

SECTION 336010 – UTILITY DISTRIBUTION GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

Note: Select the following paragraph for purchase order projects.

- A. Provide labor, materials, and equipment as necessary to complete work as indicated on the drawings, as specified herein.
- B. Steam Utility Distribution: As used in these Specifications, the steam utility distribution system includes low pressure steam, high pressure steam, pumped condensate and vacuum condensate return piping external to buildings and inside of buildings as follows:
 - 1. Low pressure steam up to the building isolation shut-off valve.
 - 2. High pressure steam up to the pressure reducing valve.
 - 3. Condensate return from the pump discharge connection.
- C. Work Included:
 - 1. Demolition of existing steam and condensate pipe valves and fittings from existing vault and tunnel to point of reconnection as indicated on Drawings.
 - 2. New work consisting of new steam and condensate pipe valves and fittings from existing vault through new tunnel and new vaults, connecting to existing vault, tunnel, building and as indicated on Drawings.
- D. Work Not Included:
 - 1. Motor starters shall be provided and installed by the electrical contractor.
- E. Excavating and Backfilling:
 - 1. Excavating and backfilling shall be done in accordance with Division 31 Section "Earthwork."
- F. Materials To Be Returned To The Owner:
 - 1. Coordinate with Owner for delivery of the following items removed from the site and not reused in the work to Owner's Physical Plant storage yard:
 - a. Butterfly and gate valves on steam and condensate piping.
 - b. Expansion joints on steam and condensate piping.
 - c. [.]

1.2 REFERENCES

- A. Codes and standards are described in the Specification by reference to various associations.

1. ACGIH - American Conference of Governmental Industrial Hygienists.
2. AGA - American Gas Association.
3. ANSI – American National Standards Institute.
4. AMCA – Air Moving and Conditioning Association.
5. ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers.
6. ASME - American Society of Mechanical Engineers.
7. ASSE - American Society of Sanitary Engineering.
8. ASTM - American Society for Testing Materials.
9. ARI - Air-Conditioning and Refrigeration Institute.
10. AWWA - American Water Works Association.
11. BOCA - Building Officials and Code Administration.
12. CTI - Cooling Tower Institute.
13. ICC - International Code Council.
14. LEED™ - Leadership in Energy & Environmental Design.
15. MICA - Midwest Insulation Contractors Association.
16. MMC - Michigan Mechanical Code.
17. MPC-- Michigan Plumbing Code.
18. MSS - Manufacturers Standardization Society.
19. NEBB - National Environmental Balancing Bureau.
20. NEMA - National Electrical Manufacturer's Association.
21. NFPA - National Fire Protection Association.
22. NSF - National Sanitation Foundation.
23. OSHA - Occupation Safety and Health Act.
24. PDI - Plumbing and Drainage Institute.
25. SMACNA - Sheet Metal and Air Conditioning Contractors National Association.
26. UL - Underwriter's Laboratories, Inc.

1.3 SUBMITTALS

- A. Shop Drawings: Submit for major equipment including, but not limited to the items listed in Division 33 sections.
- B. Coordination and Layout Drawings: Submit coordination and layout drawings for systems including, but not limited to, those listed in Division 33 sections, as necessary for coordination between trades and to ensure adequate access to installed components.
- C. Operating and Maintenance Manuals:
 - 1. When the project is substantially complete and before the project is taken over by MSU for maintenance purposes, the Contractor shall be required to provide the Engineer with three (3) complete sets of written instructions covering the proper operation and maintenance requirements of all equipment furnished under these specifications.
 - 2. The manuals shall consist of an indexed loose-leaf binder containing the manufacturer's installation, operating, maintenance, lubrication and repair parts manual for each system component; approved shop drawings including equipment performance data and pump and fan performance curves, and test reports. Small scale drawings will be furnished by the Project Representative for this purpose if desired. Should clarification be required on any of the above requirements, sample copies of acceptable manuals are available for inspection. All outsize sheets shall be recopied to provide uniformity of size.

