

# Detention Basin Construction Checklist

*This checklist has been designed for BMPs designed in accordance with the Delaware Sediment and Stormwater Program's Post Construction Stormwater BMP Standards and Specifications. Submit interim versions of this construction checklist to the approval agency weekly with the Certified Construction Reviewer report. Submit the final completed checklist with the PCVD.*

## **PROJECT INFORMATION**

Project Name/BMP Name: \_\_\_\_\_

Project Approval Number: \_\_\_\_\_ NOI number: \_\_\_\_\_

Location: \_\_\_\_\_

Contractor: \_\_\_\_\_

Construction Reviewer: \_\_\_\_\_

Supervising P.E.: \_\_\_\_\_

## **Detention Basin Variant**

10.1.1 Dry Detention Pond

10.1.2 Dry Extended Detention (ED) Basin

For each checklist item, enter in the blank the date (MM/DD/YY) the item is completed and verified by the construction reviewer. If an item is not applicable, enter "N/A" in the blank for that checklist item.

### **I. Pre-Construction**

A. \_\_\_\_\_ Detention practice field meeting with responsible person and person completing construction checklist.

B. \_\_\_\_\_ Detention practice location staked out.

C. \_\_\_\_\_ Pervious areas draining to the detention basin stabilized in accordance with the approved plans.

D. \_\_\_\_\_ Pipe and appurtenances on-site and dimensions and properties checked and confirmed to be in accordance with the approved plan if applicable.

i. \_\_\_\_\_ Discharge pipe

ii. \_\_\_\_\_ Inflow pipe

iii. \_\_\_\_\_ Watertight connectors/gaskets

iv. \_\_\_\_\_ Other; list: \_\_\_\_\_

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E. \_\_\_\_\_ Materials on-site and dimensions and properties checked and confirmed to be in accordance with the approved plan. ***Submit materials invoice or delivery tickets to approval agency as part of PCVD for the following items:***

- i. \_\_\_\_\_ Clean washed riprap, minimum d50 size of 6"
- ii. \_\_\_\_\_ Riser/outlet structure
- iii. \_\_\_\_\_ Trash rack for low flow orifice
- iv. \_\_\_\_\_ Trash rack for riser/outlet structure
- v. \_\_\_\_\_ Outlet drain valve
- vi. \_\_\_\_\_ Anti-seep collar
- vii. \_\_\_\_\_ De-watering equipment
- viii. \_\_\_\_\_ Embankment Material
- ix. \_\_\_\_\_ Other; list: \_\_\_\_\_

**II. Excavation and Grading**

- A. \_\_\_\_\_ Detention practice excavated to dimensions and at location as per the approved plan.
- B. \_\_\_\_\_ Detention practice excavated to design bottom elevation.
- C. \_\_\_\_\_ Groundwater not encountered during excavation. (Note: If groundwater is encountered during the excavation process, construction of the facility must cease and the designer notified that a plan modification is necessary)
- D. \_\_\_\_\_ Sides of detention practice excavated no steeper than 3:1.
- E. \_\_\_\_\_ Bottom of excavation in accordance with the approved plan.
- F. \_\_\_\_\_ Excavation for the riprap apron to the dimensions, bottom elevation, and location as per the approved plan.
- G. \_\_\_\_\_ Forebay provided at wet pond major inlets as specified on the approved plan.

Pretreatment types constructed:

- i. \_\_\_\_\_ Forebay excavated to dimensions and at location as per the approved plan.
- ii. \_\_\_\_\_ Forebay excavated to design bottom elevation.

**II. Principal spillway (outfall pipe or weir) installation**

- A. \_\_\_\_\_ Trench excavated with 1:1 side slope
- B. \_\_\_\_\_ Subgrade of trench is dry, stable and uniform of relatively impervious material.
- C. \_\_\_\_\_ Pipe Placement

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Metal/Plastic Pipe

- iii. \_\_\_\_\_ Installation of watertight connectors/gaskets
- iv. \_\_\_\_\_ Installation of anti-seep collar(s) with watertight connections to the pipe
- v. \_\_\_\_\_ Backfill placed and tamped by hand under “haunches” of pipe and remainder of backfill in max. 8” lifts using small power tamping equipment until 2’ of cover.

