

SECTION 01 57 23 - TEMPORARY STORM WATER POLLUTION CONTROL

PART 1 - GENERAL

1.1 DEFINITIONS

- 1.1.1 BMP – Best Management Practices
- 1.1.2 CSN –Construction Site Notice- (Large CSN for large sites; Small CSN for small sites)
- 1.1.3 NOI and NOT – Notice of Intent and Notice of Termination for TPDES permits
- 1.1.4 SWPPP – Storm Water Pollution Prevention Plan
- 1.1.5 TCEQ – Texas Commission on Environmental Quality
- 1.1.6 TPDES – Texas Pollutant Discharge Elimination System
- 1.1.7 Large Construction Activities – Construction activities including clearing, grading and excavating that result in land disturbance equal to or greater than 5 acres of land
- 1.1.8 Small Construction Activities - Construction activities including clearing, grading and excavating that result in land disturbance equal to or greater than 1 acre and less than 5 acres of land

1.2 RELATED DOCUMENTS AND APPLICABLE WORK

- 1.2.1 The TCEQ TPDES General Permit No. TXR150000 effective March 5, 2013 and the project SWPPP. This specification requires compliance with all provisions of the TCEQ TPDES permit. The TCEQ requirements currently pertain to large construction activities of 5 acres or more and small construction activities that disturb 1 to less than 5 acres.
- 1.2.2 Information to Respondents, Agreement, Uniform General and Supplementary General Conditions for The University of Texas System Building Construction Contracts (UGC) and Special Conditions shall be read carefully for provisions pertaining to this work. In the event of conflict, the better quality or greater quantity shall prevail.
- 1.2.3 The work described in this section is applicable to any and all sections of the contract documents. Any and all work that would disturb the existing site conditions or present the potential for site runoff shall adhere fully to this specification section.
- 1.2.4 Unless specifically notified to the contrary in writing by the Owner, all aspects of this specification shall apply to this project.

1.3 CONTRACTOR RESPONSIBILITIES

- 1.3.1 This project requires implementation of storm water Best Management Practices for control devices and monitoring by the Contractor to comply with all provisions of the SWPPP developed for the project by the licensed civil engineer. The Contractor must fulfill all TPDES regulatory requirements, including the filing of the NOI and NOT or signing and posting of the CSN.
- 1.3.2 The Contractor shall provide signatures of a Corporate Officer for the NOI, Large CSN, Small CSN, NOT and any other forms or applications as required by the TPDES General Permit TXR150000. The Contractor shall also provide delegated authorization to sign reports per 30 TAC 305.128. Individuals conducting site inspections shall be qualified to the satisfaction of the Owner.
- 1.3.3 When the Contractor receives the approved SWPPP from the Owner, the Contractor signs the NOI or Small CSN (see Sample form in Part 4 of this section) and forwards it to the Owner. Two separate \$325 application fees (one for the Owner and one for the Contractor) must accompany the NOI. The Owner signs his NOI and sends both NOIs and application fees to TCEQ. The Contractor shall insert a copy of the signed NOI or Small CSN into the SWPPP book to be kept at the jobsite. The \$325 application fees are not required for small construction sites.
- 1.3.4 The SWPPP book kept at the jobsite shall also contain the following:
 - 1.3.4.1 A letter delegating signature authority to the field personnel for both the Contractor and the Owner
 - 1.3.4.2 A copy of the TPDES permit when received
 - 1.3.4.3 A copy of the Large or Small CSN
 - 1.3.4.4 A copy of the Shared SWPPP Acceptance Certification form
- 1.3.5 The Contractor shall review the SWPPP and verify existing conditions at the site before determining scope of implementation of site controls. Site survey and site plan drawings shall be used for additional reference. The Contractor shall notify the Owner, in advance, of this site review to allow for Owner participation.
- 1.3.6 The Contractor shall construct a Project SWPPP sign and place it at the main entrance to the project site. This sign shall include the NOI and TPDES permit along with the TCEQ TPDES Large or Small CSN, depending on the size of the construction project. The sign shall be constructed as detailed in the sample SWPPP sign drawing included in Part 4 of this Section.
- 1.3.7 The Contractor shall contact the UTHHealth-Houston PM/CI for review of initial site controls in place prior to commencing site-disturbing activities, to ensure that any unusual circumstances or unforeseen site conditions with regard to erosion

and sedimentation have been addressed. The Contractor shall complete the SWPPP Project Start-up form (see Sample in Part 4 of this Section)) and review it with the Owner before commencing soil disturbing activities. Both parties shall sign this form when the requirements listed in the SWPPP Project Start-up form have been met.

- 1.3.8 The Contractor shall provide all material, labor, equipment and services required to implement, maintain and monitor all erosion and sedimentation controls in compliance with the SWPPP. All controls implemented by the Contractor shall comply with the TPDES regulations as issued by the TCEQ on March 5, 2013. These controls shall remain in operation until project completion and re-establishment of the site or longer as directed by the UTHHealth-Houston Manager (PM). The work shall include, but not be limited to, the following:
 - 1.3.8.1 All earthwork as required to implement swales, dikes, basins and other excavations for temporary routing of utilities, to protect against erosion or sediment-laden (polluted) storm water runoff.
 - 1.3.8.2 All structural controls as shown or specified, including silt fences, sediment traps, stabilized construction entrance, subsurface drains, pipe slope drains, inlet/outlet protection, reinforced soil retention, gabions, rock berms, etc.
 - 1.3.8.3 All non-structural controls as shown or specified, including temporary or permanent vegetation, mulching, geotextiles, sod stabilization, preservation of vegetative buffer strips, preservation/protection of existing trees and other mature vegetation.
 - 1.3.8.4 All modifications and revisions to SWPPP necessary to meet changing site conditions and to address new sources of storm water discharges, as the work progresses.
 - 1.3.8.5 All maintenance and repair of structural and non-structural controls in place shall continue until final stabilization is achieved or as directed by the PM.
 - 1.3.8.6 Weekly site inspections, as required by the SWPPP, of pollutant sources, including hazardous sources, structural and non-structural controls, and all monitoring of SWPPP revisions and maintenance of inspection records.
 - 1.3.8.7 Removal of all structural and non-structural controls as necessary upon completion, and only after final stabilization is achieved.
 - 1.3.8.8 Filing of NOT with the PM within 30 days of final stabilization being achieved and being approved by the Owner, or of another Operator assuming control of the unstabilized portions of the site.
 - 1.3.8.9 Refer to the SWPPP for additional requirements to ensure compliance with TPDES regulations.

1.4 QUALITY ASSURANCE

- 1.4.1 In order to minimize the discharge of pollutants to storm water, the Contractor shall implement all permanent and temporary site controls according to TPDES Guidelines, as set forth by the TCEQ.
- 1.4.2 Implementation of site controls shall be performed by a qualified contractor experienced in the proper installation of such devices in accordance with manufacturers' specifications, and in keeping with recognized Best Management Practices (BMPs), and in keeping with TPDES regulations. Qualification of installing Contractor shall be reviewed with the Owner prior to entering into a contract with them for services.
- 1.4.3 The Contractor shall inspect all BMPs at regular intervals as specified in the Storm Water Pollution Prevention Plan for this project. Use standard Owner Inspection forms (see form at the end of this Section) for each inspection. Record all deficiencies of site controls, and take immediate action to correct any deficiencies recorded. Keep records of inspections current and on file, available for review by EPA, TCEQ, MS4 Operator and Owner.

1.5 SUBMITTALS

- 1.5.1 Submittals of products used in structural and non-structural controls shall be made through established procedures for review and approved by the Owner prior to installation on the site. The Contractor shall make available physical samples and product literature on any material used in structural or non-structural controls during the course of the project prior to its implementation in the field.

PART 2 - PRODUCTS

2.1 MATERIALS

Specific site control devices are identified in the SWPPP. Where such devices are indicated, their material composition shall comply with this section.

- 2.1.1 Materials to be used in structural and non-structural site controls shall include, but not be limited to the following:

- 2.1.1.1 **Area Inlets, Curb Inlets and Silt Fences:** implemented to filter and remove sediment from storm water; they shall be composed of the following materials:

- a. Geotextile fabric – a non-woven, polypropylene, polyethylene, or polyamide fabric with non-raveling edges. It shall be non-biodegradable, inert to most soil chemicals, ultraviolet resistant, unaffected by moisture and other weather conditions, and permeable to water while retaining sediment. Fabric shall be 36 inches wide, with a minimum weight of 4.5 oz./yd.

