ACEC Designers Training
Stormwater Topics

August 31, 2023
Introduction

Shannon Killion, PE, Stormwater Administrator

Natalie Stephen, PE, Stormwater Program Manager
Agenda

• Stormwater Coordination
• Construction Stormwater General Permit (CSGP)
• Stormwater Manual Changes
  – Effective
  – Future
• Stormwater Reminders
• Design Exceptions
• Lessons Learned
Speakers

Gail Boydston, Program Manager – Permit and Regulatory – Stormwater, DPW Engineering

Rachel Sparks, PE, Stormwater Project-Manager, American Structurepoint, Inc.
Stormwater Coordination

- **All** projects must include stormwater in scope
- Coordinate *early* with the DPW Stormwater Team for projects that may:
  - Alter stormwater drainage patterns
  - Disturb ½ acre or more
  - Increase impervious surface
  - Add, alter, or remove stormwater infrastructure (including wetlands)
- **Early Coordination to confirm**
  - Design is suitable for the project
  - Any existing capacity or water quality issues
  - If post-construction BMPs are needed and to assist with inclusion in the maintenance program
- **Early Coordination will include**
  - Review of known drainage issues
  - Review of proposed stormwater projects
  - Feedback on proposed stormwater design
- **Coordination should begin at scoping through your DPW Design Manager**
Stormwater Coordination

- **Stormwater infrastructure maintenance considerations**
  - Special equipment needed, such as paver sweepers
  - Maintenance access, such as for BMPs
  - Unique skill set (green infrastructure plantings)

- **Must have Stormwater Administrator approval for Green Infrastructure due to maintenance requirements**
CSGP

• **Construction Stormwater General Permit (CSGP)**
  - Replaces Rule 5
    - Additional plan submission requirements in the CSGP
  - Effective December 18, 2021
  - Guidance on IDEM’s website

• **CSGP Requirements vary from Indianapolis Requirements**
  - Indianapolis
    - Post-Construction BMPs triggered at ½ acre of soil disturbance
    - No consideration for imperviousness
  - CSGP
    - Triggered at 1 acre of soil disturbance
    - Post-Construction BMPs waived if no increased imperviousness
  - Indianapolis standard and CSGP may both apply
CSGP Water Quality

- Said another way...

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CSGP

• **SWCD Reviews SWPPPs for DPW**
  – Separate SWPPP submittal from Utility Coordination
  – SWCD still seeing a few SWPPPs referencing Rule 5 vs. CSGP
    • New CSGP requirements missing
  – SWCD in transition from Alena Jones
    • Utilize the organization's email address for assistance and submissions

[Marion County Soil and Water Conservation District logo]

marioncountyswcd@iaswcd.org
SW Manual - Effective

• Stormwater Manual Changes Effective June 5, 2023
• www.indy.gov/activity/public-works-specifications-and-manuals
• Design Memo 2023.03
  https://media.graphassets.com/jAP1JEvT46HbcmCxlGMO
• **CSGP Requirements**
  - Cementitious washout containment (603.16)
  - Soil stabilization initiated by end of 7\textsuperscript{th} day and completed within 14 days (603.03)
  - Removal of sediment from public rights-of-way daily (603.03)
  - Water draw down from surface of sediment basins (603.09)
  - Existing riparian (aka waterway) buffer preservation (603.12)
  - New dewatering section (603.19)
  - New polymer section (603.20)
• Disturbance on Floodworks (101.02)
  – Disturbance on levees, dams and other floodworks must receive a drainage permit without exception
Contaminated Soils (102.04)

- Consider implications of existing contaminated soil in the Technical information Report during construction and post-construction
- Mitigate movement of contaminants off-site
- Include typical fate and transport of contaminants present
- Statement when no existing contaminants are known to be present
• **Drainage Plans (102.03)**
  – Digital plan submission encouraged
  – One-foot contours for <10% slopes, 2-foot contours for >10% slopes
  – Benchmarks – USGS datum required for project 3 acres +
  – Updates to existing and proposed storm infrastructure information

