

Storm Water Pollution Prevention Plan

For

Monticello 4th Plat

Lee's Summit, Jackson County, Missouri

Prepared By:



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Project Description

Project Location

The site is located off NE Jamestown Road, Section 4 and 5, Township 48 North, Range 31 West in Lee's Summit, Jackson County, Missouri. The construction site consists of 19.51. This proposed site is being developed by Silverstone Development, PO Box 346, Lee's Summit, Jackson County, Missouri. Below in Figure 1 is a vicinity map indicating the location of Monticello and surrounding future development area.



Figure 1: Monticello 4th Plat

Construction Type

The project will consist of 45 residential lots and the associated roadways and site utilities

Existing Site Conditions

The existing site generally drains from South to North and into an existing unnamed tributary that drains into Blue Springs Lake that serves as a regional detention facility for the watershed

Timing Schedule

Clearing and excavating operations are expected to start July 2020. Completion of the project is expected by December 2020

Areas

The disturbed area for the site is approximately 19.51 acres.

Runoff Coefficient

Existing area is open space a run-off coefficient of $C = 0.30$. The run-off coefficient for the project is estimated to be 0.51. All disturbed areas not containing parking lot will have a final stabilization of grass.

Receiving Waters

Surface water that does not infiltrate into the ground will drain into an unnamed tributary of Blue Springs Lake

Construction Plans

The construction plans, located in Appendix A, shows the existing and proposed grading of the site, the location of controls and the location of where stabilization is expected to occur. As the project's demands change, the site map shall be manually updated by the on-site contractor.

Storm Water Management Controls

Erosion and Sediment Controls

Structural controls are designed to divert flows away from disturbed areas, to store flows, or to limit the discharge of pollutants from the site to the degree attainable. The site maps, located in Appendix A, show locations of each control, the size of the control, the required materials, and methods of installation and use.

Structural Practices

Silt fences will be installed along the contours within the grading area following site grading. The erosion control measures will be placed perpendicular to flow and parallel to the contours. Fabric for silt fences will be fastened to the upslope side of the fence posts in accordance with industry standards. The fabric will be trenched into the ground to a minimum of six inches and will be backfilled with tamped natural soil. Sediment trapped by silt fence will be removed when it accumulates to 1/3 the height of the silt fence. High velocity, high erosive flow is not expected on the project site due to the relatively gentle grades. In addition to the gentle grades, much of the site's southern portion will be surfaced with crushed stone, thereby reducing sediment loss.

Concrete trucks will be allowed to discharge excess concrete and drum wash water on the site, in such a manner as to allow the material to flow into the excavation stockpile or into a settling basin installed for this purpose.

Prior to site excavation a temporary sedimentation basin will be constructed on the South side of the site to collect sediment from the disturbed earthen areas. The temporary sedimentation basin, approximately 40 feet by 95 feet with a depth approximately 3 feet, will be built by over digging the proposed detention facility. A standpipe will be placed inside the basin allowing decanted water to be piped directly into the unnamed tributary by means of a gravity drain pipe. A discharge pit detail can be found in Appendix B.

Stabilization Practices

Where possible, vegetated strips will be left along both edges of the construction limits to trap suspended solids before storm water leaves the site. In addition, trees and other plant material, which are not in conflict with the proposed construction, will be left in place. All disrupted areas of the site will be finish-graded and stabilized with permanent seeding as soon as the weather permits.

Stabilization controls are designed to control erosion from disturbed areas. The disturbed areas of the construction site that will not be re-disturbed for 21 days or more must initiate stabilization measures by the 14th day after the last disturbance, except as precluded by snow cover. These disturbed areas shall be landscaped with seed or hydro seed and mulched with a minimum of 2 tons of straw per acre to achieve final stabilization of the site.

Storm Water Management

As mentioned above, disturbed areas at the construction site that are not covered by crushed stone will be seeded and mulched. The intent is to return all surface areas to a condition which provides a run-off coefficient equal to or less than that which existed prior to construction. To the extent possible, final site grading will be conducted such that storm water runoff does not exceed erosive velocities of grassed surfaces (preconstruction levels).

Other Controls

At the southwest corner of the project site, an area will be designated for equipment maintenance, repair, refueling, tool trailers and equipment lay down. The fuel tank will be kept on its own spill containment with extra storage. The fuel tank will be stored on the protected side of the tool trailer allowing access by equipment and trucks. Therefore, the fuel tank will never be placed directly on the ground surface. Spill kits will be maintained in each piece of equipment on site. Any chemicals, paints, solvents, or other potentially toxic materials will be properly stored. An office trailer will be located at west side of the project site. Portable toilets will be located near the office trailer. The portable toilets will be pumped out regularly and the waste hauled off site, by a licensed independent contractor, to an approved treatment facility. A dumpster for trash and rubbish will be located at the construction site. The dumpster will be emptied regularly by a waste disposal contractor that will haul the waste to an approved landfill. Steps will be taken to minimize off-site tracking of sediments. Any sediment tracked onto roads or streets will be removed before they become distributed along the pavement.

