

Storm Water Quality Management for Urban Roadways



Nick Russo, Environmental Compliance Officer
Harris County Engineering Department

Agenda



1. Introduction
2. Project Development
3. Construction Phase
4. Post Construction
5. Questions



Mission

The mission of the Harris County Engineering Department is to execute the planning, study, property acquisition, design and construction of various buildings, roads, bridges, traffic signals, drainage improvements, parks, and other architectural and maintenance projects...

We create innovative customer driven solutions for all projects.

Typical County Roadway Expansion



Study Phase - Environmental Studies



- Phase I & II Environmental Site Assessments (ESA)
- Waters of the U.S. / Wetlands
- Threatened and Endangered Species
- Cultural / Archeological Resources
- USACE Permits

Study Phase – Other Studies

- Alignment
- Right of Way
- Utilities
- Geotechnical
- Traffic
- Drainage/Hydrology



Design Phase

- Develop Storm Water Pollution Prevention Plans
- Design Storm Water Quality Management Plans
- Select BMPs, Specifications, & bid/pay items.
- Obtain plan approvals & permits.



STORM WATER POLLUTION PREVENTION PLAN

PROJECT NAME: _____

LOCATION & LIMITS: _____

See plan cover sheet for vicinity map.

PROJECT SCOPE:

Activity (check all that apply)	
Roadway Expansion	<input type="checkbox"/>
Roadway New Construction	<input type="checkbox"/>
Underground Storm Sewer	<input type="checkbox"/>
Detention Pond	<input type="checkbox"/>
Bridge Expansion	<input type="checkbox"/>
Bridge New Construction	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>

TOTAL PROJECT AREA: _____ Acres _____ Linear Feet

TOTAL AREA DISTURBED: _____ Acres

EXISTING CONDITIONS OF SOIL, VEGETATION, AND DRAINAGE:

DESCRIPTION OF DRAINAGE AREAS AND OUTFALLS:

RECEIVING WATERS/CONVEYANCE:

NO.	REVISION TEXT	DATE	INIT

HARRIS COUNTY ENGINEERING DEPARTMENT



DO NOT SEAL

MAJOR SOIL DISTURBING ACTIVITIES:

ACTIVITY (CHECK ALL THAT APPLY)	
SPEC 102 - Clearing & Grubbing	<input type="checkbox"/>
SPEC 104/110/400 - Excavating	<input type="checkbox"/>
SPEC 400 - Fill	<input type="checkbox"/>
Levelling/Grading	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>

NOTES:

See Site Plan for detailed planning drawings.

SOIL STABILIZATION AND SEDIMENT CONTROL MEASURE:

MEASURES	TEMPORARY	PERMANENT
SPEC 164 - Seeding	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 162 - Sodding	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 165 - Hydro-mulch	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 164 - Soil Retention Blanket	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 713 - Reinforced Filter Fabric Barrier	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 719 - Inlet Protection Barrier	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 724 - Stabilized Construction Access	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 730 - Concrete Truck Washout Structures	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 741 - Inlet Protection Barrier	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 750 - Rock Filter Dam	<input type="checkbox"/>	<input type="checkbox"/>
SPEC 725 - Watering for Dust Control	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

Notes: If sediment escapes off site, these accumulations will be removed to minimize impact. Rock filter dams will be cleared before the reach 1/3 the height of the dam, other control measures will be cleared before their capacity has been reduced by 50%. As required in CGP TXR 150000, soil stabilization measures will be initiated in portions of the site where activities have ceased for a period exceeding 14 days. This stabilization will commence no later than the day following completion of work in these areas. If prompt repair or replacement is not feasible, the reason will be documented in the SWPPP. Records of dates for major grading activities, and initiation of stabilization measures will be maintained in the SWPPP. Daily work logs related to this section will be kept in CAPTRAC. The Harris County SWPPP detail sheet will be used when implementing BMP's and included with this document.

Current construction specification documents can be found at:
<http://www.eng.hctx.net/Consultants/Standards-Specifications/Standard-Design-Engineering-Specifications>

INSPECTION & MAINTENANCE:

Inspection and Maintenance will be performed according to SPEC 751. Inspections will be conducted at least every 7 calendar days. Inspection forms will be filed with SWPPP supporting documents. If repair or replacement of stabilization or erosion control features is necessary, it must be completed at the earliest date possible. Amendments will be tracked on the SWPPP Amendment Log. Daily work logs related to this section will be kept in CAPTRAC.