• **BMP operation and maintenance manuals to include inspection and maintenance forms (102.06)**
SW Manual – Effective

- 1st upstream structure from combined sewer shall prevent escape of sanitary sewer gases (104.05)
- Waterway enclosures permitted only for access and utilities (104.08)
- Underground detention inspection capability without entry into system required (302.06)
- Trench drains not allowed in public ROW (305.02)
• BMP easements must extend to public right-of-way (701.05)
• Dry detention pond BMPS may be placed upstream or downstream (702.02)
• 8” minimum underdrains in the right-of-way (702.04)
  – Only those requiring vac truck maintenance
• Additions and changes to definitions and abbreviations
• Language clarifications and cleanup
SW Manual – Future Updates

• **Expected 2024 - 2025**
  – Indianapolis MS4 Permit renewal changes
  – Terminology inconsistencies
  – Green Infrastructure
    • Updates to Chapter 700 and Green Infrastructure Supplemental Document for out-of-date information
  – Solar Farms
    • Evaluate need for design requirements to address issues such as channelized stormwater runoff at the dripline
SW Manual – Future Updates

• **Expected 2024 – 2025, cont.**
  - Direct discharge detention target for projects without current stormwater discharge
    - Example: combined sewer separation project
  - Post-Construction BMP modeling
  - Compare “Dry Water Quality Swales” and Hybrid Ditch standards/details
  - Tree boxes for water quality (bioretention) section
  - Underdrain clean-out requirements
• **Expected 2024 – 2025, cont.**
  – O&M Manual requirement only for water quality and quantity BMPs, improved guidance
  – Gutter spread guidance for single lane facilities
  – Update out-of-date details
  – Drainage permit variance process updates
  – In-line pipe detention unit restrictions
SW Manual – Future Updates

Please submit Stormwater Manual update ideas submit to ACEC DPW Committee

• Stakeholder Group to be formed for input
Stormwater Reminders

• Stormwater should be engaged at project scoping

• Drainage Design Submittals
  – Hydrologic Calculations at 30%
    • Drainage Areas, peak flows
    • Overall and detailed drainage area map
    • Present alternatives at this stage
  – Full Technical Information Report (TIR) due at 60%
    • SW Manual Section 102.04
    • Wetlands and other waterway permit needs addressed
    • Narrative should include a discussion of the scoping memo/report (Stormwater Projects)
  – Storm sewer calculations/results must be in a tabular format
Stormwater Reminders

• **Digital Data Submission Standards (DDSS)**
  
  – Include the following five (5) files in your submittal
    
    • Digital Design Submittal Checklist
    • Record Drawings
      
      o Reproducible Plans (pdf)
      o Digital Plan Data (.dwg or .dxl)
      o Digital GIS Data in Attribute Tables (Excel)
    • Updated O&M Manual(s)
  
  
  — Review contractor redlines and incorporate into final drawings
Stormwater Reminders

Public Sector Projects: DDSS Workflow

RPR
Forwards Red Line Drawings To The DPW PM & Designer

GIS Specialist
DigitalData@indy.gov
Provides The Final Approval

Designer
Creates The Record Drawings & DDSS submission & sends to GIS Specialist and DPW DM

Design Project Manager
Flash Drive or Cloud File Sharing (preferred)

Design PSA - Attachment A: Design Related Services, sections 6.a and 6.b.
Stormwater Reminders

• **Water Quality and Quantity Requirements**
  - **All** projects (including transportation) must comply with SW Manual requirements (even with no imperviousness increases)
    - Water quantity shall meet the SW Manual requirements either via detention or downstream analysis, whichever is *more restrictive*. Downstream analysis must be documented in the Technical Information Report.
    - Water Quality post-construction BMPs are required by the SW Manual for projects with soil *disturbance* of ½ acre or more (including combined sewer areas).
  - Designers may consider various types of detention due to space limitations (all proposed detention should be discussed with SW prior to inclusion)
    - Distributed storage
    - Detention (dry or underground)
    - Green infrastructure (hybrid ditch, infiltration trench, etc.)
    - Consider maintenance
  - SW Quantity and Quality Guidance Memo is available through DPW Design Managers
  - Design Exception required for proposed designs not meeting SW Manual requirements
    - Design Exception Template also available through DPW Design Manager
Design Exceptions

