMMER ARRESTOR
		PIPING OR EQUIPMENT TO BE REMOVED
		FIXTURE TO BE REMOVED
BFP	BFP	BACKFLOW PREVENTER
XX-1		PLUMBING EQUIPMENT IDENTIFICATION
YY-1		FIXTURE EQUIPMENT IDENTIFICATION

PLUMBING ABBREVIATIONS

Ø	DIAMETER	FDC	FIRE DEPARTMENT CONNECTION
&	AND	FU	FIXTURE UNIT(S) (CODE)
@	AT	GPF	GALLONS PER FLUSH
ADA	AMERICAN WITH DISABILITIES ACT	GPH	GALLONS PER HOUR
A/C	ABOVE CEILING	GPM	GALLONS PER MINUTE
ABV	ABOVE	GR	GRADE OR GROUND
AFF	ABOVE FINISHED FLOOR	HDR	HEADER
AP	ACCESS PANEL	I.E.	INVERT ELEVATION
BEL	BELOW	LOC	LOCATION
B/F	BELOW FLOOR	MAX	MAXIMUN
B/G	BELOW GRADE	MIN	MINIMUM
CI	CAST IRON	NTS	NOT TO SCALE
CFH	CUBIC FEET PER HOUR	OFCI	OWNER FURNISHED-CONTRACTOR INST
CLG	CEILING	O/H	OVERHEAD EXPOSED
CONC	CONCRETE	PSI	POUNDS PER SQUARE INCH (GAUGE)
CONN	CONNECT OR CONNECTION	RI&C	ROUGH IN & CONNECT
CONT	CONTINUATION	SHT	SHEET
DN	DOWN	SOV	SHUT OFF VALVE
(E) / EXIST	EXISTING	TDL	TOTAL DEVELOPED LENGTH
EV	EARTHQUAKE SHUT-OFF VALVE	THRU	THROUGH
FCO	FLOOR CLEANOUT	TYP	TYPICAL
FIN	FINISH	W/	WITH
FFA	FROM FLOOR ABOVE	W.C.	WATER COLUMN
FFE	FINISH FLOOR ELEVATION	VEL.	VELOCITY
FLR	FLOOR	VIF	VERIFY IN FIELD
FPS	FEET PER SECOND	VTR	VENT THRU ROOF

SHEET INDEX

SHT.NO.	DESCRIPTION
P-0.01	GENERAL NOTES, LEGEND, APPLICABLE CODES AND SHEET INDEX
P-0.02	PLUMBING SPECIFICATIONS
P-1.00	PLUMBING SITE PLAN
P-1.01	PLUMBING ENLARGED BASEMENT DEMO, REMODEL & TEMPORARY PLANS
P-3.00	PLUMBING DETAILS

SCOPE OF WORK

1. DISCONNECT EXISTING INDUSTRIAL WATER AND NATURAL GAS PIPING FROM EXISTING BOILER.
2. RECONNECT INDUSTRIAL WATER AND NATURAL GAS TO NEW BOILER.
3. PROVIDE GAS TO TEMPORARY UNIT.

APPLICABLE CODES

LIST OF APPLICABLE CODES THE CONSTRUCTION OF THIS PROJECT SHALL CONFORM TO THE REQUIREMENTS OF:

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 CCR
2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR
2022 CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 CCR
2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR
2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR
2022 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 CCR
2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
2022 CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR
2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PRAT 1, TITLE 24 CCR
2022 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR
TITLE 19 CCR, PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS

PBS ENGINEERS
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REGISTERED PROFESSIONAL ENGINEER
CHARLES A. CRUZ
M33827
EXP. 06-30-2027
MECHANICAL
STATE OF CALIFORNIA

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:

PLUMBING GENERAL NOTES, LEGEND & APPLICABLE CODES

Job No.	2025-082-00
Date:	2/13/2026
Scale:	NONE
Drawn By:	K.K.
Checked By:	R.C.

Sheet No:

P-0.01

P:_PROJECTS\P-2025\20\2025-082-00 City of San Dimas Boiler Replacement\10_BIM-CAD\CAD\Sheets\P-0.01.dwg 2/13/2026 2:59 PM Charles Cruz

PLUMBING SPECIFICATIONS

SECTION 220529 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY

A. SECTION INCLUDES:

1. METAL PIPE HANGERS AND SUPPORTS.

2. EQUIPMENT SUPPORTS.

1.3 DEFINITIONS

A. MSS: MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY INC.

1.4 PERFORMANCE REQUIREMENTS

A. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.

1. DESIGN SUPPORTS FOR MULTIPLE PIPES, INCLUDING PIPE STANDS, CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.

2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND COMPONENTS.

3. DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT.

1.5 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. CARBON-STEEL PIPE HANGERS AND SUPPORTS:

1. DESCRIPTION: MSS SP-58, TYPES 1 THROUGH 58, FACTORY-FABRICATED COMPONENTS.

2. GALVANIZED METALLIC COATINGS: PREGALVANIZED OR HOT DIPPED.

3. NONMETALLIC COATINGS: PLASTIC COATING, JACKET, OR LINER.

4. PADDED HANGERS: HANGER WITH FIBERGLASS OR OTHER PIPE INSULATION PAD OR CUSHION TO SUPPORT BEARING SURFACE OF PIPING.

5. HANGER RODS: CONTINUOUS-THREAD ROD, NUTS, AND WASHER MADE OF CARBON STEEL.

2.2 EQUIPMENT SUPPORTS

A. DESCRIPTION: WELDED, SHOP- OR FIELD-FABRICATED EQUIPMENT SUPPORT MADE FROM STRUCTURAL CARBON-STEEL SHAPES.

2.3 MISCELLANEOUS MATERIALS

A. STRUCTURAL STEEL: ASTM A 36/A 36M, CARBON-STEEL PLATES, SHAPES, AND BARS; BLACK AND GALVANIZED.

B. GROUT: ASTM C 1107, FACTORY-MIXED AND -PACKAGED, DRY, HYDRAULIC-CEMENT, NON-SHRINK AND NONMETALLIC GROUT; SUITABLE FOR INTERIOR AND EXTERIOR APPLICATIONS.

1. PROPERTIES: NON-STAINING, NONCORROSIVE, AND NONGASEOUS.

2. DESIGN MIX: 5000-PSI (34.5-MPA), 28-DAY COMPRESSIVE STRENGTH.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. METAL PIPE-HANGER INSTALLATION: COMPLY WITH MSS SP-69 AND MSS SP-89. INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS AS REQUIRED TO PROPERLY SUPPORT PIPING FROM THE BUILDING STRUCTURE.

B. INSTALL HANGERS AND SUPPORTS COMPLETE WITH NECESSARY ATTACHMENTS, INSERTS, BOLTS, RODS, NUTS, WASHERS, AND OTHER ACCESSORIES.

C. EQUIPMENT SUPPORT INSTALLATION: FABRICATE FROM WELDED-STRUCTURAL-STEEL SHAPES.

D. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED THERMAL AND SEISMIC MOVEMENT OF PIPING SYSTEMS.

E. LOAD DISTRIBUTION: INSTALL HANGERS AND SUPPORTS SO THAT PIPING LIVE AND DEAD LOADS AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.

F. PIPE SLOPES: INSTALL HANGERS AND SUPPORTS TO PROVIDE INDICATED PIPE SLOPES AND TO NOT EXCEED MAXIMUM PIPE DEFLECTIONS ALLOWED BY ASME B31.9 FOR BUILDING SERVICES PIPING.

