




WASHINGTON COUNTY

LAND DEVELOPMENT ENGINEERING

80 West Baltimore Street
Hagerstown, Maryland 21740-6003
Telephone: 240-313-2400
Fax: 240-313-2401
TTY/Hearing Impaired: 240-313-2430

MEMORANDUM

TO: All Interested Parties

FROM: Jennifer Smith, P.E, Deputy Director 

DATE: October 17, 2008

RE: Roadway and Stormwater Management Construction Verification Procedures

This memo is in reference to the requirements set for in the *Construction of Subdivision Infrastructure of Acceptance and Ownership by Washington County* (S-3 Policy) and the *Stormwater Management Ordinance of Washington County, Maryland* (SWM Ordinance). The purpose of these policies is to assure that public road infrastructure and public and private stormwater management systems are constructed in accordance with the approved construction plans. A Qualified Professional must attest to the fact that the public road infrastructure and public and private stormwater management facility(s) have been constructed in accordance with the approved construction plans. To do this requires that the appropriate inspection and testing is performed, and that physical measurements are taken at critical stages during the construction of the infrastructure.

Previous correspondences from the Division of Public Works indicated a desire to rely on the professional judgment of the Qualified Professional to determine when field inspections and critical measurements shall be performed. However, this approach has resulted in some cases of non-compliance, many cases of minimum reporting, and inadequate construction. The result is that additional time from the County has been required to resolve construction discrepancies that should have been identified and prevented during the construction inspection process. Such situations have delayed County acceptance, and have caused expensive reconstruction or repairs to occur. A more structured inspection approach is therefore warranted. This memo describes this structured approach and its requirements.

Qualified Professional

The Qualified Professional that will be performing the construction inspections and verifying that the construction is in accordance to the approved plans shall be

identified to the County project construction standards inspector prior to the pre-construction meeting. The Qualified Professional must be in attendance at the pre-construction meeting. If the Qualified Professional verifying the as-built plans differs from the Qualified Professional performing the construction inspections, both individuals shall attend the pre-construction meeting. The Developer must provide the County in writing within 7 days of termination of the Qualified Professional, the name and contact information of the new project Qualified Professional.

Inspection Schedule and Reports

Inspections shall be required bi-weekly and at critical stages of construction of road and stormwater management infrastructure. Based on Section 8.2 of the SWM Ordinance, Section III.D.7 of the S-3 Policy, the NRCS *MD-378 Manual for Pond Small Pond Construction*, and the *2000 MDE Stormwater Management Design Manual*, the critical inspections identified in the attached documents shall be performed. During the pre-construction meeting, the County construction standards inspector will go over the minimum inspection requirements and provide copies of inspection lists and reporting forms to the Qualified Professional. A copy of the approved plans for the project must be kept on site at all times in a location accessible by the County construction standards inspector and the Qualified Professional.

Inspection reports in the format shown in Attachment A are required to be submitted for both bi-weekly and critical inspections to the County within five (5) working days of the inspection date. All information identified on Attachment A must be completed in order for the inspection report to be accepted by the County. The inspection reports shall be submitted directly to the County construction standards inspector responsible for the project.

During the preconstruction meeting, the County construction standards inspector will identify what critical inspections will require the presence of the County inspector. For these critical inspections, the Qualified Professional must schedule the inspection with the County construction standards inspector.

If the project is to be in a non active mode for some time, the Qualified Professional can submit a request to the County to suspend the project from the requirement of bi weekly inspections for a predefined period. Upon written authorization, the Qualified Professional can suspend inspection requirements until the predefined date or until the project construction resumes. The Qualified Professional must notify the County within five (5) days of resuming the project construction.

Correction Notice

During critical inspections, anything that is not in accordance with the approved plans and outside the limits of acceptable construction tolerances, must be identified and submitted to the County for acceptance prior to proceeding to the next stage of work. The County construction standards inspector will issue a correction notice for any portion of the work which does not comply. The corrections must be made, inspected and accepted by the County prior to proceeding to the next stage of work.

Final Inspection

As stated in the S-3 Policy and the SWM Ordinance, a final inspection is required prior to acceptance of the infrastructure by the County. The County will not entertain requests for final inspection until all paper work is received by the County including:

1. All required weekly and specific inspection reports;
2. Deed description and four (4) copies of plats;
3. Approved As-built plans.

