APPENDIX B

CIVIL ENGINEERING CRITERIA

A. GENERAL REQUIREMENTS

1. OFPC will participate in the project from its beginning and will review all work performed by the A/E and Civil Engineering Consultant at each review period.

2. Civil Engineering Design shall consist of, but not be limited to, the following considerations:

   a. Preparation of a Storm Water Pollution Prevention Plan according to the OFPC Guidelines for this process. See Section G

   b. The demolition, protection, salvaging, recycling and disposal of existing site components

   c. Layout and design of streets, bridges and parking areas/structures, sidewalks and pavements

   d. Site utilities

   e. Outdoor lighting if applicable and within assigned scope of services

   f. Drainage and site grading if applicable and within assigned scope of services

   g. Special outdoor features such as ramps, walls, fences, shelters and/or other engineered elements

   h. Proper recognition and utilization of desirable existing features such as water, tree groupings, geological formations, etc.

B. DESIGN REVIEW SUBMITTAL REQUIREMENTS

1. The A/E will be required to submit the plans, specifications, and calculations (UTS requested) for review to OFPC at the intervals outlined in Appendix L of these Guidelines. Intermediate reviews may be required if the scope of the project has been changed or if an earlier review found the plans and specifications unacceptable either as a whole or part. All items submitted shall be in compliance with the Texas Engineering Practice Act, Rule 138.138(8) regarding signatures and engineer's seal.

2. The Civil Engineering Consultant(s) will participate in all reviews, work sessions and presentations where this discipline is involved. Items to be included for review at each phase or stage of completion are outlined below:

3. Schematic Design Phase

a. Civil Engineer's name(s), registration number(s), address (es), telephone and FAX number(s).

b. Brief narrative of the scope of civil work involved and description of proposed hardscape including discussion of storm water collection, detention and disposal.

c. Cost estimate of site work based on generalized quantities and/or square feet.

d. Drawings:

(1) Site Plan/s at a scale consistent with Architectural Site Plan.

(2) Scale, graphic scale, and north arrow.

(3) Show and identify required site utilities.

(4) Show major civil engineering elements such as to convey overall site design concept.

(5) Show major vehicular and pedestrian circulation layout at least diagrammatically.

(6) Show relationships of all proposed work to existing site survey. Scale and sheet orientation of survey should be consistent with that of site plans.

4. Design Development Phase

a. Drawings:

(1) Further refine all plans incorporating Schematic Design review comments from OFPC and Users. The number of drawing sheets required for the entire civil design package should be determined at this stage. The erosion control drawing and details for the project should be incorporated into the documents at this stage. Depending on the scope and complexity of the project, OFPC shall determine how many categories, if any, can be combined on any individual drawing sheet.

(2) Site plan should illustrate complete scope of hardscape/engineered features.

(3) Show outdoor lighting if within Consultant's scope of work.

(4) Show proposed grading contours with applicable spot elevations, drain inlets, manholes and other related structures.

(5) Identify all hardscape materials within scope of civil work.

(6) Show temporary storm water runoff and containment to meet applicable standards.

b. Further refine cost estimate for site work based on further refinement of drawings, more specific quantities, volumes, lengths, square feet, etc.

c. Submit outline specifications for each category of proposed work.

5. Construction Documents

a. Include updated cost estimate with each stage (50%, 75%, etc.) of construction documents submitted.

b. Drawings and specifications to the appropriate stage of completion with each stage of construction documents submitted. The construction documents shall address the complete scope of work with regard to construction methods and details, quantities, materials and performance.

c. Dated signature and seal of State of Texas licensed Civil Engineer, including date of expiration of current license. Specifications and plans shall be sealed.

d. At 50% CDs, submit SWPPP to OFPC engineer for review/comment and approval. See item G for SWPPP format and requirements.