Concrete Pipe

- vi. \_\_\_\_\_ Pouring of low cradle, pipe set on blocks or concrete slab.
- vii. \_\_\_\_\_ Pipe installation with rubber gasket joints, no spauling in gasket interface area.
- viii. \_\_\_\_\_ Excavation for anti-seep collar(s)
- ix. \_\_\_\_\_ Construction/installation of anti-seep collar(s) with approved waterproof sealant
- x. \_\_\_\_\_ Anti-seep collar(s) inspected for “honeycomb”, parge if necessary.

- D. \_\_\_\_\_ Trench filled in 8” lifts
- E. \_\_\_\_\_ Backfilled 2’ above anti-seep collar prior to traversing with heavy equipment.
- F. \_\_\_\_\_ Weir installed to design cross-section, side slopes, and top width after settlement.
- G. \_\_\_\_\_ Photo documentation of construction of pipe spillway components taken. **Submit photo documentation to approval agency as part of PCVD.** (Photo #: \_\_\_\_\_ )

**III. Riser/Outlet control structure installation (Per Pond Code 378)**

- A. \_\_\_\_\_ Excavation for riser and subgrade stabilized and dry, with reinforcements as necessary.
- B. \_\_\_\_\_ Riser/outlet control structure installed at design elevation and location.
- C. \_\_\_\_\_ Installation of trash rack(s)
- D. \_\_\_\_\_ Installation of anti-vortex device
- E. \_\_\_\_\_ Installation of anti-floatation device
- F. \_\_\_\_\_ Installation of outlet drain valve
- G. \_\_\_\_\_ Photo documentation of construction of riser/outlet control structure components taken. **Submit photo documentation to approval agency as part of PCVD.**  
(Photo #: \_\_\_\_\_ )

Metal Riser

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H. \_\_\_\_\_ Embedded parts of the aluminum riser painted with zinc on both the inside and outside.

I. \_\_\_\_\_ Reinforcing bars placed at right angles and projecting into sides of riser.

J. \_\_\_\_\_ Concrete poured to fill inside of riser to invert of barrel.

Pre-cast concrete structure

K. \_\_\_\_\_ Section installation with rubber gasket joints or caulk, no spauling in gasket interface area, *if necessary*.

L. \_\_\_\_\_ Installation of watertight and structurally sound collar or gasket joint at pipe spillway connection.

Poured concrete structure

M. \_\_\_\_\_ Structure formed to design dimensions, with reinforcing steel set as per plan.

N. \_\_\_\_\_ Concrete of an approved mix and vibrated into place.

O. \_\_\_\_\_ Concrete inspected for “honeycomb”, parge if necessary.

**II. Embankment Construction**

A. \_\_\_\_\_ Embankment fill place in 8” to 12” lifts and compacted.

B. \_\_\_\_\_ Embankment fill material in accordance with approved plan.

C. \_\_\_\_\_ Embankment installed to design cross-section, side slopes, and top width after settlement.

D. \_\_\_\_\_ Photo documentation of construction of embankment taken. ***Submit photo documentation to approval agency as part of PCVD.*** (Photo #: \_\_\_\_\_ )

**III. Earth Emergency Spillway Construction**

A. \_\_\_\_\_ Spillway structurally stabilized with riprap, gabions, concrete, etc or located in natural grounds.

B. \_\_\_\_\_ Emergency spillway constructed to design elevation and dimensions.

C. \_\_\_\_\_ Photo documentation of construction of emergency spillway taken. ***Submit photo documentation to approval agency as part of PCVD.*** (Photo #: \_\_\_\_\_ )

**IV. Outlet Protection**

A. \_\_\_\_\_ Outlet protection provided at discharge point and riprap stone size and dimensions confirmed.

B. \_\_\_\_\_ Placement, securement, and backfilled end section.

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C. \_\_\_\_\_ **Submit photo documentation to approval agency as part of PCVD.**

