F.2 Post-Construction Stormwater Management Plan

F.2.1 PCSMP Drawings

1. General
    a. Verify that all plans meet all of the PWD general plan sheet requirements listed in Appendix E, Table E-1. [Section 2.3.1]
    b. Verify that all plans meet, at minimum, all of the Conceptual Stormwater Management Plan requirements listed in Appendix E, Table E-3. [Section 2.3.1]
    c. Verify that all plans, reports, and calculations are signed and sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania. [Section 2.3.1; Appendix E, Table E-1]
    d. Verify that final plans for construction are provided for the project. Only Final Construction Drawings will be considered for PCSMP Approval by PWD Stormwater Plan Review. [Section 2.3.1]
    e. Verify that a north arrow, legend, and scale are provided on plans. [Appendix E, Table E-1]
    f. Verify that the proposed building footprint is labeled. [Appendix E, Table E-1]
    g. Verify that all acronyms and symbols are identified in the plan legends. [Appendix E, Table E-1]
    h. Verify that the plan legend is consistent with the plan view. [Appendix E, Table E-1]
    i. Verify that all plan drawings are legible. [Section 2.3.1; Appendix E, Table E-1]
2. Existing Conditions Plan
    a. Verify that the Existing Conditions Plan meets all of the PWD general plan sheet requirements listed in Appendix E, Table E-1. [Section 2.1.1]
    b. Verify that the Existing Conditions Plan meets all of the specific requirements for Existing Conditions Plans listed in Appendix E, Table E-2. [Section 2.1.1]
3. Details
    a. Verify that construction details are provided for all stormwater management practices. [Section 2.3.1]
    b. Verify that a pipe connection detail is provided for the proposed connection(s) to the existing storm sewer(s). [Section 3.4.2]
    c. Verify that dimensions of the proposed outlet control structure are provided. [Section 4.12.1, 6]

4. Drainage Area Plans

   a. Verify that drainage boundaries are based on site topography and include the entire tributary area, including any off-site drainage, if applicable. [Section 3.4.1; Appendix E, Table E-7]

   b. Verify that common points of analysis are chosen to compare predevelopment and post-development conditions. [Section 3.4.1; Appendix E, Table E-7]

   c. Verify that points of analysis are clearly labeled on the plans and in the stormwater model. [Section 3.4.1; Appendix E, Table E-7]

   d. Verify that pertinent existing stormwater infrastructure necessary to define the existing drainage conditions, including roof leaders, is shown. [Appendix E, Table E-7]

   e. Verify that the inlet drainage area for each inlet, trench drain, yard drain, and/or area drain is indicated on the plans and that the following information is clearly labeled and accurate for each area: [Appendix E, Table E-7]

      i. Inlet drainage area

      ii. Inlet time of concentration

      iii. Impervious and pervious cover within each inlet drainage area

      iv. Runoff coefficient

   f. Verify that the roof drainage area for each roof leader is indicated on the plans. [Appendix E, Table E-7]

   g. Verify that boundaries and square footages of Stormwater Management Banking or Trading areas, if proposed, are clearly identified on the plans. [Section 3.2.4]

   h. Verify that boundaries and square footages of fee in lieu areas, if proposed, are clearly identified on the plans. [Section 3.4.1]

F.2.2 Grading Design

1. Verify that the proposed grading is provided. [Section 2.3.1]

   a. Verify that there is positive slope away from the proposed buildings.

   b. Verify that proposed contours are closed or tie in to the existing contours at the limit of earth disturbance.

   c. Verify that spot grades are provided as necessary.

2. Verify that all DCIA within the project's limit of earth disturbance is captured, especially at the site's ingress and egress areas. [Section 1.2.1; Section 3.4.1]