- b. Wire Backing – a galvanized, 2"x4" welded wire fencing, 12-gauge minimum. Width shall be sufficient to support geotextile fabric 24 inches above adjacent grades. Chain link fences located along the same lines as silt fences may be used to support geotextile fabric. In this circumstance, the geotextile fabric shall be firmly attached to the fence.
 - c. Posts for area inlets and silt fences – steel fence posts shall be made of hot rolled steel, galvanized or painted, a minimum of 4 feet long, with a Y-bar or TEE cross-section of sufficient strength to withstand forces implied.
- 2.1.1.2 **Rock Berms:** shall be composed of the following materials:
- a. Rock – clean open graded rock, with a maximum diameter of 3 inches
 - b. Wire Mesh Support – a galvanized, woven wire sheathing having a maximum opening size of 1 inch, and a minimum wire diameter of 20 gauge
 - c. Ties – metal hog rings or standard wire/cable ties
- 2.1.1.3 **Triangular filter dikes:** for use on surfaces or in locations where standard silt fence cannot be implemented, shall be composed of the following:
- a. Geotextile fabric – a non-woven, polypropylene, polyethylene, or polyamide fabric with non-raveling edges, with a minimum width of 60 inches
 - b. Dike Structure – 6-gauge, 6" x 6" welded wire mesh, 60 inches wide, folded into a triangular form. Each side shall be 18 inches with an overlap of 6 inches
 - c. Ties – metal hog rings or standard wire/cable ties for attachment of wire mesh to itself, and for attachment of geotextile fabric to wire mesh
- 2.1.1.4 **Stabilized construction exit:** a steel grid that allows the safe passage of vehicles while agitating the tires to loosen and remove the soil buildup. The grid or structures shall conform to the following:
- a. It shall consist of pipes or tubes spaced such that there is a minimum clear distance between the pipes or tubes of 4½ inches. It shall be elevated above the ground surface a minimum of 8 inches to allow water, debris and soil to drain.
 - b. Minimum diameter of pipe or tube shall be 3 inches.
 - c. It shall be designed to support any and all vehicles entering and leaving the construction site.
 - d. It shall be firmly placed in the ground at the exit.
 - e. It shall be of sufficient length so that the agitation will remove the soil from the tires, or a minimum of 12 feet.
 - f. At the street side approach of the grid there shall be an impervious surface or it shall consist of 3" to 5" diameter angular crushed stone/rock approximately 5 feet in length, minimum, and 8 inches deep, minimum. On the job site side of the grid, there shall be 3" to 5" diameter angular crushed stone/rock 15 feet in length, a minimum of 8

inches deep. The steel grid will be between the street side approach and the job site crushed stone/rock. All crushed stone/rock shall have filter fabric beneath the stone/rock. See diagram on Exhibit F.

- g. Steel grid area shall be used as the tire wash area. When tire wash is in use (rainy or muddy days), the area shall be manned and the tires shall be washed using a high pressure hose/nozzle.
- h. The area beneath the grid shall be sloped such that debris, soil and water shall be diverted back onto the construction site or to a sediment basin. No water, soil or debris shall leave the construction site. The resulting discharge shall be disposed of properly.

2.1.1.5 **Concrete Truck Washout:** shall be used for containment of fluids from concrete truck washout wastes.

- a. Gravel bags, concrete blocks or open graded rock
- b. 10 mil plastic sheeting

2.1.1.6 **Temporary Storage Tanks:** shall be used for temporary storage of fuels on the construction project site

- a. 2 inches of sand on the bottom of the containment area
- b. 6 mil plastic sheeting
- c. 2 inches of sand on top of the plastic sheeting

2.1.1.7 **Erosion Control Matting:** shall be used on steep slopes, in drainage swales, and in high traffic pedestrian areas of barren soil. It shall include one or more of the following:

- a. Jute Mat – a plain fabric made of jute yarn, woven in a loose and simple manner, with a minimum unit weight of 2.7 pounds per square yard. Width shall be as required for the dimensions of the area to be covered.
- b. Wood Fiber Mat – a mat composed of wood fibers, which are encased in nylon, cotton or other type of netting
- c. Synthetic Webbing Mat – a mat manufactured from polyvinyl chloride or polypropylene monofilaments, which are bonded together into a three-dimensional web to facilitate erosion control and/or re-vegetation.

2.1.1.8 **Organic mulches:** shall be used for covering bare soil, retaining moisture under existing vegetation being preserved, and for absorbing the energy of compaction caused by foot or vehicular traffic. Mulch shall be one or more of the following:

- a. Straw – from broken straw bales that are free of weed and grass seed where the grass from the seed is not desired vegetation for the area to be protected.
- b. Wood Chips – from chipped limbs of cleared trees on site, or delivered in chipped form, in bulk quantities of pine, cedar or cypress. Wood chips of all species shall be partially decomposed to alleviate nitrogen

depletion of the soil in areas where existing vegetation is to be preserved and protected.

- c. Shredded Mulches – from pine, cypress or cedar, mechanically shredded, and capable of forming an interlocking mat following placement, and after sufficient wetting and drying has taken place naturally.

2.1.1.9 Any other materials indicated in the SWPPP.

PART 3 - EXECUTION

3.1 GENERAL

- 3.1.1 The Contractor shall provide a complete installation of all site control devices and measures (BMPs) indicated in the SWPPP book, including the Site Erosion and Sedimentation Control Drawing and as specified herein. These BMPs must be confirmed as fully operational with the Owner before any work that disturbs the site can begin.

As an alternative to the BMPs indicated in the SWPPP book, the Site Erosion and Sediment Control Drawing and as specified herein, the Contractor may propose alternate BMPs that perform the same function as the indicated BMP but may be of a different configuration, material or type for review and approval by PM. Installation of alternate BMPs shall not proceed until approved by OFPC.

- 3.1.2 The Contractor shall provide inspection and monitoring of controls in place and shall perform all revisions and updating of SWPPP book. An accurate, chronological record of all Contractor inspections, revisions and additional controls shall be kept on file at the project site, for review, with a copy of the SWPPP book.
- 3.1.3 The Contractor shall submit their NOT to the Owner after all disturbed areas are re-established (stabilized) with vegetative cover following completion of construction. Following acceptance of stabilized areas, all site controls that are no longer necessary shall be removed.

3.2 CONTROL DEVICES

Execution of specific site control devices is described in the following paragraphs. Refer to the SWPPP for applicable devices, extent and location.

3.2.1 AREA INLET DETAIL

- 3.2.1.1 Area inlet fences shall consist of non-woven geotextile fabric attached to wire fabric backing to support the geotextile. The wire fabric should be galvanized 2" x 4" welded wire, 12-gauge minimum. Attach non-woven geotextile fabric to the fence with hog rings or standard cable/wire ties, leaving a toe of fabric at the bottom of the fence of not less than 6 inches. Steel posts as specified shall be driven to a depth of 1 foot minimum and spaced not more than 6 feet

on center. Attach fencing to posts with standard cable/wire ties. Abutting ends of geotextile fabric shall be overlapped a minimum of 12 inches. Wrap grates with non-woven geotextile fabric. See Exhibit A at end of section.

3.2.1.2 Maintain silt fence daily as necessary to repair breaches in geotextile fabric. Maintain steel posts as specified in tilted condition. When siltation has occurred, it shall be removed when it has reached a depth of 6 inches. Silt that has been removed shall be disposed of offsite.

3.2.1.2 Remove area inlet when the disturbed areas have been completely stabilized as specified. Minimize site disturbance while removing area inlet protection and posts.

3.2.2 CURB INLET PROTECTION

3.2.2.1 Cover curb storm inlet with non-woven geotextile fabric covered wire fabric. Wire fabric to be 2"x4" – W1.4 x W1.4. Extend fabric 2 feet beyond inlet opening at each end and 12 inches in front of opening in the gutter. Remove a strip of filter fabric approximately 12 inches high for the length of the protection to act as overflow. Extend fabric over the top of opening to allow placement of gravel bags. Anchor fabric with 20 lb. gravel bags placed 3 feet on center. See Exhibit B at end of section.

3.2.2.2 Maintain inlet protection daily as necessary to repair breaches in geotextile fabric. When siltation has occurred, it shall be removed when it has reached a depth of 2 inches. Silt that has been removed shall be disposed of offsite.

3.2.3 ROCK BERM

3.2.3.1 Rock berm shall consist of rip-rap type rock, secured within a wire sheathing as specified, and installed at the toe of slopes, or at the perimeter of developing or disturbed areas. Height of berm shall be a minimum of 18 inches from top of berm to uphill toe of berm. Top width shall be a minimum of 24 inches, with side slopes of 2:1 or flatter. Uphill toe of berm shall be buried a minimum of 4 inches into existing grade. Rock berm shall have a minimum flow-through rate of 60 gallons per minute per square foot of berm face. See Exhibit C at end of section.

3.2.3.2 Maintain rock berm in a condition that allows the sediment to be removed, when the depth of sediment has reached 1/3 the height of the berm. Berm shall be reshaped as needed, and silt buildup removed, to maintain specified flow through berm.

3.2.3.3 Rock berm shall be removed when the disturbed areas served have been stabilized as specified.

3.2.4 SILT FENCE

- 3.2.4.1 Silt fences shall consist of non-woven geotextile fabric, attached to wire fabric backing to support the geotextile. The wire fabric should be galvanized 2" x 4" welded wire, 12-gauge minimum. Attach non-woven geotextile fabric to fence with hog rings or standard cable/wire ties, leaving a toe of fabric at the bottom of the fence of not less than 6 inches. Steel posts as specified shall be driven to a depth of 1 foot minimum and spaced not more than 6 feet on center. Tilt posts slightly, in an uphill direction for additional strength. Attach fencing to posts with standard cable/wire ties. Dig a 6 inch deep by 6 inch wide trench on the disturbed side of the fence, bury geotextile fabric in trench, backfill and tamp. Abutting ends of geotextile fabric shall be overlapped a minimum of 12 inches. See Exhibit D at end of section.
- 3.2.4.2 Maintain silt fence daily as necessary to repair breaches in geotextile fabric. Maintain steel posts as specified in tilted condition. When siltation has occurred, it shall be removed when it has reached a depth of 6 inches. Silt that has been removed shall be disposed of offsite.
- 3.2.4.3 Remove silt fence when the disturbed areas protected by silt fence have been completely stabilized as specified. Minimize site disturbance while removing silt fence and posts.