G. INSULATED PIPING:

1. ATTACH CLAMPS AND SPACERS TO PIPING.

a. PIPING OPERATING ABOVE AMBIENT AIR TEMPERATURE: CLAMP MAY PROJECT THROUGH INSULATION.

b. PIPING OPERATING BELOW AMBIENT AIR TEMPERATURE: USE THERMAL-HANGER SHIELD INSERT WITH CLAMP SIZED TO MATCH OD OF INSERT.

c. DO NOT EXCEED PIPE STRESS LIMITS ALLOWED BY ASME B31.9 FOR BUILDING SERVICES PIPING.

3.2 EQUIPMENT SUPPORTS

A. FABRICATE STRUCTURAL-STEEL STANDS TO SUSPEND EQUIPMENT FROM STRUCTURE OVERHEAD OR TO SUPPORT EQUIPMENT ABOVE FLOOR.

B. GROUTING: PLACE GROUT UNDER SUPPORTS FOR EQUIPMENT AND MAKE BEARING SURFACE SMOOTH.

C. PROVIDE LATERAL BRACING, TO PREVENT SWAYING, FOR EQUIPMENT SUPPORTS.

3.3 ADJUSTING

A. HANGER ADJUSTMENTS: ADJUST HANGERS TO DISTRIBUTE LOADS EQUALLY ON ATTACHMENTS AND TO ACHIEVE INDICATED SLOPE OF PIPE.

B. TRIM EXCESS LENGTH OF CONTINUOUS-THREAD HANGER AND SUPPORT RODS TO 1-1/2 INCHES (40 MM).

3.4 HANGER AND SUPPORT SCHEDULE

A. COMPLY WITH MSS SP-69 FOR PIPE-HANGER SELECTIONS AND APPLICATIONS.

B. USE NONMETALLIC COATINGS ON ATTACHMENTS FOR ELECTROLYTIC PROTECTION WHERE ATTACHMENTS ARE IN DIRECT CONTACT WITH COPPER TUBING.

C. USE CARBON-STEEL PIPE HANGERS AND SUPPORTS AND ATTACHMENTS FOR GENERAL SERVICE APPLICATIONS.

D. USE THERMAL-HANGER SHIELD INSERTS FOR INSULATED PIPING AND TUBING.

SECTION 220553 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY

A. SECTION INCLUDES:

1. PIPE LABELS.

1.3 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.

1.4 COORDINATION

A. COORDINATE INSTALLATION OF IDENTIFYING DEVICES WITH LOCATIONS OF ACCESS PANELS AND DOORS.

B. INSTALL IDENTIFYING DEVICES BEFORE INSTALLING ACOUSTICAL CEILINGS AND SIMILAR CONCEALMENT.

PART 2 - PRODUCTS

2.1 PIPE LABELS

A. GENERAL REQUIREMENTS FOR MANUFACTURED PIPE LABELS: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION.

B. PRETENSIONED PIPE LABELS: PRECOILED, SEMIRIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.

C. SELF-ADHESIVE PIPE LABELS: PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING.

D. PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS, PIPE SIZE, AND AN ARROW INDICATING FLOW DIRECTION.

1. FLOW-DIRECTION ARROWS: INTEGRAL WITH PIPING SYSTEM SERVICE LETTERING TO ACCOMMODATE BOTH DIRECTIONS, OR AS SEPARATE UNIT ON EACH PIPE LABEL TO INDICATE FLOW DIRECTION.

2. LETTERING SIZE: AT LEAST 1-1/2 INCHES (38 MM)HIGH.

PART 3 - EXECUTION

3.1 PREPARATION

A. CLEAN PIPING AND EQUIPMENT SURFACES OF SUBSTANCES THAT COULD IMPAIR BOND OF IDENTIFICATION DEVICES, INCLUDING DIRT, OIL, GREASE, RELEASE AGENTS, AND INCOMPATIBLE PRIMERS, PAINTS, AND ENCAPSULANTS.

3.2 PIPE LABEL INSTALLATION

A. LOCATE PIPE LABELS WHERE PIPING IS EXPOSED OR ABOVE ACCESSIBLE CEILINGS IN FINISHED SPACES AND EXTERIOR EXPOSED LOCATIONS AS FOLLOWS:

1. NEAR EACH VALVE AND CONTROL DEVICE.

2. NEAR EACH BRANCH CONNECTION, EXCLUDING SHORT TAKEOFFS FOR FIXTURES AND TERMINAL UNITS. WHERE FLOW PATTERN IS NOT OBVIOUS, MARK EACH PIPE AT BRANCH.

3. NEAR PENETRATIONS THROUGH WALLS, FLOORS, CEILINGS, AND INACCESSIBLE ENCLOSURES.

4. AT ACCESS DOORS AND SIMILAR ACCESS POINTS THAT PERMIT VIEW OF CONCEALED PIPING.

5. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION.

6. SPACED AT MAXIMUM INTERVALS OF 27 FEET (7.6M).

7. ON PIPING ABOVE REMOVABLE ACOUSTICAL CEILINGS. OMIT INTERMEDIATELY SPACED LABELS.

SECTION 220719 - PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 SUMMARY

A. SECTION INCLUDES INSULATING THE FOLLOWING PLUMBING PIPING SERVICES:

1. DOMESTIC HOT-WATER PIPING.

2. DOMESTIC RECIRCULATING HOT-WATER PIPING.

3. SUPPLIES AND DRAINS FOR HANDICAP-ACCESSIBLE LAVATORIES AND SINKS.

4. CONDENSATE DRAIN PIPING.

1.3 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED. INCLUDE THERMAL CONDUCTIVITY, WATER-VAPOR PERMEANCE THICKNESS, AND JACKETS (BOTH FACTORY- AND FIELD-APPLIED, IF ANY).

1.4 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: SKILLED MECHANICS WHO HAVE SUCCESSFULLY COMPLETED AN APPRENTICESHIP PROGRAM OR ANOTHER CRAFT TRAINING PROGRAM CERTIFIED BY THE DEPARTMENT OF LABOR, BUREAU OF APPRENTICESHIP AND TRAINING.

B. SURFACE-BURNING CHARACTERISTICS: FOR INSULATION AND RELATED MATERIALS, AS DETERMINED BY TESTING IDENTICAL PRODUCTS ACCORDING TO ASTM E 84 BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION. FACTORY LABEL INSULATION AND JACKET MATERIALS AND ADHESIVE, MASTIC, TAPES, AND CEMENT MATERIAL CONTAINERS, WITH APPROPRIATE MARKINGS OF APPLICABLE TESTING AGENCY.

2. INSULATION INSTALLED INDOORS: FLAME-SPREAD INDEX OF 25 OR LESS, AND SMOKE-DEVELOPED INDEX OF 50 OR LESS.

C. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR MISCELLANEOUS COMPONENTS:

1. SUPPLY AND DRAIN PROTECTIVE SHIELDING GUARDS: ICC A117.1.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. COMPLY WITH REQUIREMENTS IN "PIPING INSULATION SCHEDULE, GENERAL," "INDOOR PIPING INSULATION SCHEDULE," FOR WHERE INSULATING MATERIALS SHALL BE APPLIED.

B. FOAM INSULATION MATERIALS SHALL NOT USE CFC OR HCFC BLOWING AGENTS IN THE MANUFACTURING PROCESS.

C. CELLULAR GLASS: INORGANIC, INCOMBUSTIBLE, FOAMED OR CELLULATED GLASS WITH ANNEALED, RIGID, HERMETICALLY SEALED CELLS.

2.2 PROTECTIVE SHIELDING GUARDS

A. PROTECTIVE SHIELDING PIPE COVERS:

1. MANUFACTURERS:
a. MCGUIRE MANUFACTURING.
b. PLUMBEREX.
c. TRUEBRO; A BRAND OF IPS CORPORATION.

2. DESCRIPTION: MANUFACTURED PLASTIC WRAPS FOR COVERING PLUMBING FIXTURE HOT- AND COLD-WATER SUPPLIES AND TRAP AND DRAIN PIPING. COMPLY WITH AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

A. INSTALL INSULATION MATERIALS, ACCESSORIES, AND FINISHES WITH SMOOTH, STRAIGHT, AND EVEN SURFACES; FREE OF VOIDS THROUGHOUT THE LENGTH OF PIPING INCLUDING FITTINGS, VALVES, AND SPECIALTIES.