F.2.3 Utilities and Storm Sewer Design

1. Verify that the length, material, size, and slope of all piping associated with stormwater conveyance and roof drainage systems are clearly labeled on the plans. [Section 3.4.2]
2. Verify that pipe lengths, slopes, and inverts are accurate. Compare pipe information to profiles, if provided, for consistency. [Section 3.4.2]
3. If roof runoff isolation is proposed as a non-infiltrating pollutant-reducing practice, verify that the runoff discharges into a combined sewer and that the runoff is routed from a non-vehicular roof area that is not commingled with untreated runoff. [Section 3.1.7]
4. Verify that no piping conflicts exist.[Section 3.4.2]
5. Verify that inlets are not connected in series. Wye connections, or similar, may be used to ensure that inlets are offline. [Section 3.4.2]
6. Verify that roof drainage systems do not tie directly into an inlet. [Section 3.4.2]
7. Verify the separation distance between all utility crossings. A minimum of 12 inches of vertical clearance is required when a sanitary sewer line crosses above a storm sewer line. The sanitary sewer must be encased in concrete if the clearance is less than 12 inches. [Section 3.4.2]
8. Verify that any manholes between outlet structures and sewer connections in combined sewer areas have sanitary (non-vented) covers. [Section 3.4.2]
9. Verify that a cleanout is provided, at minimum, every 75 feet, at the end of all pipes, and for all 90-degree pipe bends in the storm sewer system and that a cleanout detail is provided on the plans. [Section 3.4.2]
10. If curb cuts or non-standard inlets are used to capture runoff, especially from driveways or roadways where the inlets are not in a sump condition, verify that the one-year, 24-hour storm event will be captured by the inlet. [Section 3.4.2]
11. Verify that the invert elevation(s) for the proposed connection(s) to the existing City sewer is/are specified. [Section 3.4.2]
12. Verify that the outlet culvert(s) is/are right-sized to minimize impacts on PWD infrastructure. [Section 3.4.2]
13. Verify that all stormwater conveyance pipe material is in compliance with the City of Philadelphia Plumbing Code (Plumbing Code). [Section 3.4.2]
14. Verify that a minimum cover of 36 inches is provided over all private storm sewer pipes, in accordance with the Plumbing Code. [Section 3.4.2]
15. Verify that stormwater conveyance pipes are designed with a minimum velocity of two feet per second. Designs should attempt to maintain velocity without sacrificing SMP depth. [Section 3.4.2]
16. Verify that all proposed connections to the City sewer are right-sized to convey the necessary flow while minimizing the pipe diameter. [Section 3.4.2]

17. Verify that all proposed connections to the City sewer will be inspected by PWD Water Transport Records. Instructions for obtaining a sewer connection permit can be found on the PWD **Stormwater Plan Review** ☛ www.pwdplanreview.org/ website. Refer to Section 2.5 for more information on Water Transport Records. [Section 3.4.2]
    a. Verify that commercial buildings and residential buildings with four or more stories have separate fire service connections.
    b. Verify that any sewer or water connection is made directly to the pipe and not directly to a manhole or street inlet.
    c. Verify that any sewer or water connection is made perpendicular to the pipe to which the connection is proposed.
    d. Verify that any sewer or water connection is smaller in diameter than the PWD pipe to which the connection is proposed. The minimum allowable sanitary sewer pipe diameter is 5 inches, and the minimum allowable storm and combined sewer pipe diameter is 6 inches.
    e. Verify that all PWD sewer and water mains to which connections are proposed are labeled with correct sizes and materials.
    f. Verify that, for MS4 separate sewer areas, sanitary sewer connections are made for sanitary laterals and storm sewer connections are made for storm sewer conveyance.
    g. Verify that for combined sewer areas, sanitary and storm sewer piping is kept separate. A fresh air inlet must be proposed on each pipe.
    h. Verify that connections are made to an active sewer or water main.
    i. Verify that connections are not made to an intercepting sewer or transmission main.
    j. Verify that connections are not made to a private sewer or water main or to existing lateral on an adjacent property.
    k. Verify that no structures, private drainage infrastructure (e.g., inlets, pipes, manholes, SMPs, etc.), or vertical encroachments are proposed within any public or drainage right-of-way.
    l. Verify that only RCP or rigid pipe connections are made to PWD infrastructure. Plastic pipe connections are not permitted.
    m. Verify that any sanitary lateral connection to a sanitary-only public sewer is smaller in diameter than the house drain, and is in no case less than 5 inches in diameter.
    n. Verify that any stormwater lateral is no smaller than 6 inches in diameter.
    o. Verify that any combined sanitary and stormwater lateral is no smaller than 6 inches in diameter.
18. Verify that at least two feet of clearance between the bottom of the SMP and the crown of the City sewer pipe, and/or a backflow prevention device, is provided to alleviate potential flooding from the City sewer which is regularly at full capacity. [Section 3.4.2]

19. Verify that Private Cost plans are submitted to the PWD Design Branch for review, if applicable. Refer to Section 2.5 for more information on Private Cost project requirements. [Section 2.5]
    a. Verify that all Private Cost work (i.e., extensions of PWD infrastructure, such as new sewer or water mains) or modifications to existing infrastructure (i.e, moving inlets, fire hydrants, etc.) are labeled on the plans.
    b. Verify that all PWD pipes to be abandoned are properly labeled on the plans.
    c. Verify that all City streets or drainage rights-of-way to be abandoned are properly labeled on the plans.
    d. Verify that all laterals and proposed Private Cost sewer or water mains are designed to flow by gravity.
20. Verify that a copy of the plans is submitted to the Department of Licenses and Inspections (L&I) for review if the project proposes an oil/water separator. Refer to Section 2.6 for more information on L&I permitting. [Section 2.6]
21. Verify that stormwater conveyance piping and SMPs are not receiving runoff from fueling station pads for gas stations. The drainage area under a pad's canopy must be treated by an oil/water separator then discharge directly to the sanitary sewer system. [Section 3.4.2]
22. Verify that any project which proposes stormwater conveyance piping or SMPs that encroach onto an adjacent property has obtained a drainage easement. [Section 3.4.2]

