



ADDENDUM  
PURCHASING OFFICE  
CITY OF AUSTIN, TEXAS

REQUEST FOR PROPOSAL NO: OPJ0107 ADDENDUM NO. 3 DATE OF ADDENDUM: OCTOBER 28, 2013

This addendum is to incorporate changes to the above referenced solicitation:

**I. Questions: The purpose of this addendum is to respond to vendor questions regarding the above referenced solicitation.**

1. Will the Owner furnish an office area to the contractor, or will this have to be furnished by the contractor.

**We will not furnish an office but will provide unconditioned space on the first floor for a desk, chair, etc., (Attachment D). If the contractor prefers to use an office trailer it can be parked on the gravel drive on the east side of the plant (Attachment E). Contractor is responsible for running power to the trailer.**

2. Will the contractor and its team be able to use Owner furnished toilet facilities, or will those have to be furnished by the contractor?

**There is no ideal location for a Port-a-potty and so we will make our 1<sup>st</sup> floor restroom available. Contractor will be responsible for maintaining a clean environment in the restroom. If not, use of the restroom will be revoked and the contractor will be responsible for providing temporary facilities in an agreed upon location.**

3. Please issue a sketch depicting the lay-down area for:

- a) Contractor furnished toilet facilities
- b) Office trailer.
- c) Dumpster.
- d) Materials.
- e) Frac tanks, if needed (See clarification item 15 below).

**Laydown area is inside the plant (Attachment D). Dumpster can be placed on the access road on the south side of the cooling towers (Attachment E).**

4. Specification 23 21 13, 1.4D requires the use of domestic steel. Please verify that:

- a) Piping made in Mexico or Canada shall be acceptable on this project.
- b) 'Non-NAFTA manufactured' piping shall not be permitted to be used on this project.

**Domestic pipe is not the same as NAFTA pipe. Domestic means it is manufactured in the United States. Provide as specified "All steel used on this project shall be provided from a domestic (American) source."**

5. 1M1.1 requires the new chilled water piping to be connected to the existing CHW piping mains using a Wet tap. The butterfly valve depicted at the point of connection (POC) of the new piping to the existing will not permit wet tapping as is required of the contract documents.

**Please verify that the butterfly valves are to be changed out to gate valves.**

**Valves associated with the hot taps are to be gate valves. Drawing will be changed in addendum.**

6. Keyed Note 4 on M1.1 requires the contractor to, "Provide hot tap of existing main sufficiently sized to maintain a 16" hole. Reduce downstream of valve to 16" pipe. Please verify that the wet tap is to be an 18" wet tap.

**Wet tap shall be the minimum size required to maintain a 16" path for the water. Actual size will depend on tapping methods of the contractor.**

7. Specification 23 21 13, 3.2, N: requires the use of branch connection to mains to be provided using tees. The POCs where wet taps are to be performed cannot be performed using tees.

**Please clarify if a factory manufactured shaped nipple will be an acceptable branch connection that can be utilized for the POC at the mains, or if a WOL shall be utilized.**

**Use a Weld o Let.**

8. The 2" bypass at the control valves is depicted on 1M2.0 & 2M2.0, but not on 1M1.1. Please verify that this 2" bypass is in-fact required at the control valves.

**2" bypass is required**

9. 1M2.0 depicts the use of short radius (SR) 90° elbows in the CWS & CWR piping. Please verify that the use of SR 90° elbows is indeed required for this project; or, is it the intent of the contract documents that the SR 90° elbows are to be used whenever the piping fit-up (in confined spaces) requires its use.

**Use short radius elbows only where required. Note: short radius elbows may be required near flow meters to maintain manufacturers recommended distance of straight pipe.**

10. Specification 23 21 13, 3.2, S.1 & S.2 requires a Schedule 40 galvanized steel pipe sleeve for piping passing through floor or wall penetrations, and the selection of a sleeve of size large enough to provide a 1" annular clear space between piping and concrete slabs and walls.

Drawing 1S1.0 denotes a requirement for a 22" floor penetration where the 20" CWR pipe penetrates the floor.

As relates to this 20" CWR pipe floor penetration, please:

- a) Verify if the area is to be ferro-scanned prior to the penetration of the floor. **No ferro-scanning is required**
- b) Provide a sleeve detail and a pipe penetration detail (e.g. - is there a requirement for the provision of link-seal). **Sleeve will be removed. No sleeve or link seal will be required**
- c) Verify that the sleeve does not have to be hot-dipped galvanized. **No sleeve required**
- d) Verify that the sleeve can be standard weight in lieu of Sch.40. **No sleeve required**
- e) Verify that – given the requirements for 1" annular space – a 22" floor penetration is indeed acceptable to the project. **22" penetration is acceptable**

11. Clarify the specification required for use of protective coating (e.g.: EC-1a; EC-1b, etc.) for use on:

- a) CW piping. **EC-1a**
- b) Refrigerant vent piping. **EC-1a**
- c) CHW piping. **No coating, piping is insulated**
- d) Refrigerant piping. **No coating, piping is insulated**

12. Keyed notes 2 & 3: requires the flange bolted to the new valve is to be welded to a piece of pipe which is then capped. *It is common practice to bolt a blind flange directly onto a lugged style BF valve in lieu of what is being required of these keyed notes.*

**Please verify that a blind flange bolted onto the new valve will not be acceptable.**

**Blind flange to lugged BF valve is acceptable. Drawing will be changed in addenda.**

13. Keyed note 5 on M1.1 requires the piping connections to the main to be made at 30°. Can the piping connection be made at 45° to avoid the modification of a 45° fitting?

**45 degrees is acceptable**

14. Drawing 1S2.0: requires the provision of a new structural steel beam, the bottom of which is to be installed 15'-8" AFF and 6'-9" west of column G. The specified dimension off column 'G' places the I-Beam above an existing rack of conduit, which will render the trolley useless if the conduit is not relocated?? Please review and address direction to be taken by the contractor (also, if conduit is to be relocated, would that relocation need to be provided on overtime?).

**Chiller is being moved slightly to plan East to allow motor removal without interference of conduits. Drawing will be changed in addenda.**

15. Specification 23 21 13, 3.6 addresses the cleaning and flushing of water systems.

Please clarify that the water used in the flushing of the new piping can be disposed down the sanitary sewer. If this water cannot be disposed down the sanitary sewer, please indicate a lay-down area for Frac tanks to be stored for collection of flushing fluid and for disposal to a facility that receives and processes hazardous waste.

The flush and treatment water are to be drained to sanitary. The contractor is responsible for coordinating with and receiving written approval from Austin Water Utility Special Services Division, Tammy West, 512-972-1066 or tammy.yates.west@austintexas.gov, on the disposal of the cleaning and flushing water or any other substances to the sanitary sewer.