Non-Storm Water Discharges

The following types of non-storm water discharges will occur on the site during construction:

- Groundwater pumped from excavations
- Flush water for pipe testing
- Wash water for concrete trucks

Maintenance and Inspection Procedures

Maintenance Plan

The maintenance practices that will be used to maintain erosion and sediment controls are, but not limited to the following:

- All measures and equipment will be maintained in good working order; if a repair is necessary, it will be repaired in an appropriate and timely manner.
- Identification of equipment, controls and site areas that should be inspected
- A maintenance inspection report will be made after each inspection and will stay on-site throughout the entire construction project.
- Clean silt control devices should begin when the features have lost 50% of their capacity.

Inspection Plan

The inspection practices that will be used to maintain erosion and sediment controls are, but not limited to the following:

- Inspection is required every 7 days and within 24 hours of the end of any precipitation event. The contractor shall also inspect and assure that all sediment control devices are in working condition prior to any forecasted rainfall.
- Built up sediment will be removed from silt fencing when it has reached 1/3 the height of the fence
- Silt fences will be inspected for depth of sediment, torn fabric, proper attachment to fence post, and to see that the fence posts are firmly in the ground.
- Temporary and permanent seeding will be inspected for bare spots, washouts and healthy growth.

Inspection and maintenance logs will be maintained with the SWPPP in Appendix D.

_____ will be responsible for placement and maintenance of all control measures until final stabilization.

Employee Training

An employee training program will be developed and implemented to educate employees about the requirements of the SWPPP. This education program will include background on the components and goals of the SWPPP and hands-on training in erosion controls, spill prevention and response, good housekeeping, proper material handling, disposal and control of waste equipment fueling, and proper storage, washing, and inspection procedure. All employees will be trained prior to their first day on the site.

Certifications

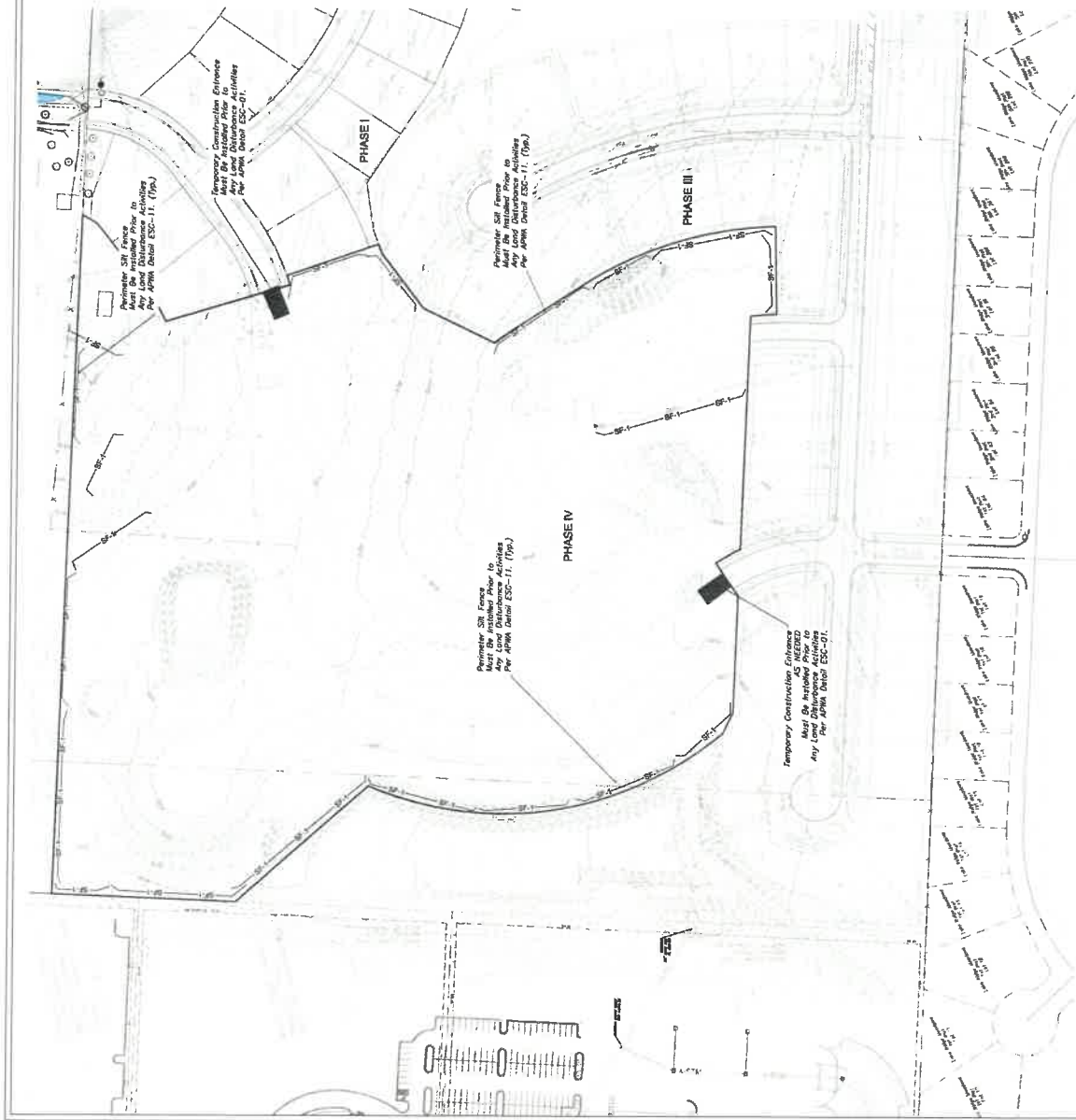
The project owner will need to sign the Project Owner Certification prior to the start of clearing and excavating. The contractors will need to complete a Contractor Certificate Form. At the discretion of the owner, other contractors and subcontractors may be asked to complete Contractor Certificate Forms. Upon signing the certificate, the contractor or sub-contractor is a co-permittee with the owner and other co-permittee contractors. All certificates must be maintained with the SWPPP. All certificates can be found in Appendix D.