6. All civil review drawings shall bear the responsible engineer's name and registration number, but not necessarily his seal, at all stages of the design. Please refer to The Texas Engineering Practice Act (Article 3271a, Vernon's Annotated Texas Statues), Section 15(b) and (c) as amended. The intent of this section is clarified in the Rule adopted by the Board, as follows:

Rule 131.138(8). "The registrant shall affix his seal, sign his name, and place the date of execution, only on engineering documents that have been issued by the registrant as completed work. Such documents should be accepted by clients for their purposes and/or by public authorities for final approval or issuance of a permit. Documents considered as incomplete by the registrant may be released temporarily for interim review and do not need to have the registrant's seal or signature affixed, but shall be dated; bear the responsible engineer's name, registration number, and professional engineer designation; and be clearly

stamped to indicate the documents are for interim review and not intended for construction, bidding, or permit purposes. The use of signature reproductions, such as rubber stamps, or computer generated or other facsimiles shall not be permitted in lieu of actual signatures."

C. CIVIL ENGINEERING ELEMENTS TO AVOID

1. Avoid storm water systems that assume outfall capacity in the collector system for the design storm event. The storm water collection, detention and disposal system shall address required redundancy and alternate function in severe storm events to the extent possible in the design phase.

D. DESIGNING TO THE 100 YEAR STORM EVENT

1. Rainfall run-off storm drainage systems shall be designed to a minimum of the 100 year hourly rainfall rate indicated on rainfall intensity figures found in the latest version of the International Plumbing Code (IPC), or based on information provided by local municipal records.
2. As a minimum, buildings and facilities shall be designed to an elevation above the 100 year – 24 hour rainfall rate flood FEMA map. Where FEMA mapping is not available, rainfall rates are as published by the National Weather Service, National Oceanic and Atmosphere Administration.
3. A/E shall discuss with OFPC the effects of any rain event flooding of basements, garages, elevator shafts and other parts of a building or facility designed below the 100 year storm event elevation.
4. The limits of the 100 year – 24 hour storm event shall be indicated on the site topography drawing when in the proximity of the building site.

E. SITE GRADING

1. The site grading for buildings and facilities shall be designed to best engineering practices by a registered Civil Engineer.
2. Slopes for cuts and fills shall not be steeper than 1 unit vertical in 2 units horizontal unless approved by the Owner.
3. Compaction of soil for regular grading or landscaping will be to a minimum of 90% of maximum density.
4. Avoid final grade elevations above the building weep holes unless specifically approved by the Owner.

F. SURVEYING

1. See Exhibit "A" for topographic surveying drawing parameters.

G. STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

OFPC A/E Guidelines for Preparation of a Storm Water Pollution Prevention Plan (SWPPP) for all sites of one (1) acre or more.

1. GENERAL REQUIREMENTS

   a. This A/E Guideline is intended for use at all UT institutional facilities.

   b. The A/E Civil Engineer (CE) is required to visit the site, in person, to evaluate the existing conditions before preparation of the SWPPP. The Engineer shall notify the OFPC project manager at least ten (10) business days in advance of site visit. The Owner may choose to participate in the site review. After visiting the site, the CE shall prepare the SWPPP book to include the sections listed below.

   c. The SWPPP is more than just a SWPPP drawing; a SWPPP book containing all the relevant SWPPP information for that project is to be maintained at the project site.

   d. This A/E guideline must be used in conjunction with OFPC Specification Section 01 57 23, Temporary Storm Water Pollution Control.

2. SWPPP BOOK FORMAT

   a. As a minimum, two copies of the SWPPP book (one for OFPC headquarters, and one for jobsite) shall be prepared in the following format: 8-1/2" x 11" size paper bound in a **3-ring binder, 1 ½"minimum**, with table of contents, tabbed sections as described below, and with plan drawings (size and scale may vary depending on nature of project) folded and inserted. The binder is to include a cover page and spine insert on the outside of the binder indicating the title Storm Water Pollution Prevention Plan, the institution name, the OFPC project name and number, the consultant's name and date prepared (month and year).

3. TITLE PAGE, ENGINEER'S SEAL, SIGNATURE AND DATE

   a. First page of SWPPP book shall identify the title Storm Water Pollution Prevention Plan, the institution name, the OFPC project name and number, the consultant's name and date (month and year) of preparation of SWPPP. Following identification of the project shall be the project engineer's seal, signature and date.

4. TABLE OF CONTENTS

   a. Include a table of contents in the SWPPP listing all ten (10) of the following Sections.

