

## 6.0 ENGINEERING SYSTEMS REQUIREMENTS

### G30 SITE CIVIL/MECHANICAL UTILITIES

#### SYSTEM DESCRIPTION

The site civil utility systems include water supply, sanitary sewer, storm drainage, electrical supply, telecommunications, natural gas, and associated appurtenances, which are more than five (5) feet (1.5 meters) outside the building.

The site mechanical utility system consists of all piping and appurtenances for natural gas, including all accessories and devices as necessary and required for a complete and usable system up to five (5) feet (1.5 meters) outside buildings.

#### GENERAL SYSTEM REQUIREMENTS

Develop the site to provide water, fire protection, sanitary sewer, storm drainage, heating, cooling and fuel distribution services that meet the requirements of each applicable regulatory agency that governs and issues permits for the construction and operation of these systems.

Provide each system complete and ready for operation.

Physically verify the location of existing above and below ground utilities prior to starting work.

Identify and obtain all permits to comply with all federal, state, and local regulatory requirements associated with this work. The Contractor shall complete the "Permits Record of Decision" (PROD) form with the first design submittal package. A blank PROD form can be obtained at the Download Tab of Part 6 of the NAVFAC Design-Build website at the following link [http://www.wbdg.org/ndbm/Download/Down\\_Additional.html?Section=AdditionalInfo](http://www.wbdg.org/ndbm/Download/Down_Additional.html?Section=AdditionalInfo). Contractor shall determine correct permit fees and pay said fees. Copies of all permits, permit applications, and the completed PROD form shall be forwarded to the Government's Civil/Mechanical Reviewer.

Minimize the impact of construction activity on facility operations and neighboring facilities.

Utility connection points are indicated on the drawings in another part of this RFP. Obtain final approvals from the Government's Civil/Mechanical Reviewer and the Contracting Officer for all utility connection points associated with this work.

Coordinate with the local utility providers and pay any fees or charges required to connect to their utility.

Refer to Site Analysis and Building Requirements Sections for additional site civil/mechanical utilities information.

Provide all required fittings, connections and accessories required for a complete and usable system. All equipment shall be installed per the criteria of PTS Section G30 and the manufacturer's recommendations. Where the word "should" is used in the manufacturer's recommendations, substitute the word "shall".

After installation of the equipment and systems, provide individual training courses for two (2) Government personnel for each of the items listed below, covering items contained in the Operations & Maintenance manuals. Provide one (1) copy of the Operations & Maintenance manuals for each two (2) course attendees. Provide one (1) DVD disc of the training courses to be used as refresher courses and to train additional personnel. Training shall be conducted by the same factory trained engineer that supervised the installation of the system. Training shall include classroom discussion as

well as hands on maintenance, replacement of typical components and repair type maintenance training for parts typically replaced or repaired in the field. Submit training plan 30 calendar days prior to training sessions. Training plan shall include scheduling, content, outline, and training material handouts.

## **G3010 WATER SUPPLY**

The new water system is an extension of the existing water system. The existing water system serving the project site is owned, operated and maintained by the federal government. Provide the new water system and connections to the existing water system in accordance with UFC 3-200-01, *Civil Engineering*, the utility provider's requirements, and the state waterworks' regulations, whichever is more stringent.

Notify the utility provider of the additional demand generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government's Civil/Mechanical Reviewer.

Provide connection to the existing water distribution system at the point indicated on the drawings in Part 6 of this RFP.

The new water system shall be designed so water consumption for each facility is monitored from its own meter. The meters shall be easily accessible, but not obvious.

## **G301001 WELL SYSTEMS**

Not Used

## **G301002 POTABLE WATER DISTRIBUTION**

Connect the new potable water distribution system to the distribution system at the point indicated on the drawings in Part 6 of this RFP.

Provide exterior corrosion protection on metallic pipelines.

A water meter on each proposed service line is required to be located within the building.

Paint potable water hydrants yellow, per MCB Quantico Fire and Emergency Services Facility Design and Construction Requirements (May 2013), included in Part 6 of this RFP.

Backflow preventers are required on all service entrance lines. Backflow preventers will not be allowed aboveground outside the building.

## **G301003 POTABLE WATER STORAGE**

Not Used

## **G301004 FIRE PROTECTION WATER DISTRIBUTION**

Connect the new fire protection water distribution system to the new water service within the building as indicated on the drawings in Part 6 of this RFP. Fire hydrants shall be color-coded per NFPA 291 (yellow for potable, red for non-potable). Bonnets shall be painted to reflect gpm flow rate.

## **G301005 FIRE PROTECTION WATER STORAGE**

Not Used

## **G301006 NON-POTABLE WATER DISTRIBUTION**

Not Used

## **G301007 PUMPING STATIONS**

Not Used

## **G301008 PACKAGED WATER TREATMENT PLANTS**

Not Used

## **G301090 OTHER WATER SUPPLY**

Not Used

## **G3020 SANITARY SEWER**

The new sanitary sewer system is an extension of the existing sanitary sewer collection system. The existing sanitary sewer collection system serving the project site is owned, operated and maintained by the federal government. Provide the new sanitary sewer system and connections to the existing sanitary sewer collection system in accordance with UFC 3-200-01, *Civil Engineering*, the utility provider's requirements, and the state sewerage regulations, whichever is more stringent.

Notify the utility provider of the additional wastewater flow generated by the proposed facility. Provide a copy of all correspondence with the utility provider to the Government Civil Reviewer.

