Basis of Design

This section applies to the general civil requirements for all Division 31 and 32 work. Deviation from these requirements must be coordinated and approved by Engineering Services. This section includes general design issues which do not fit into one of the specific sections of the FSDG.

Background

- This section is intended to assist the Civil Engineer and other design team members during the design process. The University strives to construct high quality systems which require minimal maintenance. Engineering Services' role is to assist the design team in producing a final product that is durable, will require minimal maintenance, and best serve the overall needs of the campus. Engineering Services will also review and comment on feasibility and constructability. Possibly suggesting alternatives to reduce construction costs for the project. For questions about this guide and for alternate design solutions, contact the Project Manager and Engineering Services.

- The University maintains a system of drawings that includes current utility distribution maps along with the original construction drawings for almost all buildings, roads, and infrastructure. Access to this system can be granted on a temporary basis for all designers working on University projects. The UW Project Manager can make arrangements for access. The system is referred to as the Facilities Information Library. Online access is found at:
  - https://facilities.uw.edu/catalog/fil
  - It is the consultant’s responsibility to research existing utilities.

  ➢ CAUTION when using drawings from the Records Vault for design, the University has used a number of elevation datums over the decades. It is easy to make a mistake when comparing elevations today with drawings produced decades ago.

  ➢ Include drawing and specification notes to indicate that the Contractor shall notify the Utility Notification Center (1-800-424-5555) at least two full working days before digging. When contacting the Utility Location Center, the Contractor shall also contact the University Construction Coordinator and request the University to hire a professional utility locator to locate University utilities.

Programming

- As part of design, consider operating costs, future repair cost, and replacement costs for the entire life cycle of the facility.

- Facility design guides may vary for the Tacoma campus, Bothell campus and other off-site facilities. The designer is to review each project with the Project Manager and Engineering Services to determine modifications, and exceptions to the Facilities Services Design Guides as appropriate. State all modifications clearly in the initial stages of the design process to explain the benefit to the University.

- 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.

Design Criteria

- In general, important Civil issues for coordination with Engineering Services:
  1) The proposed connections to existing utilities (size, location, invert, depth).
  2) Any expected capacity issues with adjacent utilities.
  3) The location and timing of temporary utilities.
  4) The location of any proposed meters (water and gas).
  5) The extent of all topographic surveying.
  6) The expected construction phasing and the need to shut down any campus utilities.

- Design systems and components with reliability, flexibility, and low 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 during construction is very important.

- Minimize the number of building penetrations to minimize the chances for ground water intrusion into the facility.

- Use abbreviations as shown in City of Seattle standard plan 002.

- To maximum extent practical, remove existing utilities in lieu of abandoning them. If existing piping cannot be removed, abandoned pipe per City of Seattle standard specifications.

- Construction projects located within 1000 feet of the Montlake Landfill may require special construction. The extent of the landfill is shown on the record drawing: 906-RC-02.

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 (i.e. locations and depths of vault drains). 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

- 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. It cannot be assumed a building can have services shut off since some buildings have ongoing student projects.

- 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. For projects where the utility plans are an assembly of multiple sheets, provide a simplified composite utility plan showing all existing and new utilities on one composite plan.
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 UW project manager.
- During construction the safety and flow of pedestrian traffic through and around the construction zone must be coordinated with the Project Manager and Engineering Services.
- During construction the safety and flow of persons with disabilities and special needs must also be coordinated with the Project Manager and Engineering Services.

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.

Design Evaluation

The following information is required to evaluate the design:

- **Programming Phase**: Identify any exceptions to the Facilities Services Design Guide. Identify the points of service connections, locations of proposed storm water quality and/or quality, building setbacks (if any), and estimated floor elevations. At a minimum, include a sketch.
- **Schematic Design Phase**: Refer to requirements specified in the individual Civil sections. Include estimated size and inverts of connection points and access locations to the facility. Identify ADA access locations, widths of sidewalks/ driveways, and parking.
- **Design Development Phase**: Refer to requirements specified in the individual Civil sections. Include partially complete profiles and details. Also include turning movement studies.
- **Construction Document Phase**: Refer to requirements specified in the individual Civil sections. Include final details and full profiles.

Construction Submittals

Refer to requirements specified in the individual Civil sections.

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