

**Appendix C1**  
**Recommended BMPs for**  
**Site Planning, Post-Construction, and Redevelopment/Infill**



Site Planning BMPs
Minimize Storm Water Runoff
Pervious Drainage System
Reduce Area of Impervious Surface
Site Layout

Post Construction BMPs	
BMP Name	BMP Identification No. and Name <sup>a</sup>
Aboveground Tank Berms	SC41, Aboveground Tank Berms
Car Wash Facility	SC3, Vehicle and Equipment Washing and Steam Cleaning
Catch basin insert	Not applicable.
Catch-basin screen	Not applicable.
Cistern collection systems	Not applicable.
Clarifiers	Not applicable.
Constructed Wetlands	TC3, Constructed Wetlands
Continuous flow deflection/separation systems	Not applicable.
Control of Impervious Runoff	Not applicable.
Curb elimination on landscape areas	Not applicable.
Detention/Infiltration device maintenance	SC75, Has the developer/owner determined how detention/infiltration devices planned for the site will be maintained
Drip Irrigation systems	Not applicable.
Efficient Irrigation	Not applicable
Energy Dissipaters	ESC40, Outlet Protection
Extended Detention Basins	TC5, Extended Detention Basin
Facility design to divert wash-off to sanitary sewers	Not applicable.
Filtration systems	Not applicable.
Flow diversion to landscape or pervious areas	Not applicable.
Geotextiles and Mats	ESC20, Geotextiles and Mats
Illicit Connection Prevention	SC60, Illicit Connection Prevention – Will any planned connections to the storm drain carry non-storm water discharges?
Infiltration Basins	TC1, Infiltration
Infiltration Trenches	TC1, Infiltration
Inlet Trash Racks	Not applicable.
Landscape Design	ESC2, Preservation of Existing Vegetation; ECS10, Seeding and Planting; ESC11, Mulching
Linings for Urban Runoff Conveyance Channels	Not applicable.
Materials Management	SC5, Outdoor Loading/Unloading of Materials; SC6, Outdoor Container Storage of Liquids; SC8, Outdoor Storage of Raw Materials, Products, and By-Products
Material Storage Management	SC20, Material storage control – Design site with bermed and covered storage areas for material storage located away from storm drains
Media Filtration	TC6, Media Filtration

<sup>a</sup> Corresponds to the BMP number and name as in the *California Storm Water Best Management Practice Handbooks* (1993).

Motor Fuel Dispensing Area Canopy	SC3, Vehicle and Equipment Washing and Steam Cleaning
Motor Fuel Dispensing Area Canopy	Not applicable.
Protected Slopes and Channels	ESC40, Outlet Protection
Motor Fuel Dispensing Areas	ESC40, Outlet Protection No. and Name <sup>a</sup>
Motor Fuel Dispensing Areas	SC31, Aboveground Tank Berms
Scheduling	Not applicable.
Non-storm water discharges elimination	Not applicable.
Oil/Water Separators and Water Quality Inlets	Not applicable.
Outdoor Process Equipment Operation and Maintenance	TC3, Constructed Wetlands
Outdoor Storage	Not applicable.
Pesticide and fertilizer use elimination or reduction	Not applicable.
Post signs to caution improper practices or to educate	SC75, Has the developer/owner determined how detention/infiltration devices planned for the site will be maintained
Primary waste-water treatment systems	Not applicable.
Self-Contained Areas for Vehicle or Equipment Washing, Steam Cleaning, Maintenance, Repair, or Material Processing	Not applicable.
Storm Drain System Stenciling and Signage	TC1, Infiltration
Trash Container Areas	Not applicable.
Vacuum sweeping of parking lots	ESC2, Preservation of Existing Vegetation; ECS10, Seeding and Planting; ESC11, Mulching
Vegetated buffer zones	Not applicable.
Vegetated Swales and Strips	SC5, Outdoor Loading/Unloading of Materials; SC6, Outdoor Container Storage of Liquids; SC8, Outdoor Storage of Raw Materials, Products, and By-Products
Wet Pond	SC20, Material storage control – Design site with bermed and covered storage areas for material storage located away from storm drains

<sup>a</sup> Corresponds to the BMP number and name as in the *California Storm Water Best Management Practice Handbooks* (1993).

