



VA Montana Healthcare System

3687 Veterans Drive, P.O. Box 1500

Ft. Harrison, MT 59636-1500



In Reply Refer To: 436/139

Project: 436-15-105, Potable Water Improvements

Scope of Work

The VA Montana Healthcare System requires the services of a qualified Architect / Engineer (A/E) firm to provide design services to improve the water system pressure and update the existing water system to meet federal mandates to control the outbreak of biological agents in the potable water system at the VA medical center located in Fort Harrison Montana.

The primary purposes of this renovation project is to construction of a reinforced concrete vault to hold a duplex pump arrangement capable of operating in a lead lag arrangement, each capable of pumping 3X average flow rate as calculated based on the highest volume utilization month at the facility. Required lift is to be calculated assuming a city pressure of 30 PSI. Arrangement shall have a primary bypass line and isolation for the pumps as the system will not be placed into use immediately. All connections for pumps, isolation valves, and check valves are to be flanged connections. The vault is to be equipped with a ceiling mounted rail and a rated chain hoist to allow maintenance activities. Control of the pump status as well as replacement of the existing reservoir alarm system is to be achieved in coordination with the existing building automation system. The reservoir system shall provide status, level, temperature, and shall also provide an audible alarm to indicate either critically low or overflow conditions.

The tasks described below are in anticipation of the issuance of a new Directive governing domestic water controls. Applicability of the criteria at the Fort Harrison Campus is limited to the Primary Hospital Complex, Inpatient Mental Health, and Liberty House.

Primary Hospital Complex

- 1) Redesign the facility hot water recirculation system in all acute care (3rd and 4th floor of hospital) areas to control temperature. Provide in line recirculation pumps or circuit setters on primary legs to facilitate circulation and control status with temperature set points to ensure no temperatures

below 124 deg F in the domestic hot water system. Monitor hot water discharge temperature provided by AERCO semi-instantaneous heaters through the existing building automation system. Monitor the hot water supply temperature at end of loop locations to provide data for troubleshooting. Where observed through site verification, provide for the insulation or re-insulation of existing domestic hot water piping.

- 2) Provide for the design or retrofit of temperature limiting fixtures in acute care areas to ensure discharge temperatures cannot scald patients. Keep operational requirements of hands free use where currently in place.
- 3) Update the existing water distribution drawings to indicate all critical control points as indicated in the reference material below.

Inpatient Mental Health & Liberty House

- 1) Construct controls and monitoring to allow for compliance to the stated guidance in coordination with the existing building automation system. Allow for a thermostatic mixing valve on the supply line to allow production of hot water above the thermal eradication level with a controlled discharge to limit scalding risk. Update records drawings to reflect changes in critical control point.

Alternate Bid Item:

- 1) Design a water treatment system in compliance with the guidance below for the Primary Hospital Complex.

REFERENCE MATERIAL

APPLICABILITY:

New and existing VHA-owned buildings in which patients, residents or visitors experience an overnight stay. *(including, but are not limited to, acute care facilities, Community Living Centers (CLCs), domiciliaries, Residential Rehabilitation Treatment Facilities, Fisher Houses, and temporary lodging facilities (e.g. "hoptels")*

SELECT POLICY CORE ELEMENTS:

1. **HCA LD Prevention Plans-** Healthcare Associated (HCA) Legionnaire's Disease (LD) Prevention Plan for each building meeting the applicability requirements.

2. **Schematic (single line) Diagrams-** Current diagrams of potable water site distribution and hot & cold domestic water systems. Each diagram shall be kept current and include how water is distributed, circulated, stored, heated and cooled, treated, and monitored

3. **Critical Control Points¹**- Identification of critical control points in the building's water distribution system(s), based on the schematic diagram(s). The critical control points are those points in the water distributions system(s) where controls can be implemented to prevent the growth of *Legionella*.
 - a. Identification
 - b. Establishment of Operating Parameters and Limits
 - c. Monitoring (Routine and Remediation)
 - d. Validation (Environmental water testing and Clinical Testing)