Conclusion

Sediment control measures shall be removed once 70% of the permanent cover is established over 100% of the tributary area. Within 30 days after final stabilization of the project site the owner shall submit a Notice of Termination to the Missouri Department of Natural Resources.

The owner shall retain copies of the SWPPP, all reports required by this permit and records of all data used to complete the SWPPP and the inspection forms for at least three years from the date of final stabilization.

Appendix A – Site Drawings



DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

PHASE 1 SILT FENCE

LEGEND

**GILT FENCE PROTECTION
TO BE MAINTAINED BY CONTRACTOR**

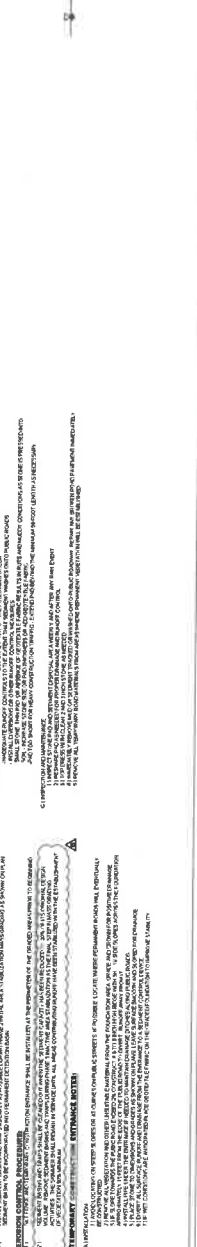
NOTE: The Land Disposal/Reuse Plans indicate the Final placement of problem general devices. The contributor(s) may proceed with contamination prior to the final placement of these devices by providing additional criteria to control emission on their terms of work. These devices shall be maintained until the final devices are in place.

PRE-CLEARING PLAN
SCALE: 1" = 80'

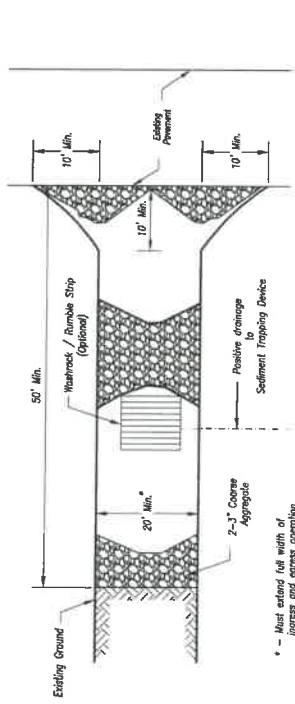


DURING ALL PHASES OF CONSTRUCTION, INACTIVE AREA STABILIZATION METHODS AS DESCRIBED IN APWA SECTION 5111.3 SHALL BE USED TO CONTROL EROSION AND SILTATION.