<b>Redevelopment and Infill BMPs</b>	
<b>BMP Name</b>	<b>BMP Identification No. and Name<sup>a</sup></b>
Aboveground Tank Berms	SC41, Aboveground Tank Berms
Car Wash Facility	SC3, Vehicle and Equipment Washing and Steam Cleaning
Catch basin insert	Not applicable.
Catch-basin screen	Not applicable.
Cistern collection systems	Not applicable.
Clarifiers	Not applicable.
Constructed Wetlands	TC3, Constructed Wetlands
Continuous flow deflection/separation systems	Not applicable.
Control of Impervious Runoff	Not applicable.
Curb elimination on landscape areas	Not applicable.
Detention/Infiltration device maintenance	SC75, Has the developer/owner determined how detention/infiltration devices planned for the site will be maintained
Drip Irrigation systems	Not applicable.
Efficient Irrigation	Not applicable
Energy Dissipaters	ESC40, Outlet Protection
Extended Detention Basins	TC5, Extended Detention Basin
Facility design to divert wash-off to sanitary sewers	Not applicable.
Filtration systems	Not applicable.
Flow diversion to landscape or pervious areas	Not applicable.
Geotextiles and Mats	ESC20, Geotextiles and Mats
Illicit Connection Prevention	SC60, Illicit Connection Prevention – Will any planned connections to the storm drain carry non-storm water discharges?
Infiltration Basins	TC1, Infiltration
Infiltration Trenches	TC1, Infiltration
Inlet Trash Racks	Not applicable.
Landscape Design	ESC2, Preservation of Existing Vegetation; ECS10, Seeding and Planting; ESC11, Mulching
Linings for Urban Runoff Conveyance Channels	Not applicable.
Materials Management	SC5, Outdoor Loading/Unloading of Materials; SC6, Outdoor Container Storage of Liquids; SC8, Outdoor Storage of Raw Materials, Products, and By-Products
Material Storage Management	SC20, Material storage control – Design site with bermed and covered storage areas for material storage located away from storm drains
Media Filtration	TC6, Media Filtration

<sup>a</sup> Corresponds to the BMP number and name as in the *California Storm Water Best Management Practice Handbooks* (1993).

**Redevelopment and Infill BMPs (continued)**

BMP Name	BMP Identification No. and Name <sup>a</sup>
Motor Fuel Concrete Dispensing Areas	SC41, Aboveground Tank Berms
Motor Fuel Dispensing Area Canopy	SC3, Vehicle and Equipment Washing and Steam Cleaning
Multiple treatment systems in combination	Not applicable.
Normal flow separation/storage systems	Not applicable.
Non-storm water discharges elimination	Not applicable.
Oil/Water Separators and Water Quality Inlets	Not applicable.
Outdoor Process Equipment Operation and Maintenance	TC3, Constructed Wetlands
Outdoor Storage	Not applicable.
Pesticide and fertilizer use elimination or reduction	Not applicable.

Porous Pavement and Alternative Surfaces	Not applicable.
Post signs to caution improper practices or to educate	SC75, Has the developer/owner determined how detention/infiltration devices planned for the site will be maintained
Primary waste-water treatment systems	Not applicable.

Primary waste-water treatment systems	Not applicable
Protect Slopes and Channels	ESC40, Outlet Protection
Retention grading	TC5, Extended Detention Basin
Scheduling	Not applicable.
Secondary waste-water treatment systems	Not applicable.
Self-Contained Areas for Vehicle or Equipment Washing, Steam Cleaning, Maintenance, Repair, or Material Processing	Not applicable.
Storm Drain System Stenciling and Signage	TC1, Infiltration
Trash Container Areas	Not applicable.
Vacuum sweeping of parking lots	ESC2, Preservation of Existing Vegetation; ECS10, Seeding and Planting; ESC11, Mulching
Vegetated buffer zones	Not applicable.
Vegetated Swales and Strips	SC5, Outdoor Loading/Unloading of Materials; SC6, Outdoor Container Storage of Liquids; SC8, Outdoor Storage of Raw Materials, Products, and By-Products
Wet Pond	SC20, Material storage control – Design site with bermed and covered storage areas for material storage located away from storm drains

<sup>a</sup> Corresponds to the BMP number and name as in the *California Storm Water Best Management Practice Handbooks* (1993).