B. INSTALL INSULATION WITH LONGITUDINAL SEAMS AT TOP AND BOTTOM OF HORIZONTAL RUNS.

C. KEEP INSULATION MATERIALS DRY DURING APPLICATION AND FINISHING.

D. INSTALL INSULATION WITH TIGHT LONGITUDINAL SEAMS AND END JOINTS. BOND SEAMS AND JOINTS WITH ADHESIVE RECOMMENDED BY INSULATION MATERIAL MANUFACTURER.

SECTION 221116 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 01 SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.2 ACTION SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT INDICATED.

1.3 FIELD CONDITIONS

A. INTERRUPTION OF EXISTING WATER SERVICE: DO NOT INTERRUPT WATER SERVICE TO FACILITIES OCCUPIED BY OWNER OR OTHERS UNLESS PERMITTED UNDER THE FOLLOWING CONDITIONS AND THEN ONLY AFTER ARRANGING TO PROVIDE TEMPORARY WATER SERVICE ACCORDING TO REQUIREMENTS INDICATED:

1. NOTIFY ARCHITECT AND OWNER NO FEWER THAN TWO DAYS IN ADVANCE OF PROPOSED INTERRUPTION OF WATER SERVICE.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. POTABLE-WATER PIPING AND COMPONENTS SHALL COMPLY WITH NSF 14 AND NSF 61.

2.2 COPPER TUBE AND FITTINGS

A. HARD COPPER TUBE: ASTM B 88, TYPE L, WATER TUBE, DRAWN TEMPER.

B. WROUGHT-COPPER, SOLDER-JOINT FITTINGS: ASME B16.22, WROUGHT-COPPER PRESSURE FITTINGS.

2.3 PIPING JOINING MATERIALS

A. SOLDER FILLER METALS: ASTM B 32, LEAD-FREE ALLOYS.

B. FLUX: ASTM B 813, WATER FLUSHABLE.

2.4 TRANSITION FITTINGS

A. GENERAL REQUIREMENTS:

1. SAME SIZE AS PIPES TO BE JOINED.

2. PRESSURE RATING AT LEAST EQUAL TO PIPES TO BE JOINED.

3. END CONNECTIONS COMPATIBLE WITH PIPES TO BE JOINED.

2.5 DIELECTRIC FITTINGS

A. GENERAL REQUIREMENTS: ASSEMBLY OF COPPER ALLOY AND FERROUS MATERIALS WITH SEPARATING NONCONDUCTIVE INSULATING MATERIAL. INCLUDE END CONNECTIONS COMPATIBLE WITH PIPES TO BE JOINED.

B. DIELECTRIC UNIONS:

1. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
a. JOMAR INTERNATIONAL.
b. MATCO-NORCA.
c. MCDONALD, A. Y. MFG. CO.
d. WATTS; A DIVISION OF WATTS WATER TECHNOLOGIES, INC.
e. WILKINS; A ZURN COMPANY.

2. STANDARD: ASSE 1079.

3. END CONNECTIONS: SOLDER-JOINT COPPER ALLOY AND THREADED FERROUS.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF DOMESTIC WATER PIPING. INDICATED LOCATIONS AND ARRANGEMENTS ARE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.

B. INSTALL DOMESTIC WATER PIPING LEVEL AND PLUMB.

C. INSTALL PIPING CONCEALED FROM VIEW AND PROTECTED FROM PHYSICAL CONTACT BY BUILDING OCCUPANTS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.

D. INSTALL PIPING INDICATED TO BE EXPOSED AND PIPING IN EQUIPMENT ROOMS AND SERVICE AREAS AT RIGHT ANGLES OR PARALLEL TO BUILDING WALLS. DIAGONAL RUNS ARE PROHIBITED UNLESS SPECIFICALLY INDICATED OTHERWISE.

E. INSTALL PIPING TO PERMIT VALVE SERVICING.

F. INSTALL NIPPLES, UNIONS, SPECIAL FITTINGS, AND VALVES WITH PRESSURE RATINGS THE SAME AS OR HIGHER THAN THE SYSTEM PRESSURE RATING USED IN APPLICATIONS BELOW UNLESS OTHERWISE INDICATED.

G. INSTALL PIPING FREE OF SAGS AND BENDS.

H. INSTALL SLEEVES FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.

I. INSTALL ESCUTCHEONS FOR PIPING PENETRATIONS OF WALLS, CEILINGS, AND FLOORS.

3.2 JOINT CONSTRUCTION

A. REAM ENDS OF PIPES AND TUBES AND REMOVE BURRS.

B. REMOVE SCALE, SLAG, DIRT, AND DEBRIS FROM INSIDE AND OUTSIDE OF PIPES, TUBES, AND FITTINGS BEFORE ASSEMBLY.

C. THREADED JOINTS: THREAD PIPE WITH TAPERED PIPE THREADS ACCORDING TO ASME B1.20.1. CUT THREADS FULL AND CLEAN USING SHARP DIES. REAM THREADED PIPE ENDS TO REMOVE BURRS AND RESTORE FULL ID. JOIN PIPE FITTINGS AND VALVES AS FOLLOWS:

1. APPLY APPROPRIATE TAPE OR THREAD COMPOUND TO EXTERNAL PIPE THREADS.

2. DAMAGED THREADS: DO NOT USE PIPE OR PIPE FITTINGS WITH THREADS THAT ARE CORRODED OR DAMAGED.

D. SOLDERED JOINTS FOR COPPER TUBING: APPLY ASTM B 813, WATER-FLUSHABLE FLUX TO END OF TUBE. JOIN COPPER TUBE AND FITTINGS ACCORDING TO ASTM B 828 OR CDA'S "COPPER TUBE HANDBOOK."

3.3 FIELD QUALITY CONTROL

A. PERFORM THE FOLLOWING TESTS AND INSPECTIONS:

1. PIPING INSPECTIONS:

a. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT HAS BEEN INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.

b. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST ONE DAY BEFORE INSPECTION MUST BE MADE. PERFORM TESTS IN PRESENCE OF AUTHORITIES HAVING JURISDICTION:

c. RE-INSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TESTS OR INSPECTIONS, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR RE-INSPECTION.

d. REPORTS: PREPARE INSPECTION REPORTS AND HAVE THEM SIGNED BY AUTHORITIES HAVING JURISDICTION.

3.4 CLEANING

A. PRIOR TO UTILIZATION OF NEWLY CONSTRUCTED OR ALTERED POTABLE WATER PIPING SYSTEMS, ALL AFFECTED POTABLE WATER PIPING SHALL BE DISINFECTED USING PROCEDURES PRESCRIBED IN CALIFORNIA PLUMBING CODE SECTION 609.9(1) THROUGH 609.9(4). THE METHOD TO BE FOLLOWED SHALL BE THAT PRESCRIBED BY THE HEALTH AUTHORITY OR, IN CASE NO METHOD IS PRESCRIBED BY IT, THE FOLLOWING:

(1) THE PIPE SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL POTABLE WATER APPEARS AT THE POINTS OF OUTLET.

