DIVISION 31 – EARTHWORK
31 00 00 EARTHWORK

PART 1 - GENERAL

1.01 DESIGN CONSIDERATIONS (GEOTECHNICAL)

A. The Washington State University campus at Pullman, Washington is located near the eastern edge of the Columbia Plateau Geologic Province. The geologic substructure is characterized by a thick zone of basalt, of the Columbia River Group, which is as much as 5,000 to 10,000 feet thick in this area and consists of separate flows and occasional interlayers of sedimentary materials. Blanketing the basalt is a material commonly referred to as the "Palouse Loess". This soil consists of wind deposited clay and silt particles and usually classifies as CL or ML in the Unified Soil Classification System. It has a relatively low dry unit weight, is highly sensitive to moisture content changes and some phases are considered collapsible. The thickness of the Palouse Loess stratum varies throughout the campus from only several feet to 100 feet or more.

1. Native soils may only be used as structural fill upon the recommendation of the Geotechnical and Structural Engineers of Record, and with the specific approval of WSU Engineering Services and the WSU Project Manager.

B. For all new structures the Prime Consultant shall provide a Geotechnical Report, prior to Design Development, describing the condition of the native soils and any special considerations necessary during excavation and backfill operations.

C. If the excavation involves a surface area greater than 5,000 square feet, contact WSU Environmental Health and Safety (EH&S) for inspection and review of stormwater protection requirements.

1.02 EXCAVATION NOTIFICATION AND UTILITY LOCATIONS

A. At a minimum, Contractors shall at all times comply with the Excavation and Utility standards of RCW 19.122.

B. Pre-Design Surveys

1. Design Consultants shall note that the One-Number Locator Service is primarily intended for pre-excavation, not-predesign. WSU Utilities personnel can assist with utility locates to confirm essential pre-design survey work (see requirements below).

2. Consultants requiring locations of as-built campus utilities shall request access to Record Drawing archives and WSU Graphic Information Systems (GIS) through the WSU Project Manager.

3. Consultants are responsible for hiring a Survey Consultant to resolve additional information requirements above and beyond WSU Record Drawings and GIS data.

4. When essential to confirm pre-design survey work, Consultants may request WSU utility locates through the WSU Construction Manager (not the One-Number Locator Service).

C. Pre-Excavation Utility Locating Services: This case applies to pre-excavation utility locates only; not for utility shutdowns.

1. Pre-Excavation Meeting: Contractor shall schedule a Pre-Excavation Meeting through the WSU Construction Manager prior to contacting the One-Number Locator Service. This affords the opportunity to assess potential impacts of excavation and coordinate with WSU Facilities Services Operations and the appropriate public utilities.

2. Contractor shall request utility locations through the One-Number Locator Service (for public utilities such as Avista) and the WSU Construction Manager (for WSU Facilities Services personnel).

3. WSU Facilities Services personnel will mark utility locations (located utilities as well as available information on unlocatable utilities) per the standard procedures of RCW 19.122.

4. Standard utility marking colors:

   i. Red = Electrical

   ii. Yellow = Steam, Condensate, Gas, Oil, Petroleum

   iii. Orange = Telecommunications

   iv. Blue = Drinking Water

   v. Green = Sewer

   vi. Purple = Non-Drinking Water (including Chilled Water)

   vii. Pink = Survey Marks

   viii. White = Excavator Marks, Excavation Boundary

5. Contractors are responsible for maintaining accurate utility locations per the requirements of RCW 19.122.

D. Utility Shutdown Services:

1. Contractor shall request utility shutdowns through the WSU Construction Manager at least 10 working days in advance.

2. WSU Facilities Services cannot guarantee approving shutdowns on the requested date(s) (even when requested 10 working days in advance):

    i. Shutdowns require WSU personnel to exercise local valves and frequently to conduct temporary shutdowns (domestic water, steam lines, electrical, etc.) in order to verify existing conditions and confirm site isolation prior to the Contractor's requested shutdown and/or connections to new work.

    ii. Temporary utility shutdowns may affect ongoing research and other critical University functions, and require prior notification and coordination with faculty and staff in the affected locations.

1.03 DUMPSITE AND HAULING CONSIDERATIONS

A. Contractor shall perform excavation and hauling so as to provide the least impact to public safety, existing campus infrastructure, and daily university operations.

B. Contractor shall submit all proposed haul routes to the WSU Construction Manager for review and approval prior to commencement of hauling operations. Haul routes shall be selected to minimize the need to operate in the campus core, and to minimize the impact on students, faculty, and staff. The Contractor shall, when hauling over existing roadways, be responsible for maintenance during use of roadway and for restoration to original condition upon completion.

    1. Note that the lowest overhead clearance (and the maximum permissible height for trucks and equipment) on Stadium Way is 13'5" (Gannon-Goldsworthy pedestrian overpass).

C. Contractor trucks shall not exceed AASHTO HS20 design loads without specific approval from the WSU Construction Manager.