3.2.5 TRIANGULAR DIKE

- 3.2.5.1 See Exhibit E for information regarding installation of Triangular Dike

3.2.6 STABILIZED CONSTRUCTION EXIT

- 3.2.6.1 A steel grid that allows the safe passage of vehicles while agitating the tires to loosen and remove the soil buildup. The grid or structures shall conform to the following:
- It shall consist of pipes or tubes spaced such that there is a minimum clear distance between the pipes or tubes of 4½ inches. It shall be elevated above the ground surface a minimum of 8 inches to allow water, debris and soil to drain.
 - Minimum diameter of pipe or tube shall be 3 inches.
 - It shall be designed to support any and all vehicles entering and leaving the construction site.
 - It shall be firmly placed in the ground at the exit.
 - It shall be of sufficient length so that the agitation will remove the soil from the tires or a minimum of 12 feet.
 - At the street side approach of the grid, there shall be an impervious surface or it shall consist of 3" to 5" diameter angular crushed stone/rock approximately 5 feet in length, minimum, and 8 inches deep, minimum. On the job site side of the grid, there shall be 3" to 5" diameter angular crushed stone/rock 15 feet in length, minimum, and 8 inches deep, minimum. The steel grid will be between the street side

approach and the job site crushed stone/rock. All crushed stone/rock shall have filter fabric beneath the stone/rock. See diagram on Exhibit F at end of section.

- g. Steel grid area shall be used as the tire wash area. When tire wash is in use (rainy or muddy days) the area shall be manned and the tires shall be washed using a high pressure hose/nozzle.
- h. The area beneath the grid shall be sloped such that debris, soil and water shall be diverted back on to the construction site or to a sediment basin. No water, soil or debris shall leave the construction site. The resulting discharge shall be disposed of properly.
- i. The stabilized construction exit shall be properly maintained throughout the entire construction process until removal is approved by OFPC.

3.2.7 CONCRETE/PAINT/STUCCO/EQUIPMENT WASHOUT (SELF INSTALLED)

3.2.7.1 Concrete Truck Washout (self installed) shall be constructed so that it will be able to accommodate the maximum number of anticipated concrete trucks that will be cleaned on any given day at any given time using 7 gallons of water for washout per truck or 50 gallons of water to wash out pump trucks. The area utilized to contain the wash water and concrete solids cleaned from the trucks will be a minimum of 10 feet in width. The containment area will be covered with 10 mil plastic sheeting without any holes or tears and the seams shall be sealed according to manufacturer's recommendations. The gravel bags, concrete blocks or open graded rocks shall line the outside perimeter and shall be double wrapped with the 10 mil plastic sheeting to prevent any potential for runoff from the containment area. See Exhibit G at end of section.

3.2.7.2 The concrete truck washout containment area shall be maintained in a condition that will not allow concrete buildup within the containment area to exceed 50% of the storage capacity.

3.2.7.3 The concrete truck washout area will be removed when it is no longer necessary to wash out concrete trucks on the site.

3.2.7.4 Equipment Cleaning: Clean equipment in a manner that does not create any discharge of cleaning agents, paints, oil or solvents to a storm sewer, waterway or onto the ground. Soaps and detergents must never be discharged to the ground. Cement handling equipment must be rinsed in a contained area and there must be no drainage off-site or onto to ground.

3.2.7.5 When rinsing painting equipment/tools outside, rinse water must be contained in a bucket or other container for appropriate disposal. Water based or latex paint rinse water may be discharged to the sanitary sewer only with permission/approval from UTH EH&S.

3.2.7.6 Oil based paint wastes, including solvents and thinners, must not be disposed

of in the sanitary sewer; they must be collected and disposed of through the contractor's disposal company in accordance with applicable laws and regulations.

- 3.2.7.7 Discharges from pressure washing using soaps or chemicals must not be allowed to enter a storm sewer. The wastewater will need to be collected with a berm and vacuumed (transported to appropriate disposal site). If the rinse only contains water and dirt (sediment) it may be spread on a grass area or contained/filtered with clean water allowed to enter storm sewer. In some cases it may also be possible to discharge to a sanitary sewer with permission from UTH EH&S.

3.2.8 TEMPORARY STORAGE TANKS

- 3.2.8.1 Must be located in a bermed containment area. The berm must be a minimum 3 feet in all directions, and the height of the berm must contain the maximum contents of the largest tank plus 8 inches (approximately 110% of the tank capacity). The containment area is constructed by beginning with a 2-inch sand pad, and then covered with 6-mil plastic or rubber sheeting. The sheeting is then covered with another 2-inch layer of sand. The plastic sheeting is secured to the outer berm.
- 3.2.8.2 Storage tanks are to be placed no closer than 50 feet from a building or property line.
- 3.2.8.3 If using tanks with a gravity feed setup, the containment must be of sufficient size to be able to contain the tank if it should fall over.
- 3.2.8.4 There must be a fusible link at the valve that will shut off the flow to the hose in the event of a fire.
- 3.2.8.5 There must be sufficient cover for the tank and the containment area to prevent potential storm water runoff.
- 3.2.8.6 The area within the containment area is to be kept free and clear of spills; if a spill occurs, the sand is to be removed and replace with a fresh layer of sand.
- 3.2.8.7 The storage tank containment area is to be removed from the site once it has been determined that it will no longer be used on the construction site.

3.2.9 DIVERSION DIKE

- 3.2.9.1 Diversion dikes shall be formed and shaped using compacted fill, and shall not intercept runoff from more than 10 acres. The dike shall have a minimum top width of 24 inches, and a minimum height of 18 inches. Soil shall have side slopes of 3:1 or flatter, and shall be placed in 8-inch lifts. Compact soil to 95% standard proctor density. Where protected slopes exceed 2 percent, the uphill side of diversion dike shall be stabilized with

crushed stone or erosion control matting to a distance of not less than 7 feet from toe of dike. The channel that is formed by the diversion dike must have positive drainage for its entire length to a stabilized outlet, such as a rock berm, sandbag berm, or stone outlet structure. Storm water shall not be allowed to overflow the top of diversion dike at any point other than the stabilized outlet.

3.2.9.2 Maintain the diversion dike in a condition that allows the storm water runoff to be diverted away from exposed slopes. Repair any failures at top of dike and remove sediment as necessary behind the dike to allow positive drainage to a stabilized outlet.

3.2.9.3 Remove diversion dike when the exposed slopes being protected are stabilized with vegetation or other permanent cover.

3.2.10 INTERCEPTOR SWALE

3.2.10.1 An interceptor swale shall be implemented to prevent on or off-site storm water from entering a disturbed area, or prevent sediment-laden runoff from leaving the site or disturbed area. The interceptor swale shall be excavated as required by the SWPPP drawings, with side slopes of 3:1 or flatter. This shall include all labor and equipment associated with the installation and maintenance of the swale as shown on the construction documents. Constructed swale may be v-shaped or trapezoidal with a flat bottom, depending on the volume of water being channeled. Sediment laden runoff from swale shall be directed to a stabilized outlet or sediment-trapping device. Flow line of swale shall have a continuous fall for its entire length and shall not be allowed to overflow at any other points along its length.

3.2.10.2 Maintain interceptor swale in a condition that allows the storm water runoff to be channeled away from disturbed areas. Remove sediment in swale as necessary to maintain positive drainage to a stabilized outlet.

3.2.10.3 Fill in or remove swale after the disturbed area/s being protected is completely stabilized as specified.

3.2.11 EROSION CONTROL MATTING

3.2.11.1 Remove all rocks, debris, dirt clods, roots, and any other obstructions which would prevent the matting from lying in direct contact with the soil. 6 inch by 6 inch anchor trenches shall be dug along the entire perimeter of the installation. Bury matting in trenches, backfill and compact. Fasten matting to the soil using 10-gauge wire staples, 6 inches in length and 1 inch wide. Use a minimum of 1 staple per 4 square feet of matting, and at 12 inches on center along all edges. Install parallel to flow of water and overlap joining strips a minimum of 12 inches.

- 3.2.11.2 Maintain erosion control matting by repairing any bare spots. Missing or loosened matting shall be promptly replaced or re-anchored.
- 3.2.11.3 Remove matting where protection is no longer required. In areas where permanent vegetation is established along with matting, matting can be left in place permanently.

3.2.12 MULCHES

- 3.2.12.1 Apply specified mulches in areas identified on the SWPPP, to a depth of 3 inches or as otherwise specified on the SWPPP drawings.