• Consult with Stormwater Team PRIOR to designing
• Include engineering analysis and documentation that supports the feasibility of meeting the design standards
• Written narrative stating:
  – Specific design standard
  – Reason for the request
  – How the intent of the current standard is being addressed.
• Engineering Analysis
  – Exhibits and/or calculations that illustrate what’s required to meet the standard and what is proposed.
  – Document details such as size, type, location of conflicts on plans and in narrative.
Design Exceptions

- Design exceptions may be considered if:
  - Existing water quality and/or quantity post-construction (PC) BMPs meet design requirements and are functioning as designed as determined by the DPW SW Team.
  - Water quality and/or quantity PC BMPs are to be included in a future planned project.
  - Water quantity and quality issues are not anticipated or are known to be negligible:
    - No or little evidence or record of flooding based on historical complaint data, Initial Priority Ratings, field observations, or other available data.
    - No or little evidence or record of sediment or floatable debris.
  - Projects with no additional impervious surface:
    - Exception required for water quality only.
Design Exceptions

• Design exceptions may be considered if:
  – Inclusion of PC BMPs is not practicable (multiple outlets, ROW limitations, utility conflicts, etc.)
    • Alternatives to traditional "grey infrastructure" must be considered such as green infrastructure, low impact development concepts, combination of green & grey infrastructure, etc.
    • Green Infrastructure Design Toolbox coming
  – Water quality and/or quantity PC BMPs that could negatively impact flood control such as penetrations to existing levees.
  – Bridges over water resources
Stormwater Reminders

- Water Quality Requirements

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Stormwater Reminders

• **Scope and Fee to include**
  - Design to address drainage issues
  - Wetland delineation and considerations
  - Permitting
  - Post-construction BMPs
  - Operation and Maintenance Manuals
  - Geotechnical engineering
  - Subsurface utility engineering
  - Utility coordination
    • Designers & utility coordinators must follow DPW UC process. Push utilities for accurate information using test hole and other field verification at utility’s expense.

• **Wetlands**
  - Required to be addressed in the Technical Information Report (TIR)
  - Clearly shown on plans
Stormwater Reminders

• INDOT 205 Spec changes effective 9/1/2023
  – Designer no longer designates SWQM level
    • Now based on permits
    • See INDOT Design Memo 23-03
Stormwater Reminders

- 3 Specification 205 Section Pay Items
  - Stormwater Management Budget
  - Stormwater Management Implementation
  - SWQCP Preparation

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Storm Water Quality Control Plans

- Only required for CSGP projects
- Revised requirement as of 9/1/2023 (2024 Spec)
- No longer required for projects with waterway permits
Stormwater Reminders

- Not Included In Stormwater Budget:
  - Permanent Erosion Control Blanket
  - Pump Arouunds
  - Cofferdams
  - Spillways
  - Turbidity Curtains
  - Concrete Washouts
Lessons Learned

• Curb ramp drainage
  – Silt and ponding water is a safety hazard and impedes mobility
  – Design Memo drafted
    • Type 3 castings discouraged on DPW projects; Use Type 8 where feasible
    • Type 3 casting rehabilitation also an option
Lessons Learned

• More curb ramp drainage and inlet issues
Lessons Learned

• Plan and Profile Required
• Asphalt applied over curb
Lessons Learned

• Consider waterway permits for bridge demo
  – Demolition debris falling into the water must be permitted.
Lessons Learned

- Design standard for slopes is 3:1 min
- Often installed steeper, which is difficult to maintain
- Design 4:1 if space available
- Consider maintenance
Questions?