(Photo #: \_\_\_\_\_ )

**V. Vegetative Stabilization**

A. \_\_\_\_\_ Areas to be vegetated have completed the following items. **Submit soil test report, lime, fertilizer, planting tags and seed tickets to approval agency as part of PCVD.**

i. \_\_\_\_\_ Soil testing.

ii. \_\_\_\_\_ Side slopes scarified to a minimum depth of 3 inches prior to placing topsoil

iii. \_\_\_\_\_ Application of topsoil to a minimum depth of 4 inches.

iv. \_\_\_\_\_ Application of soil amendments including lime and fertilizer in accordance with the recommendations of the soil test or the approved plan.

v. \_\_\_\_\_ Application of seed to the soil surface using approved methods.

vi. \_\_\_\_\_ Planting installed in accordance with the approved plan.

B. \_\_\_\_\_ Application of soil stabilization matting, and permanent seeding used on side slopes in accordance with approved plan.

C. \_\_\_\_\_ Confirmation of no woody vegetation planted or growing within 15 feet of the embankment and 10 feet of the principal spillway or inflow pipes.

D. \_\_\_\_\_ Photo documentation of landscaping components taken. **Submit photo documentation to approval agency as part of PCVD.** (Photo #: \_\_\_\_\_ )

**IV. Erosion and Sediment Control**

A. \_\_\_\_\_ Sediment perimeter controls placed at the toe of the basin slope to prevent sediment deposition on basin bottom.

B. \_\_\_\_\_ Sediment controls removed once drainage area meets final stabilization standard.

**V. Maintenance Access**

A. \_\_\_\_\_ Maintenance access to the perimeter of the detention practice and forebay (including riser and outlet structure) has minimum width of 15 feet.

B. \_\_\_\_\_ Profile grade of maintenance access does not exceed 10H:1V.

C. \_\_\_\_\_ Minimum 10H:1V cross slope on maintenance access.

D. \_\_\_\_\_ Maintenance set-aside area located and dimensioned per approved plans

E. \_\_\_\_\_ Depth of set-aside area does not exceed 1 foot.

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F. \_\_\_\_\_ Slope of set aside area does not exceed 5%

**VI. Post Construction Verification**

Owner shall submit post construction verification documents to demonstrate that the detention basin has been constructed within allowable tolerances in accordance with the Approved Sediment and Stormwater Management Plan and accepted by the approving agency.

A. \_\_\_\_\_ Constructed top bank elevation at or above design elevation confirmed after ESC controls are removed.

B. \_\_\_\_\_ Constructed detention facility surface area confirmed equal to or greater than 90% of the design surface area once ESC controls are removed.

C. \_\_\_\_\_ Constructed volume of the detention practice storage confirmed equal to or greater than 90% of the of the design.

D. \_\_\_\_\_ Constructed elevation of all structures confirmed to be within 0.15 foot of the design elevation for:

- i. \_\_\_\_\_ Emergency spillway
- ii. \_\_\_\_\_ Spillway pipe or weir
- iii. \_\_\_\_\_ Riser/Outlet control structure
- iv. \_\_\_\_\_ Embankment
- v. \_\_\_\_\_ Outlet protection
- vi. \_\_\_\_\_ Other; list: \_\_\_\_\_

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### VII. BMP Acceptance

- A. \_\_\_\_\_ Final BMP construction review complete.
- B. \_\_\_\_\_ All BMP punch list items addressed.
- C. \_\_\_\_\_ Detention practice is online (stabilized drainage area is entering detention basin)
- D. \_\_\_\_\_ As-built survey.
- E. \_\_\_\_\_ PCVD submitted to approval agency for review and approval. Submit the following pieces of PCVD documentation to the approval agency:
- Materials invoice or delivery tickets
  - Confirmatory infiltration testing report
  - Photo documentation
  - Soil test report
  - Lime, fertilizer, and seed tickets
  - As-built survey
  - Final, completed BMP Construction Checklist