In addition, the Maintenance Bond must be submitted fourteen (14) days after the final inspection is completed. The developer is required to notify DPW within thirty (30) days of the date the Maintenance Bond is to be released.

Enforcement Actions

In accordance with Section 8.2.B of the *Stormwater Management Ordinance for Washington County, Maryland*, the County may use any one of a combination of the following actions when violations of these procedures occurs:

1. A stop work order inclusive of all buildings served by the affected infrastructure;
2. The County's refusal to issue building permits or certificates of occupancy for dwellings served by the improvements in question;
3. Claims against the performance or maintenance security posted or referral for legal action;
4. Civil or criminal prosecution for any person in violation of the Stormwater Management subtitle (Md. Code, Environment Article, Section 4-201, et seq.) or the *Stormwater Management Ordinance of Washington County, Maryland*.

The Qualified Professional is strongly encouraged to contact the appropriate County staff with any questions they may have, and do so as early as possible. For inspection and testing matters, contact the Construction Standards Inspectors. All questions pertaining to stormwater management structures shall be directed to Mr. John Swauger.

Roadway and SWM Construction Verification

October 17, 2008

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Construction Standards Inspectors

Henry Renner (South County), 240-313-2421

Ralph Weaver (West County), 240-313-2417

Vicki Stinebaugh (East County), 240-313-2413

John Swauger (Stormwater Management), 240-313-2415

Please feel free to contact me or the corresponding field inspector should you have any questions regarding this matter. Thank you in advance for your cooperation in this effort.

cc: Joe Kroboth, Director, DPW

Attachments

ATTACHMENT A



Washington County Division
of Public Works
Land Development Engineering

CONSTRUCTION PROGRESS AND INSPECTION REPORT

Inspection Period _____

Project Name	Project Location
Project Description	Contractors Name
Developer	Weather Conditions

1. Construction Completion to Date with Percent Complete <i>(Include items such as clearing, grading, drainage, base, surface, etc.)</i>
2. Work Observed
3. Test Performed
4. Problem Areas/Other Comments/Remarks

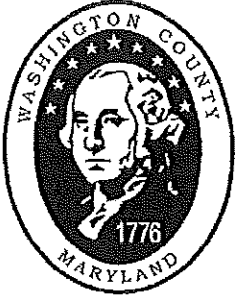
CERTIFYING ENGINEER

Date	Typed or Printed Name and Title	Signature
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COUNTY CONSTRUCTION STANDARDS INSPECTOR

Date	Typed or Printed Name and Title	Signature
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INSTRUCTIONS: This form to be completed by the Project Certifying Engineer every two (2) weeks and at critical inspections. Submit one (1) copy for each report. If additional space is required to complete any of the items, continue on a separate sheet of plain paper, identifying it with the project name and date.



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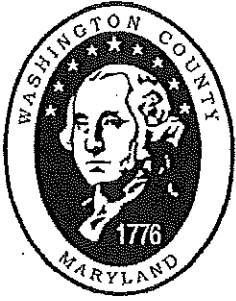
NOTICE OF REQUIRED STORMWATER MANAGEMENT INSPECTIONS SAND FILTERS, BIORETENTION AND RAIN GARDEN FACILITIES

The following inspections are required to be performed by the Qualified Professional for the construction of any Sand Filter, Bioretention or Rain Garden Facility. Additional inspections may be needed based on professional engineering judgment. Each inspection is required at the start of each stage.

1. EXCAVATION OF FACILITY – Prior to excavation, verify sediment and erosion control features are in place to prevent sediment inflow. Verify all flagging required in the area for sensitive area protection. Verify grading is accurately staked-out and re-staked as needed. Facility dimensions shall be verified and soils checked for infiltration. Verify contributing area is permanently stabilized. Verify that water is not present. Ensure roughening of side walls if sheared and sealed by heavy equipment. Verify that compaction of facility base is minimized.
2. PLACEMENT OF FILTER CLOTH (Trenches) – Ensure filter fabric is overlapping six (6) inches between strips of cloth. Ensure tree roots or other obstacles are removed from facility walls or sides and base to prevent tearing. Verify that uphill fabric roll overlaps two (2) feet over downhill roll.
3. PLACEMENT OF SAND FILTER LAYER OR GRAVEL DIAPHRAGM - Verify depth and width of sand and/or diaphragm layer. Verify fill material.
4. PLACEMENT OF FILTERING MEDIA – Verify bottom layer material and thickness. Verify sand and/or filter media layer material and thickness. Verify filter fabric or pea gravel used between sand layers. Verify top filter media layer.
5. PLACEMENT OF UNDERDRAINS AND OBSERVATION WELLS – Location, size and material of under drain and observation wells shall be verified prior to stone placement. Verify pipe ends capped. Verify 3” gravel cover.
6. STABILIZATION AND LANDSCAPING - Verify site top soiled, seeded and mulched. Verify embankment top soiled and seeded. Verify location, size, type and number of planted landscape material. Verify no more than 1/8