16: When looking at plans what supersedes? For example, M1.1 keynote 2 states : "weld a flange to existing pipe and cap". However, on the plans they show an additional butterfly valve in place.

Note 2 will be revised. For capped pipes, a new lugged butterfly valve will be required with a blind flange bolted to it. For wet taps, a gate valve will be required.

17. I have been searching for Test and Balance in the specs/plans but I couldn't find any. Could you provide some guidance on this issue?

Refer to Metal Duct Specification 23 31 13 for exhaust fan test and balance. Test & Balance for the chiller shall be performed under the factory start up per Specification 23 64 16. Commissioning shall be performed by a third party through the Owner.

18. Specification Section 236416 1.12 E. Is a Trane UC-800 chiller controller with AdaptiView touchscreen display acceptable as an equivalent to Allen-Bradley 1756-L75 provided it is furnished with a Modbus to Ethernet IP gateway which is compatible with the existing Allen-Bradley control system?

Specification section 236416 – 1.4.C.3 gives a method to provide an alternate method of compliance. This is where this information belongs. It is then up to the owner to evaluate the alternate methods for acceptability.

19. Is a Bid Bond required for this project?

A bid bond is not required for this project.

20. Define the Evaluation Factors to help out contractors in bidding this project.

- (1) **Demonstrated Installation Experience.** Proposer(s) shall provide their response pertaining to the experience in installing and commissioning industrial grade 2500 ton chillers with VFDs as requested in the RFP.
- (2) **Technical Concept and Solutions Proposed.** See Section 0600, Paragraph 1.B, Part II – Technical Concept and Solution.
- (3) **Total Evaluated Cost – complete and submit Attachment B.**
- (4) **Chiller Performance – See Attachment A and referenced Legend**
- (5) **Local Factory Service – Local service Technicians trained and certified by the factory to provide maintenance on the chiller and working within 30 miles from the plant and/or Austin city limits**
- (6) **Concordance Matrix – See Attachment A – to be completed**
- (7) **Local Business Presence – A firm (Offeror or Subcontractor) is considered to have a Local Business Presence if the firm is headquartered in the Austin Corporate City Limits, or has a branch office located in the Austin Corporate City Limits in operation for the last five (5) years. The City defines headquarters as the administrative center where most of the important functions and full responsibility for managing and coordinating the business activities of the firm are located. The City defines branch office as a smaller, remotely located office that is separate from a firm's headquarters that offers the services requested and required under this solicitation.**

**II. All items in the drawings and specifications referenced herein shall be supplemented and modified as follows:**

**SPECIFICATIONS**

**Item 1. Specification 23 64 16 Centrifugal Water Chiller (Not Issued)**

Section 2.5 B.6.e and Section 2.5 C.6.e are revised to read as follows:

“Minimum Wall Thickness:0.025” minimum thickness at enhanced areas and 0.045” minimum thickness at tube supports and end sheets. Alternate design: tubes that are enhanced along their entire length must have a 0.028” minimum thickness throughout.”

**Item 2. Specification 23 21 13 Hydronic Piping (Re-Issued)**

Part 3 Execution

- A. Renumbered Sections as indicated.
- B. Piping Installations - deleted the pipe sleeve requirement.

**Item 3. Specification 23 05 53 Identification for HVAC Piping and Equipment (Not Issued)**

Section 2.3 A.- added the following:

**2.3 PIPE IDENTIFICATION BY COLOR CODE**

A. Provide protective coatings for piping and piping insulation in accordance with specification section 722S Protective coatings and the piping schedule listed below.

B. Piping system schedule:

1. Insulated piping systems:

- a. Pipe coating: None
- a. Pipe insulation coating: Per insulation manufacturers written recommendation
- b. Surface preparation: Per insulation manufacturers written recommendation
- c. Match existing plant color scheme for each piping system.

2. Un-insulated piping systems:

- a. Pipe coating: EC-1a
- b. Surface preparation: As specified for EC-1a
- c. Match existing plant color scheme for each piping system.

**MECHANICAL DRAWINGS (Attached)**

**Item 1. Sheet MD1.1 (Re-Issued)**

A. Showed existing 10x6 duct.

**Item 2. Sheet M1.0 (Re-Issued)**

- A. Detail 1, point of disconnection revised.
- B. Detail 2, point of connection revised and a butterfly valve added.

**Item 3. Sheet M1.1 (Re-Issued)**

- A. Flex connections shown for clarity.
- B. 2 valves revised from butterfly to gate.
- C. Capping system of existing pipe legs revised to include a blind flange bolted directly to valve.
- D. Chiller moved 25” to plan East.
- E. Notes 2,3, 5 and 6 edited as indicated.
- F. Showed existing 10x6 duct to be relocated.

Item 4. Sheet M2.0 (Re-Issued)

A. Revised details to match plans as indicated.

**ELECTRICAL DRAWINGS**

Item 1. Sheet E1.2: (Re- Issued)

A. Added warning label.

**STRUCTURAL DRAWINGS**

Item 1. Sheet S-1.0 (Re-Issued)

A. Relocated chiller as indicated

Item 2. Sheet S-2.0 (Re-Issued)

A. Relocated hoist beam and chiller as indicated

**END OF QUESTIONS AND ANSWERS**

All other terms and conditions remain the same.

BY THE SIGNATURES affixed below, Addendum #3 is hereby incorporated and made a part of the above referenced Solicitation.

APPROVED BY:



Oralia Jones, Senior Buyer  
Purchasing Office, 512-322-6594

ACKNOWLEDGED BY:

\_\_\_\_\_  
SUPPLIER

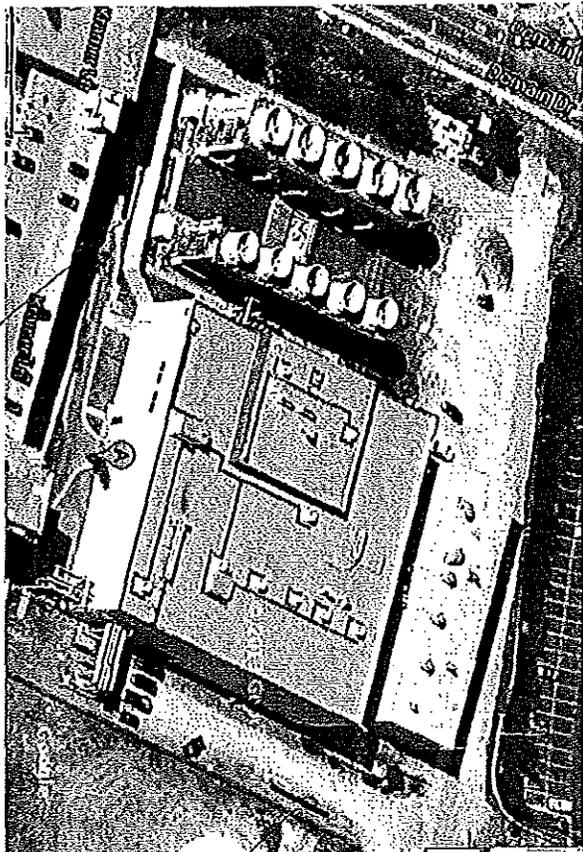
\_\_\_\_\_  
AUTHORIZED SIGNATURE

\_\_\_\_\_  
DATE

RETURN ONE (1) COPY OF THIS ADDENDUM TO THE PURCHASING OFFICE, CITY OF AUSTIN, WITH BID OR PRIOR TO BID OPENING. FAILURE TO DO SO MAY CONSTITUTE GROUNDS FOR REJECTION OF YOUR OFFER.