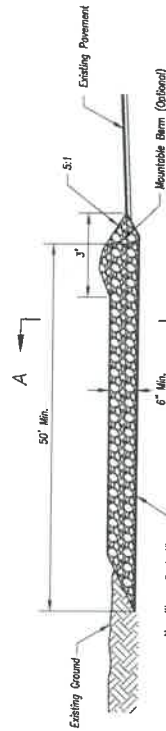
**SIDE VIEW
(NO SCALE)**



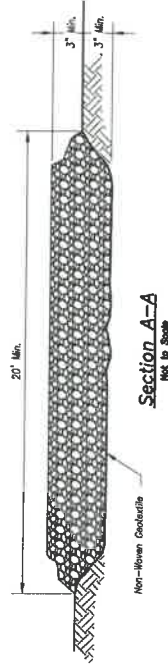
Appendix B – Erosion Control Details



Plan View
Not to Scale



Side Elevation
Not to Scale



Section A-A
Not to Scale

Notes for Construction Entrance:

1. Avoid locating on steep slopes, at curves on public roads, or on the shoulder of public roads.
2. Remove all vegetation and other unsuitable material from the foundation area, grass, and crown for positive drainage.
3. If slope towards the public road exceeds 2%, construct a 6- to 8-inch high ridge with 3:1-V slope slopes across the foundation area, extending approximately 15 feet from the edge of the public road to divert runoff from it.
4. Install pipe under the entrance if needed to maintain drainage ditches along public roads.
5. Place stone to dimensions and grade as shown on plans. Leave surface sloped for drainage.
6. Divert all surface runoff and drainage from the entrance to a sediment control device.
7. If conditions warrant, place geotextile fabric on the graded foundation to improve stability.

Maintenance for Construction Entrance:

1. Reshape entrance as needed to maintain function and stability of installation. Top dress with clean aggregate as needed.

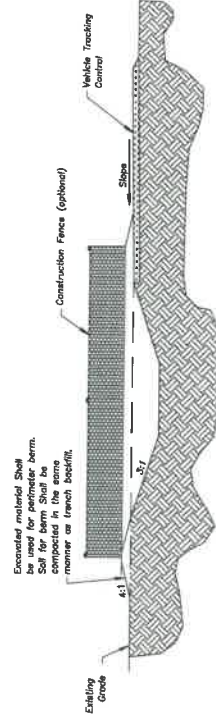
CONSTRUCTION ENTRANCE

Notes for Concrete Washout:

1. Concrete washout areas shall be installed prior to any concrete placement on the project.
2. Concrete washout areas shall include a 24\"/>

Maintenance for Concrete Washout:

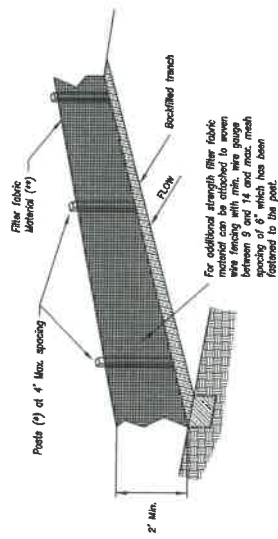
1. Concrete washout materials shall be removed once the materials have filled the washout to approximately 75% full.
2. Concrete washout areas shall be enlarged as necessary to maintain capacity for washed concrete.
3. Concrete washout areas, washed pieces of concrete and all other materials shall be removed from the project area.
4. Concrete washout areas shall remain in place until all concrete for the project is placed.
5. When concrete washout areas are removed, excavations shall be filled with suitable compacted backfill and topped, any disturbed areas shall be stabilized with vegetation, mulch, or other means, and/or removal of the concrete washout areas shall be stabilized.



CONCRETE WASHOUT

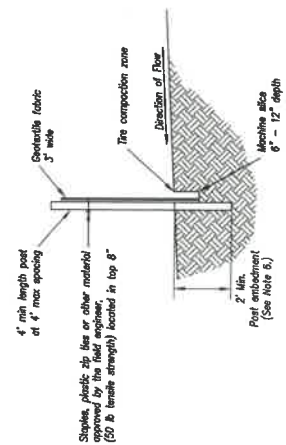
AMERICAN PUBLIC WORKS ASSOCIATION 	KANSAS CITY METRO CHAPTER
	CONSTRUCTION ENTRANCE AND CONCRETE WASHOUT
STANDARD DRAWING NUMBER ESC-Q ADOPTED: 10/24/2016	

Construction Entrance modified from 2015 Standard Plan Standard Details for Erosion and Sediment Control, Concrete Washout modified from 2008 City of Great Bend Standard Drawings.



- (*) POSTS
- MIN. LENGTH 4'
 - HARDWOOD 1 1/2" x 1 3/4"
 - IN-2.2 SOUTHERN PINE 2 3/8" x 2 3/4"
 - STEEL 1.33 LB/FT

(*) - Geotextile fabric shall meet the requirements of ASTM M288



SILT FENCE DETAILS

Not to Scale

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches 1/3 the height of silt fence.
2. Repair as necessary to maintain function and structure.