5. SECTION 1 - NOTICES OF INTENT (NOIs) AND PERMITS OR CONSTRUCTION SITE NOTICES (CSNs) FOR OWNER AND CONTRACTOR

a. Draft versions of the SWPPP book shall include the incomplete unsigned NOI or CSN forms following the Table of Contents. After filing NOIs for Owner and Contractor, Owner shall distribute both completed and signed NOIs or CSNs for each copy of the SWPPP book, along with both copies of TCEQ TPEDES Construction Discharge Permits.

6. SECTION 2 –POSTING NOTICE/CONTACTS AND DELEGATION LETTERS

a. For large construction sites of five (5) acres or larger include two (2) incomplete copies of the OFPC Posting Notice/Primary Points of Contacts form. Both forms will be completed later and posted at the entrance of the facility.
b. A copy of the Owner's and Contractor's delegation of authority letters are to be kept in this section.
c. Shared SWPPP Acceptance Certification

7. SECTION 3 – SITE DESCRIPTION

This section of the SWPPP shall include a written description of the following items or map when appropriate:

a. A description of the project site, followed by an 8-1/2" x 11" vicinity map. The vicinity map shall be of sufficient scale to show the project site location and the major streets and highways in and around the project location.
b. A description of the nature of the project.
c. Latitude and longitude of the site.
d. A description of the intended sequence of major activities that disturb soils for major portions of the site (e.g., on-site mobilization, demolition, clearing, grubbing, excavation, grading, utilities and infrastructure installation.). Include timing of activities when it becomes available.
e. Estimates of the total number of acres of the campus (see Exhibit "B") and the total area of the site that is expected to be disturbed by excavation, grading, or other activities including off-site borrow and fill areas.
f. An estimate of the runoff coefficient of the site for both the pre-construction and post-construction conditions and data describing the soil or the quality of any discharge from the site.
g. A statement that the site is not located over the Edwards Aquifer Contributing Zone or Recharge Zone and is not located on Indian Country Lands.
h. The name of receiving waters and extent of wetlands.
i. Identify any industrial activities such as concrete or asphalt batch plants associated with the construction of the project. If none, state so.
j. A general location map or vicinity map (e.g. a portion of a city or county map), which locates the site within the overall drainage pattern of the city and/or county and shows the receiving waters and surface waters. The

preference for the general location map is a color US Geological Survey Quadrangle map or equal. An 8 ½" x 11" general location map should be kept in this section or a larger quad map in the back of the 3 ring binder with other SWPPP drawings in the section titled exhibits.

8. SECTION 4 – GENERAL PERMIT REQUIREMENTS

a. Copy of the permit requirements. Include copy of TCEQ TPDES General Permit TXR150000, March 5, 2013 containing the general permit requirements.

9. SECTION 5 – EROSION AND SEDIMENTATION CONTROLS

a. Each SWPPP shall include a written description of appropriate control measures (i.e. Best Management Practices - BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges. The written description must clearly describe for each major activity, appropriate control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

b. Include an Erosion and Sediment Control Drawing and any control detail drawings illustrating the BMPs as exhibits in Section 10. Ensure the proposed locations of stabilized construction entrances and exits are shown on the Erosion and Sediment Control Drawing (see Section 10 of the A/E Guideline for additional contents of the drawing).

c. Include a statement identifying which permittee is responsible for implementation.

d. Include statements for Erosion and Sediment Controls - Short and Long Term Goals and Criteria that include the following:

(1) The construction-phase erosion and sediment controls should be designed to retain sediment on site to the extent practicable.

(2) All control measures must be properly selected, installed and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections or other information indicates a control has been used inappropriately, or incorrectly, the permittee must replace or modify the control for site situations.

(3) If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts. (i.e. sediment accumulation in streets and curbs)

(4) Sediment must be removed from sediment traps or sedimentation ponds when the design capacity has been reduced by 50%.

