Post-Construction Stormwater Management (PCSM) Fact Sheets 7-9-2024

Post-Construction Stormwater Best Management Practices (PCBMPs)

- *Permanent*, engineer-designed features that help remove contaminants from stormwater runoff
- Not to be confused with BMPs – *Temporary* erosion and sediment control features (Chapter 205 Requirements)

INDOT's list of PCSMs by Priority

1. Dry turf grass swale
1. Dry native grass swale
1. Filter strip
1. Dry detention (pond or swale/ditch)
2. Wet swale
2. Wet retention pond
3. Infiltration swale
3. Infiltration basin
4. Proprietary device

Why is PCSM required?

- Municipal Separate Storm Sewer System General Permit (MS4GP)
- Construction Stormwater General Permit (CSGP)

When is PCSM required?

- Projects that require a CSGP and
- Projects with 1 acre or more of net added impervious surface

How are PCBMPs designed?

- To treat the first flush – the first 1 inch of rainfall that falls on the pavement (not designed to *treat* larger flows but must be able to convey them per Chapter 203)

What about projects currently in progress?

- See Table 1 of Design Memo 22-22

Table 1 from DM 22-22: Project Action based on project development process milestone and the amount of additional impervious area

PDP Milestone	Added Impervious Surface <1 acre	Added Impervious Surface ≥ 1 acre and < 3 acres	Added Impervious Surface ≥ 3 acres
Stage 3 as of November 18, 2022	No action	No action - Project is advanced in development for design changes or additional project commitments	Credit measures already included in design through supporting calculations and designation as a post-construction stormwater measure
Stage 2 as of November 18, 2022	No action	Credit measures already included in design through supporting calculations and designation as a post-construction stormwater measure	Examine for measures to add or modify, consult with PM on acquiring ROW
Stage 1 as of November 18, 2022	No action	Examine for measures to add or modify, consult with PM on acquiring ROW	Examine for measures to add or modify, consult with PM on acquiring ROW
Prior to Stage 1 as of November 18, 2022	No action	Post-construction stormwater measures are required	Post-construction stormwater measures are required

- This means that some of your current design contracts need amendments to incorporate PCSMs.
- To "credit measures already in design" means to perform the calculations per the guidance document, submit a PCSM report for review and approval, and add the measures (now referred to as PCBMPs) to the plans.

Post-Construction Stormwater Management - Submittal Requirements

With Stage 1 Review Submission (25% Design):

- Stormwater Outfalls (locations where stormwater leaves INDOT right-of-way) identified in plan sheets with approximate added pavement values listed (acres or square feet)
- Preliminary locations of proposed PCBMPs identified and labeled in construction detail sheets and plan sheets.
    - Use naming convention provided on Environmental Services Division Stormwater webpage
    - List type of PCBMP (for example: PCBMP 067-055-078.65 – Dry Turf Grass Swale)
- PCBMPs included in cost estimate
- Design calculations for PCBMPs are not required with Stage 1 Submittal

With Stage 2 Review Submission (55% Design):

- All items required with Stage 1 Review Submission
- PCBMP detail sheets for all PCBMPs. Must include beginning and ending station and offset (if linear) and all dimensions and details needed for construction.
- PCBMPs included in cost estimate
- Design calculations for PCBMPs are not required with Stage 2 Submittal

90 Days After Stage 2 Review Submission (approval required before Stage 3 Submission):

- Post-construction Stormwater Management Design Report including:
    - Narrative
    - Project Location Map
    - Outfall Locations Map
    - Existing and proposed drainage area delineations for each outfall
        - Must include existing contours with labels and proposed contours with labels, respectively
    - NRCS Soils information
        - Percolation testing results if using infiltration measure(s)
    - Water Quality Volume calculations for each outfall
    - Water Quality Treatment rate calculations or model output for flow through PCBMP sizing
    - All supporting calculations for proposed PCBMPs, including computer models
    - Signed and sealed by a professional engineer licensed in Indiana
- PCBMP detail sheets for all PCBMPs.
- Completed maintenance plans (see templates on Environmental Services Division Stormwater webpage). Submit as separate pdfs in a zipped file. Fill out preliminary information and add screenshots from plans (plan, profile, and cross-section views).
- Shapefiles of outlines of PCBMPs (points for HDS units) in a separate zipped file.

