

_____ E. Certifications 33-107.(e)(4)(xvi):

- _____ 1. Engineer sealed and signed each sheet including note regarding Phase I of development process, i.e., This Plan is Sealed and Certified as being in accordance with the approved Development Plan. (This note is not applicable to Minor subdivisions, or projects that have an "A" exemption from the DRC).
- _____ 2. Required certifications
 - _____ a. Engineer's certification.
 - _____ b. Developer's/landowner certification.
 - _____ c. As-Built certification.
 - _____ d. Consultant's hazard class certification.

_____ F. General:

- _____ 1. Storm water management plans presented on standard 2' x 3' county mylars with key sheet, position sheet, drawing numbers, County Election and Councilmanic districts filled in. For drawing numbers, preferably e-mail engineering records at: engrec@baltimorecountymd.gov
- _____ 2. Stormwater management stamps must be placed on plans as shown at this link: (<http://resources.baltimorecountymd.gov/Documents/Environment/SWM/swmstamps.pdf>)
- _____ 3. Unless otherwise noted, all construction and workmanship shall be in accordance with:
 - _____ a. Baltimore County Department of Public Works Standard Specifications For Construction Materials, December 2007, Errata & Addenda.
 - _____ b. Natural Resources Conservation Service of Maryland Standards and Specifications, Pond, Code 378, January 2000.
 - _____ c. Maryland Department of Transportation State Highway Administration, July 2008, Standard Specifications for Construction and Materials.
- _____ 4. Storm water management approved under Bill No. **25-10**
- _____ 5. Maintenance responsibility, Private or Public.
- _____ 6. A state permit is required for this project.
- _____ 7. Contractor's As-Built Note.
- _____ 8. Provide dedication table for all reservations and easements

_____ III. Best Management Practices, (BMPs)

1. Stormwater Management Ponds:

_____ A. Plan view 33-4-107.(e)(4)(i):

- _____ 1. Contours:
 - _____ a. Existing and proposed ground (minimum 2' contours).
 - _____ b. Contours are uniformly spaced at indicated slope with a gentle curvature.
 - _____ c. Reflect positive drainage across pond bottom @ 0.5% min. [378.7].
 - _____ d. If required, show the proposed topography of the emergency spillway. [378.8].
 - _____ e. Proposed contours tying into existing at or beyond property line will require temporary construction easements off-site.
 - _____ f. 3:1 maximum interior slopes are required for all maintained 378 small ponds.
- _____ 2. All Incoming drains, swales and channels are shown with methods of stabilization. (DPW S.D.2009 32 & 33)

- _____3. Barrel outlet shown and outlet protection dimensioned.
- _____4. Property lines, property owners (name, lot # and Liber/Folio). Streams, wetlands, forest buffers, flood plain, existing and proposed easements shown (including acreage). Proposed SWM shall be either 'SWM' Easement or 'SWM Reservation'.
- _____5. Stationing along centerline of embankment.
- _____6. Scale, north arrow and MCS grid ticks (3 minimum).
- _____7. A fence with a height of forty-two inches is required for all facilities with interior slopes steeper than 4:1. Provide 4' ledge @ 4:1 slope around interior of fence for public facilities.
- _____8. Access road to SWM area - for public facilities. In fee access from County R/W. Swing gate required. (18' width on direct access, 24' wide on skew access)
- _____9. Access ramp to bottom of pond - for public facilities @ 5:1 max. slope.
- _____10. Building envelope setback 20' from ultimate 100 year water surface elevation and 1' freeboard. See DPW Design Manual 2009 SD Plate DF-1 for clarity.
- _____11. Utilities, private and public shown (drawing number if available).
- _____12. Delineate boundary for no woody vegetation zone. No trees or shrubs allowed within 15' of the toe of slope near a constructed pond embankment or within 25' of the control structure [378.9]. (For 378 only)*
*For non 378 facilities "within 15' of the toe of slope" does not apply.
- _____13. Pond Buffers per MDE manual. P. 3.12, 3.22
- _____B. Principal spillway profile, cross section of dam [378.4, 5, 6, &7]:
 - _____1. Existing ground.
 - _____2. Proposed ground, constructed and settled (side slopes, 6' minimum top width) [378.4].
 - _____3. Cut-off trench [378.4]:
 - _____a. 4' minimum depth below concrete cradle for barrel.
 - _____b. Four feet minimum bottom width.
 - _____c. Side slopes, 1:1.
 - _____4. Impervious core [378.4]:
 - _____a. Top at or above 10 year W.S.E. (may be higher if it is a sediment basin)
 - _____b. Four feet minimum top width.
 - _____c. Side slopes, 1:1.
 - _____5. Geotechnical engineer note regarding depth of cutoff trench:
 - _____6. Riser:
 - _____a. Dimensions, material [378.5].
 - _____b. No barrel pipe exposed.
 - _____c. Provisions for watertight seal between barrel and pre-cast concrete riser.
 - _____d. Reinforcing steel detailed and dimensioned.