ATTACHMENT E - Dumpster location



**Dumpster**

**Office  
Trailer**

## SECTION 23 21 13 - HYDRONIC 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 SUMMARY

- A. This Section specifies the requirements for materials, fabrication, and installation of carbon steel piping systems. In accordance with the requirements of ASME/ANSI 31.3 Process Piping.
- B. Section includes pipe and fitting materials and joining methods for the following:
  - 1. Chilled-water piping.
  - 2. Condenser-water piping.
  - 3. Refrigerant Recovery-Piping
  - 4. Vent piping.
  - 5. Safety-valve-inlet and -outlet piping.
  - 6. Piping Specialties

#### 1.3 SUBMITTALS

- A. Coordination Drawings: Piping layout, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. All Other building services.
  - 2. Structural members.
- B. Qualification Data: For Installer.
- C. Welding certificates.
- D. Field quality-control reports.

#### 1.4 QUALITY ASSURANCE

- A. Installer Qualifications:
  - 1. Qualify welders and welding operators at the Contractor's expense by an approved independent testing laboratory before performing any welding. Provide qualification tests in accordance with the requirements of Section IX of the ASME Code.

2. Prior to the start of the work, submit a list of the welders the Contractor proposes using and the type of welding for which each has been qualified. Copy of certification for each welder. Qualification tests may be waived if evidence of prior qualification is deemed suitable by the Engineer
- B. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- C. Pipe Welding: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code: Section IX.
1. Qualify welders and welding operators at the Contractor's expense by an approved independent testing laboratory before performing any welding. Provide qualification tests in accordance with the requirements of Section IX of the ASME Code
  2. Prior to the start of the work, submit a list of the welders the Contractor proposes using and the type of welding for which each has been qualified. Copy of certification for each welder.
- D. All Steel used on this project shall be provided from a domestic (American) Source.
- E. Weld Testing and certification will be done by a third party.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature unless otherwise indicated:
1. Chilled-Water Piping: 150 at 200 deg F.
  2. Condenser-Water Piping: 150 psig at 150 deg F.
  3. Refrigerant Recovery – Piping: 150 PSI @ 200 deg F.
  4. Air-Vent Piping: 200 deg F.
  5. Safety-Valve-Inlet and -Outlet Piping: Equal to the pressure of the piping system to which it is attached.

### 2.2 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; welded and seamless, Grade B, and wall thickness as indicated in "Piping Applications" Article.
- B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125 and 250 as indicated in "Piping Applications" Article.
- C. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150 and 300 as indicated in "Piping Applications" Article.
- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in "Piping Applications" Article.

- E. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 25, 125, and 250; raised ground face, and bolt holes spot faced as indicated in "Piping Applications" Article.
- F. Wrought-Steel Fittings: ASTM A 234/A 234M, wall thickness to match adjoining pipe.
- G. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
  - 1. Material Group: 1.1.
  - 2. End Connections: Butt welding.
  - 3. Facings: Raised face.

## 2.3 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless otherwise indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- D. Gasket Material: Thickness, material, and type suitable for fluid to be handled and working temperatures and pressures.
- E. Filler Materials
  - 1. Deposited weld metal shall conform to the standards listed below and have the same alloy content as the metal being joined and be of the same tensile strength:
    - a. ASTM A233 for covered carbon steel electrodes.
    - b. Store welding rods in a warm dry area per manufacturer's recommendation.

## 2.4 PIPING SPECIALTIES

- A. Spherical, Rubber, Flexible Connectors:
  - 1. Body: Fiber-reinforced rubber body.
  - 2. End Connections: Steel flanges drilled to align with Classes 150 and 300 steel flanges.
  - 3. Performance: Capable of misalignment.
  - 4. CWP Rating: 150 psig.
  - 5. Maximum Operating Temperature: 250 deg F.

B. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. In "Strainer Screen" Subparagraph below, larger mesh numbers have larger passages, thus allowing larger objects to pass.
4. Strainer Screen: Stainless-steel, 40-mesh strainer, or perforated stainless-steel basket.
5. CWP Rating: 125 psig

PART 3 - EXECUTION

3.1 JOINT PREPARATION AND ALIGNMENT

- A. Provide weld bevels suitable for the welding process used. Fabricate the contour to permit complete fusion throughout the joint. Conform bevels to those used in the procedure qualification; however, when not specified, provide in accordance with the requirements of ANSI B31.3. Pipe having a nominal thickness less than 3/16 inch may have a slight chamfer or may be square, depending upon the fabricator's preference.
- B. Make weld bevels by machining, grinding, or thermal cutting, and the surfaces to be reasonably smooth and true.
- C. Position adjacent sections of welded pipe that are joined by butt welding so that the longitudinal weld seams do not match (minimum 30 degrees apart).
- D. Wherever possible, do not match the position of the longitudinal weld seam with branch connections (couplings, stubs, etc.).
- E. Where the ends of piping components are to be joined by welding and the internal surface misalignment exceeds 1/16 inch, that component, with the wall extending internally, internally trim (see Figure 328.4.3 of ANSI B31.3) so that the adjoining internal surfaces are flush. However, the resulting thickness of the welded joint shall not be less than the minimum design thickness plus any corrosion allowance.
- F. Preheat materials that require preheating for welding at the same temperature for thermal cutting or gouging.
- G. Clean surfaces to be welded free from paint, oil, dirt, scale, and other materials detrimental to welding.
- H. Make fit-up by tack welding or using lugs.
- I. Make tack welds with a qualified welder under a qualified welding procedure. Make tack welds that are part of the root pass with the same electrodes as are to be used for the first pass. Remove cracked tack welds by grinding.
- J. Provide clear distance between centerlines of adjacent girth butt welds not be less than four times the pipe wall thickness or 1 inch, whichever is greater.