D. If the project requires a temporary access road to the site or to a University dumpsite, the Contractor shall establish, maintain and remove (if necessary) said access road. Maintenance shall continue during periods of bad weather so alternate dumpsites are not required. Contractor shall make provisions as necessary to ensure the uninterrupted flow of required University traffic.

E. Trucks shall be equipped with proper sidewalls and/or covers to ensure total containment of debris in transit to the dump site.

1.04 OTHER DESIGN CONSIDERATIONS AND PROJECT SPECIFICATION REQUIREMENTS

A. Tunnel Protection: Contractor shall take all necessary precautions for protecting the steam tunnels from equipment damage. Contractor shall not move or park any equipment or heavy loads over tunnel lids. Contractor shall not move or park any equipment or heavy loads over or adjacent to the University's steam tunnels without first providing necessary shoring and planking (approved by the Structural Engineer of Record) to distribute wheel loads and to prevent chipping of edges. Depending on the type of traffic, utility tunnels may require interior shoring and protection. The Engineer of Record shall recommend tunnel protection requirements during late design development or early construction development phase, to be approved by WSU Engineering Services.

B. Debris Disposal:

1. All demolition and construction debris shall be removed from site and disposed of in a legal landfill or other legal location.

2. Contractor shall not dispose of any construction debris in any University dumpsters unless contracted with WSU Waste Management for debris disposal.

3. Contractor is responsible for maintaining a written chain of custody for disposal of all hazardous and asbestos-containing materials, and shall furnish record copies to the WSU Construction Manager and Environmental Health and Services (EH&S). See also the requirements of Section 02 40 00 “Demolition and Structure Moving.”

C. Excess Earth Disposal:

1. Topsoil: If topsoil from an excavation is of acceptable quality (determined by WSU Facilities Services) it shall be retained in the WSU Topsoil Storage Yard. Contractor use of the Topsoil Storage Yard requires approval of the WSU Construction Manager and the Director of Plant Services.

   i. If Contractor is found to have placed unacceptable or unapproved material in the WSU Topsoil Storage Yard, Contractor shall be responsible for removing said materials and relocating to an acceptable disposal facility at the Contractor’s expense.

2. Contractor shall dispose of all other excess earth from excavation off campus in a legal fashion.

3. If excess earth from an excavation is removed under the provisions of an NPDES permit, stormwater protection provisions of the permit apply wherever the soil is deposited.

D. Blasting shall not be permitted under any circumstances. Typically specify mechanical removal or expansive breaking of rock.

E. Excavations shall be performed without destabilizing any adjacent building structure.

1.05 MAINTENANCE AND CORRECTION

A. Contractor shall make necessary repairs to pavement, sidewalks or other structures which may be damaged as a result of post-construction settlement for a period of five (5) years after substantial completion or acceptance of the work, whichever is earlier. Contractor shall confirm this via written warranty.

1.06 QUALITY ASSURANCE

A. WSU shall retain a Special Inspector to perform on-site observation and testing services. During the course of construction, the Inspector will advise the WSU Project Manager in writing, with copy to the Contractor, if any work does not appear to conform to the Contract Documents.

PART 2 - PRODUCTS

2.01 GENERAL

A. Local native soils are unsuitable for anything but landscape fill and embankments.

B. Structural fills have to be imported to campus. Locally, crushed basalt of various size is the primary aggregate source from several quarrying operations. Most structural fill applications can be provided from local quarries.

C. All rounded aggregates for drainage or other purposes have to be imported anywhere from 40 to 90 miles away. When design dictates the need for these types of aggregates, consider that their costs are significantly higher than locally quarried and crushed aggregates.

D. The use of Controlled Density Fill (CDF), a sand, cement, and water slurry capable of attaining over 100 psi, has proven to be an efficient method of backfill. Where compaction around utilities or tight structures is necessary, CDF may be a cost effective alternate to mechanically compacted fills. Specification of CDF is acceptable where it is compatible with design. Also consider the use of CDF in locations where vibration from compaction equipment may be detrimental to the University's operations.

PART 3 - EXECUTION

3.01 EXISTING UTILITIES

A. Confirmation of Utility Locations: The Contractor is responsible to maintain due diligence when performing work on the WSU campus, even after WSU Facilities Services and public utilities personnel have marked existing utility locations. All marked locations of existing utilities are approximate. The Contractor is responsible to verify correct utility locations via potholing, probing, or other means approved by the WSU Construction Manager.

B. Excavation Confirmation Code: During construction, all Contractors performing excavation work shall maintain a copy of the excavation confirmation code, issued by the One-number Locator Service (per RCW 19.122), at the project site.

C. Obstructions or Utilities Encountered during Excavation:

1. Contractor shall immediately notify the WSU Construction Manager in the event an underground obstruction or uncharted utility is encountered.

2. WSU Construction Manager shall coordinate with WSU Facility Information Resource Management (FIRM) to conduct on-site GPS surveys, while utilities remain exposed, for updating the WSU Graphic Information Systems (GIS).

D. Contractor is responsible for all costs for damage to utilities shown on the drawings or identified by locating process.

END OF SECTION