- _____ 7. Trash rack [378.7].
- _____ 8. Riser base shown and dimensioned.
- _____ 9. Low flow or dewatering device component:
 - _____ a. Diameter.
 - _____ b. Material.
 - _____ c. Gage with corrugation size.
 - _____ d. Length and stations. (20' min. length)
 - _____ e. Trash rack or stone cover.
 - _____ f. Perforated vertical stack 3' min. above pond bottom.
 - _____ g. Horizontal pipe anchored w/ crown level w/ pond bottom
 - _____ h. Watertight seal for the orifice plate inside of the control structure
- _____ 10. Barrel pipe [378.5,6]:
 - _____ a. Diameter [378.5].
 - _____ b. ASTM C-361, unless otherwise approved by DEPS*
*(Refer to MD-378-13 Table 5, for private facilities).
 - _____ c. Length and stations.
 - _____ d. Slope.
 - _____ e. Saturated length [378.5].
 - _____ f. Concrete cradle for concrete pipe [378.13].
 - _____ g. Multiple pipe spacing [378.5].
 - _____ h. Manning's "n" value.
 - _____ i. Design Q's with velocities.
- _____ 11. Phreatic line - start at the riser crest or 10-year water surface elevation, whichever is higher extending 4H:1V to barrel, pipe invert [378.4]. The phreatic line cannot daylight the embankment.
- _____ 12. Seepage control [378.6,7]:
 - _____ a. Anti-seep collar:
 - _____ (1) Minimum - maximum spacing requirements met.
 - _____ (2) Size, dimensions shown.
 - _____ (3) Minimum 1 ft. of earth cover between the top of collar and the slope face and no less than the minimum collar spacing between riser and first collar.
 - _____ (4) Two foot minimum between collar and pipe joint note.
 - _____ b. Filter and drainage diaphragm and/or toe drain [378.6,7]:
 - _____ (1) Drain material.
 - _____ (2) Dimensions.
 - _____ (3) Minimum cover 2 ft.
 - _____ (4) Pressure relief drain pipe:
 - _____ a. Diameter.
 - _____ b. Material.
 - _____ c. Perforations pattern.
- _____ 13. Outlet protection:
 - _____ a. Length stationed.
 - _____ b. Thickness or depth.
 - _____ c. Material:
 - _____ (1) Median stone size.
 - _____ (2) Class IV gabion, PVC coated.
 - _____ (3) Filter cloth.

- _____ 14. Elevations:
- _____ a. Emergency spillway (dotted line at crest).
 - _____ b. Settled top of dam (1' & 2' freeboard) [378.8,11].
 - _____ c. Constructed top of dam [378.5].
 - _____ d. Riser crest [378.5].
 - _____ e. Design storms:
 - _____ (1) Maximum design high water [378.11 TABLE 1].
 - _____ (2) Ultimate 100 year water surface elevation, freeboard.
 - _____ (3) 1, 10 & 100 year water surface elevations.
 - _____ (4) Water quality storage, water surface elevation.
 - _____ f. Inlet and outlet inverts of low flow and barrel pipes.
 - _____ g. Where county road serves as embankment, 3' minimum between 100 year ultimate W.S.E. and sump in road.
- _____ C. Emergency spillway profile [378.8, 9 & 11]:
- _____ 1. Existing ground (spillway in cut).
 - _____ 2. Stationing.
 - _____ 3. Inlet and outlet sections, length and slopes.
 - _____ 4. Level control section, elevation and length (min. 25' - active spillway).
 - _____ 5. Type and limits of channel protection.
 - _____ 6. Suitable outfall.
 - _____ 7. Flow quantity and velocity.
 - _____ 8. 1' minimum above riser crest
- _____ D. Profile of dam along centerline:
- _____ 1. Top of dam (constructed & settled), [378.4].
 - _____ 2. Emergency and principal spillways stationed corresponding to plan view.
 - _____ 3. Existing ground.
 - _____ 4. Proposed ground line of projected pond bottom.
 - _____ 5. Impervious core (minimum 10 yr. W.S.E.) or above
 - _____ 6. Cutoff trench; 4' minimum depth below pond bottom and existing ground. Trench side slopes perpendicular to barrel, 2:1 down to barrel invert, 1:1 below invert of barrel.
 - _____ 7. Elevations for vertical control.
 - _____ 8. Geotechnical engineer note regarding depth of cutoff trench.
 - _____ 9. Emergency spillway width, side slopes, channel protection.
- _____ E. Soil investigation [378.2] 33-4-107. (e)(2)(ii) (Minimum of 3 required for small pond):
- _____ 1. Geotechnical investigation has been performed
 - _____ 2. Bearing strength (blow count).
 - _____ 3. Unified soil classification for each strata.
 - _____ 4. Groundwater at completion.
 - _____ 5. Groundwater @ 24 hours, minimum.
 - _____ 6. U.S.D.A. soil textural classification for each strata (required for infiltration).
 - _____ 7. Location of soil borings shown on plan with boring logs provided.