- K. Provide end connections of shop-fabricated spool pieces as follows. Any exception to the following will be indicated on the piping drawing and reviewed by the Engineer prior to fabrication:
1. Where field welding is required to join the ends of two pieces of fabricated pipe or a piece of pipe and a welding fitting or flange, the shop fabricator shall furnish both adjacent ends beveled for field welding and fabricated to the Drawing dimensions.
  2. Where field fit-up is required to allow for adjustment in the field, one spool piece at the fit-up weld provide a plain end 6 inches longer than the dimension indicated on the piping drawing. Bevel the adjacent spool end and fabricate to the dimension indicated.
  3. Furnish where field welds occur at stub-ons to a field-fabricated straight run, the shop fabricator, the spool end contoured, and ready for welding. Should a reinforcement fitting (i.e., weldolet) be required, include in the shop spool.

### 3.2 WELDING PROCESS

- A. Make field welds by the shielded metal arc process. Accomplish shop welding and fabrication in accordance with the submitted welding procedure qualifications reviewed by the Engineer.
- B. Do not perform welding if there is impingement of rain, snow, sleet, or high wind on the weld area. If the ambient temperature is less than 32 degrees F, local preheating of the surfaces to a temperature warm to the hand is required.

### 3.3 WELD CONTOUR AND FINISH

- A. Welding requirements are as follows:
1. Thoroughly clean each layer of deposited weld metal prior to the deposition of each additional layer of weld metal, including the final pass, with a power-driven wire brush. Surface defects which affect the soundness of weld shall be ground out.
  2. Provide a minimum of three weld passes on pipe sizes 6 inches through 24 inches, using the specified covered electrode. Provide minimum of a full root and second pass on all welded pipe 4 inches and under.
- B. Weld Testing
1. All welds are subject to visual and/or X-ray inspection for compliance with specifications. Weld testing will be performed by the owner's third party testing agent. Reasons for rejecting welded joints include will include cracks, incomplete penetration, weld undercutting, excessive weld reinforcement, porosity, and slag inclusions in excess of the limits prescribed in Chapter V of ANSI B31.3.
  2. The contractor shall be responsible for all labor, material and travel expenses involved in the re-inspection and re-testing of any welds found to be unacceptable. In addition, the contractor shall be responsible for the costs involved in any and all additional testing required or recommended by ASME/ANSI Standards B31.1, B31.9, and B31.3 due to the discovery of poor, unacceptable, or rejected welds.

### 3.4 PIPING APPLICATIONS

- A. Chilled-water piping NPS 2 and smaller, shall be the following:
  - 1. Schedule 40 steel pipe; Class 150, malleable-iron fittings; cast-iron flanges and flange fittings; and threaded joints.
- B. Chilled-water piping NPS 2-1/2 and larger, shall be the following:
  - 1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
- C. Condenser-water piping NPS 2 and smaller, shall be the following:
  - 1. Schedule 40 steel pipe; Class 150, malleable-iron fittings; cast-iron flanges and flange fittings; and threaded joints.
- D. Condenser-water piping NPS 2-1/2 and larger, shall be the following:
  - 1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
- E. Refrigerant recovery piping NPS 2 and smaller, shall be the following:
  - 1. Schedule 40 steel pipe; Class 150, malleable-iron fittings; cast-iron flanges and flange fittings; and threaded joints.
- F. Refrigerant recovery piping NPS 2-1/2 and larger, shall be the following:
  - 1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
- G. Vent Piping:
  - 1. Schedule 40 steel pipe, wrought-steel fittings and welded joints.
- H. Safety-Valve-Inlet and -Outlet Piping for refrigerant Piping: Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.

### 3.5 PIPING INSTALLATIONS

- 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 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.
  - D. Install piping to permit valve servicing.
  - E. Install piping at indicated slopes.
  - F. Install piping free of sags and bends.
  - G. Install fittings for changes in direction and branch connections.
  - H. Install piping to allow application of insulation.
  - I. Select system components with pressure rating equal to or greater than system operating pressure.
  - J. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
  - K. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
  - L. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
  - M. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
  - N. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. Install valves according to Section 230523 "General-Duty Valves for HVAC Piping."
  - O. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
  - P. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.
  - Q. Install shutoff valve immediately upstream of each dielectric fitting.
  - R. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for identifying piping.
  - S. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230518 "Escutcheons for HVAC Piping."
- 3.6 HANGERS AND SUPPORT
- A. Comply with requirements in Section 230529 "Hangers and Supports for HVAC Piping and Equipment" for hanger, support, and anchor devices. Comply with the following requirements for maximum spacing of supports.

- B. Install the following pipe attachments:
  - 1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet long.
  - 2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet or longer.
  - 3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
  - 4. Spring hangers to support vertical runs.
  
- C. Install hangers for steel piping with the following maximum spacing and minimum rod sizes:
  - 1. NPS 3/4: Maximum span, 7 feet.
  - 2. NPS 1: Maximum span, 7 feet.
  - 3. NPS 1-1/2: Maximum span, 9 feet.
  - 4. NPS 2: Maximum span, 10 feet.
  - 5. NPS 2-1/2: Maximum span, 11 feet.
  - 6. NPS 3 and Larger: Maximum span, 12 feet.
  
- D. Support vertical runs at roof, at each floor, and at 10-foot intervals between floors.

### 3.7 PIPE JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe 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 unless dry seal threading is specified.
  - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
- E. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

### 3.8 TERMINAL EQUIPMENT CONNECTIONS

- A. Sizes for supply and return piping connections shall be the same as or larger than equipment connections.
- B. Install control valves in accessible locations close to connected equipment.

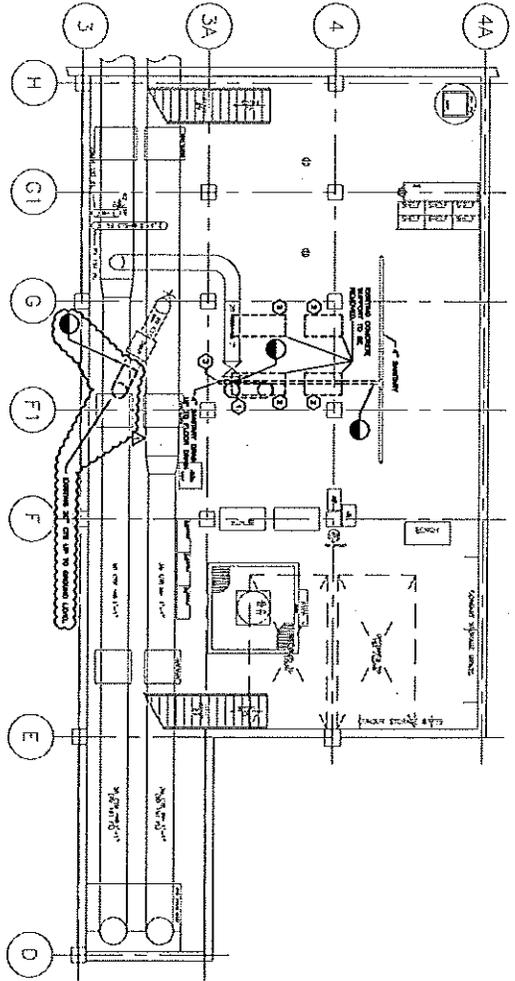
- C. Install bypass piping with ball valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install ports for pressure gages and thermometers at coil inlet and outlet connections. Comply with requirements in Section 230519 "Meters and Gages for HVAC Piping."