inch root ball exposed. Verify planting stock kept moist during on-site storage. Verify installation location, size, material type of fencing or other safety barriers.

The Qualified Professional may request the presence of a County Construction Standards Inspector at least 24 hours in advance by calling 240-313-2400.



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NOTICE OF REQUIRED STORMWATER MANAGEMENT INSPECTIONS RETENTION, EXTENDED DETENTION OR DETENTION PONDS

The following inspections are required to be performed by the Qualified Professional for the construction of any Retention Pond, Extended Detention Pond or Detention Pond. Additional inspections may be needed based on professional engineering judgment. Each inspection is required at the start of each stage.

1. **SITE PREPARATION AND EXCAVATION** – Prior to excavation, verify sediment and erosion control features are in place to prevent sediment inflow. Verify all flagging required in the area for sensitive area protection. Verify grading is accurately staked-out and re-staked as needed. Verify objectionable material removed from immediate area.
2. **CUT-OFF (CORE) TRENCH EXCAVATION** – Verify location at centerline of embankment. Verify length, depth, width, side slopes. Verify sub grade is dry and stable. Verify area beneath embankment has been stripped of all vegetation, topsoil and organic matter.
3. **CORE TRENCH BACKFILL** – Verify material free of large stones, roots, etc., Verify layers placed in 8 inch lifts continuous for entire trench length. Verify compaction of each lift. Geotechnical engineer to test compaction and moisture content.
4. **PRINCIPAL SPILLWAY CONSTRUCTION AND BACKFILLING** – Verify principal spillway pipe placed prior to construction of embankment. Verify spillway material, size, type. Metal pipes 54 inches or greater require flowable fill for backfill and bituminous coating. Verify soil compaction under and adjacent to pipe. Verify cradle and anti seep collar bottom installed as monolithic pour. Verify anti-seep collar location and size. Verify water tight connectors on pipes.
5. **SPILLWAY WEIR** – Verify footing excavated on stable subgrade.
6. **EMBANKMENT CONSTRUCTION** – Verify embankment material, compaction, moisture content and elevations. Verify installation of impervious core. Verify embankment side slopes. Verify top width of embankment. Verify emergency spillway constructed in natural ground. Verify no equipment is driven within 4 feet of principal spillway structure.

7. POND EXCAVATION – Verify pond bottom topography. Verify pond side slopes and bench widths and locations. Verify maintenance access location, width and slope.
8. SPILLWAY OUTFALL PROTECTION – Verify outfall protection channel excavated to design cross section. Verify filter fabric in place. Verify stone size.
9. STABILIZATION AND LANDSCAPING - Verify site top soiled, seeded and mulched. Verify embankment top soiled and seeded. Verify location, size, type and number of planted landscape material. Verify installation location, size, material type of fencing or other safety barriers.

The Qualified Professional may request the presence of a County Construction Standards Inspector at least 24 hours in advance by calling 240-313-2400.



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NOTICE OF REQUIRED STORMWATER MANAGEMENT INSPECTIONS CONSTRUCTED WETLANDS

The following inspections are required to be performed by the Qualified Professional for the construction of any Wetland System. Additional inspections may be needed based on professional engineering judgment. Each inspection is required at the start of each stage.