(5) Litter, construction debris, and construction chemicals exposed to storm water shall be prevented from becoming a pollutant source for storm water discharges (i.e. screening outfalls, picked up daily)

e. Stabilization Practices – include a description of interim and permanent stabilization practices for the project site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Use of impervious surfaces for stabilization should be avoided. Stabilization practices may include, but are not limited to:
   (1) Establishment of temporary vegetation
   (2) Establishment of permanent vegetation
   (3) Mulching
   (4) Geotextiles
   (5) Sod stabilization
   (6) Vegetative buffer strips
   (7) Protection of trees
   (8) Preservation of mature vegetation

f. Structural Practices – include a description of structural practices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. Structural practices may include, but are not limited to:
   (1) Silt fences
   (2) Earth dikes
   (3) Drainage swales
   (4) Sediment traps
   (5) Check dams
   (6) Subsurface drains
   (7) Pipe slope drains
   (8) Level spreaders
   (9) Storm drain inlet protection
   (10) Rock outlet protection
   (11) Reinforced soil retaining systems
   (12) Gabions
   (13) Temporary and permanent sediment basins (detention ponds)
   (14) Stabilized construction exit
   (15) Rock berms

10. SECTION 6 – MAINTENANCE

a. As a minimum, include a statement indicating that if site inspections identify BMPs that are not operating effectively, maintenance shall be performed before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls.

11. SECTION 7 – SPILL PREVENTION

a. List and describe the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and

substances to storm water runoff. The general construction site superintendent is responsible for cleaning up and disposition of spills.

b. Include a statement that spills and releases of hazardous material shall be reported to the Environmental Health and Safety Director for the site specific campus and OFPC, as soon as there is knowledge of the spill. The EHS Director will determine if the spill is a reportable quantity and determine who must be notified. Include a statement that the contractor shall contain the spill until such time the campus EHS office can give direction or clean up.

c. Include a statement that the SWPPP must be modified within 14 days of the spill to show any BMP modifications for spill prevention.

12. SECTION 8 – INSPECTIONS

a. Include in the SWPPP a written description of all steps to be taken, by a qualified person, to perform inspections of site controls. Steps include, but are not necessarily limited to items b. through h. below.

b. Include statements that the owner and contractor's construction inspector shall be responsible for a routine inspection of on-site controls, once every seven (7) days, on Tuesday. One standard OFPC form shall be used for routine inspections. An after-rain event inspection will not be required if the 7 day inspection is followed.

c. Include instructions to perform site inspections, at specified intervals and using OFPC inspection forms. Verify that all implemented site controls are functioning properly to prevent erosion and sedimentation. Note any and all deficiencies in site controls on inspection form. Inspection report forms are to be signed in accordance with the General Permit by a person qualified to make such inspections and by the individual designated as having certification authority.

d. Include instructions to provide a copy of inspection report to party responsible for maintenance and repair of site controls. Keep copies of all inspection reports filed with SWPPP on site for review by EPA, TCEQ, MS4 operator officials, or Owner's representatives.

e. Include instructions requiring when controls are found to be ineffective, or require modification to adequately prevent erosion and sedimentation, revise on-site copy of SWPPP to reflect changes made. Describe and illustrate change and note date of change.

f. Direct Contractor to perform regular inspections at beginning of workweek (Tuesday) to allow sufficient time for maintenance and repair of site controls during same workweek.

g. Include instructions that all inspection reports, along with noted revisions to the SWPPP, shall be retained for a period of at least three years from the date the site is finally stabilized.

h. Include copy of UT OFPC SWPPP Inspection Report Form. These forms are to be duplicated and used for inspection purposes.

13. SECTION 9 – NON-STORM WATER DISCHARGES

a. Include an inventory of the non-storm water substances expected to be present onsite during construction. Examples are:
   - discharges from fire fighting
   - fire hydrant flushing
   - vehicle, building and pavement wash water
   - water used for dust control

a. If no non-storm water substances are expected, then include a statement indicating there are none.