## CITY OF LOS ANGELES – STORMWATER PROGRAM

### Prescriptive Method

### Standard Urban Stormwater Mitigation Plan

#### RETAIL GASOLINE OUTLETS

**OBJECTIVE** The prescriptive method described in this bulletin meets the minimum requirements of the Standard Urban Stormwater Mitigation Plan (SUSMP) for a retail gasoline outlet. As a prescriptive method, all requirements specified herein shall be incorporated into the approved development plan. Should an alternate method of compliance or an alternate product/manufacturer be used, the applicant shall prepare a site-specific plan indicating the alternate and its details. Such plan must be submitted for review and approval.

#### REQUIREMENTS

##### **Fueling Area**

- Must be covered with an overhanging roof structure or canopy with dimensions equal or greater than the area with the grade break and must not drain onto the fuel dispensing area. Area shall be graded to drain to catch basin.
- Must be paved with Portland cement concrete and extend 6.5 feet from the corner of each fuel dispenser.
- Must have a 2% to 4% slope to prevent ponding and have a grade break to prevent run-on of stormwater.
- Figure 1 shows a fuel island illustration.

##### **Site and Roof Drainage**

- Single grating catch basin (CB) with filter insert. CB shall be in accordance with the City of Los Angeles Standard Plan S-355-0 with depth modified to accommodate drainage elevations. Minimum depth of CB insert shall be 24 inches. Filter insert can be either of the following:
  - Aqua-Guard™, AquaShield/Remedial Solutions, Inc., Web Site: <http://www.aquashieldinc.com>.
  - Ultra-Urban™, Filter Series DI2020 (Abtech Industries, Inc., Web Site: <http://www.abtechindustries.com>.
  - DrainPac, United Storm Water, Inc., Web Site: <http://www.unitedstormwater.com>.
  - Enviro-Drain, Enviro-Drain, Inc., Web Site: <http://www.enviro-drain.com>.
- Site shall be graded to drain to CB.
- Figure 2 shows an example CB insert.
- Proofs of ongoing CB insert maintenance shall be kept on site indicating at the minimum, insert type, operator name, activity date, and activity type. Refer to Provision No. 8 of the Final SUSMP.

##### **Trash Storage Area (If included)**

- Must be screened or walled to prevent off-site transport of trash.



**Outdoor Material Storage Area (If included)**

- Must be placed in an enclosure or bermed (secondary containment). The berm height shall be \_ inch.
- Must be paved to contain leaks and spills.

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CITY OF LOS ANGELES – STORMWATER PROGRAM  
Prescriptive Method  
Standard Urban Stormwater Mitigation Plan

**AUTOMOTIVE REPAIR SHOP**

**OBJECTIVE** The prescriptive method described in this bulletin meets the minimum requirements of the Standard Urban Stormwater Mitigation Plan (SUSMP) for an automotive repair shop (SIC Codes\* 5013, 5014, 5541, 7532 to 7534, 7536 to 7539). As a prescriptive method, all requirements specified herein shall be incorporated into the approved development plan. Should an alternate method of compliance or an alternate product/manufacturer be used, the applicant shall prepare a site-specific plan indicating the alternate and its details. Such plan must be submitted for review and approval.

**REQUIREMENTS**

**Repair/Maintenance Bay**

- Must be indoors and designed to avoid stormwater run-on or contact with stormwater runoff.
- The bay drainage system must capture all wash-water, leaks, and spills, equipped with a clarifier and properly connected to a sanitary sewer. A plumbing permit from Department of Building and Safety will be required for the clarifier. IWD permit will be required from the Bureau of Sanitation – Industrial Waste Management Division for sewer connection.