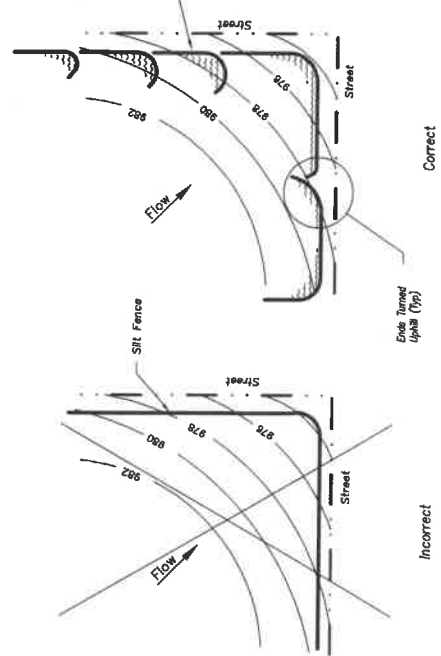
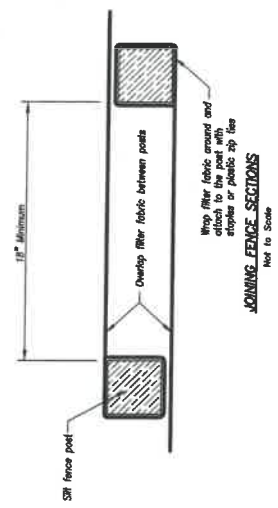
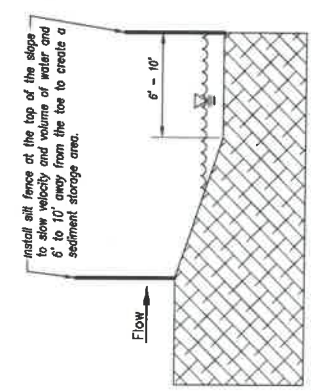
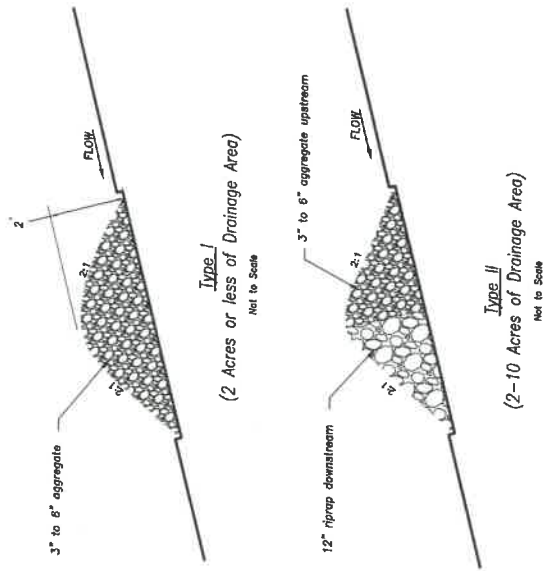


Figure A
SILT FENCE LAYOUT
Not to Scale



Notes:

1. In order to contain water, the ends of the silt fence must be turned uphill (Figure A).
2. Long perimeter runs of silt fence must be limited to 100'. Runs should be broken up into several smaller segments to minimize water concentrations (Figure A).
3. Long slopes should be broken up with intermediate rows of silt fence to slow runoff velocities.
4. Attach fabric to upstream side of post.
5. Install posts a minimum of 2' into the ground.
6. Trenching will only be allowed for small or difficult installation, where slicing machine cannot be reasonably used.

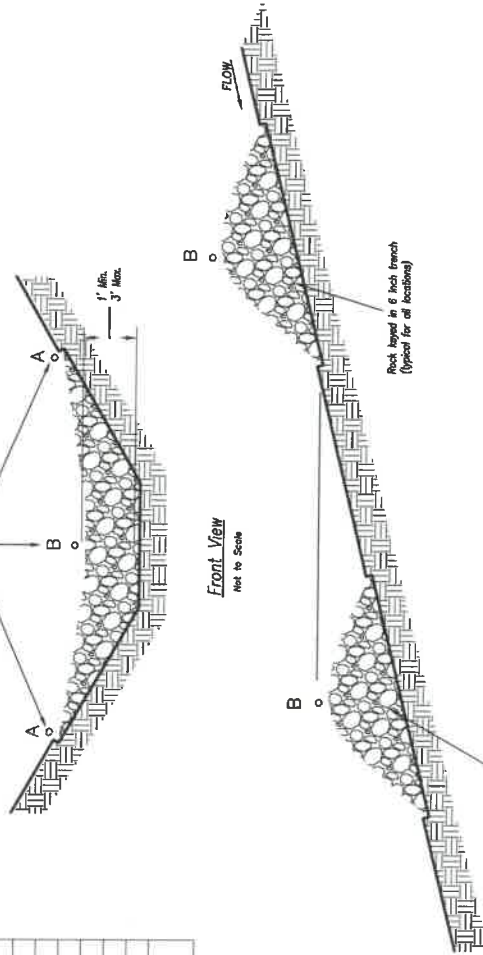


ROCK DITCH CHECK

Temporary Rock Ditch Check Spacing		
Ditch Centerline Slope (%)	Spacing Interval (Feet)	
5.0	60	
6.0	50	
7.0	43	
8.0	36	
9.0	33	
10.0	29	

Note: Use this spacing only for Rock Ditch Checks.

