STORMWATER MANAGEMENT DESIGN REPORT
(To be later inserted into the Drainage Design Documentation)

Note: This report outline is not all-inclusive. There may be situations when information not included in this outline should be included in the Stormwater Management Design Report to provide adequate explanations/documentation for project specific issues. The report is intended to be submitted at a 45% roadway phase so stormwater permitting issues can be worked out prior to submittal of 60% roadway. Refer to TDH Part 3 Chapter 301.2 Table 301.2.1 for plans required at the 45% submittal phase.

SECTION 1.0 – GENERAL INFORMATION

1.1 Project Location.
- Overall project location (county, city, section/township/range, Turnpike milepost, etc.)
- Datum used for this project. Provide datum conversion if applicable.

1.2 Purpose.
- Brief description of the intent of the report.

1.3 Existing Drainage Patterns.
- General drainage patterns in the vicinity of the project, on a regional basis.
- Address offsite areas draining toward the Turnpike right-of-way.
- Review KMZ file containing Drainage Connection Permits for projects that discharge to the project’s right-of-way.
- Describe if project is in open and/or closed basins.
- Brief description of receiving water bodies and their classification (Outstanding Florida Water, etc).
- Brief description of proximity to potable well fields and well field protection zones.

1.4 Tailwater.
- Discuss tail water elevations used in the design for all cases such as ponds, storm sewers, ditches, underdrain, etc. Include pertinent information such as, previous studies from state or local agencies, etc. References should be made to the appropriate Appendix and/or Document for calculations and information related to tail water determinations. Refer to the FDOT Drainage Manual and the Turnpike Supplement to the FDOT Drainage Manual for required tailwater elevations.

1.5 Floodplain Impacts and Mitigation
- Describe if the project impacts adjacent floodplain areas. If so, describe how impacts are being mitigated.
- Describe whether or not the project will have any floodway involvement and if a no-rise certification is required.

1.6 Rules & Regulations/Regulatory Agency Coordination
- Describe all stormwater and right of way occupancy permits needed to construct this project.
- Describe water quality and quantity criteria applicable to this project.
- Describe all stormwater recovery requirements applicable to this project.
- Summarize only the drainage criteria specific to this project.
- Describe any Special Basin Criteria that may apply to the project; such as Outstanding Florida Waters or Wellfield Protection Zones.
- Describe whether the project discharges to an impaired water body and what TMDL’s are associated with it.
SECTION 2.0 – PRE-DEVELOPMENT ANALYSIS

The intent of Section 2.0 is to provide a brief narrative describing the existing condition of the project site as it relates to stormwater management. The narrative should include information on the number of drainage basins with their respective outfalls, as well as the type of existing stormwater management systems currently in use. Tables summarizing pre-development analysis should be included in Section 2.0. All supporting calculations, documentation, and the pre-development drainage map, for the pre-development analysis, should be presented in Appendix B. Refer to the FDOT Drainage Manual and the FDOT Drainage Design Guides Chapter 9 for guidance.

For each basin include the following:

- Basin name.
- Begin and end station limits.
- Existing drainage patterns (i.e., flow paths and time of concentration).
- Land uses (i.e., curve numbers).
- Describe soils and hydrologic grouping.
- Ultimate outfall location for discharge comparison (open or closed basin?).
- Document/justify tail water (provide source of information).
- Identify hazardous materials, utilities, archeological, historical, and environmental information affecting the design of the stormwater facility.
- Identify offsite areas draining towards the road and how offsite runoff is currently conveyed through the project.
- Previously permitted information.
- Previously permitted/required water quality, if applicable (is there surplus volume and/or discharge available?).
- Existing permitted stormwater management system, if applicable.

SECTION 3.0 – POST-DEVELOPMENT ANALYSIS

The intent of Section 3.0 is to provide a brief narrative describing the proposed condition of the project site as it relates to stormwater management. The narrative should include information on the number of drainage basins with their respective outfalls, as well as the type of recommended stormwater management systems to be used for the basin. Tables summarizing post-development analysis should be included in Section 3.0. Discharge rates may be compared at the ultimate outfall locations if more than one basin shares the same downstream outfall. All supporting calculations and documentation, including the post-development drainage map, for the post-development analysis should be presented in Appendix C. Refer to FDOT Drainage Manual and Drainage Design Guide Chapter 9 for guidance.

For each basin include the following:

- Basin name.
- Begin and end station limits.
- Proposed drainage patterns (flow paths in ditches and swales for example, time of concentration, etc.).
- Land uses (i.e., curve numbers).