_____ F. Details to be shown on plans 33-4-107 (e)(4)(v):

- _____ 1. Baltimore County DPW standard details referenced by plate numbers.
- _____ 2. Riser:
 - _____ a. Riser base: length, width, thickness shown.
 - _____ b. Dimensions from riser crest to barrel and low-flow pipes.
 - _____ c. Vertical angles between riser, barrel and low-flow pipes.
 - _____ d. Horizontal angle between riser, barrel and low-flow pipes.
 - _____ e. Standard notes and dimensions.
 - _____ f. Reinforced concrete riser shown fully detailed on plans.
- _____ 3. Anti-seep collars [378.2]:
 - _____ a. Dimensions.
 - _____ b. Specifications
- _____ 4. Pipe bedding for concrete pipe. (Minimum 1/2 the height of the pipe)
- _____ 5. Outlet channel
- _____ 6. Dewatering device detail.
- _____ 7. Fence crossing detail.
- _____ 8. Welding trash rack detail.
- _____ 9. Emergency spillway typical cross-section.

_____ G. Construction Specifications [378.14,15,16,17 & 18]

- _____ 1. Applicable SCS MD specifications.
- _____ 2. Fence
- _____ 3. Filter cloth
- _____ 4. Gabions (Class IV, PVC coated)
- _____ 5. Sequence of construction 33-4-107 (e)(4)(ix)
- _____ 6. All public pond's slopes are stabilized with crown vetch inside the pond and outside of constructed embankment slope.
- _____ 7. Permanent seeding note: "Baltimore County will not acquire the SWM facility in fee until the crown vetch ground cover is uniformly established."

_____ H. Notes:

- _____ 1. Hydrologic criteria for ponds [378.11]:
 - _____ a. MD-378? (Y/N)
 - _____ b. Structure classification.
 - _____ c. Baltimore County watershed name.
 - _____ d. Structure type.
 - _____ e. Storage height product (Ac - ft²).
 - _____ f. Drainage area to facility (Ac).
 - _____ g. RCN to facility
 - _____ h. Height to emergency spillway crest (ft.).
 - _____ i. Maximum Height of Fill (ft.).
 - _____ j. Permanent Pool, water surface area (Ac).
 - _____ k. Principal spillway capacity, at design storm.
 - _____ l. Emergency spillway capacity, at design storm.
 - _____ m. Level of Management, required and provided.
 - _____ n. Freeboard required, and provided.

- _____o. Water quality provided:
 - _____ (1) Volume separated from quantity storage.
 - _____ (2) Type of water quality features used.
- _____I. Design Storm, Existing Conditions, Allowable Release Rate, Facility Inflow, Facility Discharge, Water Surface Elevation, Storage Volume.

IV. COMPUTATIONS REQUIRED AS PART OF PLANS SUBMISSION – EXECUTIVE SUMMARY

33-4-107 (e)(3)

- _____A. Table of contents
- _____B. Hydraulics :
 - _____1. Hydraulic performance table [378.11].
 - _____2. Elevation - discharge table and graph.
 - _____3. Barrel controls before riser passes from weir to orifice [378.4].
 - _____4. Release structure hydraulics. Invert elevations of all structure openings shall be included in input data for TR-20 or Hydraflow *(Hydraflow not to be used for MD-378 ‘Small Ponds’).
- _____C. Routings:
 - _____1. Water quality volume is not used in quantity routing.
 - _____2. Elevation - storage curve and table [378.20].
 - _____3. Storage - indication method, TR-20 or Hydraflow *.
 - _____4. Inflow hydrographs.
 - _____5. 1 year, 10 year and 100 year routing [378.11].
- _____D. Water quality volume: ♦
 - _____1. Criteria used to compute volume requirement:
 - _____a. First 1 inch of runoff from proposed new impervious areas.
 - _____b. First 1 inch of rainfall over entire drainage area.
 - _____c. The 1 year storm frequency over entire drainage area (C_{pv}).
 - _____2. Extended detention pond per MDE criteria.
 - _____3. Infiltration basin per MDE criteria.
 - _____4. Retention pond per MDE criteria.
- ♦ For new projects beginning after May 4, 2010, ESD_v should be used to address a portion of WQ_v , Re_v & C_{pv} (5.17)
- _____E. Outfall study 33-4-107 (e)(3):
 - _____1. Suitable outfall.
 - _____2. Determine tailwater elevations and impact pond freeboard.
 - _____3. Dam breach analysis and danger reach, TR60, TR66 or HEC 1 [378.3].
 - _____4. Hazard Classification.
 - _____5. Velocity and outfall design substantiating median stone size and depth.
- _____F. Emergency spillway, Capacity sized by MD Code 378 [378.8,11].
- _____G. Riser anti-flotation computations.
- _____H. Structural reinforcing steel computations sealed by MD PE for cast-in-place and precast risers prior to plan approval. 33-4-107 (e)(3)(iii).
Pre-Cast Riser Note: (Must be submitted prior to SWM plans approval)