3.2.13 BPM Details

- 3.2.13.1 Refer to Exhibits for the following BMP details:
 - Exhibit A -- Area Inlet Detail
 - Exhibit B -- Curb Inlet Detail
 - Exhibit C -- Rock Berm Detail
 - Exhibit D -- Silt Fence Detail
 - Exhibit E -- Triangular Dike Detail
 - Exhibit F -- Stabilized Construction Exit
 - Exhibit G -- Concrete Truck Washout

3.3 INSPECTIONS AND RECORD KEEPING

- 3.3.1 Contractor shall inspect all BMPs on 7-day intervals. Coordinate inspections with P M / CI, who is also required by TPDES to regularly inspect the site. Use standard Owner Inspection forms (see form in Part 4 of this Section) for each inspection. Record all deficiencies of site controls, and take appropriate action to correct any deficiencies recorded. Exception is rock berms located in a stream bed. Any rock berm located in a stream bed shall be inspected on a daily basis. Keep records of inspections current and on file, available for review by EPA, TCEQ, MS4 Operator Representative and/or Owner's Representative.
- 3.3.2 Contractor shall keep records of all Contractor inspections on file with SWPPP book at project site, and make available for review by Owner's Representative or EPA, TCEQ or MS4 Operator officials requesting review of SWPPP inspection records. One copy of each inspection report shall be delivered to the CI and the RCM office.
- 3.3.3 Contractor shall keep records of all major grading and stabilization activities on file with the SWPPP book at the project site and make available for review by Owner's representative, EPA, TCEQ, or MS4 Operator officials requesting review of the SWPPP.
- 3.3.4 Contractor shall retain copies of all inspection records and the Major Grading and

Stabilization Log along with SWPPP book for 3 years from NOT date per TCEQ regulations.

3.4 MAINTENANCE

- 3.4.1 All erosion and sediment control measures and other protective measures identified in the SWPPP must be maintained in effective operating condition. If through inspections the permittee determines that BMPs are not operating effectively, maintenance must be performed before the next anticipated storm event or as necessary to maintain the continued effectiveness of storm water controls. If maintenance prior to the next anticipated storm event is impracticable, maintenance must be scheduled and accomplished as soon as practicable. Erosion and sediment controls that have been intentionally disabled, run over, removed or otherwise rendered ineffective must be replaced or corrected immediately upon discovery.

3.5 Waste Disposal

- 3.5.1 Contractor is responsible for proper disposal of hazardous materials. Hazardous wastes (such as flammable petroleum products and solvents, thinners) and materials contaminated with hazardous wastes are considered regulated wastes, and should be containerized for transport and disposal by a permitted company in accordance with applicable laws and regulations.
- 3.5.2 Any trash or debris must be contained on site and disposed of in a recycling bin or waste receptacle in accordance with applicable laws and regulations to prevent wind or rain from carrying it off-site into a storm drain. Non-hazardous solid wastes such as general construction debris may be recycled or disposed of in the trash container. Never dispose of liquid wastes of any kind in University dumpsters.

PART 4 - SAMPLE FORMS

The following forms or sketches are to be used by the Contractor in the execution of the work in this Section, in compliance with TPDES requirements and the SWPPP.

- UT System SWPPP Project Start-up
- Major Grading and Stabilization Log
- SWPPP Posting Sign for Main Construction Entrance for large construction site 5 acres or greater
- SWPPP Posting Sign for Main Construction Entrance for small construction site 1 to less than 5 acres

Contact the Owner's representative for electronic copies of these forms to be used in the execution of work in this section:

- TCEQ TPDES Notice of Intent (NOI)

- TCEQ TPDES CSN (Large CSN or Small CSN)
- TCEQ TPDES Notice of Termination (NOT)
- UT System OFPC Notice of Termination (OFPC NOT)
- Shared SWPPP Acceptance Certification form
- UT System OFPC SWPPP Inspection form

END OF SECTION 01 57 23

The UTHHealth -Houston
Office of Facilities Planning and Engineering
7000 Fannin, Suite 830 Houston, Texas 77030

SWPPP Project Start-up

Contractors must meet 4 TPDES requirements before soil-disturbing activities can commence on construction projects. This form provides the Contractor and Owner an acceptance of compliance with initial BMPs and required paperwork for commencement of work on the project site.

The Contractor is to initial items that are certified as complete and then review for concurrence with the Owner's Designated Representative.

1 BMPs applicable to this project have been inspected to ensure correct placement in accordance with the SWPPP and for proper installation according to specifications.

Initial by Contractor

Initial by CI

2 The SWPPP is approved and on site.

Initial by Contractor

Initial by CI

3 The TCEQ NOI and OFPC Posting Notice forms (and permits if received) or the TCEQ CSNs are complete and posted for all permittees at the main entrance to the project site.

Initial by Contractor

Initial by CI

4 Inspector qualifications and letter of delegation of authority are inserted in the SWPPP.

Initial by Contractor

Initial by CI

Having met the above requirements and in recognition of prior receipt of Notice to Proceed, the Contractor is authorized to commence work on site.

Contractor

UTHH Project #

UTHealth-Houston Project Manager

Date: _

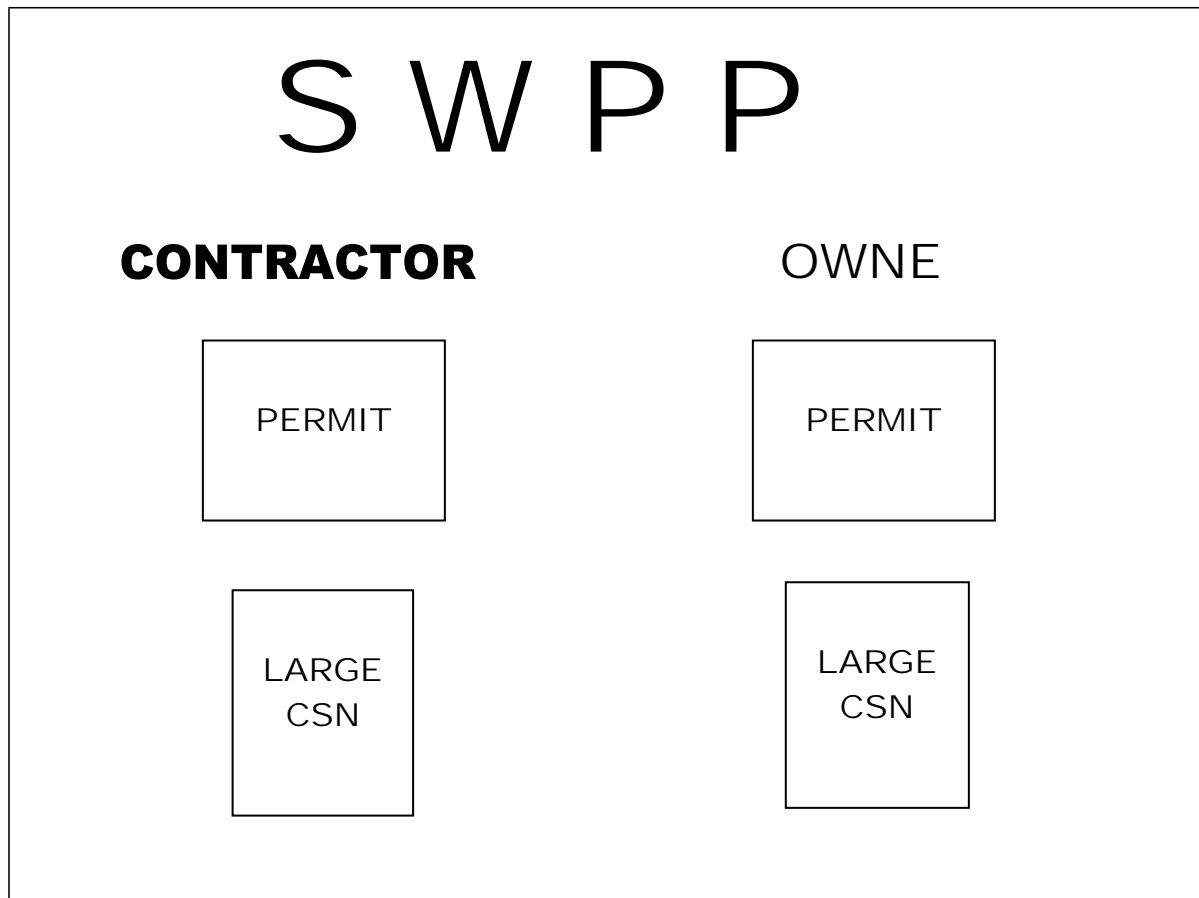
The UTHealth-Houston
Office of Facilities Planning and Engineering
7000 Fannin, Suite 830 Houston, TX 77030

Storm Water Pollution Prevention Plan
Major Grading and Stabilization Activities Log

Start Date	End Date*	Type and Location of Activity

***End Date does not pertain to stabilization activities**

Sign for Large Construction Site



MINIMUM SIGN SPECIFICATIONS: 5 Acre or Greater Sites

SIGN - Exterior grade $\frac{3}{4}$ " plywood, cut 4' x 4', with red painted letters, background painted white - **DISPLAY ON CONSTRUCTION FENCE AT MAIN ENTRANCE TO PROJECT SITE.**

S W P P P - 10-inch painted letters, 3 inches from top of sign, centered

CONTRACTOR OWNER - 3 inch painted letters, 4 inches below SWPPP letters, centered on each half of sign

PERMIT, CSN - 8-1/2 X 11 TCEQ forms, laminated beyond edges of documents, stapled to plywood.