**Site and Roof Drainage**

- Single grating catch basin (CB) with filter insert. CB shall be in accordance with the City of Los Angeles Standard Plan S-355-0 with depth modified to accommodate drainage elevations. Minimum depth of CB insert shall be 24 inches. Filter insert can be either of the following:
  - Aqua-Guard™, AquaShield/Remedial Solutions, Inc., Web Site: <http://www.aquashieldinc.com>.
  - Ultra-Urban™ Filter Series DI2020, Abtech Industries, Inc., Web Site: <http://www.abtechindustries.com>.
  - DrainPac, United Storm Water, Inc., Web Site: <http://www.unitedstormwater.com>.
  - Enviro-Drain, Enviro-Drain, Inc., Web Site: <http://www.enviro-drain.com>.
- Site shall be graded to drain to CB.
- Figure 2 shows an example CB insert.
- Proofs of ongoing CB insert maintenance shall be kept on site indicating at the minimum, insert type, operator name, activity date, and activity type. Refer to Provision No. 8 of the Final SUSMP.

**Vehicle/Equipment Wash Area (If included)**

- Self-contained, equipped with a clarifier and rain diversion system and properly connected to a sanitary sewer. A plumbing permit from Department of Building and Safety will be required for the clarifier. IWD permit will be required from the Bureau of Sanitation – Industrial Waste Management Division for sewer connection.

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**Fueling Area (If included)**

- Must be covered with an overhanging roof structure or canopy with dimensions equal or greater than the area with the grade breaks and must not drain onto the fuel dispensing area. Area shall be graded to drain to catch basin.
- Must be paved with Portland cement concrete and extend 6.5 feet from the corner of each fuel dispenser.
- Must have a 2% to 4% slope to prevent ponding and have a grade break to prevent run-on of stormwater.
- Figure 1 shows a fuel island illustration.

**Outdoor Material Storage Area (If included)**

- Must be placed in an enclosure or bermed (secondary containment). The berm height shall be \_ inch.
- Must be paved to contain leaks and spills.

**Loading/Unloading Dock Area (If included)**

- Must be covered and designed to avoid stormwater run-on or runoff.

**Trash Storage Area (If included)**

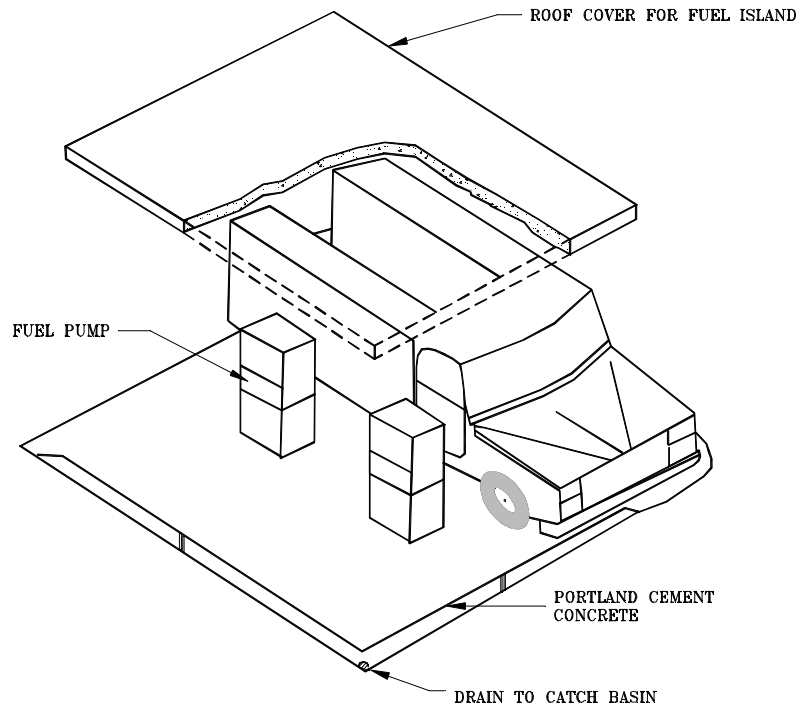
- Must be screened or walled to prevent off-site transport of trash.