### 3.9 CLEANING AND FLUSHING OF WATER SYSTEMS

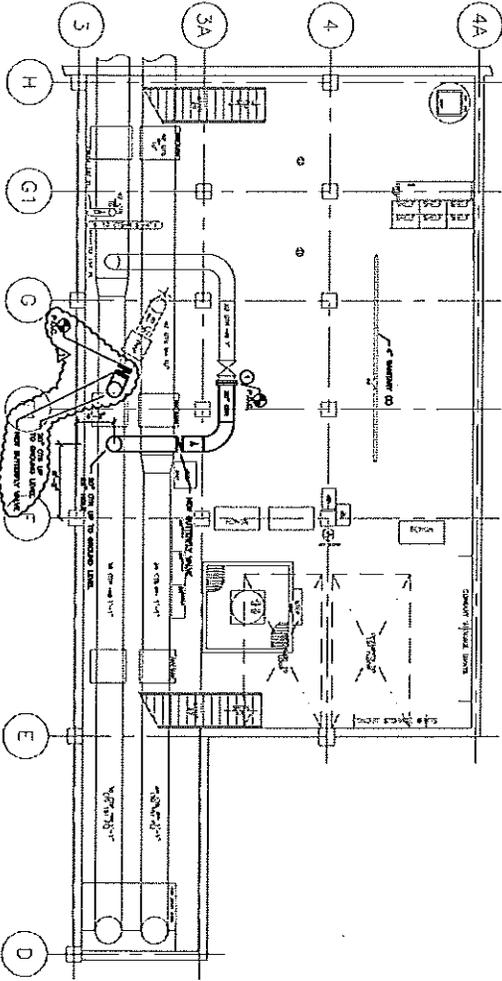
- A. Water circulating Systems shall be thoroughly cleaned before placing in operation to rid systems of rust, dirt, piping compound, mill scale, oil, grease, any and all other material foreign to water being circulated.
  - 1. Remove dirt, scale and other foreign matter from the inside of piping, by swabbing or flushing, prior to the connection of other piping sections, fittings, valves or equipment.
  - 2. Care shall be exercised during construction to prevent dirt and other foreign matter from entering the pipe or other parts of systems. Pipe stored on the project shall have open ends capped and equipment shall have openings fully protected. Before erection, each piece of pipe, fitting, or valve shall be visually examined cleaned using non-hazardous cleaning compound.

END OF SECTION 23 21 13





1 BASEMENT MECHANICAL DEMOLITION PLAN  
SCALE 1/8"



2 BASEMENT MECHANICAL FLOOR PLAN  
SCALE 1/8"



**GENERAL NOTES:**

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.

- DEMOLITION KEYED NOTES:**
- 1. DEMOLITION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.
  - 2. DEMOLITION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.
  - 3. DEMOLITION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.

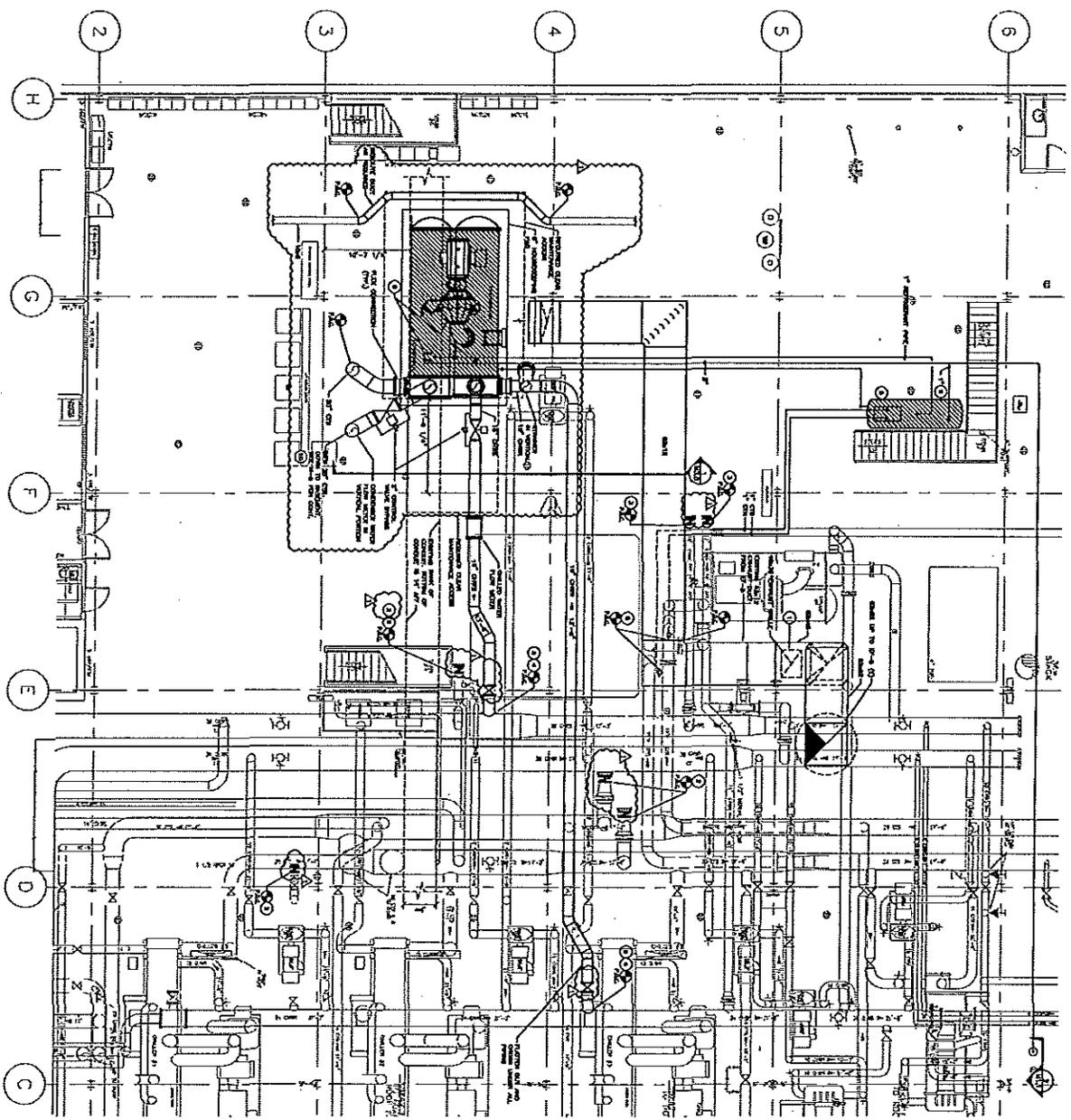
**GENERAL NOTES:**

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.