Sign for Small Construction Site

S W P P	
CONTRACTOR	OWNE
<div>CSN</div>	<div>CSN</div>

MINIMUM SIGN SPECIFICATIONS: 1 to Less than 5 Acre Sites

SIGN - Exterior grade $\frac{3}{4}$ " plywood, cut 4' x 4', with red painted letters, background painted white – **DISPLAY ON CONSTRUCTION FENCE AT MAIN ENTRANCE TO PROJECT SITE.**

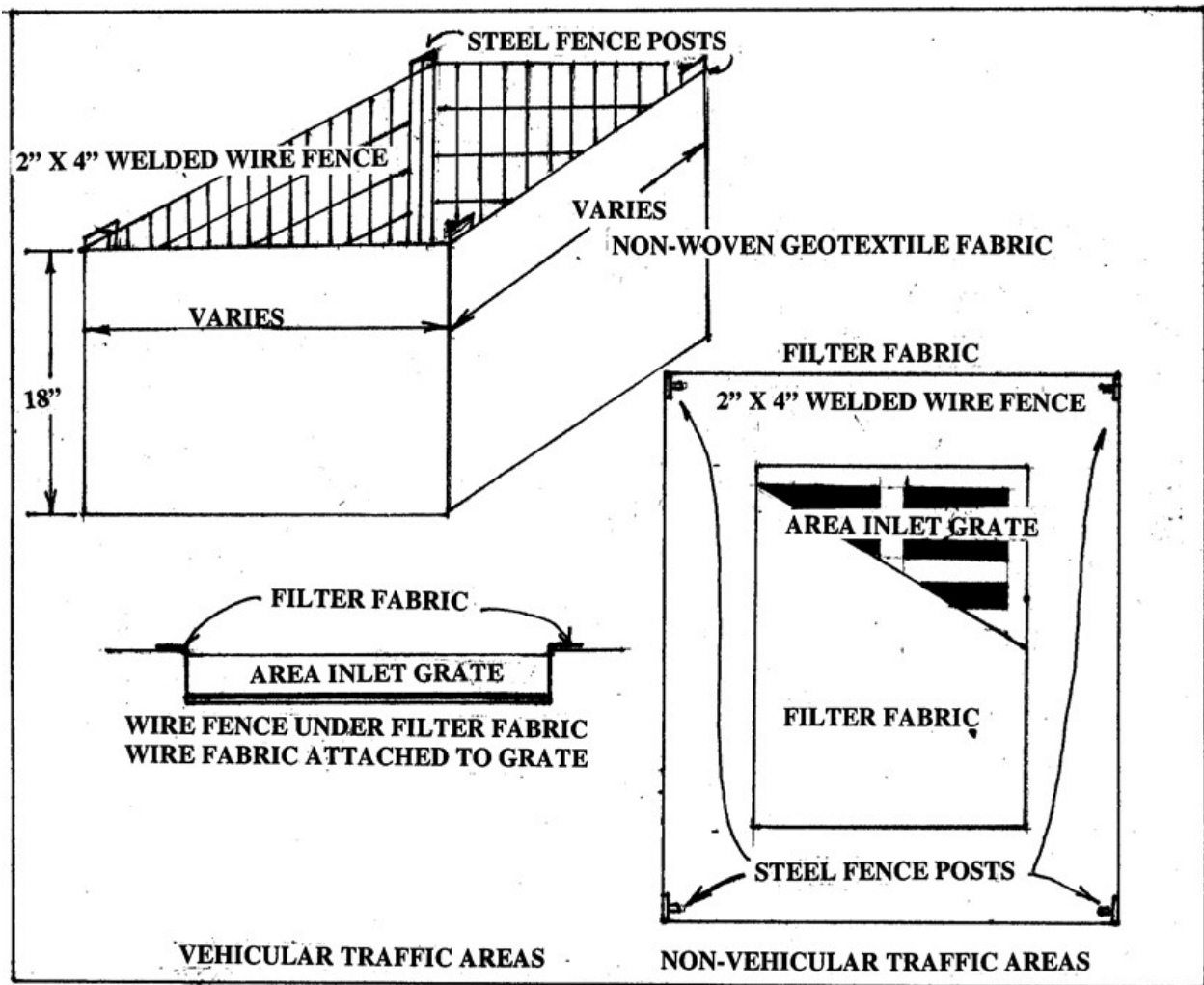
S W P P P - 10-inch painted letters, 3 inches from top of sign, centered

CONTRACTOR OWNER - 3-inch painted letters, 4 inches below SWPPP letters, centered on each half of sign

CONSTRUCTION SITE NOTICE - 8-1/2 X 11 TCEQ forms, laminated beyond edges of documents, stapled to plywood.

EXHIBIT A

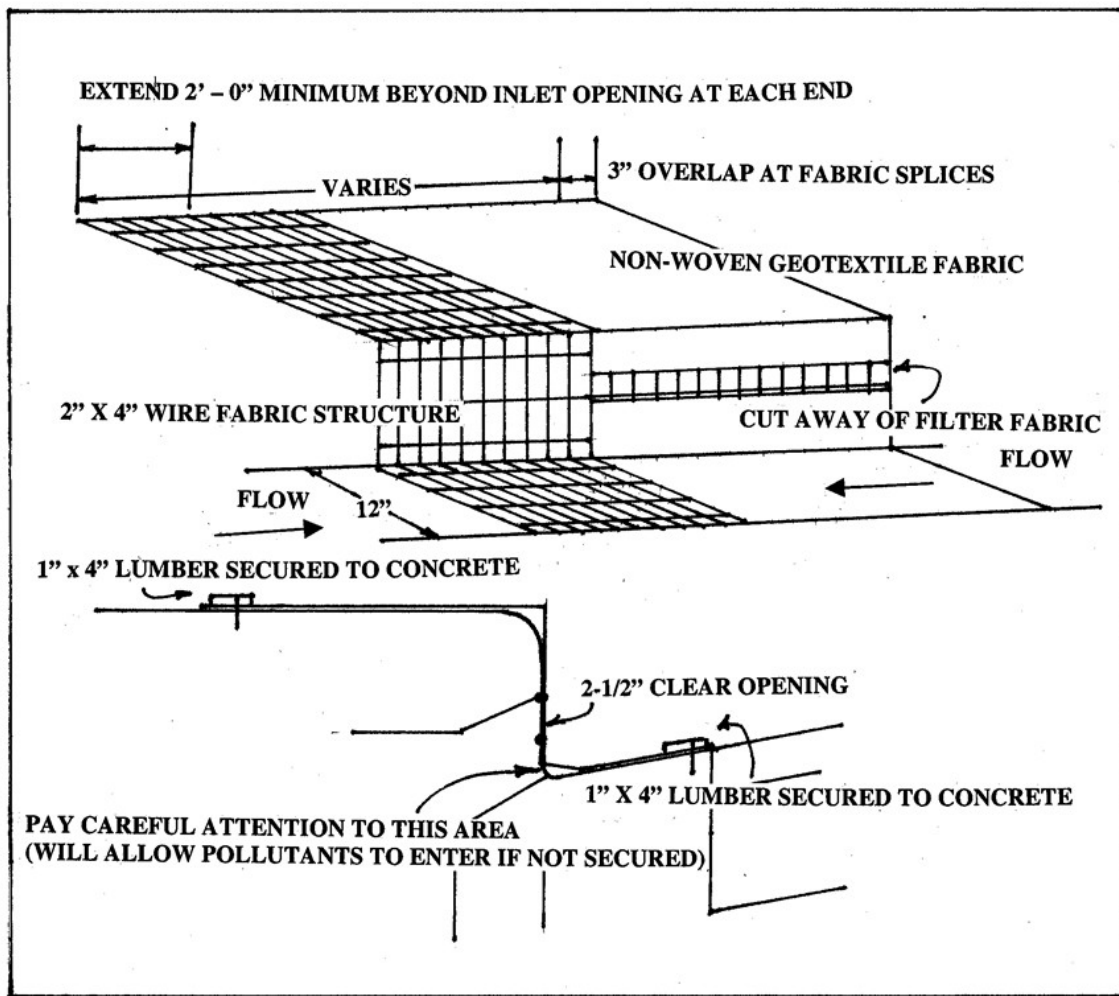
Area Inlet Detail



1. INSTALL STEEL POSTS THAT SUPPORT THE SILT FENCE AT EACH CORNER, AND ALSO BETWEEN CORNERS IF THE DISTANCE IS GREATER THAN 6 FEET BETWEEN CORNER POSTS.
2. USE SILT FENCE DETAIL FOR INSTALLATION OF THE SILT FENCE AROUND THE AREA INLET.
3. LIFT THE METAL AREA INLET GRATE, WRAP THE FILTER FABRIC AROUND IT, AND THEN REPLACE THE GRATE.
4. IN VEHICULAR TRAFFIC AREAS, LIFT THE METAL GRATE OUT AND PLACE WIRE FENCE MATERIAL UNDER IT WITH FILTER FABRIC PLACED BETWEEN THE GRATE AND THE WIRE FENCE. THEN ATTACH THE WIRE FENCE TO THE GRATE.
5. REMOVE ACCUMULATED SILT WHEN THE FILTER FABRIC OVE THE GRATE COMPLETELY COVERS THE GRATE AREA AND THE SILT AROUND THE SILT FENCE REACHES A HEIGHT OF 6 INCHES.
6. REMOVE AREA INLET PROTECTION WHEN THE SITE IS COMPLETELY STABILIZED.