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* SIC Codes:	5013 – Motor Vehicle Supplies & New Parts
	5014 – Tires & Tubes
	5541 – Gasoline Service Stations
	7532 – Top, Body, & Upholstery Repair & Paint Shops
	7533 – Automotive Exhaust System Repair Shops
	7534 – Tire Retreading & Repair Shops
	7536 – Automotive Glass Replacement Shops
	7537 – Automotive Transmission Repair Shops
	7538 – General Automotive Repair Shops
	7539 – Automotive Repair Shops, Not Elsewhere
	<b>Classified</b>

**FIGURE 1**

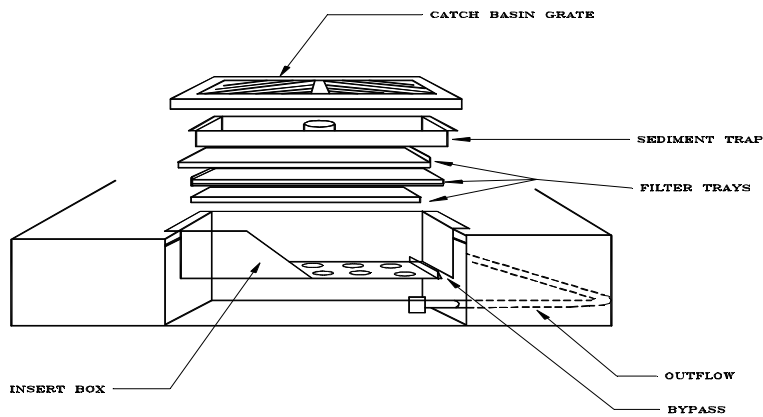
**Fuel Island Illustration**



FUEL ISLAND

**FIGURE 2**

**Example Catch Basin Insert**



CATCH BASIN INSERT



CITY OF LOS ANGELES – STORMWATER PROGRAM  
Prescriptive Method  
Standard Urban Stormwater Mitigation Plan

**PARKING LOTS**

**OBJECTIVE** The prescriptive method described in this bulletin meets the minimum requirements of the Standard Urban Stormwater Mitigation Plan (SUSMP) for a parking lot  $\geq$  5,000 square feet (sf) but not more than 20,000 sf, or  $\geq$  25 parking spaces but not more than 50 parking spaces. As a prescriptive method, all requirements specified herein shall be incorporated into the development plan. Should an alternate method of compliance or an alternate product/manufacture be used, the applicant shall prepare a site-specific plan indicating the alternate and its details. Such plan must be submitted for review and approval.

**REQUIREMENTS**

***Site Drainage***

The site drainage alternatives for a parking lot development can include one, or a combination of, the following: an infiltration trench; a hydrodynamic system; or a catch basin (CB) with filter insert. The infiltration trench or CB with filter insert, if selected, shall be used for every 5,000 sf area. The hydrodynamic system shall be used for lot areas up to 20,000 sf. The site shall be graded to drain to the drainage system.

- Hydrodynamic system can be one of the following:
  - StormCeptor 450j, StormCeptor Corp., Web Site: <http://www.csrstormceptor.com>.
  - Vortechincs™ 1000, Vortechincs, Inc., Web Site: <http://www.vortechincs.com>.
  - Jensen Interceptor JPHV-750, Jensen Precast, Web Site: <http://www.jensenprecast.com>.
  - V2B1™ V2-3, Environment 21, Web Page: <http://www.env21.com>.
- Infiltration trench
  - Infiltration trenches must **not** be used if either one of the following site conditions exist:
    - Project is located in the **San Fernando Valley/Upper Los Angeles River Area** watershed
    - Groundwater table/depth beneath the site is less than 10 feet below ground surface.
    - Site soil lithology consists primarily of clay
    - Parking lot is located in industrial areas or areas of industrial activity as defined in the State of California NPDES General Permit for Discharges of Stormwater Associated with Industrial Activities.
    - Parking lot is located in an area immediately adjacent to, or if the project receives and/or has a potential to receive stormwater run on from areas subject to high vehicular traffic activity (25,000 or greater average daily traffic [ADT] on main roadway or 15,000 or more ADT on any intersecting roadway)