Elevation of end points "A" must be minimum 6" higher than elevation of flow line at point "B"



Spacing Between Check Dams (all types)

Not to Scale

Notes:

1. Rock check dams shall be used only for drainage areas less than 10 acres unless approved by the City Engineer.
2. Use rock checks only in situations where the ditch slope exceeds 5%.

Maintenance:

1. Remove and dispose of sediment deposits when the deposit approaches 1/2 the height of the ditch check.
2. Replace and reshape as necessary to maintain function and integrity of installation.

Modified from 2015 Overland Park Standard Details for Erosion and Sediment Control.

AMERICAN PUBLIC WORKS ASSOCIATION



KANSAS CITY
METRO CHAPTER

ROCK DITCH CHECKS

STANDARD DRAWING
NUMBER ESC-10

ADOPTED:
10/24/2016

Sediment Basin Design Summary (**)

Design Item	Basin #1	Basin #2	Units	Notes
Site Data:				
Tributary Drainage Area to Pond			Acres	
50% (2 yr) Design Flow			cfs	
4% (25 yr) Design Flow			cfs	
Pond Data:				
Minimum Sediment Storage Volume			cu yd	134 cu yd/acre required minimum
Provided Sediment Storage Volume			cu yd	
Bottom Elevation			ft	
Sediment Cleanout Elevation			ft	Elevation equal to 20% of original design volume
Top of Riser Elevation			ft	
Emergency Spillway Elevation			ft	at or above 0-2' elevation, 1.0 ft min above principal spillway
Top of Dam Elevation			ft	1.0 ft min above 0-25' elevation
Basin Slope Data:				
A = Area of Normal Pool			SF	
L = Length of Flow Path			ft	
W _e = Effective Width = A/L			ft	
Length to Width Ratio = L/W _e				
Principal Spillway Data:				
Riser Pipe dia			in	15" min. Size for 2 year flow minimum
Barrel Pipe dia			in	15" min. Size for 2 year flow minimum
Concrete Base size for Riser Pipe			CY	Size to prevent flotation, 1.25 safety factor required
Skimmer Size				Designer to provide specific details and calculations per application to diverter in 48 to 72 hours
Emergency Spillway Data:				
Design Depth in Spillway			ft	
Design Velocity in Spillway			ft/sec	
Lining Material				Designer to provide specific details and calculations per application

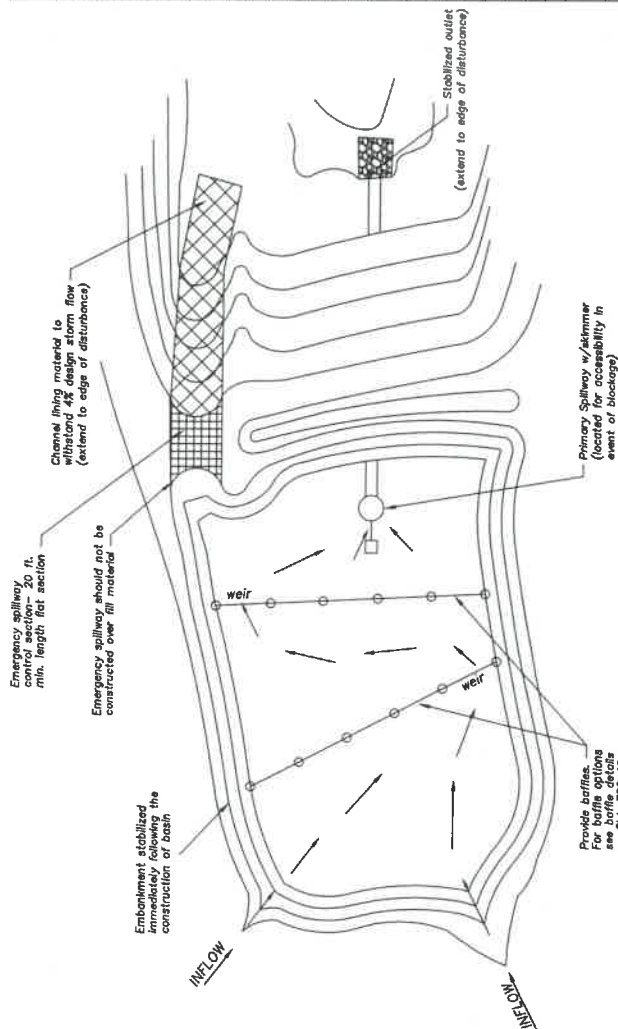
(**) - Required on all Sediment Basin Plan Sheets