(2) THE SYSTEM OR PARTS THEREOF SHALL BE FILLED WITH A WATER CHLORINE SOLUTION CONTAINING NOT LESS THAN 50 PARTS PER MILLION OF CHLORINE, AND THE SYSTEM OR PART THEREOF SHALL BE VALVED-OFF AND ALLOWED TO STAND FOR 24 HOURS;OR, THE SYSTEM OR PART THEREOF SHALL BE FILLED WITH A WATER-CHLORINE SOLUTION CONTAINING NOT LESS THAN 200 PARTS PER MILLION OF CHLORINE AND ALLOWED TO STAND FOR 3 HOURS.

(3) FOLLOWING THE ALLOWED STANDING TIME, THE SYSTEM SHALL BE FLUSHED WITH CLEAN, POTABLE WATER UNTIL THE CHLORINE RESIDUAL IN THE WATER COMING FROM THE SYSTEM DOES NOT EXCEED THE CHLORINE RESIDUAL IN THE FLUSHING WATER.

(4) THE PROCEDURE SHALL BE REPEATED WHERE IT IS SHOWN BY BACTERIOLOGICAL EXAMINATION MADE BY AN APPROVED AGENCY THAT CONTAMINATION PERSISTS IN THE SYSTEM.

3.5 VALVE SCHEDULE

A. WHERE SPECIFIC VALVE TYPES ARE NOT INDICATED, THE FOLLOWING REQUIREMENTS APPLY:

1. SHUTOFF DUTY: USE BALL OR GATE VALVES FOR PIPING NPS 2 (DN 50) AND SMALLER.

B. USE CHECK VALVES TO MAINTAIN CORRECT DIRECTION OF DOMESTIC WATER FLOW TO AND FROM EQUIPMENT.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING SYSTEMS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.

B. INSTALL PIPING IN CONCEALED LOCATIONS UNLESS OTHERWISE INDICATED AND EXCEPT IN EQUIPMENT ROOMS AND SERVICE AREAS.

C. INSTALL PIPING ABOVE ACCESSIBLE CEILINGS TO ALLOW SUFFICIENT SPACE FOR CEILING PANEL REMOVAL.

D. INSTALL PIPING FREE OF SAGS AND BENDS.

E. MAKE CHANGES IN DIRECTION FOR SOIL AND WASTE DRAINAGE AND VENT PIPING USING APPROPRIATE BRANCHES, BENDS, AND LONG-SWEEP BENDS. SANITARY TEES AND SHORT-SWEEP 1/4 BENDS MAY BE USED ON VERTICAL STACKS IF CHANGE IN DIRECTION OF FLOW IS FROM HORIZONTAL TO VERTICAL. USE LONG-TURN, DOUBLE Y-BRANCH AND 1/8-BEND FITTINGS IF TWO FIXTURES ARE INSTALLED BACK TO BACK OR SIDE BY SIDE WITH COMMON DRAIN PIPE. STRAIGHT TEES, ELBOWS, AND CROSSES MAY BE USED ON VENT LINES. DO NOT CHANGE DIRECTION OF FLOW MORE THAN 90 DEGREES. USE PROPER SIZE OF STANDARD INCREASERS AND REDUCERS IF PIPES OF DIFFERENT SIZES ARE CONNECTED. REDUCING SIZE OF DRAINAGE PIPING IN DIRECTION OF FLOW IS PROHIBITED.

F. INSTALL SOIL AND WASTE DRAINAGE AND VENT PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:

1. HORIZONTAL SANITARY DRAINAGE PIPING: 2 PERCENT DOWNWARD IN DIRECTION OF FLOW.

2. VENT PIPING: DOWN TOWARD VERTICAL FIXTURE VENT OR TOWARD VENT STACK.

G. INSTALL CAST-IRON SOIL PIPING ACCORDING TO CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK," CHAPTER IV, "INSTALLATION OF CAST IRON SOIL PIPE AND FITTINGS."

H. INSTALL ABOVEGROUND COPPER TUBING ACCORDING TO CDA'S "COPPER TUBE HANDBOOK."

I. DO NOT ENCLOSE, COVER, OR PUT PIPING INTO OPERATION UNTIL IT IS INSPECTED AND APPROVED BY AUTHORITIES HAVING JURISDICTION.

3.2 JOINT CONSTRUCTION

A. JOIN HUBLESS, CAST-IRON SOIL PIPING ACCORDING TO CISPI 310 AND CISPI'S "CAST IRON SOIL PIPE AND FITTINGS HANDBOOK" FOR HUBLESS-PIPING COUPLING JOINTS.

B. JOIN COPPER TUBE AND FITTINGS WITH SOLDERED JOINTS ACCORDING TO ASTM B 828. USE ASTM B 813, WATER-FLUSHABLE, LEAD-FREE FLUX AND ASTM B 32, LEAD-FREE-ALLOY SOLDER.

3.3 CONNECTIONS

A. DRAWINGS INDICATE GENERAL ARRANGEMENT OF PIPING, FITTINGS, AND SPECIALTIES.

B. CONNECT DRAINAGE AND VENT PIPING TO THE FOLLOWING:

1. PLUMBING FIXTURES: CONNECT DRAINAGE PIPING IN SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY PLUMBING CODE.

2. PLUMBING FIXTURES AND EQUIPMENT: CONNECT ATMOSPHERIC VENT PIPING IN SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY AUTHORITIES HAVING JURISDICTION.

3. PLUMBING SPECIALTIES: CONNECT DRAINAGE AND VENT PIPING IN SIZES INDICATED, BUT NOT SMALLER THAN REQUIRED BY PLUMBING CODE.

4. INSTALL TEST TEES (WALL CLEANOUTS) IN CONDUCTORS NEAR FLOOR AND FLOOR CLEANOUTS WITH COVER FLUSH WITH FLOOR.

C. WHERE INSTALLING PIPING ADJACENT TO EQUIPMENT, ALLOW SPACE FOR SERVICE AND MAINTENANCE OF EQUIPMENT.

3.4 FIELD QUALITY CONTROL

A. DURING INSTALLATION, NOTIFY AUTHORITIES HAVING JURISDICTION AT LEAST 24 HOURS BEFORE INSPECTION MUST BE MADE. PERFORM TESTS SPECIFIED BELOW IN PRESENCE OF AUTHORITIES HAVING JURISDICTION.

1. ROUGHING-IN INSPECTION: ARRANGE FOR INSPECTION OF PIPING BEFORE CONCEALING OR CLOSING-IN AFTER ROUGHING-IN AND BEFORE SETTING FIXTURES.

2. FINAL INSPECTION: ARRANGE FOR FINAL INSPECTION BY AUTHORITIES HAVING JURISDICTION TO OBSERVE TESTS SPECIFIED BELOW AND TO ENSURE COMPLIANCE WITH REQUIREMENTS.

B. RE-INSPECTION: IF AUTHORITIES HAVING JURISDICTION FIND THAT PIPING WILL NOT PASS TEST OR INSPECTION, MAKE REQUIRED CORRECTIONS AND ARRANGE FOR RE-INSPECTION.

C. TEST SANITARY DRAINAGE AND VENT PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION.

3.5 CLEANING AND PROTECTION

A. CLEAN INTERIOR OF PIPING. REMOVE DIRT AND DEBRIS AS WORK PROGRESSES.

B. PROTECT DRAINS DURING REMAINDER OF CONSTRUCTION PERIOD TO AVOID CLOGGING WITH DIRT AND DEBRIS AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.