- Project is located in hillside area (area with known erosive soil conditions, where the development contemplates grading on any natural slope that is twenty five percent or greater)
- The following factors must be considered if an infiltration trench is selected:
  - Local site geology/soil characterization – The developer shall demonstrate that the site soil geology is appropriate for infiltration.
  - Location(s) of nearby or surrounding water supply wells – The developer shall demonstrate that risk of impact on nearby water supply wells due to infiltration, is not likely to occur.
  - Groundwater depth.
  - Drainage site location.
  - Potential pollutants arising from use of the lot.
- A soil report to address the feasibility of infiltration will be required to be submitted with the plan to LADBS for review and approval.
- The infiltration trench configuration shall follow the specifications indicated in Figures 3 through 6. The primary components shall consist of the following:
  - Trench shall be 5'4" wide by 4'6" deep and 15' in length
  - Bottom infiltration layer shall be 18" thick & consist of fine sand
  - Top infiltration layer shall be 3' thick & consist of \_ inch clean and washed gravel free of organic material. The gravel shall be placed in lifts and compacted per ASTM D-1557.
  - Geotextile fabric filter liner
  - Shall contain a vegetated buffer 10' wide at inflow side and cable concrete mat as shown in Figures 3 and 7.
  - Two inch diameter observation well (cap secured with lock) located at center of trench
  - Overflow inlet
  - Inflow curb openings for sheet flow to the trench
  - Figure 7 shows an example infiltration trench
- Single grating CB with filter insert. CB shall be in accordance with the City of Los Angeles Standard Plan S-355-0 with depth modified to accommodate drainage elevations. Minimum depth of CB insert shall be 24 inches. Figure 2 shows an example CB insert. CB filter insert can be either of the following:
  - Aqua-Guard™, AquaShield/Remedial Solutions, Inc., Web Site: <http://www.aquashieldinc.com>.
  - Ultra-Urban™ Filter Series DI2020, Abtech Industries, Inc., Web Site: <http://www.abtechindustries.com>.
  - DrainPac , United Storm Water, Inc., Web Site: <http://www.unitedstormwater.com>.
  - Enviro-Drain , Enviro-Drain , Inc., Web Site: <http://www.enviro-drain.com>.
- Proofs of ongoing system maintenance shall be kept on site indicating at the minimum, type of system, operator name, activity date, and activity type. Refer to Provision No. 8 of the Final SUSMP.

**Outdoor Material Storage Area (If included)**

- Must be placed in an enclosure or bermed (secondary containment). The berm height shall be \_ inch.