1. **SITE PREPARATION AND EXCAVATION** – Prior to excavation, verify sediment and erosion control features are in place to prevent sediment inflow. Verify all flagging required in the area for sensitive area protection. Verify grading is accurately staked-out and re-staked as needed. Verify objectionable material removed from immediate area.
2. **CUT-OFF (CORE) TRENCH EXCAVATION** – Verify location at centerline of embankment. Verify length, depth, width, side slopes. Verify sub grade is dry and stable. Verify area beneath embankment has been stripped of all vegetation, topsoil and organic matter.
3. **CORE TRENCH BACKFILL** – Verify material free of large stones, roots, etc. Verify material tested and approved for use in core. Verify layers placed in 8 inch lifts continuous for entire trench length. Verify compaction of each lift. Geotechnical engineer to test compaction and moisture content.
4. **PRINCIPAL SPILLWAY CONSTRUCTION AND BACKFILLING** – Verify principal spillway pipe placed prior to construction of embankment. Verify spillway material, size, type. Metal pipes 54 inches or greater require flowable fill for backfill and bituminous coating. Verify soil compaction under and adjacent to pipe. Verify cradle and anti seep collar bottom installed as monolithic pour. Verify anti-seep collar location and size. Verify water tight connectors on pipes. Verify installation of drain valve. Verify installation of drainage diaphragm.
5. **SPILLWAY WEIR** – Verify footing excavated on stable subgrade.
6. **EMBANKMENT CONSTRUCTION** – Verify embankment material, compaction, moisture content and elevations. Verify installation of impervious core. Verify embankment side slopes. Verify top width of embankment. Verify emergency spillway constructed in natural ground. Verify no equipment is driven within 4 feet of principal spillway structure.

7. POND EXCAVATION – Verify pond bottom topography. Verify pond side slopes and bench widths and locations. Verify maintenance access location, width and slope.
8. SPILLWAY OUTFALL PROTECTION – Verify outfall protection channel excavated to design cross section. Verify filter fabric in place. Verify stone size.
9. STABILIZATION - Verify site top soiled, seeded and mulched. Verify embankment top soiled and seeded.
10. LANDSCAPING - Verify planting area scarified prior to planting. Verify nutrient amendments added to excavated zones. Verify pond drain open 3 days prior to planting. Verify location, size, type and number of planted landscape material. Verify wetland mulch used for seeding. Verify installation location, size, material type of fencing or other safety barriers.

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**NOTICE OF REQUIRED STORMWATER MANAGEMENT INSPECTIONS
INFILTRATION FACILITIES**

The following inspections are required to be performed by the Qualified Professional for the construction of any Infiltration Facility. Additional inspections may be needed based on professional engineering judgment. Each inspection is required at the start of each stage.

1. **EXCAVATION OF FACILITY** – Prior to excavation, verify sediment and erosion control features are in place to prevent sediment inflow. Verify all flagging required in the area for sensitive area protection. Verify grading is accurately staked-out and re-staked as needed. Facility dimensions shall be verified and soils checked for infiltration. Verify that water is not present. Ensure roughening of side walls if sheared and sealed by heavy equipment. For infiltration ponds, the initial excavation should be carried to not less than two (2) feet above the final elevation of the facility floor. Final excavation shall occur only when area draining to facility is permanently stabilized.
2. **PLACEMENT OF FILTER CLOTH (Trenches)** – Ensure filter fabric is overlapped six(6) inches between strips of cloth. Ensure tree roots or other obstacles are removed from facility walls or sides and banded to prevent tearing. Verify that uphill fabric roll overlaps two (2) feet over downhill roll.
3. **PLACEMENT OF FILTERING MEDIA** – Verify bottom layer material and thickness. Verify stone aggregate layer material and thickness. Verify stone placement in 12 inch loose lifts. Verify top filter media layer.
4. **PLACEMENT OF UNDERDRAINS AND OBSERVATION WELLS** – Location, size and material of under drain and observation wells shall be verified prior to stone placement.
5. **INSTALLATION OF FINAL COVER** – Verify cover and capping of observation well. Verify permanent stabilization of basin floor.
6. **PRETREATMENT AREA** – The slope of land draining to facility shall be verified. Verify length of grass filter strip. Verify aggregate type.

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NOTICE OF REQUIRED INSPECTIONS FOR CONSTRUCTION OF PUBLIC ROADS

The following inspections are required to be performed by the Qualified Professional for the construction of any Public Road. Additional inspections may be needed based on professional engineering judgment. Each inspection is required at the start of each stage.