C. PLACE PLUGS IN ENDS OF UNCOMPLETED PIPING AT END OF DAY AND WHEN WORK STOPS.

PART 2 -PRODUCTS

2.1 NATURAL GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. STEEL PIPE: ASTM A53/A53M SCHEDULE 40 BLACK.

1. FITTINGS: ASTM A234/A234M FORGED STEEL WELDING TYPE.

2. JOINTS: ASME B31.9, WELDED FOR 3” AND LARGER; THREADED FOR 2” AND SMALLER.

3. JACKET: AWWA C105 POLYETHYLENE JACKET OR DOUBLE LAYER, HALF-LAPPED 10 MIL POLYETHYLENE TAPE.

B. PLASTIC PIPE: ASTM D-2513 SCHEDULE 40 POLYETHYLENE.

1. FITTINGS: PE 2406 BUTT-FUSED.

2. JOINTS: PE 2406 BUTT-FUSED.

2.2 NATURAL GAS PIPING, ABOVE GRADE

A. STEEL PIPE: ASTM A53/A53M SCHEDULE 40 BLACK.

1. FITTINGS: ASME B16.3, MALLEABLE IRON, 150 PSIG.

2. JOINTS: THREADED FOR PIPE 2 INCHES AND SMALLER; WELDED FOR PIPE 2-1/2 INCHES AND LARGER.

2.3 PIPING

A. INSIDE STEEL PIPING:

1. FOR LOW PRESSURE 0.5 PSIG OR LESS USE STANDARD WEIGHT BLACK STEEL PIPE WITH 150 PSIG THREADED MALLEABLE IRON FITTINGS FOR PIPING 4 IN. AND SMALLER.

2. FOR PRESSURE ABOVE 5 PSIG, ALL PIPING SHALL BE WELDED.

B. UNDERGROUND PIPING:

1. STEEL PIPE WITH DRESSER TYPE AND STEEL WELDING FITTINGS. PRE-WRAP WITH MILL-WRAPPED CORROSION PROTECTION EXTRUDED POLYOLEFIN COATING IN ACCORDANCE WITH GAS COMPANY REQUIREMENTS, EQUAL TO ENERGY COATING CO. OR PLEXCO.

2. HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS IN ACCORDANCE WITH ASTM D-2513, GRADES 2306, 3306, AND 3408 WITH FUSION JOINTS ONLY, EQUAL TO DRISCOPIPE 8100-DRII SERIES.

C. UNDERGROUND DRIPS SHALL BE AGA AND LOCAL GAS COMPANY APPROVED AND SHALL BE CAST IRON OR TAR COATED WELDED STEEL POTS WITH ADJUSTABLE TAR COATED CAST IRON EXTENSION SHAFT AND FLUSH BOX WITH LOCK TYPE EXTRA HEAVY CAST IRON COVER MARKED GAS DRIP.

D. IN NO CASE SHALL ANY GAS PIPE BE LESS THAN ¾ INCH.

2.4 REGULATOR VENT PIPING, ABOVE GRADE

A. INDOORS: SAME AS NATURAL GAS PIPING, ABOVE GRADE.

B. OUTDOORS: PVC PIPE, TUBING, AND FITTINGS, UL 651.

2.5 UNIONS AND FLANGES

A. UNIONS FOR PIPE 2 INCHES AND SMALLER:

1. FERROUS PIPING: CLASS 150, MALLEABLE IRON, THREADED.

2. COPPER PIPING: CLASS 150, BRONZE UNIONS WITH SOLDERED BRAZED JOINTS.

B. FLANGES FOR PIPE 2-1/2 INCHES AND LARGER:

1. FERROUS PIPING: CLASS 150, FORGED STEEL, SLIP-ON FLANGES.

2. COPPER PIPING: CLASS 150, SLIP-ON BRONZE FLANGES.

3. GASKETS: 1/16 INCH THICK PREFORMED NEOPRENE GASKETS.

2.6 STRAINERS

A. MANUFACTURERS:

1. MUELLER STEAM SPECIALTY.

2. O.C. KECKLEY COMPANY.

3. SPIRAX SARCO, INC.

B. 2 INCH AND SMALLER: SCREWED BRASS OR IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 1/32 INCH STAINLESS STEEL PERFORATED SCREEN.

C. 2-1/2 INCH TO 4 INCH: FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, Y PATTERN WITH 3/64 INCH STAINLESS STEEL PERFORATED SCREEN.

D. 5 INCH AND LARGER: FLANGED IRON BODY FOR 175 PSIG WORKING PRESSURE, BASKET PATTERN WITH 1/8 INCH STAINLESS STEEL PERFORATED SCREEN.

2.7 NATURAL GAS PRESSURE REGULATORS

A. MANUFACTURERS:

1. EQUIMETER.

2. AMERICAN.

3. SENSUS.

B. PRODUCT DESCRIPTION: SPRING LOADED, GENERAL PURPOSE, SELF-OPERATING SERVICE REGULATOR INCLUDING INTERNAL RELIEF TYPE DIAPHRAGM ASSEMBLY AND VENT VALVE. DIAPHRAGM CASE CAN BE ROTATED 360 DEGREES IN RELATION TO BODY.

1. COMPLY WITH ANSI Z21.80.

2. TEMPERATURES: MINUS 20 DEGREES F TO 150 DEGREES F.

3. BODY: CAST IRON WITH NEOPRENE GASKET.

4. SPRING CASE, LOWER DIAPHRAGM CASING, UNION RING, SEAT RING AND DISK HOLDER: ALUMINUM.

5. DISK, DIAPHRAGM, AND O-RING: NITRILE.

6. MINIMUM INLET PRESSURE: 5 PSI.

7. FURNISH SIZES 2 INCHES AND SMALLER WITH THREADED ENDS. FURNISH SIZES 2-1/2 INCHES AND LARGER WITH FLANGED ENDS.

C. SERVICE PRESSURE REGULATORS: COMPLY WITH ANSI Z21.80.

1. MANUFACTURERS:
a. EQUIMETER.
b. AMERICAN.
c. SENSUS.

2. BODY AND DIAPHRAGM CASE: CAST IRON OR DIE-CAST ALUMINUM.

3. SPRINGS: ZINC-PLATED STEEL; INTERCHANGEABLE.

4. DIAPHRAGM PLATE: ZINC-PLATED STEEL.

5. SEAT DISC: NITRILE RUBBER RESISTANT TO GAS IMPURITIES, ABRASION, AND DEFORMATION AT THE VALVE PORT.

6. ORIFICE: ALUMINUM; INTERCHANGEABLE.

7. SEAL PLUG: ULTRAVIOLET-STABILIZED, MINERAL-FILLED NYLON.

8. SINGLE-PORT, SELF-CONTAINED REGULATOR WITH ORIFICE NO LARGER THAN REQUIRED AT MAXIMUM PRESSURE INLET, AND NO PRESSURE SENSING PIPING EXTERNAL TO THE REGULATOR.

9. PRESSURE REGULATOR SHALL MAINTAIN DISCHARGE PRESSURE SETTING DOWNSTREAM, AND NOT EXCEED 150 PERCENT OF DESIGN DISCHARGE PRESSURE AT SHUTOFF.

10. OVERPRESSURE PROTECTION DEVICE: FACTORY MOUNTED ON PRESSURE REGULATOR.

11. ATMOSPHERIC VENT: FACTORY- OR FIELD-INSTALLED, STAINLESS-STEEL SCREEN IN OPENING IF NOT CONNECTED TO VENT PIPING.

12. MAXIMUM INLET PRESSURE: 60 PSIG.

2.8 NATURAL GAS PRESSURE RELIEF VALVES

A. MANUFACTURERS:

1. FISHER.

2. AMERICAN.

3. OR APPROVED EQUAL

B. PRODUCT DESCRIPTION: SPRING LOADED TYPE RELIEF VALVE.

1. BODY: ALUMINUM.

2. DIAPHRAGM: NITRILE.

3. ORIFICE: STAINLESS STEEL.

4. MAXIMUM OPERATING TEMPERATURE: 150 DEGREES F.

5. INLET CONNECTIONS: THREADED.

6. OUTLET OR VENT CONNECTION: SAME SIZE AS INLET CONNECTION.

2.9 UNDERGROUND LABELING & IDENTIFYING

A. DETECTABLE WARNING TAPE: ACID AND ALKALI-RESISTANT, PE FILM WARNING TAPE MANUFACTURED FOR MARKING AND IDENTIFYING UNDERGROUND UTILITIES, A MINIMUM OF 6 INCHES WIDE AND 4 MILS THICK, CONTINUOUSLY INSCRIBED WITH A DESCRIPTION OF UTILITY, WITH METALLIC CORE ENCASED IN A PROTECTIVE JACKET FOR CORROSION PROTECTION, DETECTABLE BY METAL DETECTOR WHEN TAPE IS BURIED UP TO 30 INCHES DEEP; COLORED YELLOW.