14. SECTION 10 - EXHIBITS

a. Erosion and Sediment Control Drawing (SWPPP drawing) – plan drawing(s) and detailed drawing of controls, with plan sheet showing proposed improvements (building, paving, etc.) and indicating the following:

   (1) Existing drainage patterns indicated with post construction arrows to show direction of flow on site with destinations of flow described (both on-site and off-site destinations)
   (2) Approximate slopes anticipated after major grading activities (steeper slopes shall require additional control measures until final stabilization)
   (3) Areas of soil disturbance (limit disturbance as much as possible and protect as much of existing vegetation in place as possible)
   (4) Areas which will not be disturbed (indicate intent to protect or preserve existing vegetation)
   (5) Show limits of construction.
   (6) Locations of major structural and non-structural controls identified in SWPPP (silt fences, berms, swales, dikes, inlet protection, etc)
   (7) Locations where stabilization practices are expected to occur (exposed embankments during excavations, etc.)
   (8) Locations of off-site material, waste, borrow or equipment storage areas (concrete wash pits, lay-down areas, soil stockpile areas, etc.)
   (9) Surface waters (including wetlands or low areas, drainage channels, creeks, lakes, etc.)
   (10) Locations where storm water discharges to surface water
   (11) Location and description of any discharge associated with industrial activity other than construction, including storm water discharges from dedicated asphalt plants and dedicated concrete plants, which is covered by this permit.
   (12) Offsite material storage areas (also including overburden and stockpiles of dirt, borrow areas, etc.) used solely by the permitted project are considered a part of the project and shall be addressed in the SWPPP

b. General Location Map (Quadrangle Map or equal)

EXHIBIT "A"

TOPOGRAPHIC SURVEY DRAWING PARAMETERS

1. Overall drawing sheets shall be prepared at a scale of 1"=50' - enlargements at 1"=20'.
2. Sheet size shall be 30 x 42, with a border on the (left) binder edge of 3-1/2", and a right edge border of 1".
3. Show plan and magnetic north and graphic scale on each sheet.
4. Include legend of symbols and abbreviations on the drawing/s.
5. Include spot elevations to the nearest .01 foot on paved or hard surfaces, and to the nearest .10 foot on non-paved surfaces (i.e. grass, base of existing trees).
6. Boundary and topographical information shall be on the same drawing sheet/s.
7. State elevation datum on each drawing sheet.
8. Locate and give elevations, size, depth and alignment (including invert elevations to the nearest .01 foot) of all drainage structures, manholes, storm sewer lines, gas lines, water lines, chilled water and/or steam lines.
9. Locate fire hydrants with size of main serving each.
10. Locate all power, cable television, street lighting and communication systems above and below grade. Contact University of Texas Campus Facilities Services for available record information on existing utilities.
11. Locate all easements and rights-of-way, and identify owners.
12. Show driveways that intersect with adjacent street across from the site to be surveyed.
13. Provide spot elevations every 10 feet along adjacent street curbs and along all edges of adjacent parking lots and driveways unless otherwise approved by the Owner.
14. Locate all other physical features on the site, including but not limited to trees, sign poles, ditches (arroyo), culverts, sidewalks, retaining walls, fences, traffic signal poles, disabled access ramps, light poles/fixtures, and driveways.
15. Note planned street widenings.
16. Show contours at one foot intervals, with a minimum of one permanent bench mark for each four acres.
17. Give total acreage of site, identify total watershed onto property, and note floodplain information as applicable.
18. Submit survey drawings in both electronic form (Auto Cad 14 on CD) and (hard copy) prints.

EXHIBIT "B"

U. T. SYSTEM CAMPUS LAND HOLDINGS BY ACREAGE

TOTAL NUMBER OF ACRES OF ENTIRE PROPERTY (FOR TCEQ TPDES SWPPP PURPOSE ON ACREAGE)

COMPONENT	ACRES
UT SYSTEM	**35**
UT ARLINGTON	**393**
UT AUSTIN	**424**
UT BROWNSVILLE *	***0**
UT DALLAS	**339**
UT EL PASO	**447**
UT PAN AMERICAN	**238**
UT PERMIAN BASIN	**588**
UT SAN ANTONIO	**629**
UT TYLER	**278**
UT MEDICAL BRANCH AT GALVESTON	**85**
UT HEALTH SCIENCE CENTER AT HOUSTON	**172**
UT HEALTH SCIENCE CENTER AT SAN ANTONIO	**224**
UT M. D. ANDERSON CANCER CENTER	**91**
UT SWMC DALLAS	**221**
UT HEALTH CENTER AT TYLER	**655**

* The U. T. Board of Regents leases land from Texas Southwest College for UT Brownsville. Use project site acres.