With Stage 3 Review Submission (95% Design) and/or Final Tracings Submission (100% Design):

- All items required with Stage 2 Review Submission in addition to the following:
    - PCSM Unique Special Provisions (USP) or PCSM Recurring Special Provisions (RSP)
    - Completed maintenance plans
    - PCSM Approval Memo

With SWP3 (as an Appendix):

- Approved Final Tracings plans
- PCSM Approval Memo

Submittal and Review

Typical ERMS Uploads for Plans Submittals

- For Stage 1, 2, 3, and Final Tracings, cc us in the ERMS Coordinator email (PCSM@indot.IN.gov) when a submittal is made (that includes PCBMPs) until further direction is provided. State in transmittal letter PCBMPs are included.

For PCSM Report Submittal, there are currently two options:

- Email report to PCSM@indot.IN.gov. Use an upload link if file size is over 30M.
- Or request new PCSM Reports ERMS Application, upload to new application, and send an email to PCSM@indot.IN.gov letting us know you submitted.

PCSM File Naming Convention

- Report – PCSM Report DES XXXXXXX (Date) XX-XX-XXXX
  - For example: PCSM Report DES 1900162 2-23-2023
- Models – PCSM (Model Name) DES XXXXXXX (Date) XX-XX-XXXX
  - For example: PCSM WinTR-55 DES 1900162 2-23-2023
- Use this basic naming convention for other file types

Review Process

- Comment Form will be sent to designer via email as needed
  - INDOT PM will be cc'd, along with INDOT EWPO staff
  - PCSM Team review of plans is not part of the plan review process at this time; its an independent and separate review
- Report Approval Memo will be sent once design and report are approved
- Coordination meetings may be required
  - Designers are encouraged to ask questions ahead of submittals and request meetings if needed
- PCSM Reports will not be scored at this time; however, INDOT PMs will be aware of number of resubmittals

Cost Estimates and Construction Specifications

- Recurring Special Provisions and Drawings to be released soon
- For now, use traditional methods
  - USPs
  - Detail Sheets
  - Existing Pay Items
- PCSM Team can provide guidance if needed (have draft RSP that can be shared)

Questions – Contact Us

- PCSM@indot.IN.gov

Definitions and Acronyms

- **Post-Construction Stormwater Management - *PCSM*** - This is the term defining the whole program collectively. Also, term used within the CSGP.
- **Post-Construction Best Management Practices - *PCBMPs*** - These are individual features that treat stormwater after construction is complete.
- **Construction Stormwater General Permit - *CSGP*** – This is a construction stormwater pollution control permit. It applies to all projects where proposed land disturbance (in acres) is one acre or more.
- **Municipal Separate Storm Sewer System - *MS4*** – A conveyance or system of conveyances that is owned by a state, city, town, village, or other public entity that discharges to waters of the US.
- **Municipal Separate Stormwater Sewer System General Permit – *MS4GP*** – This is the agency wide stormwater pollution control permit.
- **Stormwater Outfall** – Also referred to as "outfalls" - locations stormwater leaves INDOT right-of-way.
- **Total Suspended Solids – *TSS*** – sediment in stormwater, PCBMPs are designed to remove 80% TSS from stormwater runoff.
- **Water Quality Event** – A rainfall event of one inch which produces the Water Quality Volume and Water Quality Treatment Rate used to design PCBMPs. Often referred to as the "first flush" because it flushes contaminants from the pavement.
- **Dry Detention** – Can be either a dry pond, inline ditch detention, or inline underground detention (often achieved with oversized pipes).
- **Dry Vegetated Swale** – Can be planted with turf grass or native grass. Designed to fully dry between rainfall events.
- **Infiltration** – Can be either a basin or swale/ditch. For INDOT projects, this type of PCBMP will only be used when the underlying soil is well drained (typically sandy areas). Amended/engineered soils will not be used, only native underlying soil.
- **Filter Strip** – A section of vegetated, uniformly graded area that receives sheet flow. Typically placed between the road and a receiving water body (pond or stream).
- **Wet Swale** – A swale that does not fully dry between rainfall events. Rarely designed for INDOT projects.
- **Wet Retention Pond** – A detention basin that maintains a permanent pool of water. Often seen in residential and commercial areas. Rarely designed for INDOT projects.
- **Hydrodynamic Separator** – A proprietary device that uses a swirl or vortex to remove solids and trash via gravity from stormwater runoff. Must be part of a storm sewer system. Designers can utilize the INDOT QPL for cost estimating but contractor chooses final unit based on water quality treatment rate.