2.10 GAS VENT TERMINALS

A. ¾ IN. AND ONE (1) IN. ALUMINUM THREADED VENT TERMINAL WITH 16 X 16 MESH 0.018 GAUGE STAINLESS STEEL SCREEN.

B. 1¼ IN. TO 4 IN. STANDARD PIPE THREADED ELBOW WITH 12 X 12 MESH STAINLESS STEEL SCREEN.

1. EQUAL TO UPSCO INC.

C. STEEL PIPE: ASTM A 53/A 53M, BLACK STEEL, SCHEDULE 40, TYPE E OR S, GRADE B.

1. MALLEABLE-IRON THREADED FITTINGS: ASME B16.3, CLASS 150, STANDARD PATTERN.

2. WROUGHT-STEEL WELDING FITTINGS: ASTM A 234/A 234M FOR BUTT WELDING AND SOCKET WELDING.

3. UNIONS: ASME B16.39, CLASS 150, MALLEABLE IRON WITH BRASS-TO-IRON SEAT, GROUND JOINT, AND THREADED ENDS.

4. FORGED-STEEL FLANGES AND FLANGED FITTINGS: ASME B16.5, MINIMUM CLASS 150, INCLUDING BOLTS, NUTS, AND GASKETS OF THE FOLLOWING MATERIAL GROUP, END CONNECTIONS, AND FACINGS:
a. MATERIAL GROUP: 1.1.
b. END CONNECTIONS: THREADED OR BUTT WELDING TO MATCH PIPE.
c. LAPPED FACE: NOT PERMITTED UNDERGROUND.
d. GASKET MATERIALS: ASME B16.20, METALLIC, FLAT, ASBESTOS FREE, ALUMINUM O-RINGS, AND SPIRAL-WOUND METAL GASKETS.
e. BOLTS AND NUTS: ASME B18.2.1, CARBON STEEL ABOVEGROUND AND STAINLESS STEEL UNDERGROUND.

5. PROTECTIVE COATING FOR UNDERGROUND PIPING: FACTORY-APPLIED, THREE-LAYER COATING OF EPOXY, ADHESIVE, AND PE.
a. JOINT COVER KITS: EPOXY PAINT, ADHESIVE, AND HEAT-SHRINK PE SLEEVES.

2.11 VALVES

A. MANUAL SHUT-OFF VALVES INSIDE BUILDING.

1. MANUFACTURER:
a. NORDSTROM.
b. FISHER
c. GRINNEL

2. GENERAL REQUIREMENTS FOR METALLIC VALVES, NPS 2 AND SMALLER: COMPLY WITH ASME B16.33.
a. CWP RATING: 125 PSIG.
b. THREADED ENDS: COMPLY WITH ASME B1.20.1.
c. DRYSEAL THREADS ON FLARE ENDS: COMPLY WITH ASME B1.20.3.
d. TAMPERPROOF FEATURE: LOCKING FEATURE FOR VALVES WHERE REQUIRED BY CON. ED.
e. LISTING: LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION FOR VALVES 1 INCH AND SMALLER.
f. SERVICE MARK: VALVES 1-1/4 INCHES TO NPS 2 SHALL HAVE INITIALS "WOG" PERMANENTLY MARKED ON VALVE BODY.
g. THREADED CAST IRON BODY, 125 PSIG WOG.

3. GENERAL REQUIREMENTS FOR METALLIC VALVES, NPS 2-1/2 AND LARGER: COMPLY WITH ASME B16.38.
a. CWP RATING: 125 PSIG.
b. FLANGED ENDS: COMPLY WITH ASME B16.5 FOR STEEL FLANGES.
c. TAMPERPROOF FEATURE: LOCKING FEATURE FOR VALVES WHERE REQUIRED BY CON. ED.
d. SERVICE MARK: INITIALS "WOG" SHALL BE PERMANENTLY MARKED ON VALVE BODY.
e. 2½ IN. TO 4-IN.: FLANGED CAST IRON BODY LUBRICATED TAPERED PLUG TYPE, 175 PSIG WOG.
f. 6 IN. AND LARGER: FLANGED CAST IRON BODY LUBRICATED TAPERED PLUG TYPE, 200 PSIG WOG, WORM GEAR OPERATED.

4. PROVIDE 2 WRENCHES FOR EACH SIZE USED.
a. ATTACH WRENCH TO EACH VALVE.

B. BALL VALVES

1. MANUFACTURER:
a. CONTROMATICS.
b. CORNBRACO
c. NIBCO

2. ON LOCAL BRANCHES THREE INCHES AND SMALLER, PROVIDE THREADED THREE PIECE FULL PORT WAFER-TYPE BALL VALVE WITH BRONZE BODY, BALL STEM, TEFLON SEATS, AND LEVEL HANDLES, 300 PSIG WOG.

C. TWO-PIECE, FULL-PORT, BRONZE BALL VALVES WITH BRONZE TRIM: MSS SP-110.

1. 2 INCH AND SMALLER: THREADED BRASS BALL VALVES WITH FULL PORT TFE SEARS AND BLOWOUT PROOF STEM, 600 PSIG WOG.

2. MANUFACTURERS:
a. BRASSCRAFT.
b. CONBRACO.
c. NIBCO.

3. BODY: BRONZE, COMPLYING WITH ASTM B 584.

4. BALL: CHROME-PLATED BRONZE.

5. STEM: BRONZE; BLOWOUT PROOF.

6. SEATS: REINFORCED TFE; BLOWOUT PROOF.

7. PACKING: THREADED-BODY PACKNUT DESIGN WITH ADJUSTABLE-STEM PACKING.

8. ENDS: THREADED, FLARED, OR SOCKET.

9. CWP RATING: 600 PSIG.

10. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

11. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.

D. BRONZE PLUG VALVES: MSS SP-78.

1. MANUFACTURERS:
a. HAMMOND.
b. LEE BRASS COMPANY.
c. NIBCO.

2. BODY: BRONZE, COMPLYING WITH ASTM B 584.

3. PLUG: BRONZE.

4. ENDS: THREADED, SOCKET, OR FLANGED.

5. OPERATOR: SQUARE HEAD OR LUG TYPE WITH TAMPERPROOF FEATURE WHERE INDICATED.

6. PRESSURE CLASS: 125 PSIG.

7. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

8. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.

E. CAST-IRON, NON-LUBRICATED PLUG VALVES: MSS SP-78.

1. MANUFACTURERS:
a. MCDONALD.
b. MUELLER CO.
c. XOMOX CORPORATION.

2. BODY: CAST IRON, COMPLYING WITH ASTM A126, CLASS B.

3. PLUG: BRONZE OR NICKEL-PLATED CAST IRON.

4. SEAT: COATED WITH THERMOPLASTIC.

5. STEM SEAL: COMPATIBLE WITH NATURAL GAS.

6. ENDS: THREADED OR FLANGED AS INDICATED IN "UNDERGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE" AND "ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE" ARTICLES.