EXHIBIT B

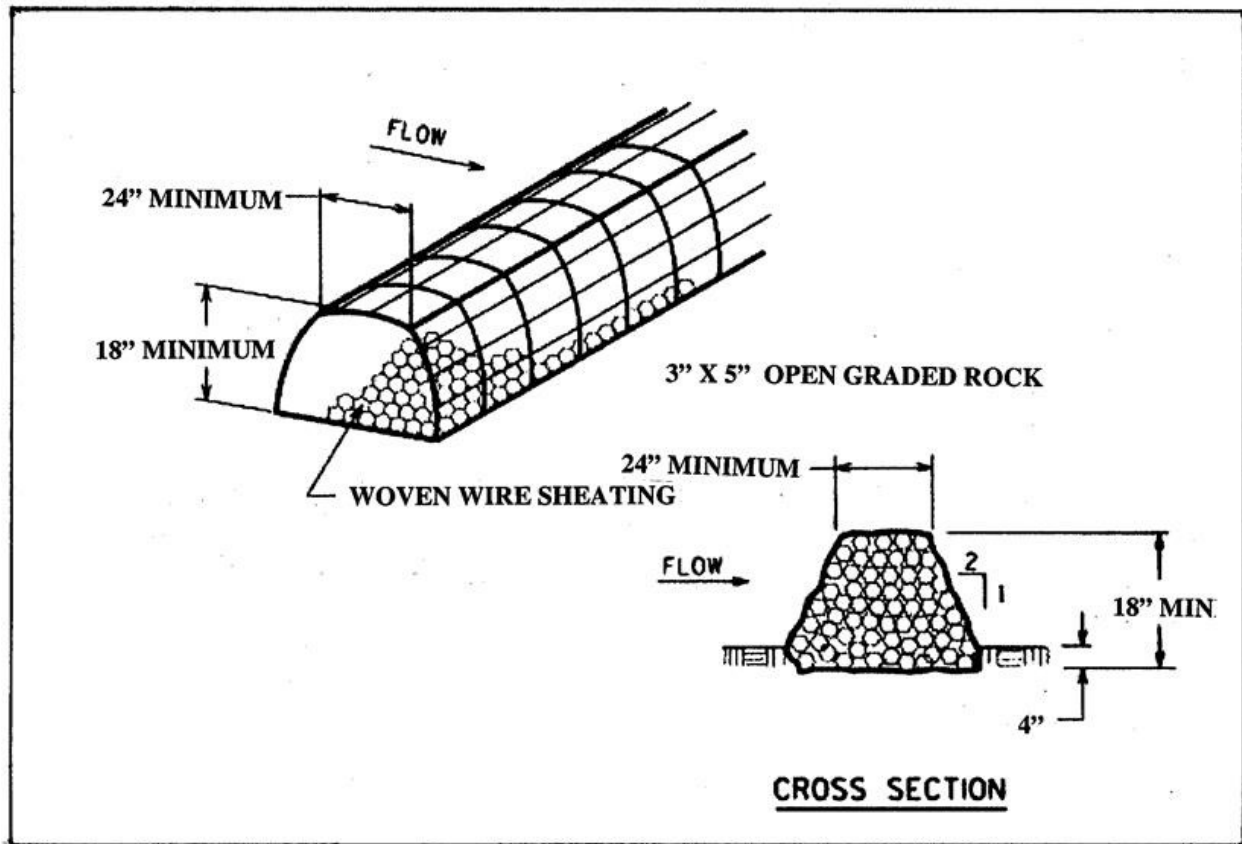
Curb Inlet Detail



1. WHERE MINIMUM CLEARANCES CAUSE TRAFFIC TO DRIVE IN THE GUTTER, USE 1" BY 4" LUMBER SECURED WITH CONCRETE NAILS 3 FEET ON CENTER NAILED INTO THE CONCRETE. IF THERE IS PEDESTRIAN TRAFFIC ONLY, THE USE OF 20# GRAVEL BAGS TO SECURE MATERIAL IS PERMITTED.
2. REMOVE SECTION OF FILTER FABRIC AS SHOWN IN THIS DETAIL. SECURE FABRIC TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
3. INSPECT DAILY AND REMOVE SILT ACCUMULATION WHEN THE DEPTH REACHES 2 INCHES.
4. MONITOR THE PERFORMANCE OF THE INLET PROTECTION DURING EACH RAINFALL EVENT AND REMOVE PROTECTION IMMEDIATELY IF THE STORM WATER BEGINS TO OVERTOP THE CURB.
5. REMOVE ACCUMULATED SILT WHEN THE FILTER FABRIC OVER THE GRATE COMPLETELY COVERS THE GRATE AREA AND THE SILT AROUND THE SILT FENCE REACHES A HEIGHT OF 6 INCHES.
6. REMOVE INLET PROTECTION AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

EXHIBIT C

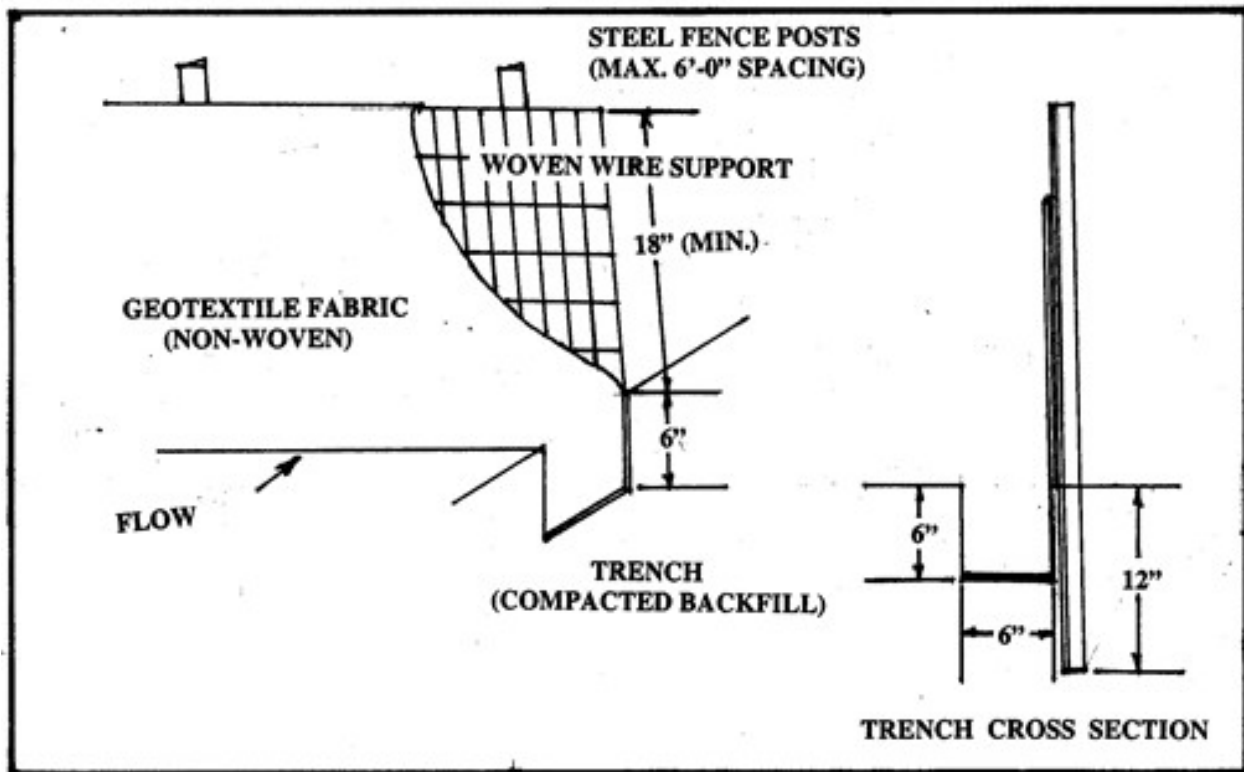
Rock Berm Detail



1. USE ONLY OPEN GRADED 4" X 8" ROCK FOR STREAM FLOW CONDITIONS. USE 3" X 5" OPEN GRADED ROCK FOR OTHER CONDITIONS.
2. SECURE THE ROCK BERM WITH A WOVEN WIRE SHEATHING HAVING A MAXIMUM 1 INCH OPENING AND A MINIMUM 20-GAUGE WIRE DIAMETER. ANCHOR ROCK BERMS IN CHANNEL APPLICATIONS FIRMLY INTO THE SUBSTRATE A MINIMUM OF 6 INCHES WITH TEE POSTS OR WITH #5 OR #6 REBAR WITH A MAXIMUM SPACING OF 48 INCHES ON CENTER.
3. INSPECT THE ROCK BERM WEEKLY. REPLACE THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC, ETC.
4. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 6 INCHES, WHICHEVER IS LESS, REMOVE THE SILT AND DISPOSE OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SILTRATION PROBLEM.
5. INSPECT SEVERE SERVICE ROCK BERMS DAILY, AND REMOVE SILT WHEN ACCUMULATION REACHES 6 INCHES.
6. WHEN THE SITE IS COMPLETELY STABILIZED, REMOVE THE ROCK BERM AND ACCUMULATED SILT AND DISPOSE OF IN AN APPROVED MANNER.

