

Basis of Design

This section applies to the general civil requirements for all Division 2 work.

Background

- This section is intended to assist the Civil Engineer and other design team members during the design process. For questions about this guide, and for alternate solutions, contact the Project Manager.

Programming

- As part of design, consider operating costs, future repair cost, and replacement costs.
- Facility design guides may vary for the Tacoma campus, Bothell campus and off-site facilities. Review each project with the Project Manager and Campus Engineering to determine modifications, and exceptions to the Facilities Services Design Guides as appropriate. State modifications clearly in the Technical Program.
- Where a detailed analysis of the program reveals an inadequate budget to provide the appropriate system design, notify the Project Manager, in writing, of the budget deficiency, the recommended system and its cost, and the alternatives if a budget revision is not provided. Identify and evaluate alternates early in the design process.
- Include an evaluation for building and site renovation projects which describes the condition of the systems, variances from present standards, and identifies system capacity or system deficiencies and opportunities for improvement. The design team's civil, electrical, mechanical, structural, and architectural disciplines should participate jointly in this evaluation.
- When connecting to existing storm and sanitary systems, verify via dye test. Coordinate with University of Washington Campus Engineering.
- All stenciling for catch basins, curb inlets, area drains and plaza drains shall be done by the Owner.
- Provide new monuments for all new buildings/facilities and major sitework construction projects.

Design Criteria

- Important civil items for coordination with Campus Engineering:
 - 1) Connection to existing utilities
 - 2) Capacity
 - 3) Temporary utilities
 - 4) Metering
 - 5) Locates
 - 6) Surveying
- Design systems and components with maximum reliability, maximum flexibility, and minimum operation and maintenance cost. Give full consideration for future system alterations with a minimum of system shutdowns. Accomplish preventive maintenance without a major building shutdown. Maintenance accessibility is very important.

- Avoid pumps for storm drainage and sanitary sewer. If pumps are absolutely necessary, only use in areas where necessary, while gravity draining all other portions of the building where possible. This will minimize operational problems when the pumps fail. Provide duplex pumps and stand-by power for the drainage pumps.
- Minimize number of building penetrations.
- To maximum extent practical, remove existing utilities in lieu of abandoning them. If existing piping cannot be removed, plug abandoned pipe at both ends.

Interdisciplinary Coordination

- Coordinate the civil work with other disciplines to define the work and responsibilities of the Civil Contractor. The Civil Engineer will need to work very closely with the Architect, Structural, Mechanical, and Electrical Engineers to coordinate work.
- UW Technology establishes additional University standards. Communications systems may require additional civil site work. See UW Technology Design Guide.
- Environmental Health and Safety establishes University Life, Health, and Safety standards that may affect the design of specific civil systems. See EH&S Laboratory Safety Design Guide.

Plans and Specifications

- Extensive drawings of existing building civil and utility systems are available from the records vault.
- Several standard type specifications with specific language about the University requirements are included in the Facilities Services Design Guide –Civil and Facilities Services Design Guide Operational Constraints
- Sustainability, operability and maintainability are key elements in the evaluation of the Technical Program and Schematic Design.
- In remodel or renovation projects, shutdowns of existing utilities and services may be necessary. These shutdowns may have to occur after normal working hours to prevent interruption of critical operations. Coordinate all shutdowns with the University.
- Temporary utilities may be necessary to maintain service to critical loads in laboratories and hospital health care areas and to refrigeration equipment. Factor the impact of long equipment delivery time into the project cost estimate and schedule.

Construction Requirements

- The location of equipment, products, or processes that create hazardous or offensive noise, dust, or fumes may be restricted. Take measures to protect the building occupants and prevent atmospheric release of chemicals, dust, fumes or other undesirable materials. Identify and discuss any of these items with the U.W. project manager.

Renovation and Demolition

- Generally, the abandonment of existing equipment and material in place is not acceptable. Abandoned systems become a liability since it becomes difficult to determine what is active and what is not. The correction of existing civil problems and removal of abandoned civil equipment, while maintaining the operation of the building, all need to be addressed in the contract documents. Disposal of materials can be a problem with limited on-site areas for temporary storage.

Design Evaluation

The following information is required to evaluate the design:

- Programming Phase: Identify civil system requirements and any exceptions to the Facilities Services Design Guide.
- Schematic Design Phase: Refer to requirements specified in the individual Civil sections.
- Design Development Phase: Refer to requirements specified in the individual Civil sections.
- Construction Document Phase: Refer to requirements specified in the individual Civil sections.

Construction Submittals

- Refer to requirements specified in the individual Civil sections.

Related Sections

- Facilities Services Design Guide - Curbs
- Facilities Services Design Guide - Earthwork
- Facilities Services Design Guide - Gas Distribution
- Facilities Services Design Guide - Irrigation
- Facilities Services Design Guide - Parking Lots
- Facilities Services Design Guide - Roadways
- Facilities Services Design Guide - Sanitary Sewers
- Facilities Services Design Guide - Sidewalks
- Facilities Services Design Guide - Storm Drainage
- Facilities Services Design Guide - Topographical Survey
- Facilities Services Design Guide - Utility Tunnels and Trenches
- Facilities Services Design Guide - Water Distribution

Products, Material and Equipment

- Refer to requirements specified in the individual Civil sections.

Installation, Fabrication and Construction

- Refer to requirements specified in the individual Civil sections.

END OF DESIGN GUIDE SECTION