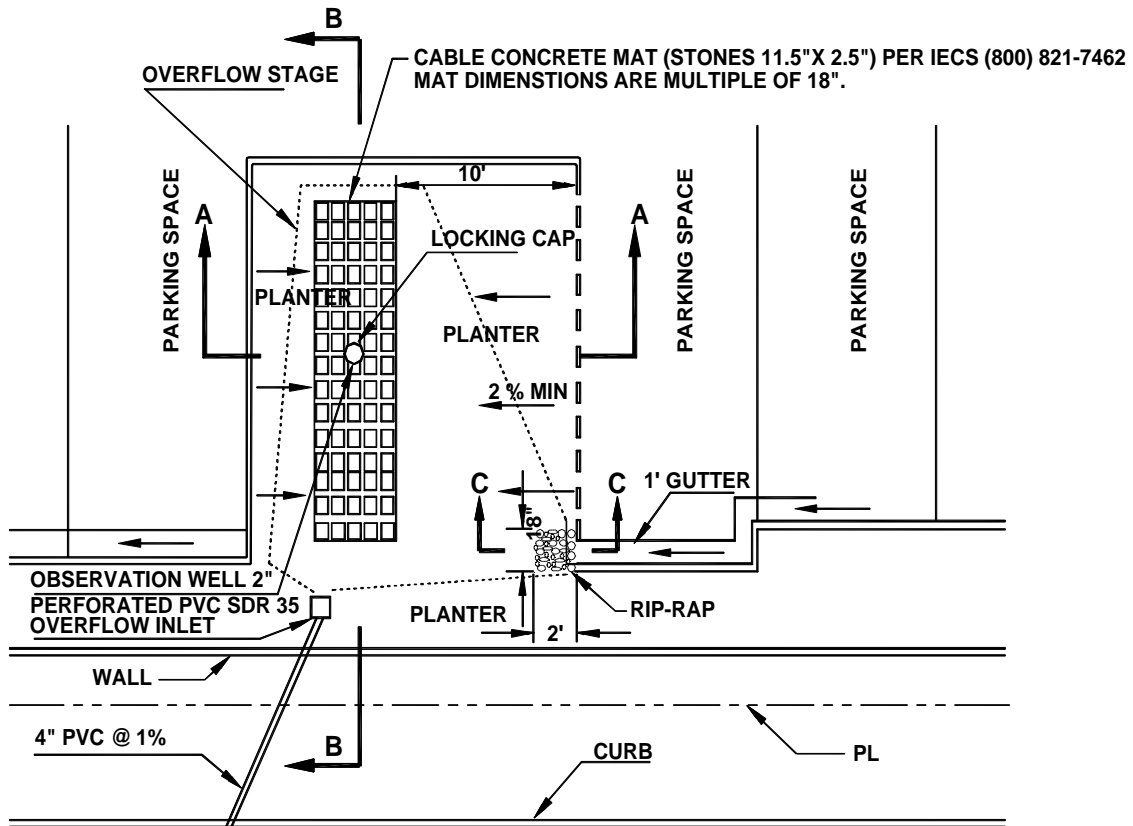
- Must be paved to contain leaks and spills.

**Trash Storage Area (If included)**

- Must be screened or walled to prevent off-site transport of trash.