EXHIBIT D

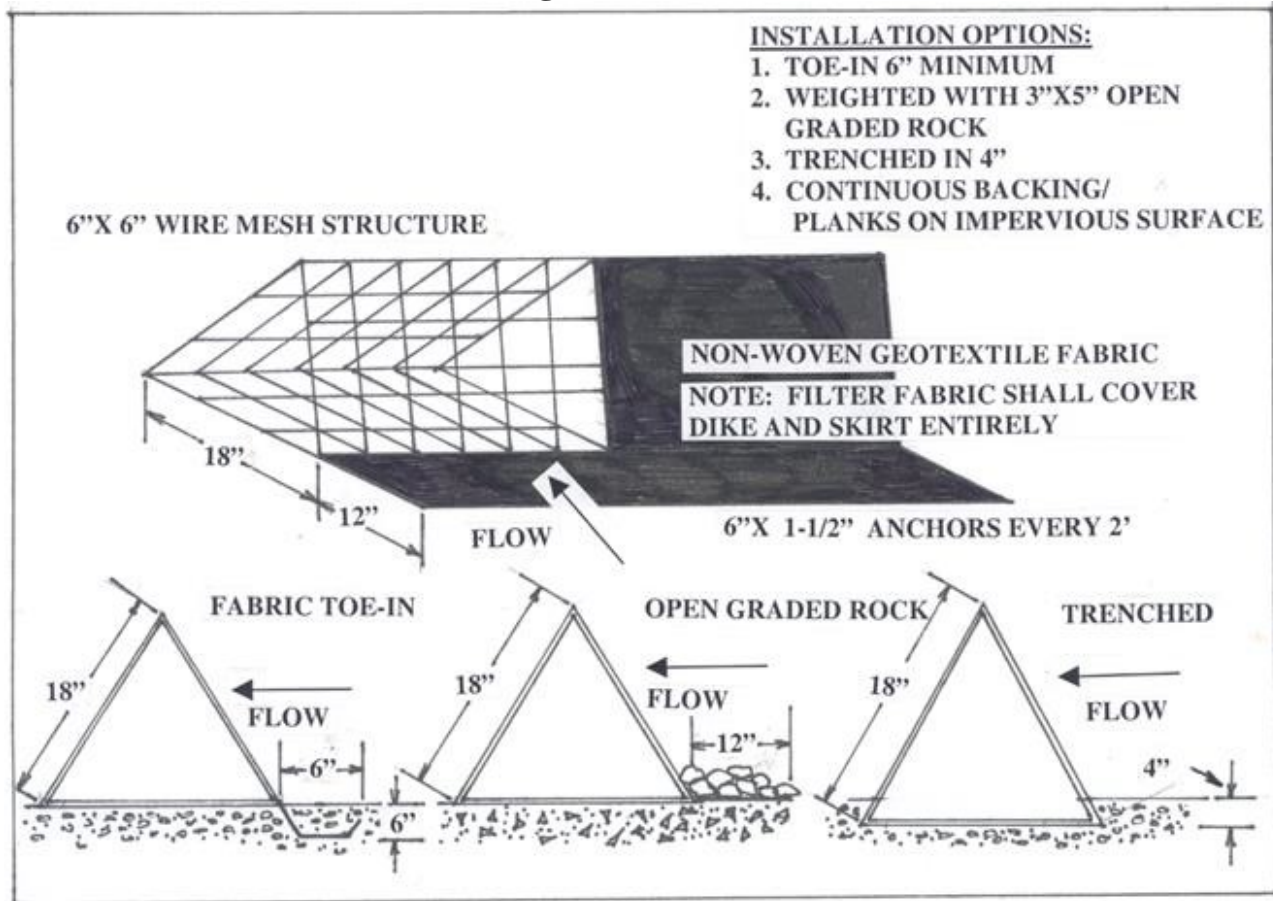
Silt Fence Detail



1. INSTALL STEEL POSTS THAT SUPPORT THE SILT FENCE ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 12 INCHES.
2. TRENCH IN THE TOE OF THE SILT FENCE WITH A SPADE OR MECHANICAL TRENCHER SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF THE FLOW. WHERE FENCE CAN NOT BE TRENCHED INTO THE SURFACE, (E.G., PAVEMENT), WEIGHT THE FABRIC DOWN WITH ROCK OR 1" X 4" LUMBER SECURELY FASTENED TO THE SURFACE. PLACE ON THE UPSTREAM SIDE TO PREVENT FLOW UNDER THE FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE FILTER FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. FASTEN THE FILTER FABRIC SECURELY TO THE WOVEN WIRE BACKING, AND IN TURN FASTEN IT SECURELY TO THE STEEL FENCE POST.
5. REMOVE ACCUMULATED SILT WHEN IT REACHES A DEPTH OF 6 INCHES, DISPOSE OF THE SILT ON AN APPROVED SITE AND IN SUCH A MANNER THAT IT WILL NOT CONTRIBUTE TO ADDITIONAL SILTRATION.
6. INSPECT THE SILT FENCE WEEKLY AND REPAIR OR REPLACE PROMPTLY IF NEEDED.
7. WHEN THE SITE IS COMPLETELY STABILIZED, REMOVE THE SILT FENCE.

EXHIBIT E

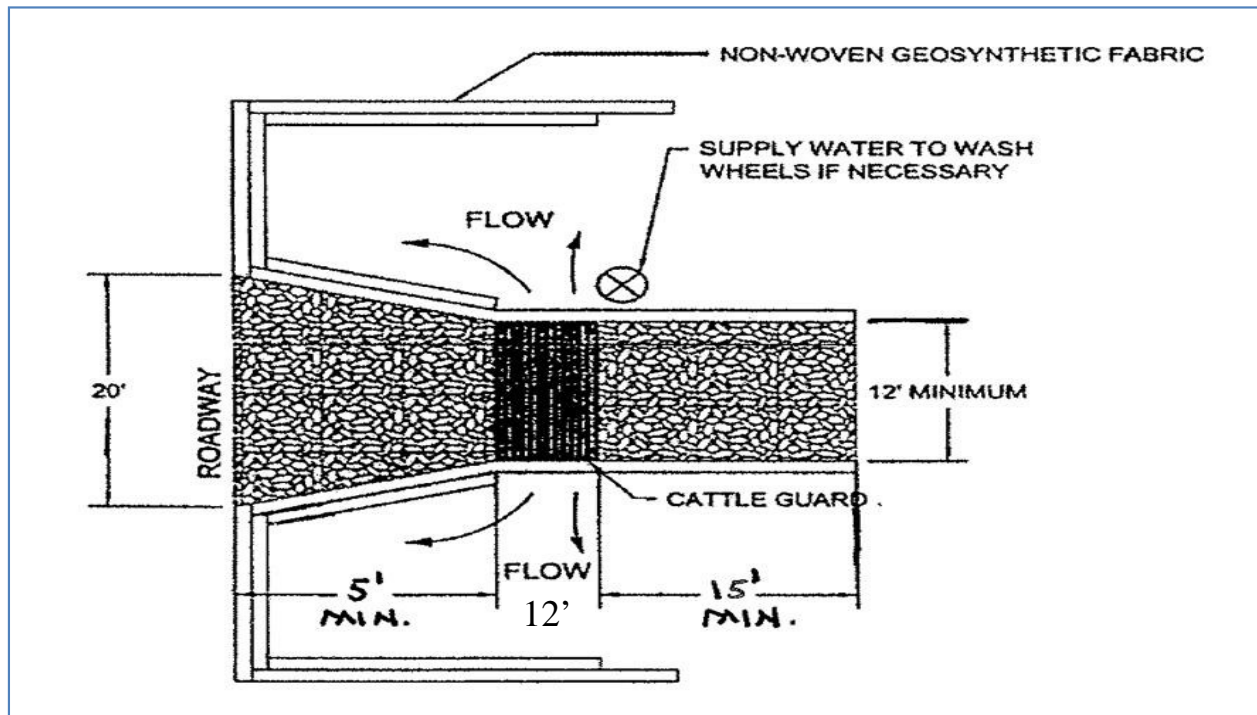
Triangular Dike Detail



1. PLACE DIKES IN A ROW WITH EACH END TIGHTLY ABUTTING THE ADJACENT DIKE.
2. THE FABRIC COVER AND SKIRT SHALL BE A CONTINUOUS WRAPPING OF NON-WOVEN GEOTEXTILE. THE SKIRT SHALL BE A CONTINUOUS EXTENSION OF THE FABRIC ON THE UPSTREAMFACE.
3. WEIGHT THE SKIRT WITH A CONTINUOUS LAYER OF 3" x 5" OPEN GRADED ROCK, 1" x 4" SECURELY FASTENED LUMBER, OR TOED-IN 6 INCHES WITH MECHANICALLY COMPACTED MATERIAL. OTHERWISE, TRENCH IT IN 4 INCHES IN DEPTH.
4. ANCHOR DIKES AND SKIRT SECURELY IN PLACE USING 6 INCH WIRE STAPLES ON 2 FOOT CENTERS ON BOTH EDGES OF SKIRT, OR STAKE USING 3/8 INCH REBAR WITH TEE ENDS.
5. LAP FILTER MATERIAL OVER ENDS 6 INCHES TO COVER DIKE TO DIKE JOINTS. FASTEN JOINTS WITH GALVANIZED HOG RINGS.
6. THE DIKE STRUCTURE SHALL BE 6-GAUGE 6" x 6" WIRE MESH, 18 INCHES ON A SIDE.
7. REMOVE ACCUMULATED SILT WHEN IT REACHES A DEPTH OF 6 INCHES, AND DISPOSE OF IT IN A MANNER THAT WILL NOT CAUSE ADDITIONAL SILTRATION.
8. INSPECT TRIDIKES WEEKLY AND REPAIR OR REPLACE PROMPTLY AS NEEDED.
9. AFTER THE SITE IS COMPLETELY STABILIZED, REMOVE THE DIKES AND ANY REMAINING SILT.