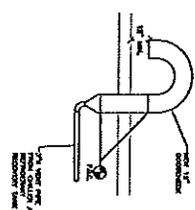
**KEYED NOTES:**

- 1. DEMOLITION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.
- 2. DEMOLITION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE M.I.C. CODES AND THE LATEST EDITIONS OF THE M.I.C. CODES.

<p><b>M.I.O.</b></p>	<p><b>DOMAIN - NEW 2500 TON CHILLER INSTALLATION</b>  <b>DOMAIN DISTRICT COOLING PLANT/AUSTIN ENERGY</b>  <b>CLM089 2012 M.E.P. Rotation List PA120000006</b>  <b>D.O. NO. 13071517369</b></p>	<p>ASHTX TEXAS 78708</p>	<p><b>Jose J. Guerra, Inc.</b>                  Consulting Engineers, Inc.                  8401 South IH-35 Suite 210                  Austin, Texas 78741                  (512) 441-8006                  Structural &amp; Civil &amp; Mechanical &amp; Electrical                  TSP2 FORM F-3</p>
----------------------	--	--------------------------	--



1 MECHANICAL FIRST FLOOR PLAN  
SCALE: 1/8" = 1'-0"



2 VENT CONNECTION DETAIL  
SCALE: 1/2" = 1'-0"

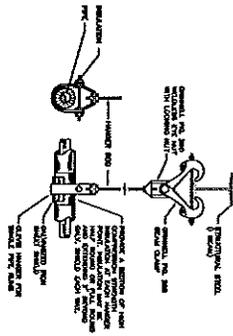
**GENERAL NOTES:**

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MECHANICAL, PLUMBING AND ELECTRICAL CODES AND ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSURANCE.
3. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING UTILITIES AND STRUCTURES.
5. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING WORK.
7. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER.
8. THE CONTRACTOR SHALL MAINTAIN A NEAT AND ORDERLY WORK SITE AT ALL TIMES.
9. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSURANCE.

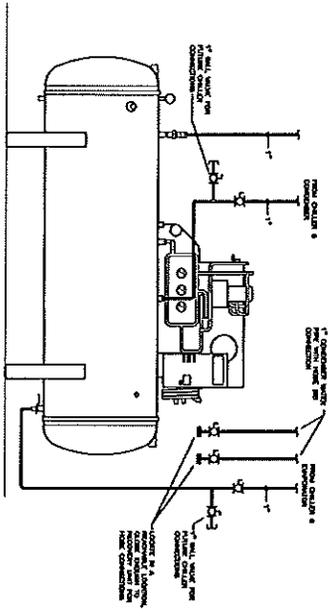
**KEYED NOTES:**

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE MECHANICAL, PLUMBING AND ELECTRICAL CODES AND ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSURANCE.
3. ALL MATERIALS AND EQUIPMENT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL EXISTING UTILITIES AND STRUCTURES.
5. ALL WORK SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING WORK.
7. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE ENGINEER.
8. THE CONTRACTOR SHALL MAINTAIN A NEAT AND ORDERLY WORK SITE AT ALL TIMES.
9. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSURANCE.

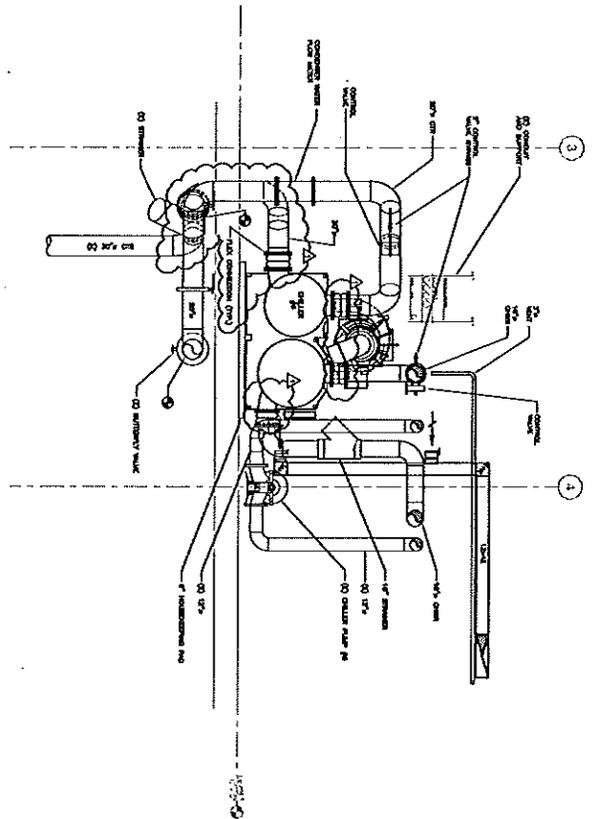
<p><b>M1.1</b></p>	<p><b>DOMAIN - NEW 2500 TON CHILLER INSTALLATION</b>  <b>DOMAIN DISTRICT COOLING PLANT/AUSTIN ENERGY</b>  <b>CLM089 2012 M.E.P. Rotation List PA120000006</b>  <b>D.O. NO. 13071517369</b></p>	<p><b>Jose J. Guerra, Inc.</b>          Consulting Engineers          8401 North IH-36 Suite 210          Austin, Texas 78741          (512) 644-8099          Structural • Civil • Mechanical • Electrical          TYPED FIG. 1-3</p>
--------------------	--	---