Provide connection to the existing sanitary sewer collection system at the point indicated on the drawings in Part 6 of this RFP.

### **G302001 SANITARY SEWER PIPING**

Unless otherwise noted, sanitary sewer piping shall be installed as indicated on the drawings in Part 6 of this RFP.

### **G302002 SANITARY SEWER MANHOLES & CLEANOUTS**

Unless otherwise noted, sanitary sewer manholes and cleanouts shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide precast concrete manholes only. Provide lockable manhole covers. Manhole covers shall have "SANITARY" cast into the cover.

### **G302003 LIFT STATIONS AND PUMPING STATIONS**

Not Used

### **G302004 PACKAGED SANITARY SEWER TREATMENT PLANTS**

Not Used

### **G302005 SEPTIC TANKS**

Not Used

## **G302006 DRAIN FIELDS**

Not Used

## **G302090 OTHER SANITARY SEWER**

Not Used

## **G3030 STORM SEWER**

The new storm sewer system serving the project site will be owned, operated and maintained by the federal government. Provide the new storm sewer system in accordance with UFC 3-200-01, *Civil Engineering*, the utility provider's requirements, and the state stormwater management laws and regulations, whichever is more stringent.

Storm drainage system shall be integrated with existing drainage systems on site to provide a comprehensive campus system such that all existing facilities including elements within the Whaling Hall site continue to function in accordance with regulatory requirements. This will require comprehensive storm drainage analysis of the entire MCEG campus draining to the three points of interest shown along the FBI boundary on the concept plans. All work with ephemeral streams and wetland areas shall be coordinated and permitted in accordance with state and federal requirements.

### **G303001 STORM SEWER PIPING**

Unless otherwise noted, storm sewer piping shall be installed as indicated on the drawings in Part 6 of this RFP.

### **G303002 STORM SEWER STRUCTURES**

Unless otherwise noted, storm sewer manholes and cleanouts shall be installed as indicated on the drawings in Part 6 of this RFP.

Provide precast concrete structures only. Manhole covers shall have "STORM" cast into the cover.

### **G303003 LIFT STATIONS**

Not Used

### **G303004 CULVERTS**

Unless otherwise noted, culverts shall be installed as indicated on the drawings in Part 6 of this RFP.

The following materials for culvert piping will not be allowed: PVC and HDPE.

### **G303005 HEADWALLS**

Not Used

### **G303006 EROSION & SEDIMENT CONTROL MEASURES**

Provide permanent and temporary erosion and sediment control measures and a Commonwealth of Virginia approved erosion and sediment control plan for all areas being developed with this project in

accordance with the Virginia Erosion and Sediment Control Handbook. See Part 3, Project Program, UFC 3-200-01, *Civil Engineering* and Part 4 of this RFP section G10 for specific requirements.

## **G303007 STORM WATER MANAGEMENT**

Comply with UFC 3-210-10, *Low Impact Development*. The use of Low Impact Development (LID) is required for the project to achieve design objectives stated in DoD Policy on Implementing Section 438 of the Energy and Independence and Security Act (EISA), dated December 2007, and Department of Penn Memo/Navy Low Impact Development (LID) Policy for Storm Water Management, dated 16 November, 2007. The following LID features shall be considered: bioretention, filter/buffer strips, grassed swales, bioretention swales, wet swales, infiltration trenches, permeable pavement/pavers, and tree box filters. Comply with UFC 3-210-10.

The Contractor shall evaluate the drainage conditions and submit sealed calculations to the Government for civil and environmental review supporting EISA Section 438 and NAVY LID policies have been met in accordance with UFC 3-210-10. Provide a narrative stating project design goals were achieved or to what extent with the sealed calculations. The Contractor shall obtain all required regulatory permits required for the proposed work. Coordinate all reports, submittals, and permit applications through the Contracting Officer.

## **G303090 OTHER STORM SEWER**

Not Used

## **G3040 HEATING DISTRIBUTION**

Not Used

## **G304001 OVERHEAD HOT WATER SYSTEMS**

Not Used

## **G304002 OVERHEAD STEAM SYSTEMS**

Not Used

## **G304003 UNDERGROUND HOT WATER SYSTEMS**

Not Used

## **G304004 UNDERGROUND STEAM SYSTEMS**

Not Used

## **G304005 REINFORCED CONCRETE MANHOLES & VALVE BOXES**

Not Used

## **G304090 OTHER HEATING DISTRIBUTION**

Not Used

## **G3050 COOLING DISTRIBUTION**

### **G305001 OVERHEAD COOLING SYSTEMS**

Not Used

### **G305002 UNDERGROUND COOLING SYSTEMS**

Not Used

### **G305090 OTHER COOLING DISTRIBUTION**

Not Used

## **G3060 FUEL DISTRIBUTION**

### **G306001 LIQUID FUEL DISTRIBUTION PIPING**

Not Used

### **G306003 LIQUID FUEL STORAGE TANKS**

Not Used

### **G306004 LIQUID FUEL DISPENSING EQUIPMENT**

Not Used

### **G306006 GAS DISTRIBUTION PIPING (NATURAL GAS/PROPANE)**

Provide polyethylene (PE) natural gas piping system.

### **G306007 GAS STORAGE TANKS**

Not Used

### **G306009 OTHER GAS DISTRIBUTION**

Not Used

### **G306090 OTHER FUEL DISTRIBUTION**

Not Used

## **G3090 OTHER SITE MECHANICAL UTILITIES**

Not Used

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