4. **Water Temperature Control-** Maintaining appropriate temperatures throughout the hot and cold building water systems.
 - a. Hot Water System(s)

Water System Component	Temperature Limit
Hot Water Tank (heat source)	140°F minimum
Hot Water Tank (storage)	140°F minimum
Instantaneous Heat Exchanger	130°F minimum
Piping Distribution System (Includes: pumps, valves, etc.)	124°F minimum throughout piping system to tempering valve at each distal fixture/water outlet
Showerhead (non-emergency)	110°F maximum (water discharge)
Showerhead (emergency)	100°F maximum; 60 °F minimum (water discharge)
Immersion Tub (water outlet)	110°F maximum(water discharge)
Sink/Lavatory faucet	110°F maximum (water discharge)
Eyewash (emergency)	100°F maximum; 60 °F minimum (water discharge)

¹(Critical) control point: *A step at which a control can be applied to prevent or eliminate a hazard or reduce the hazard to an acceptable level [WHO, 2007]. For example, in this Directive, hot water tanks are identified as a critical control point and require implementation of a control (water temperature of at least 140°F) to kill Legionella.*

b. Cold Water System(s)

Water System Component	Temperature Limit
Piping Distribution System (Includes: fixtures, pumps, valves, etc.)	67°F maximum

c. Temperature Limiting Devices

Water temperature limiting device (i.e. tempering valve/anti-scald device) individual to each fixture to ensure water discharge from fixture does not exceed maximum temperature limit. *(Refer to American Society of Sanitary Engineering (ASSE) Standards 1016/1069/1070 and VA Master Construction Specification 22 40 00 – 17)*

5. **Disinfectant Control-** Disinfection of piping systems and maintaining appropriate EPA registered disinfectant for drinking water treatment throughout the hot and cold building water systems.

a. Disinfection of Potable Water Distribution Piping and Associated Components.

New construction	PCRA ² ; ICRA ³ required
Remodeling /new installations	PCRA ² ; ICRA ³ required
Maintenance	ICRA ³ required
Repairs	ICRA ³ required

Notes: ²PCRA- Pre-Construction Risk

Assessment

³ICRA- Infection Control Risk Assessment

AWWA C651-05, IPC 2009, and VA Master Construction Specifications

b. Primary Water Disinfectants.

Addition of oxidizers to the domestic water supply at the campus and building levels may be necessary to achieve required *Legionella* inactivation.

EPA registered Oxidizer
Chlorine
Monochloramine
Chlorine Dioxide

6. Emergency Remediation- Emergency remediation of the water distribution system(s) or portion(s) thereof is required when: definite HCA LD case is identified, possible HCA LD case is identified and *Legionella* is detected, and *Legionella* detected in the potable water distribution system(s).

Pre-approved Emergency Measures
Thermal Eradication
Hyperchlorination
High Level Disinfection

Specifications are to be taken from the VA Master Specifications. VA Montana will provide the “General Requirements” section for inclusion that incorporates articles specific to this location.

A/E Requirements

The anticipated construction cost associated with this design is expected to range between \$1,000,000 and \$2,000,000. The VA expectation is that the A/E will provide sufficient design services to utilize this entire construction budget. The A/E will provide an initial itemized construction cost estimate as part of the 30% submission from which the VA may choose to modify scope to reflect the anticipated construction budget, limiting design activities only to those items that can be provided within the cost limitations. This cost estimate shall be carried forward and modified to reflect changes on each subsequent submission. Design of the previously described systems must meet all applicable codes, regulations, and standards. This includes but is not limited to NFPA Codes, MTDEQ, NEC, EPA, DEQ Regulations, OSHA 1926, and TJC Standards. Additionally, the A/E is required to meet all applicable laws and regulation not explicitly stated in this document. Design efforts and products shall be conducted and produced in compliance with VA Publications including Master Construction Specifications, Design Guides, and CAD Standards (<http://www.cfm.va.gov/TIL>). Compliance with public law regarding energy

utilization is required, therefore selected equipment shall be designated FEMP or ENERGYSTAR compliant.