EXHIBIT F

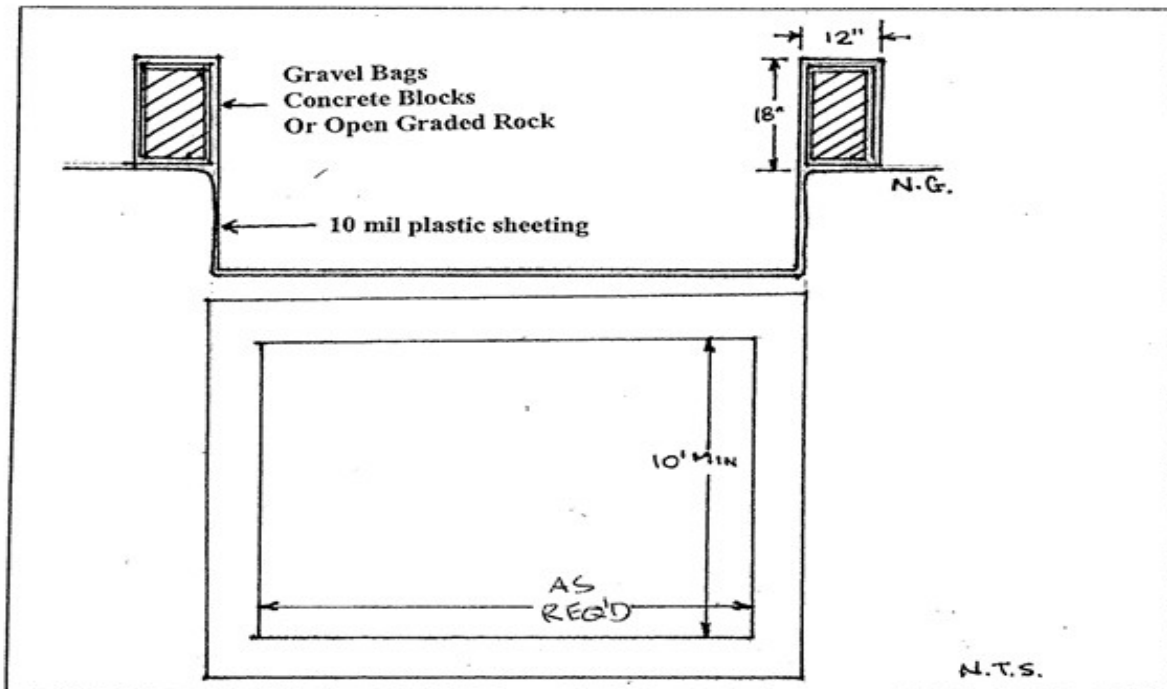
Stabilized Construction Exit



1. THE GRID CONSISTS OF PIPES OR TUBES WITH A MINIMUM DIAMETER OF 3 INCHES, AND SPACED SUCH THAT THERE IS A MINIMUM CLEAR DISTANCE OF 4 1/2 INCHES BETWEEN THEM. ELEVATE THE GRID ABOVE THE GROUND SURFACE A MINIMUM OF 8 INCHES TO ALLOW WATER, DEBRIS AND SOIL TO DRAIN.
2. THE GRID SHALL BE DESIGNED TO SUPPORT THE WEIGHT OF ANY AND ALL VEHICLES ENTERING AND LEAVING THE CONSTRUCTION SITE.
3. THE GRID SHALL BE FIRMLY PLACED IN THE GROUND AT THE EXIT, AND SHALL BE OF SUFFICIENT LENGTH THAT THE AGITATION WILL REMOVE THE SOIL FROM THE TIRES, OR A MINIMUM OF 12 FEET.
4. AT THE STREET SIDE APPROACH OF THE GRID, THERE SHALL BE AN IMPERVIOUS SURFACE OR IT SHALL CONSIST OF 3" x 5" ANGULAR CRUSHED STONE/ROCK 5 FEET IN LENGTH MINIMUM, AND 8 INCHES DEEP, MINIMUM. ON THE JOB SITE SIDE OF THE GRID, THERE SHALL BE 3" x 5" ANGULAR CRUSHED STONE/ROCK 15 FEET IN LENGTH, MINIMUM, 8 INCHES DEEP, MINIMUM. THE STEEL GRID WILL BE BETWEEN THE STREET SIDE APPROACH AND THE JOB SITE CRUSHED STONE/ROCK. ALL CRUSHED STONE/ROCK SHALL HAVE FILTER FABRIC PLACED BENEATH IT.
5. THE STEEL GRID AREA SHALL BE USED AS THE TIRE WASH AREA. WHEN TIRE WASH IS IN USE (RAINY OR MUDDY DAYS), THE AREA SHALL BE MANNED AND THE TIRES SHALL BE WASHED USING A HIGH PRESSURE HOSE/NOZZLE.
6. THE AREA BENEATH THE GRID SHALL BE SLOPED SUCH THAT DEBRIS, SOIL AND WATER SHALL BE DIVERTED BACK ON TO THE CONSTRUCTION SITE OR TO A SEDIMENT BASIN. NO WATER, SOIL OR DEBRIS SHALL LEAVE THE CONSTRUCTION SITE, AND THE RESULTING DISCHARGE SHALL BE DISPOSED OF PROPERLY.

EXHIBIT G

Concrete Truck Washout



1. THE EXCAVATION FOR THE CONCRETE TRUCK WASHOUT SHALL BE A MINIMUM OF 10 FEET WIDE AND OF SUFFICIENT LENGTH AND DEPTH TO ACCOMMODATE 7 GALLONS OF WASHOUT WATER AND CONCRETE PER TRUCK PER DAY AND/OR 50 GALLONS OF WASHOUT WATER AND CONCRETE PER PUMP TRUCK PER DAY.
2. IN THE EVENT THAT THE CONCRETE TRUCK WASHOUT IS CONSTRUCTED ABOVE GROUND, IT SHALL BE 10 FEET WIDE AND 10 FEET LONG, WITH THE SAME REQUIREMENTS FOR CONTAINMENT AS DESCRIBED IN ITEM 1.
3. THE CONTAINMENT AREA SHALL BE LINED WITH 10 MIL PLASTIC SHEETING WITHOUT HOLES OR TEARS. WHERE THERE ARE SEAMS, THESE SHALL BE SECURED ACCORDING TO MANUFACTURERS' DIRECTIONS.
4. THE BERM CONSISTING OF GRAVEL BAGS, CONCRETE BLOCKS OR OPEN GRADED ROCK SHALL BE NO LESS THAN 18 INCHES HIGH AND NO LESS THAN 12 INCHES WIDE.
5. THE PLASTIC SHEETING SHALL BE OF SUFFICIENT SIZE SO THAT IT WILL OVERLAP THE TOP OF THE CONTAINMENT AREA AND BE WRAPPED AROUND THE GRAVEL BAGS, CONCRETE BLOCKS OR OPEN GRADED ROCK AT LEAST 2 TIMES.
6. THE GRAVEL BAGS OR CONCRETE BLOCKS SHALL BE PLACED ABUTTING EACH OTHER TO FORM A CONTINUOUS BERM AROUND THE OUTER PERIMETER OF THE CONTAINMENT AREA.
7. THE WASHOUT MATERIAL IN THE CONTAINMENT AREA SHALL NOT EXCEED 50% OF CAPACITY AT ANY ONE TIME.
8. SOLIDS SHALL BE REMOVED FROM CONTAINMENT AREA AND DISPOSED OF PROPERLY. ANY DAMAGE TO THE PLASTIC SHEETING SHALL BE REPAIRED OR SHEETING REPLACED BEFORE THE NEXT USE.

REVISION LOG

The following is provided for convenience to the Owner, Architect/Engineer and Contractor, and is not to be considered by any party to be contractual or 100% complete.

The Architect/Engineer shall remove this revision log before publication of the project manual for construction.

Date	Paragraph Revised
02/01/08	Updated the SWPPP Inspection Form
05/27/08	Revisions to formatting/New 2008 Permit info/ Certification form
11/08	Revisions to formatting and sequence/ added language for alternative BMPs
7/13	Revisions to formatting/New 2013 Permit Info
10/2014	Added Sections 3.2.7.4, .5, .6, .7 and 3.5.2