1.4 QUALITY ASSURANCE

- A. Permits and Inspections
 - 1. Obtain and pay for permits (temporary and permanent), fees, and inspections as required by applicable laws or ordinances. Post such permits and inspection certificates in a prominent place adjacent to the work.
 - 2. Deliver certificates of final inspection or approval to the Project Representative.
 - 3. Do not cover concealed work until final inspection has been made and approval certificates obtained.
- B. Codes, Regulations and Standards:
 - 1. Refer to Division 01 General Requirements for Codes and Regulations that apply.
 - 2. Following codes and standards shall be used as minimum requirements. Where codes are contradictory, follow the most stringent. Where the Specifications or Drawings call for an installation that exceeds and does not violate the Code requirements, the Specifications and Drawings shall be followed.
 - a. Michigan Mechanical Code, 2009.
 - b. Michigan Plumbing Code, 2009.
 - c. M.I.O.S.H.A.
 - d. Michigan Uniform Energy Code.

- e. Michigan Fire Safety Rules.
- f. Michigan Barrier Free Design.
- g. ADA Public Law 101-336.
- h. ASHRAE Standards.
- i. LEED™ NC 3.0.
- j. NFPA Standards.
- k. SMACNA Standards.
- l. Michigan Boiler Code.

1.5 WARRANTY

- A. In the event that part of the work or equipment fails (abuse and causes beyond control of the Contractor excepted), within this period of warranty, it shall be replaced by the Contractor at no cost to the Owner.

1.6 SYSTEM START-UP

- A. Activation of the steam and condensate systems for testing will be allowed only after the construction is substantially complete, or by permission of the Project Representative.
- B. Activation and shutdown of University utility systems shall be conducted by MSU personnel only. Coordinate shutdowns [10] days in advance with Project Representative.

1.7 MAINTENANCE

- A. Contractor shall be responsible for maintenance of equipment and systems installed until final acceptance by Owner.
- B. Lubricate rotating equipment in accordance with the manufacturer's recommendations before activation. Re-lubricate as required during activation and prior to final acceptance.
- C. Provide readily accessible and secured copper extensions to bearing lubrication fittings when equipment bearings are not visible or are inaccessible.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Character of Work: The installation shall be executed in a workmanlike manner and shall present a neat mechanical appearance when completed.
- B. Laying Out Work:
 - 1. Lay out piping and equipment in accordance with the Contract Documents and the manufacturer's recommended practice including provision of adequate space for maintenance. Review layout with the Project Representative prior to installation.

2. Review Drawings to verify spaces in which work will be installed. Maintain maximum headroom and space conditions at all points. Where headroom or space conditions appear inadequate, notify the Project Representative before proceeding with installation.
3. If directed by the Project Representative, make reasonable modifications in the layout as required to permit proper execution of the work and to prevent conflict with work of other trades.
4. Work shall be installed so as to be readily accessible for operation, maintenance and repair. Minor deviations from Drawings may be made to accomplish this. Changes shall not be made without approval of the Project Representative.

C. Connection to Existing Systems:

1. Connections to existing system shall be arranged in advance and shall be made at the convenience of the Owner.
2. Existing water systems that must be drained for work shall be refilled and purged of air at the end of the Project.

D. Accessibility:

1. Coordinate the exact location with the work of other trades.

3.2 FIELD QUALITY CONTROL

A. Site Tests:

1. Furnish labor and equipment necessary for the completion of tests called for in these Specifications.
2. Arrange with authorities to complete the tests without unnecessary delays so that the work may progress as rapidly as possible. Notify the Project Representative in advance of tests, at least 72 hours before starting tests.
3. Tests shall be repeated after defects disclosed thereby have been made good or the work replaced, if in the judgment of the Project Representative, it is deemed necessary.
4. Test Equipment: Instrumentation shall be provided as necessary and appropriate to perform the work. The instrument shall be factory calibrated, and shall be used with the factory-determined application factors. When reasonable doubt of accuracy exists, recalibration of instrumentation shall be performed as requested by the Project Representative.

3.3 DEMONSTRATION

- A. The Contractor shall demonstrate and give verbal instructions to the Owner's authorized personnel on the operation and maintenance of the complete steam and condensate systems in this Project.

END OF SECTION 336010