F.2.4 PCSMP Report

1. Verify that the PCSMP Report meets all of the specific PCSMP Report requirements listed in Appendix E, Table E-7. [Section 2.3.1]
2. Verify that the PCSMP Report is signed and sealed by a Professional Engineer licensed in the Commonwealth of Pennsylvania. [Section 2.3.1; Appendix E, Table E-7]
3. Verify that the PWD Stormwater Plan Review Online Technical Worksheet is completed, as necessary, and submitted with the PCSMP Review Phase Submission Package. [Section 3.4.1; Appendix E, Table E-7]

4. Operations and Maintenance Agreement

a. Verify that a site-specific SMP Maintenance Guide is provided. [Section 6.1; Appendix E, Table E-7]

i. Verify that an SMP Maintenance Guide Site Map is included.

1. Verify that the SMP Maintenance Guide Site Map identifies the on-site SMPs and key SMP-related features which require maintenance, using unique, legible, labels, and provides a list of structures and SMP-related features, identifying the associated SMP(s) for each.

2. Verify that the SMP Maintenance Guide Site Map includes a Color Legend that adheres to the Color Legend provided in the SMP Maintenance Guide document provided in Appendix G.

3. Verify that the SMP Maintenance Guide Site Map is sized 11" x 17". (Multiple sheets may be used, if necessary.)

4. Verify that the SMP Maintenance Guide Site Map is consistent in format with the SMP Maintenance Guide Sample's Site Map, provided in Appendix G.

ii. Verify that a site-specific SMP Maintenance Schedule Form is included for each proposed SMP and SMP-related structure, using the templates provided in Appendix G.

1. Verify that each schedule provides for inspection of the SMP or SMP-related structure, including routine maintenance, repair, and replacement.

2. Verify that each schedule provides for a report documenting each inspection and all SMP maintenance activities performed as a result of the inspections.

b. Verify that the "Operations and Maintenance Agreement Information" section of the Online Technical Worksheet is completed. [Section 2.3.1; Appendix E, Table E-7]

i. Verify that the listed property owner is consistent with the property owner named in Public Records.

ii. Verify that the business title of the provided signatory is appropriate to the property owner business entity.

iii. Verify that a legal description of the property is provided in an electronically editable (Word document) format.

c. Verify that a copy of the Agreement of Sale, or similar documentation, is provided to demonstrate the current owner's intent to convey the property to the developer, if applicable.

d. Verify that documentation supporting a lot consolidation or subdivision plan is provided to demonstrate the intent to change the address of the current property, if applicable.

5. Construction Certification Package

a. Verify that a site-specific SMP Construction Certification Form is provided for each proposed SMP, customized by the project's design professional and to be completed by a registered professional during construction. [Section 5.3.1; Appendix E, Table E-7]

b. Verify that each SMP Construction Certification Form is customized to adequately record and verify all required measurements that are most critical to the listed SMP's ability to perform its designed function (e.g., elevations, outlet control sizes, surface areas, layer depths, etc.) [Section 5.3.1]

6. Verify that proof of application for applicable State and Federal permits is submitted with the PCSMP Review Phase Submission Package. This can be in the form of copies of permit applications, application receipts, or notification letters from relevant agencies. Applicable State permits include, but are not limited to, a PA DEP NPDES Permit if one acre or more of earth disturbance activity is proposed. [Section 2.3.1; Appendix E, Table E-7]
7. Verify that a discussion on proposed Stormwater Management Banking and Trading is provided, if applicable. [Section 3.2.4; Appendix E, Table E-7]
    a. Verify that the type of Stormwater Management Banking or Trading proposed is provided.
    b. Verify that a description of the area(s) proposed to be banked or traded is provided.
    c. Verify that the square footage(s) of area(s) proposed to be banked or traded is provided.
    d. Verify that justification for the proposed bank or trade, including reasons why management of the required area(s) is not feasible and why PWD may benefit from the proposal, is provided.
8. Verify that a discussion on proposed fee in lieu is provided, if applicable. [Section 3.4.1; Appendix E, Table E-7]
    a. Verify that the square footage(s) of area(s) for proposed fee in lieu is provided.
    b. Verify that all Water Quality stormwater management strategies considered and rejected are outlined.
    c. Verify that justification for the proposed fee in lieu, including reasons why all considered stormwater management strategies are not feasible or advisable, is provided.