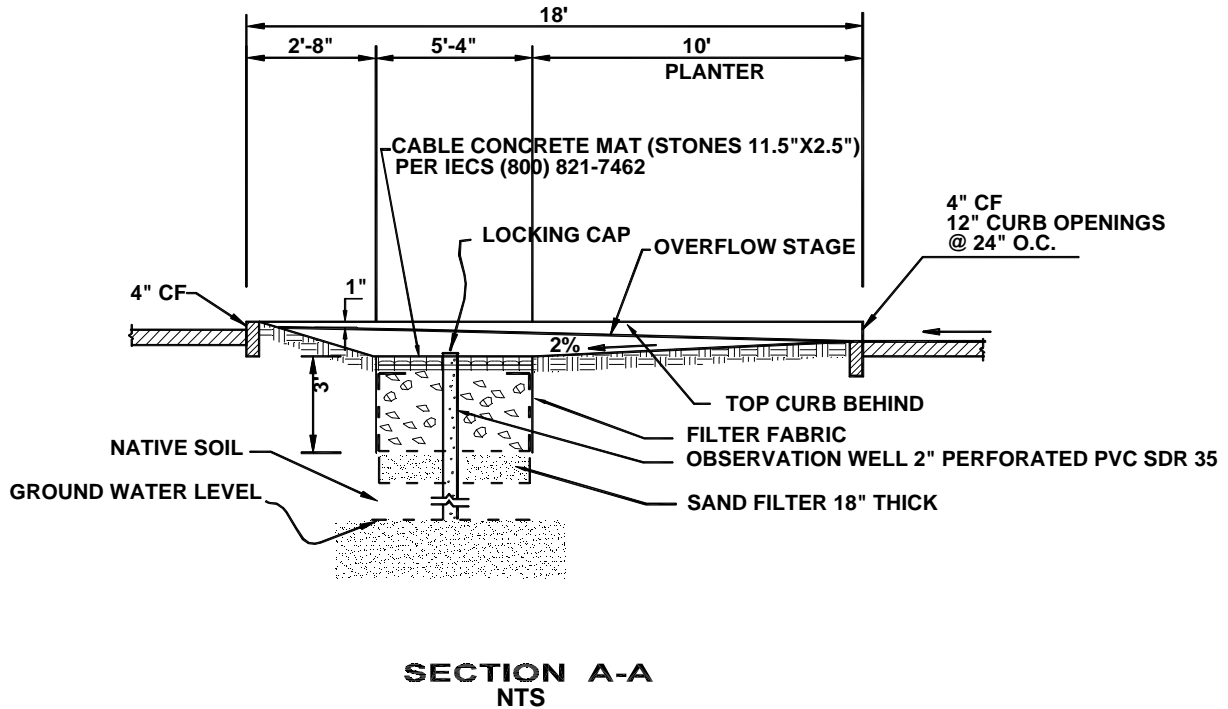
**FIGURE 3**

**Infiltration Trench Configuration**



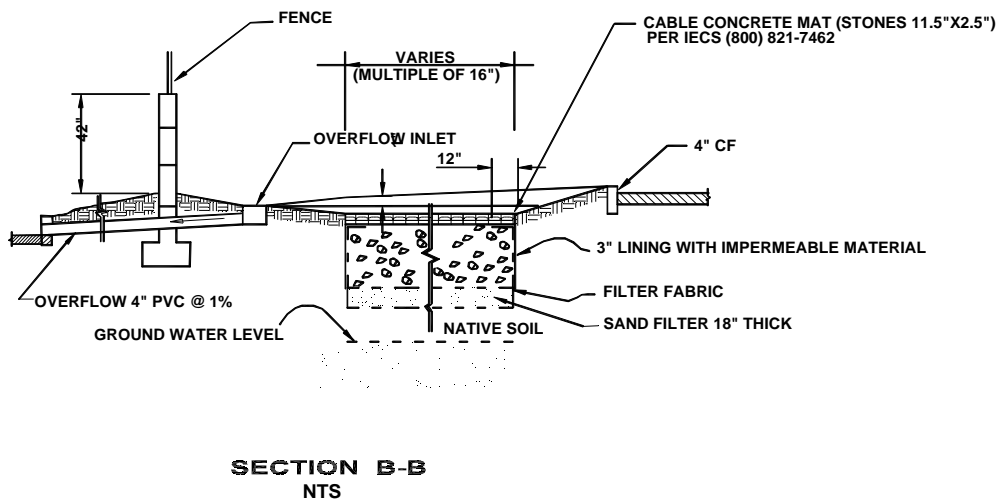
**FIGURE 4**

**Infiltration Trench Configuration (Section A-A)**

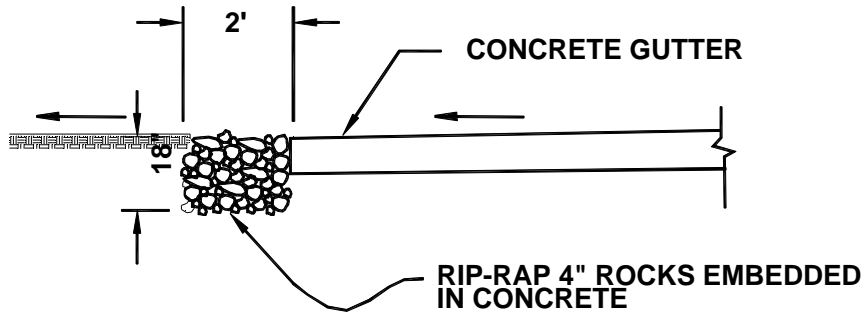


**FIGURE 5**

**Infiltration Trench Configuration (Section B-B)**



**FIGURE 6**  
Infiltration Trench Configuration (Section C-C)



**SECTION C-C**  
NTS

**FIGURE 7**  
Example Infiltration Trench