Sediment Basin Notes:

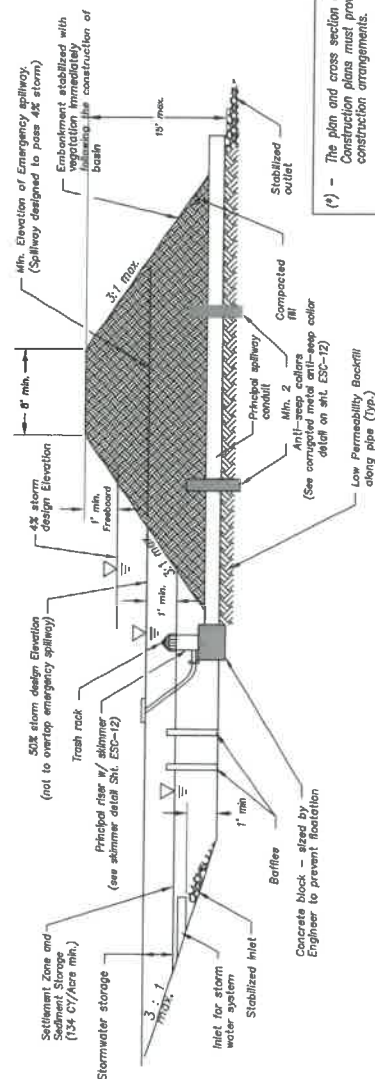
1. Interior baffles shall be provided to reduce short-circuiting of the basin. See Sht. ESC-12 for approved baffle options.
2. Emergency spillways to be located in a non-fill location when feasible and shall be lined with a non-erodible material such as Riprap or Turf Reinforcement Mat.
3. When directed, sediment basins shall be fenced using construction fence or other material for safety reasons and include warning signs, reading: "DANGER - KEEP OUT".

Maintenance:

1. Check temporary sediment basins after periods of significant runoff.
2. Remove sediment and restore the basin to its original dimensions when sediment accumulates to 20% of the storage capacity.
3. Immediately repair any erosion damage to the embankment and outlets.
4. Repair and/or replace baffles as necessary to maintain function and integrity of installation.
5. Keep outlet, skimmer and pool area free of all trash and other debris.

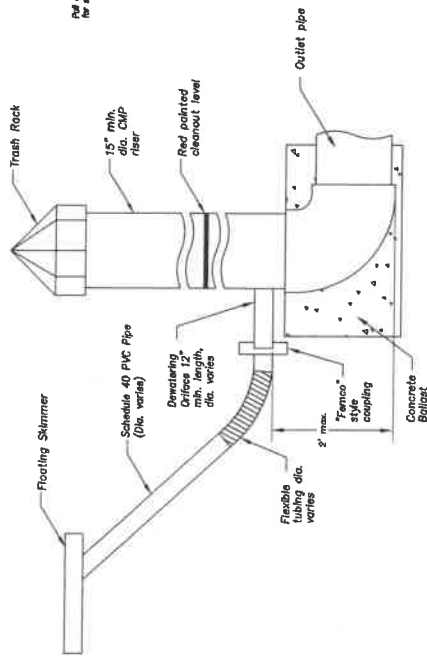


Plan View (**) Not to Scale

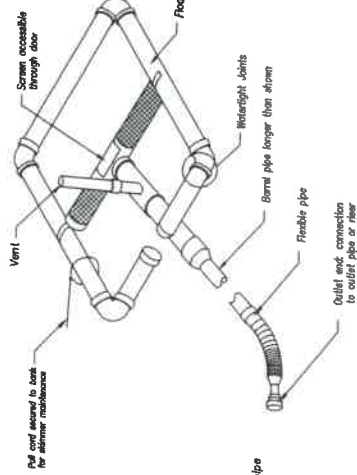


Cross Section (**) Not to Scale

(*) - The plan and cross section are schematic in nature. Construction plans must provide specific site construction arrangements.

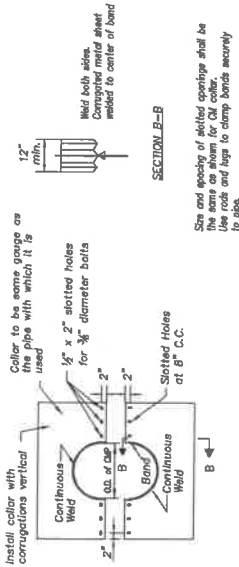


PRINCIPAL SPILLWAY DETAIL



SKIMMER DETAIL (Typ.) *

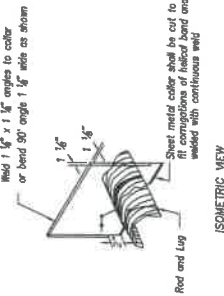
* Designer to provide specific details per application (i.e., pipe size, screen area, perforation, etc.)