1. **PREPARATION OF SITE** - Prior to excavation, verify sediment and erosion control features are in place to prevent sediment inflow. Verify all flagging required in the area for sensitive area protection. Verify grading is accurately staked-out and re-staked as needed.
2. **EARTHWORK** - Verify clearing and grubbing and excavation in accordance with applicable sections of the MSHA standards and specifications. Verify removal of unsuitable material (topsoil, root mat etc.) at or below section.
3. **EMBANKMENT FILL PLACEMENT** - Verify backfill material conforms to MSHA specifications. Contact Washington County construction standards inspector prior to proof roll. Verify fill material placed in 8 inch maximum horizontal layers across the full width of the embankment. Verify an adequate crown maintained to provide drainage at all times. Verify compaction of each layer of fill. Verify protection of all utilities and structures during compaction process.
4. **SUBGRADE** - Verify subgrade compaction. Verify subgrade is proof rolled. Contact Washington County construction standards inspector prior to proof roll of subgrade. Verify bleeder ditches adequately maintained throughout construction.
5. **STONE AGGREGATE BASE PLACEMENT**- Verify that the base material uniformly spread without particle size segregation. Verify base material spread in equal layers. Verify that shoulders or berms not less than 2 ft wide are built up on each side of the base to the top elevation of each uncompacted layer unless the base is placed against concrete curbs or gutters. Verify base compaction.

Required Inspections for Construction of Public Road

6. BITUMINOUS CONCRETE BASE PLACEMENT - Verify ambient air and surface temperature is at least 32° F and rising prior to placement. Verify that the surface of the stabilized aggregate base course maintained in a moist condition until the emulsified asphalt seal coat is applied. Verify stabilized aggregate base course allowed to cure for a period of seven days.
7. BINDER COURSE - Verify binder course is SHA SN or BI.
8. TACK COAT - Verify surface cleaned of all loose and foreign materials. Verify tack coat uniformly applied at a rate of 0.05 gal/yd².
9. SURFACE COURSE - Verify that HMA material placed on roadway surfaces when the ambient air and surface temperature is at least 40° F and rising for surface mixes. Verify HMA temperature a minimum of 225° F at the time of placement. Verify HMA compacted to an in place density of 92.0 to 97.0 percent of the maximum density immediately following placement. Verify in place compaction completed before the mixture cools below 185° F. Verify surface course thickness and lift placement.
10. CONCRETE CURB AND GUTTER CONSTRUCTION - Verify forms are thoroughly cleaned and coated with a form release compound each time they are used. Verify curb is finished, floated smooth and followed with a broom type textured finish. Verify spacing between joints is 10 ft. Verify full depth expansion joint using 1/2 in. preformed expansion joint filler. Verify only the joints in the gutter portion of the combination curb and gutter and 1 in. up the face of all joints and expansion joints of monolithic medians are sealed.
11. UTILITY MANHOLES - Verify that all utility manholes are at or below finished surface to no more than 1/2 inch.
12. HMA CURB CONSTRUCTION - Verify HMA curb base is clean, dry and stable, and tack coated.
13. GUARDRAIL - Verify guard rail material and location.
14. SUBGRADE DRAINS – Verify subgrade drains placed at all low spots at 25 foot intervals for 25 feet on either side of low spot and then at 100 foot intervals to within 125 feet of summit. Verify SRC #2 stone used for subgrade drains.
15. CLOSED STORM DRAIN SYSTEM CONSTRUCTION – Verify pipe length, diameter, material and condition before installation. Verify pipe is protruding through end wall. Verify bedding material. (remove rock and replace with 8 inch min. select backfill). Verify tamping of fill material under and around pipe. Verify sealing of lay holes and pipe joints. Verify proper

Required Inspections for Construction of Public Road

pipe connections. Verify backfill material free of large lumps, clods and rocks. Verify minimum cover over top of pipe.

16. CONCRETE CHANNELS - Verify maximum joint spacing. Verify backfill placement and compaction.
17. RIP RAP OUTFALL CHANNEL CONSTRUCTION - Verify ditch sides and bottom smooth and free of protruding objects. Verify line and grade of excavation. Verify geotextile is free of damage and placed with 2 foot overlapping adjacent edges. Verify stone gradation, size, type, and thickness. Verify backfill blends with existing ground.
18. CONCRETE SIDEWALKS - Verify forms are straight and free of warp, cleaned and coated with form release compound after each use. Verify subgrade moistened before concrete is poured. Verify joint placement. Verify expansion joint depth. Verify joint sealing. Verify concrete set a minimum of 12 hours prior to removal. Verify surface is floated and broom finished.

The Qualified Professional may request the presence of a County Construction Standards Inspector at least 24 hours in advance by calling 240-313-2400.