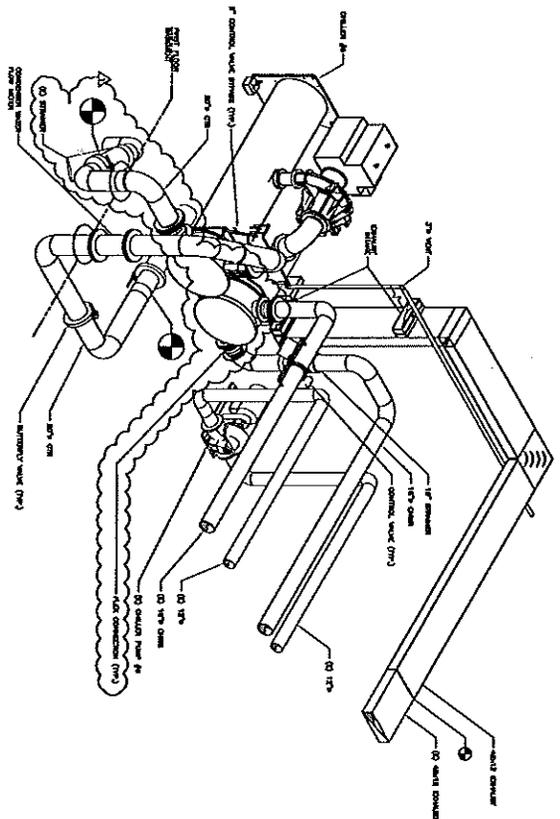
3 WATER PIPING HANGERS & SUPPORTS DETAIL



4 WATER PIPING HANGERS & SUPPORTS DETAIL

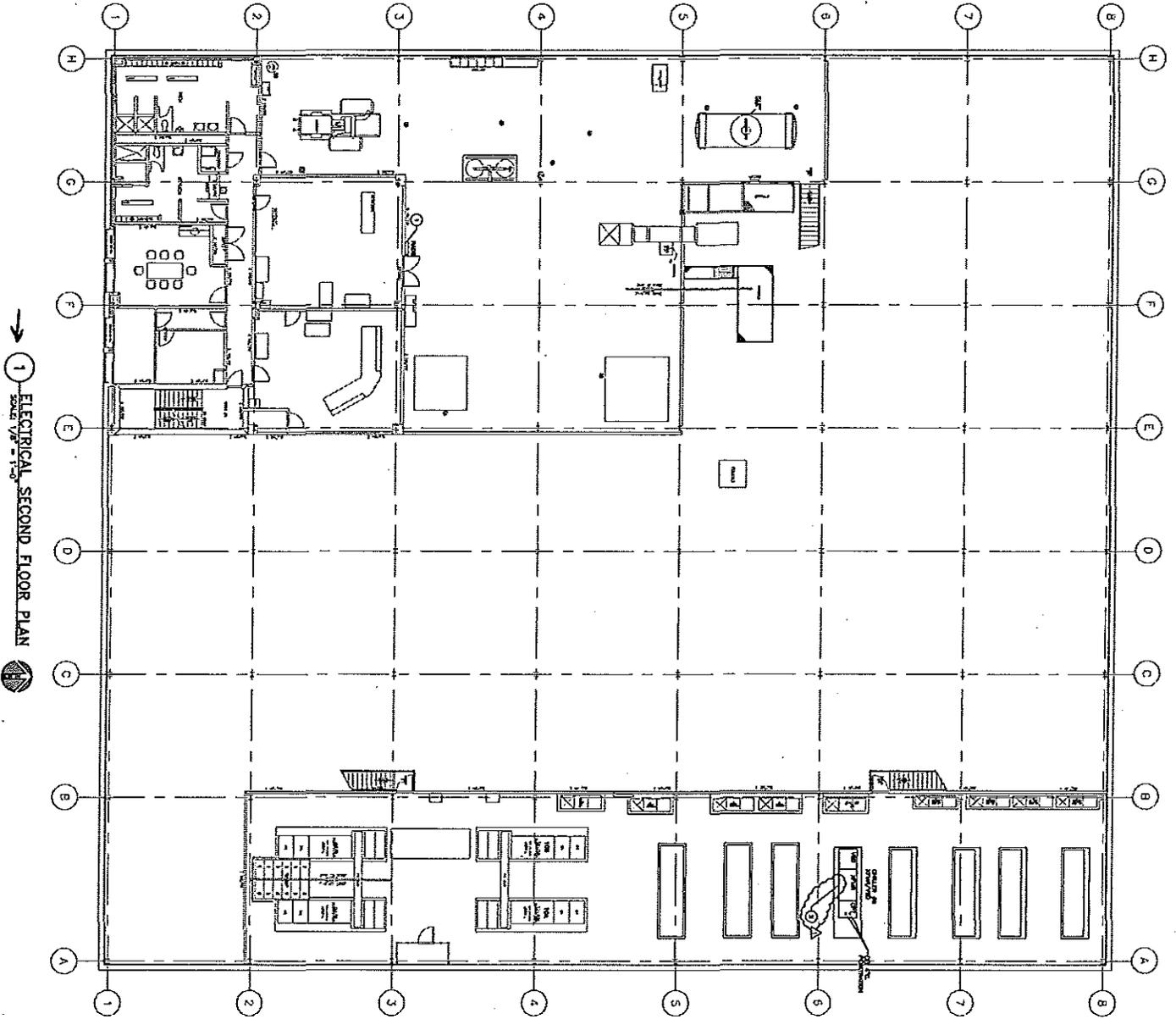


1 CHILLER #6 SECTION



2 CHILLER #6 ISOMETRIC

<p><b>M2.0</b></p>	<p>PROJECT NO. 1308.00</p>	<p><b>Jose I. Guerra, Inc.</b>                  Consulting Engineers                  2441 North IH-35 Suite 210                  Austin, Texas 78711                  (512) 444-8000                  Structural &amp; Civil &amp; Mechanical &amp; Electrical                  TRS# FORM F-3</p>
	<p>DATE 09.04.13</p>	
	<p>FOR CONSTRUCTION</p>	
	<p>MECHANICAL                  DETAILS AND                  SCHEDULES</p>	
	<p>SHEET TITLE                  DOMAIN - NEW 2500 TON CHILLER INSTALLATION                  DOMAIN DISTRICT COOLING PLANT/AUSTIN ENERGY                  CLM089 2012 M.E.P. Rotation List PA120000006                  D.O. NO. 13071617369</p>	



→ 1 ELECTRICAL SECOND FLOOR PLAN

**GENERAL NOTES:**  
 1. CONSULT WITH THE ARCHITECT FOR THE LOCATION OF ALL WALLS, DOORS, WINDOWS, AND OTHER FEATURES.  
 2. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND THE LOCAL ELECTRICAL CODES.  
 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL AUTHORITIES.  
 4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES.  
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL ADJACENT PROPERTIES AND AREAS.  
 6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING ELECTRICAL SYSTEMS AND EQUIPMENT.  
 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING PIPING AND MECHANICAL SYSTEMS.  
 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING STRUCTURAL MEMBERS.  
 9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING FINISHES AND MATERIALS.  
 10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING LANDSCAPE AND PLANTING.