POTENTIAL POLLUTION SOURCES:

Concrete	<input checked="" type="checkbox"/>	Cleaning Solvents	<input checked="" type="checkbox"/>
Fertilizer	<input checked="" type="checkbox"/>	Curing Compounds	<input checked="" type="checkbox"/>
Pesticides	<input checked="" type="checkbox"/>	Hydraulic Fluid	<input checked="" type="checkbox"/>
Asphalt	<input checked="" type="checkbox"/>	Motor Oil	<input checked="" type="checkbox"/>
Paint	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Gasoline	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Diesel Fuel	<input checked="" type="checkbox"/>		<input type="checkbox"/>
Sanitary Toilets	<input checked="" type="checkbox"/>		<input type="checkbox"/>

POLLUTION PREVENTION BMPS

Whenever possible all materials will be stored in their original containers in secure areas where spillage is protected from runoff. Stockpiles and work areas will be constructed in such a way to minimize the amount of sediment that enters receiving waters and wetlands. Spill prevention and control measures are included on attached site maps. Records of spills will be maintained with SWPPP supporting documents. Additional required BMPs can be found in SPEC 725. Temporary materials and structures will be removed from waterways as soon as feasible once they are no longer required.

WASTE MATERIAL:

All solid waste materials will be collected and stored in secure metal dumpsters, then transported to appropriate disposal facilities. Collection will be completed often enough to ensure that no waste materials will be lost due to overflowing of collection containers. Liquid wastes will be stored in sealed containers in designated areas and disposed of according to all applicable regulations. All wasted containers should meet all state and local requirements.

RESPONSIBLE PARTY/CONTRACTOR

Name	
Title	
Company	
Signature	

PROJECT TITLE:		HCD STANDARD
DRAWN BY: ADT	SHEET DESCRIPTION:	1
CK'D BY: J.M.		
SCALE: 1"=20'	APPROVED BY:	SHEET NO:
DATE: 3/24/16		1 / 1

Construction Phase BMPs

- TCEQ Construction General Permit
- County/City Stormwater Regulations
- Implement SWPPP & BMPs

Agencies:



Post-Construction BMPs

REGULATIONS OF HARRIS COUNTY, TEXAS

FOR

STORMWATER QUALITY MANAGEMENT



AS
ADOPTED AUGUST 21, 2001
AMENDED SEPTEMBER 25, 2001
EFFECTIVE OCTOBER 1, 2001
AMENDED APRIL 13, 2004
AMENDED APRIL 19, 2011
EFFECTIVE MAY 1, 2011
AMENDED AUGUST 9, 2016
EFFECTIVE SEPTEMBER 1, 2016

HARRIS COUNTY
ENGINEERING DEPARTMENT

JOHN R. BLOUNT, P.E.
COUNTY ENGINEER

- New Development greater than 5 acres
- Significant Redevelopment greater than 1 acre
- Also applies to roadways.
- Various methods used since about 2002.

The “First Flush” Dry Basin



Dry/Wet outlet designs



Floatables Collection Screen



Wet Bottom Detention



Wet Bottom Detention Basins with Water Quality Features

HARRIS COUNTY FLOOD CONTROL DISTRICT

DESIGN GUIDELINES FOR HCFCD WET BOTTOM DETENTION BASINS WITH WATER QUALITY FEATURES

HARRIS COUNTY FLOOD CONTROL DISTRICT HCFCD.org

Urban Forestry



Low Impact Development

Low Impact Development (LID) is a comprehensive land planning and engineering design approach with the goal of maintaining, as the minimum, the pre-development hydrologic regime in a watershed **without solely using conventional development and detention basin techniques to satisfy drainage and flood mitigation requirements..**



Typical Detention Systems



Birnamwood Dr. - Bioswale

LID-Birnamwood



LID Design provided a cost effective, sustainable roadway leading to an anchor park along spring creek.

LID -Louetta



Harvey-Roadway Impacts



Public Infrastructure Roadway Damages :

- 45 Bridges
- 54 Roadways
- 58 Traffic Signals



Summary

- Harris County has been implementing post construction stormwater BMPs since about 2002.
- Various ways to treat stormwater within a roadway project.
- Available storage space and offsite drainage are significant challenges.



Questions

- Nick.Russo@hcpid.org