7. OPERATOR: SQUARE HEAD OR LUG TYPE WITH TAMPERPROOF FEATURE WHERE INDICATED.

8. PRESSURE CLASS: 125 PSIG.

9. LISTING: VALVES NPS 1 AND SMALLER SHALL BE LISTED AND LABELED BY AN NRTL ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

10. SERVICE: SUITABLE FOR NATURAL-GAS SERVICE WITH "WOG" INDICATED ON VALVE BODY.

F. CAST LUBRICATED PLUG VALVES INSIDE BUILDING:

1. 2-INCH AND SMALLER: CAST IRON BODY, THREADED, EQUAL TO NORDSTROM VALVES, INC. FIGURE 114.

2. 2½ INCH TO 4-INCH: FLANGED CAST IRON BODY LUBRICATED TAPERED PLUG TYPE, 175 PSIG WOG, EQUAL TO NORDSTROM VALVES, INC. FIGURE 115.

3. 6 INCH AND LARGER: FLANGED CAST IRON BODY LUBRICATED TAPERED PLUG TYPE, 200 PSIG WOG, WORM GEAR OPERATED, EQUAL TO NORDSTROM VALVES, INC. FIGURE 165.

4. VALVES 2 ½ INCH AND LARGER SHALL BE FLANGED.

5. PROVIDE 2 WRENCHES FOR EACH SIZE USED.

6. ATTACH WRENCH TO EACH VALVE.

7. GAS COCKS:
a. GAS COCKS SHALL BE FOR USE ONLY AS MANUAL GAS SHUT-OFF VALVES AT EACH PIECE OF GAS BURNING EQUIPMENT; SHALL BE OF THE PLUG TYPE, BRONZE CONSTRUCTION WITH CHECK, NUT AND WASHER BOTTOM AND TEE HANDLE.
b. GAS COCKS SHALL BE FIGURE 10596 AS MANUFACTURED BY A.Y. MCDONALD MFG. CO., OR SERIES 52 AS MANUFACTURED BY CONBRACO INDUSTRIES, INC.
c. GAS COCKS SHALL ONLY BE USED ON PIPING 1 INCH AND SMALLER.

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EXP. 06-30-2027
MECHANICAL

REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS
BOILER REPLACEMENT
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ISSUED / REVISIONS:

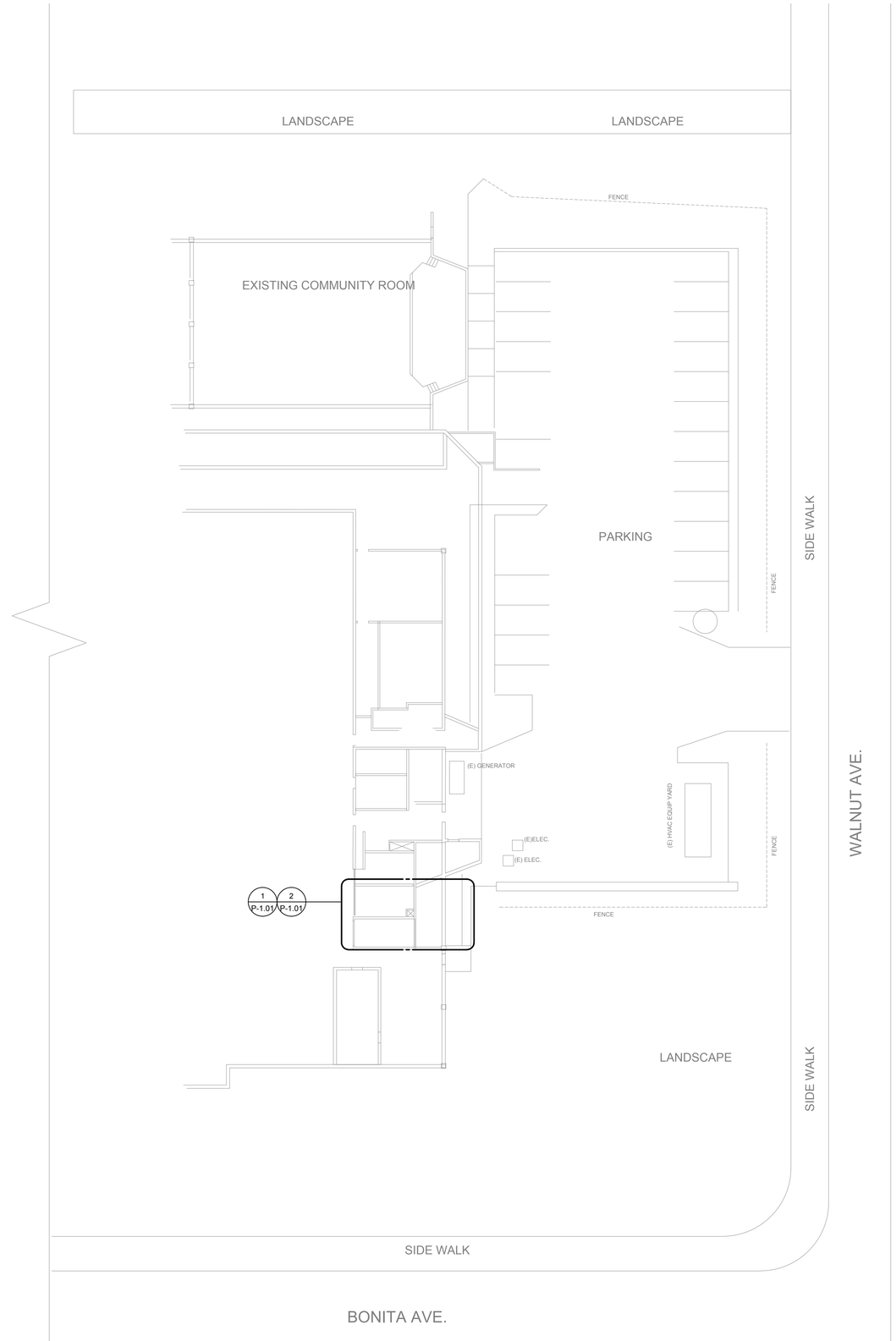
No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:
PLUMBING
SPECIFICATIONS

Job No. 2025-082-00
Date: 2/13/2026
Scale: NONE
Drawn By: K.K.
Checked By: R.C.

Sheet No:
P-0.02

P:_PROJECTS\P-2025\20\2025-082-00 City of San Dimas Boiler Replacement\10_BIM-CAD\CAD\Sheets\P-0.02.dwg 2/13/2026 2:59 PM Charles Cruz



GENERAL NOTES

1. -

KEY NOTES

1. -

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REVIEWED BY

Name: -

Date: -

CITY OF SAN DIMAS BOILER REPLACEMENT

245 E. BONITA AVE
SAN DIMAS, CA 91773

ISSUED / REVISIONS:

No.	Description	Date
1	80% Review Set	12/02/25
2	95% Review Set	12/18/25
3	IFC Set	2/13/26

Sheet Title:

PLUMBING SITE PLAN

Job No.	2025-082-00
Date:	2/13/2026
Scale:	AS SHOWN
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Checked By:	R.C.