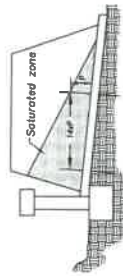
SECTION B-B

Size and spacing of slotted openings shall be the same as shown for CM collar. Use stainless steel and legs to clamp bolts securely to pipe.

Weld 1 1/2" x 1 1/2" angles to collar or bend 90 degree 1 1/2" wide as shown



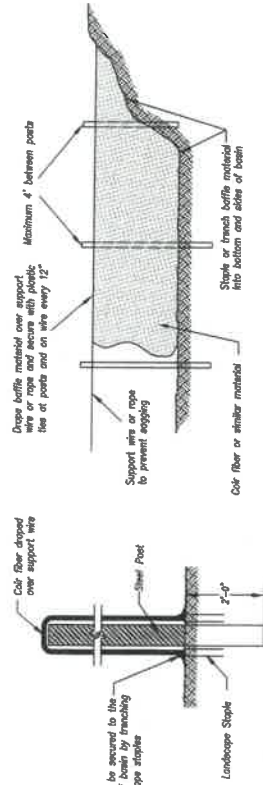
ISOMETRIC VIEW



ANTI-SEEPAGE COLLAR LOCATIONS

CORRUGATED METAL ANTI-SEEPAGE COLLAR DETAIL

Not to Scale



Option A - Rock with Weir

Option B - Coir Fiber Material

BAFFLE DETAILS

Not to Scale

1. The top between the two half sections and between the pipe and connecting band shall be caulked with optimal mastic at the time of installation.
2. Each collar shall be furnished with two (2) 1/2" diameter rods with standard lock legs for connecting the collars to the pipe.
3. For bands and collars, modification of the details shown may be used providing equal or better performance is achieved and details are approved by the Engineer prior to delivery.
4. Two other types of anti-seep collars are:
 - a. Corrugated metal, similar to shown, except also welded to a 4 ft. section of pipe and connected to the pipe with connecting bands.
 - b. Concrete, 8 inches thick, formed around the pipe with #3 rebar spaced 12".

ANTI-SEEPAGE COLLAR DETAILS

1. Connections between the anti-seepage collar and the barrel must be watertight.
2. P = projection distance. Stud as required to achieve at least a 100% increase in seepage length.
3. 14g2 = max. spacing between collars.
4. Collars shall generally be placed in the middle of the barrel, and the bottom, and within the saturated zone.
5. All materials to be in accordance with construction material specifications.
6. When specified on the plans, coating of the collar shall be in accordance with construction material specifications.
7. Unassembled collars shall be marked by painting or tagging to identify matching pairs.

Appendix C – Permits

Appendix D – Certifications

Project Owner Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SignatureDate

Contractor Certification (_____)
CONTRACTOR COMPANY NAME

I certify under penalty of law that I understand the terms and conditions of this SWPPP and all procedures of storm water discharges associated activities from the construction site identified as part of this certification

Name

Title

Date

Appendix E – Inspection and Maintenance Logs

Monticello 4th Plat

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT FORM

LARGE DISTURBED AREA INSPECTION FORM

To be completed every 7 days and within 24 hours of any precipitation event

Inspector: _____

Date: _____

Inspector's Qualifications:

Days since last rainfall: _____

Amount of last rainfall: _____ inches

Stabilization Measures

Area	Date of Last Stabilization	Stabilization Measures	Current Condition

Stabilization required:

To be performed by: _____

On or Before: _____

Monticello 4th Plat

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT FORM

SEDIMENT BASIN & ROADWAY INSPECTION FORM

Sediment Basin(s):

Basin ID/Depth	Condition of Basin Side Slope	Any Evidence of Overtopping of the Embankment	Condition of Outfall from Sediment Basin

Maintenance required from sediment basin:

To be performed by: _____

On or Before: _____

Other Controls / Stabilized Construction Entrance

Is Sediment on Paved Roadway?	Is Gravel Clean or is it Filled with Sediment?	Does all Traffic use the Stabilized Entrance to Leave the Site?	Is the Culvert Beneath the Entrance Working?

Maintenance required from stabilized construction entrance:

To be performed by: _____

On or Before: _____

Monticello 4th Plat

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT FORM

PERIMETER BARRIER PROTECTION INSPECTION **FORM**

To be completed every 7 days and within 24 hours of any precipitation event

Inspector: _____

Date: _____

Silt Fence and/or Straw Bales

Area	Date of Last Stabilization	Stabilization Measures	Current Condition

Maintenance required for silt fence and straw bales:

To be performed by: _____

On or Before: _____

Monticello 4th Plat

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT FORM

Changes required to the SWPPP:

Reasons for changes:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including possibility of fine for knowing of violations.

Name

Title

Date