A/E submissions are to comply with the requirements stated in PG-18-15 Volume C. The design submissions shall consist of progressively more complete documents consisting of the following:

- Schematic Design (30%)
- Schematic Design (50%)
- Design Development (90%)
- Design Development (95%)
- Construction Documents (100%)
- Final Construction Documents - Production

Meetings to review the submissions shall be conducted via teleconference if determined to be necessary by the VA. Physical appearance by the A/E shall be made at the request of the VA and shall serve primarily as a means of involving all stakeholders to address concerns, but shall not exceed three (3) appearances throughout the design phase. The design shall incorporate phasing during the construction process to minimize impact to operations of the VA Montana. Specifications shall be derived from the VA Master Specifications and provided initially as part of the 90% submittal. The A/E will provide two (2) sets of documents at each submission with the exception of the 100% submission, which will require only one complete 100% document set and an accompanying independent Cover Sheet stamped "CONSTRUCTION DOCUMENTS" for VA signatures (Signature Line Information to be provided by the VA). Prior to production of the Construction Documents, all sets shall be stamped as "NOT FOR CONSTRUCTION". At production of the construction documents, electronic set of drawings in AutoCAD 2012 and specifications in Microsoft Word 2007 shall be provided to the VA in addition to four (4) sets of full sized drawings, four (4) sets of half sized drawings and four (4) sets of specifications for procurement. To allow for posting, construction drawings shall also be provided electronically in half size (11x17) as PDF files. A schedule shall be provided by the A/E utilizing Microsoft Project and adhering to the basic schedule noted in this document. All drawings must meet current VA standards for compliance to the existing drawing characteristics and Acad standards accepted by the government as referenced in the TIL.

Existing Site Conditions

The location of the work is at the VA Medical Center campus in Fort Harrison Montana. Locations of main potable water underground service line and water storage reservoir is on the east side of the campus.

Schedule

The anticipated Design Schedule is as follows:

<i>Required Action</i>	<i>Time from Award</i>
A/E to Complete Site Investigation	End of Week 4
VA to Receive 30% Documents	End of Week 8
VA 30% Comments Back to A/E	End of Week 10
VA to Receive 50% Documents	End of Week 14
VA 50% Comments Back to A/E	End of Week 16
VA to Receive 90% Documents	End of Week 21
VA 90% Comments Back to A/E	End of Week 25
VA to Receive 95% Documents	End of Week 28
VA 95% Comments Back to A/E	End of Week 29
VA to Receive 100% Documents	End of Week 30
VA 100% Comments Back to A/E	End of Week 31
VA to Receive Final Construction Documents – Production **	End of Week 32

**** W / Alternate water treatment system design included add four weeks to design schedule.**

Construction Period Services

During the construction period, the A/E will review all necessary technical submittals as submitted by contractor and will recommend approval/disapproval to the VA. The A/E will act as a consultant to the VA for the duration of project, and will serve as primary response to receive RFI's from the contractor. During construction, the A/E will provide a representative familiar with project to make a site visit when requested by the VA. Include three (3) construction period site visits in proposal. The designer of record from the A/E will be expected to attend final project inspections for both significant tasks as well as a project final inspection that will be scheduled by the VA.

Following Construction, the A/E shall complete as-built drawings from contractor provided red-lines and furnish electronically in the most current AutoCAD version on CD which meet the compliance guidelines in the VA Publications including Master Construction Specifications, Design Guides, and CAD Standards (<http://www.cfm.va.gov/TIL>).

Bid Schedule

For each item described below, the A/E shall provide an expected design service cost as part of the proposal.

Base Bid

The A/E is to provide design and construction period services to complete all work as stated in this scope of work. The cost per site visit should be listed as a line item on the bid sheet; in the event additional site visits are required or deleted.

Deductive Alternate 001

- 1) The A/E shall eliminate design cost associated with the design a water treatment system in compliance with the guidance below for the Primary Hospital Complex from the base bid as an alternative.