All maps and figures should be included in Appendix A. These include the Project Location Maps, USGS Quadrangle Maps, Soils Maps, FEMA Maps, WMD Basin Maps, and Wellfield Protection Zone Maps.
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- Discuss direct discharge to Outstanding Florida Waters, TMDLs or facilities within a Wellfield Protection Zones, if any.
- Describe soils and summarize results from the geotechnical investigation.
- Ultimate outfall point.
- Discuss any Special Basin Criteria that may apply to the particular project basin.
- Document/justify tail water, seasonal high water table, control, and weir elevations.
- Identify offsite areas draining towards the road and describe how it is to be conveyed through the project.
- Recommended stormwater management system.
- Total required and provided water quality (includes previously permitted, if applicable, as well as anything new) meet criteria.
- Treatment volume recovery meets criteria.
- Permanent pool volume meets criteria, if applicable.
- If compensating or over treatment to be used, provide detailed description of area of new impervious not being treated, area of existing pavement to be treated, etc.
- Retention systems certified by a Geotechnical Engineer.
- Post-development discharge rates compared to the pre-development discharge rates (meets critical duration criteria, as stated in Chapter 14-86, F.A.C.).
- Post-development stages provide for freeboard as stated in the FDOT Drainage Manual.

SECTION 4.0 – FLOODPLAIN ANALYSIS

The intent of Section 4.0 is to provide a brief narrative describing the floodplain conditions at the project site and should include the following information. Tables summarizing floodplain impacts, locations, and compensation should be included in Section 4.0. All supporting calculations and documentation for the floodplain analysis should be presented in Appendix D.

- Brief narrative.
- Statement describing impacts have been avoided or minimized.
- Describe limits of impacts and final cut/fill quantities, if applicable.
- Describe where compensation is to occur, if applicable.

SECTION 5.0 – BASE CLEARANCE ANALYSIS

The intent of Section 5.0 is to provide a brief narrative describing site specific base clearance issues as well as issues involved in determining the base clearance water elevation. Tables summarizing the calculated base clearances should be included in Section 5.0. All supporting calculations and documentation for the base clearance analysis should be presented in Appendix E.

- Describe how the base clearance water elevation was established.
- Describe limits of project which do not meet Florida Department of Transportation Design Manual base clearance requirements.
- Describe how sections that do not meet base clearance are to be handled.

SECTION 6.0 – REFERENCES
APPENDICES

Appendix A – Figures
- Project Location Maps
- USGS Quadrangle Maps
- Soils Maps
- FEMA Floodplain Maps
- WMD Basin Maps
- Wellfield Protection Zone Maps
- Other

Appendix B – Pre-Development Calculations and Documentation including:
- Pre-development drainage map with aerial background
- Supporting pre-development stormwater facility calculations; Tc, CN, Areas, etc.
- Pre-development ICPR Input and Output Data
- Pre-development nodal diagram. Reference specific structure numbers and pond names as shown in the construction plans.

Appendix C – Post-Development Calculations and Documentation including:
- Post-development drainage map with aerial background
- Supporting post-development stormwater facility calculations; Tc, CN, Areas, etc.
- Post-development ICPR Input and Output Data
- Post-development nodal diagram. Reference specific structure numbers and pond names as shown in the construction plans.
- Post-development recovery analysis

Appendix D – Floodplain Encroachment/Compensation Calculations and Documentation

Appendix E – Base Clearance Calculations and Documentation

Appendix F – Correspondence and Excerpts from Previous Permits and Studies
STORMWATER MANAGEMENT DESIGN REPORT

CHECKLIST

___Purpose
___Project Description
___Existing Land Use
___Soils
___Seasonal High Water Elevations/Base Clearance Water Elevations
___Floodplains & Floodways
___Permits/Special Basin Criteria
___Sovereign Submerged Lands
___Stormwater Management (Requirements)
___Wetlands
___Tailwater Constraints
___Offsite Areas/Co-mingling of Off-Site Drainage
___Utilities
___Hazardous Materials
___Other Constraints (Cemetery/Parks/Historic Buildings)
___Deficiencies of Existing Conditions
___Retaining Wall Requirements
___Outfall Requirements (right-of-way, easements)
___Freeboard in ponds meets criteria
___Post-condition discharges do not exceed pre-condition discharges
___Provided treatment volume equal to or greater than pre-condition treatment volumes
___Treatment volume recovery time meets criteria
___Pond dimensions meet criteria
___Construction plan details match drainage design

EXHIBITS CHECKLIST

1. ___Location Map
2. ___Quadrangle Maps
3. ___Soils Maps
4. ___FEMA Maps
5. ___WMD Basin Maps
6. ___Wellfield Protection Zone Maps
7. ___Pre- and Post- Drainage Maps
8. ___Stormwater Criteria
9. ___Stormwater Details/Calculations