<p><b>E1.2</b></p>	<p>300 FRAMER LANE AUSTIN, TEXAS 78738</p>	<p><b>DOMAIN - NEW 2500 TON CHILLER INSTALLATION</b>  <b>DOMAIN DISTRICT COOLING PLANT/AUSTIN ENERGY</b>  <b>CLM089 2012 M.E.P. Rotation List PA120000006</b>  <b>D.O. NO. 13071517369</b></p>	<p><b>Jose I. Guerra, Inc.</b>          Consulting Engineers          8441 North Loop West, Suite 210          Houston, Texas 77041          (813) 444-8099          Structural • Civil • Mechanical • Electrical          1979 TMSD 7-3</p>
	<p>PROJECT NO. 13036.30</p>	<p>DATE 08.04.12</p>	<p>FOR CONSTRUCTION</p>

**GENERAL NOTES**

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.

**NOTES**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.

**DETAILS**

1. SEE DETAIL 1 FOR CONNECTION OF THE CHILLER TO THE STRUCTURAL STEEL.
2. SEE DETAIL 2 FOR CONNECTION OF THE CHILLER TO THE STRUCTURAL STEEL.
3. SEE DETAIL 3 FOR CONNECTION OF THE CHILLER TO THE STRUCTURAL STEEL.

**CONNECTIONS**

1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.

**GENERAL NOTES**

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.

**NOTES**

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.

**DETAILS**

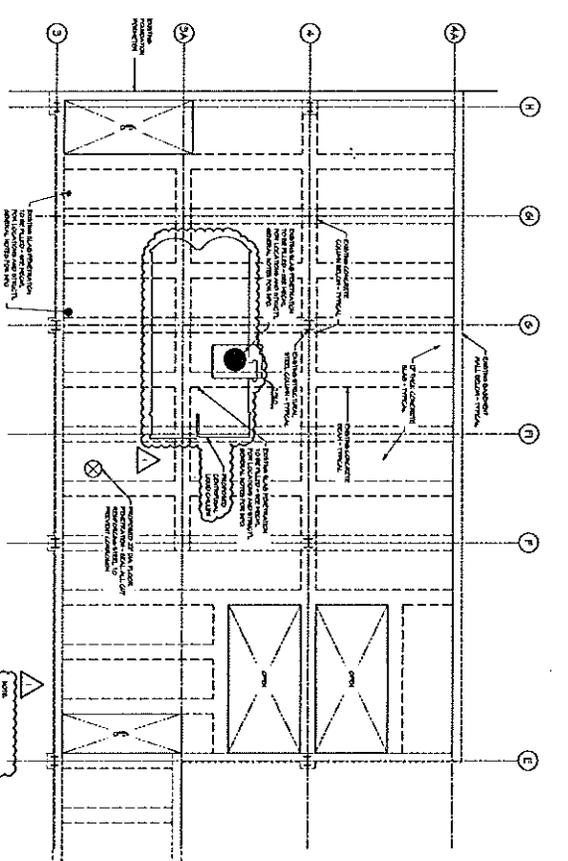
1. SEE DETAIL 1 FOR CONNECTION OF THE CHILLER TO THE STRUCTURAL STEEL.
2. SEE DETAIL 2 FOR CONNECTION OF THE CHILLER TO THE STRUCTURAL STEEL.
3. SEE DETAIL 3 FOR CONNECTION OF THE CHILLER TO THE STRUCTURAL STEEL.

**CONNECTIONS**

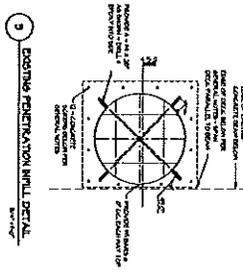
1. ALL CONNECTIONS SHALL BE IN ACCORDANCE WITH THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.

**GENERAL NOTES**

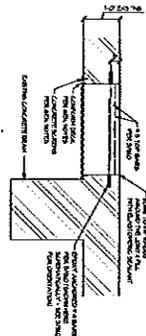
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE LOCAL, STATE, AND FEDERAL AUTHORITIES.



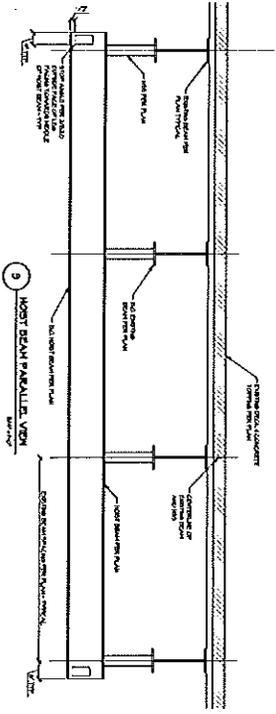
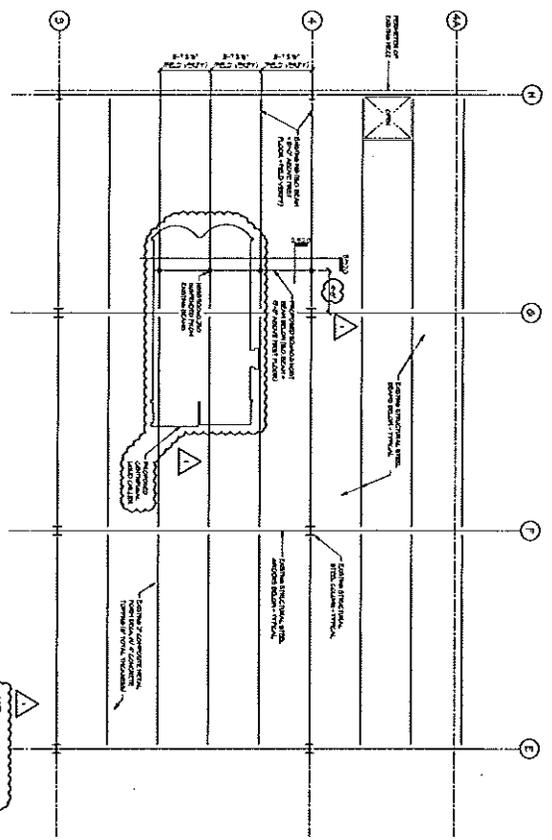
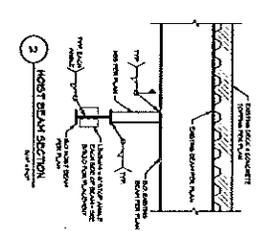
**1 FIRST FLOOR STRUCTURAL PLAN**



**3 EXISTING PERFORATION MILL DETAIL**



**4 EXISTING PERFORATION MILL SECTION**



1 HOIST MEZANINE STRUCTURAL PLAN  
1/4\"/>

GENERAL NOTE: ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.

DOMAIN - NEW 2500 TON CHILLER INSTALLATION  
 DOMAIN DISTRICT COOLING PLANT/AUSTIN ENERGY  
 CLM089 2012 M.E.P. Rotation List PA120000006  
 D.O. NO. 13071617369

PROJECT TITLE  
 PROJECT NO.  
 130366.30  
 SHEET NO.  
 S2.0