Sheet No:

P-1.00

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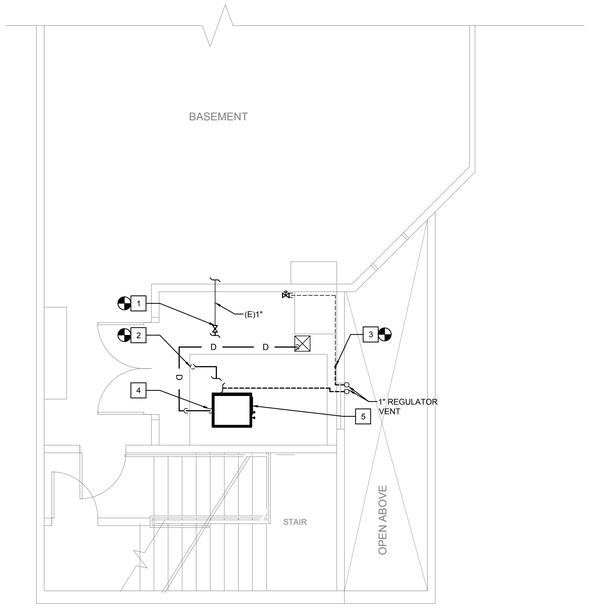
PLUMBING SITE PLAN

SCALE: NTS

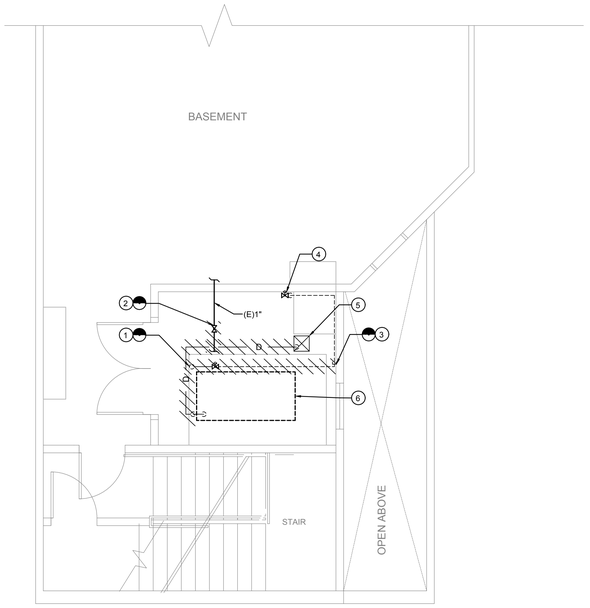
1



N

PLUMBING ENLARGED BASEMENT REMODEL PLAN

SCALE: 1/4" = 1'-0" | 2



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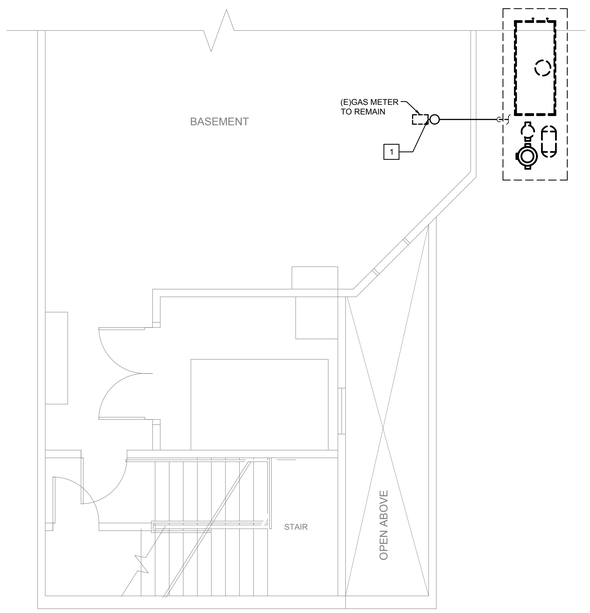
PLUMBING ENLARGED BASEMENT DEMO PLAN

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



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PLUMBING ENLARGED TEMPORARY PLAN - PARKING LOT

SCALE: 1/4" = 1'-0" | 3

GENERAL NOTES

1. COORDINATE DEMOLITION WORK WITH ALL RELATED DISCIPLINES INCLUDING ELECTRICAL AND MECHANICAL.
2. CONTRACTOR TO FIELD VERIFY THE EXACT LOCATIONS OF PLUMBING PIPING.
3. CONTRACTOR IS RESPONSIBLE FOR REPAIRING WALL OPENINGS, AS NECESSARY, TO ACCOMMODATE PROPOSED WORK. REPAIR AND PATCH THE WALL OPENINGS AS REQUIRED.
4. COORDINATE ALL PIPING REQUIREMENTS WITH BOILER MANUFACTURER.
5. ROUTE REGULATOR VENT TO THE EXTERIOR AS REQUIRED PER CODE.

DEMO KEY NOTES (#)

1. POINT OF DISCONNECTION. CUT AND REMOVE EXISTING 2" GAS PIPING AND REGULATOR BACK TO EXISTING BOILER.
2. POINT OF DISCONNECTION. CUT AND REMOVE EXISTING X" MAKE-UP WATER PIPING BACK TO EXISTING BOILER.
3. CUT AND CAP EXISTING REGULATOR VENT.
4. EXITING GAS REGULATOR TO REMAIN IN PLACE.
5. EXISTING FLOOR SINK TO REMAIN IN PLACE.
6. EXISTING BOILER TO BE REMOVED. SEE MECHANICAL PLANS FOR BOILER REMOVAL.

REMODEL KEY NOTES [#]

1. POINT OF CONNECTION. CONNECT 1" INDUSTRIAL COLD WATER TO EXISTING 1" INDUSTRIAL COLD WATER OVERHEAD WITH 1" SHUT OFF VALVE AND RUN 1" INDUSTRIAL COLD WATER TO BOILER.
2. POINT OF CONNECTION. CONNECT 2" NATURAL GAS TO EXISTING 2" NATURAL GAS OVERHEAD WITH 2" SHUT OFF VALVE AND RUN 2" NATURAL GAS TO BOILER. GAS REGULATOR SHALL BE PROVIDED, SELECTED AND LOCATED BY THE BOILER MANUFACTURER. MAINTAIN MANUFACTURERS REQUIRED DISTANCE FROM REGULATOR TO BOILER. PROVIDE BADGER BLANCETT FLOW MONITOR B2900 SERIES WITH QUICKSERT FLOW METER, CONNECT TO BMS AND COORDINATE FINAL LOCATION.
3. POINT OF CONNECTION. CONNECT 1" REGULATOR VENT TO OUTSIDE, ROUTE UP ALONG EXTERIOR WALL WITH ELBOW AS REQUIRED PER CODE.
4. RUN 3 /4" DRAIN FROM BOILER TO EXISTING FLOOR SINK.
5. SEE MECHANICAL PLANS FOR BOILER.

TEMPORARY KEY NOTES

1. CONNECT TEMPORARY PIPING TO EXITING GAS METER WITH REGULATOR AND RUN TEMPORARY PIPING TO TEMPORARY UNIT. REGULATOR TYPE, PIPE SIZE AND PIPE ROUTING SHALL BE COORDINATED WITH TEMPORARY UNIT MANUFACTURER.

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Sheet Title:

PLUMBING ENLARGED BASEMENT DEMO, REMODEL & TEMPORARY PLANS

Job No.	2025-082-00
Date:	2/13/2026
Scale:	AS SHOWN
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Checked By:	R.C.

Sheet No:

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NOT USED	NOT TO SCALE	10	**NOT USED**	NOT TO SCALE	7	**NOT USED**	NOT TO SCALE	4	**PIPE SUPPORT ON CONCRETE**	NOT TO SCALE	1
NOT USED	NOT TO SCALE	11	**NOT USED**	NOT TO SCALE	8	**NOT USED**	NOT TO SCALE	5	**NOT USED**	NOT TO SCALE	2
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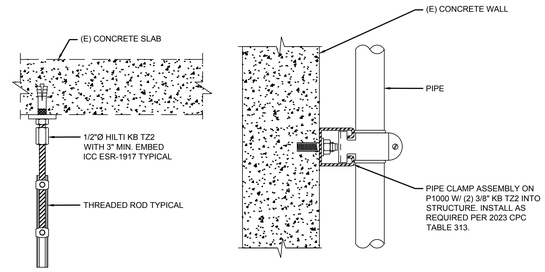

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Sheet Title:
PLUMBING DETAILS

Job No.	2025-082-00
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Checked By:	R.C.

Sheet No:
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