## Section 10-1 General Introduction

10-1-1 Purpose and Objectives
   1.1 Originator
   1.2 Purpose
   1.3 Chapter Organization
   1.4 Glossary

10-1-2 Applicable Laws and Permits
   2.1 Federal, State, and Local Laws and Regulations
   2.2 Transportation Construction General Permit
   2.3 Transportation Separate Storm Sewer System Permit
   2.4 Wis. Adm. Code, Chapter Trans 401
   2.5 Administration Rules for Erosion and Sediment Control on Highway Construction Projects

10-1-3 Erosion Control Plan
   3.1 Limit Off-Site Effects
   3.2 Facilitate Construction and Minimize Cost
   3.3 Laws & Regulations

10-1-5 The Erosion Process

10-1-10 Basic Principles of Erosion and Sediment Control

## Section 10-5 Developing an Erosion Control Plan

10-5-1 Communication and Coordination
   1.1 Internal Communication and Coordination
   1.2 External Communication and Coordination

10-5-5 Planning and Location Considerations

10-5-10 Erosion Sensitive Areas

10-5-15 Environmental and Customer Sensitive Areas

10-5-20 Soils Investigation

10-5-25 Geometric Considerations
   25.1 Introduction
   25.2 Topography
   25.3 Alignment and Grade
   25.4 Cross Sections
   25.5 Proper Shaping for Erosion Control
   25.6 Cut-To-Fill Transitions (Cut Runouts)
   25.7 Culverts

   Attachment 25.1 Erosion Control Prevention
   Attachment 25.2 Erosion Control at Cut to Fill Transition
   Attachment 25.3 Transition from Cut of Fill

10-5-30 Drainage Guidance for Erosion Control
   30.1 Natural Drainage
   30.2 Adjacent Areas
   30.3 Local Input
   30.4 Storm Design Guidance and Channel Capacity
   30.5 Storm Water Runoff

10-5-35 Channel and Slope Matrics
   Attachment 35.1 Channel Erosion Control Matrix
   Attachment 35.2 Slope Erosion Control Matrix

10-5-40 Calculating Shear Stress in Channels
   Attachment 40.1 Manning's Roughness Coefficients Table
   Attachment 40.2 Nomograph for Flow in Triangular Channels
Section 10-10 Erosion and Sediment Control Devices

10-10-1 Devices and Measures Available
   1.1 Introduction
   1.2 Devices Available
   1.3 Devices Required on All Grading Projects
   1.4 Temporary vs. Permanent Measures

Attachment 1.1 Erosion Control Measures
Attachment 1.2 Summary of Control Measure Applications
Attachment 1.3 Example of Selected Control Measures Used in Combination

10-10-3 Vegetation

10-10-6 Seeding
   6.1 Definition
   6.2 Application
   6.3 Design Guidance

10-10-8 Water
   8.1 Definition
   8.2 Application
   8.3 Design Guidance
   8.4 Considerations
   8.5 Estimating Quantities

10-10-9 Sodding
   9.1 Definition
   9.2 Application
   9.3 Design Guidance
   9.4 Limitations

10-10-10 Mowing
   10.1 Definition
   10.2 Application
   10.3 Design Guidance
   10.4 Considerations
   10.5 Estimating Quantities

10-10-11 Topsoil
   11.1 Definition
   11.2 Application
   11.3 Design Considerations

10-10-12 Fertilizer
   12.1 Definition
   12.2 Application
   12.3 Design Considerations

10-10-13 Mulching
   13.1 Definition
   13.2 Application
   13.3 Design Considerations

10-10-15 Erosion Mat
   15.1 Definition
   15.2 Application
   15.3 Design Guidance
   15.4 Erosion Mat Classes and Types
   15.5 General Performance Measures
Attachment 15.1: Erosion Mat

10-10-17: Interlocking Cells
   17.1: Definition
   17.2: Application
   17.3: Design Guidance

10-10-19: Riprap or Grouted Riprap
   19.1: Definition
   19.2: Application
   19.3: Riprap
   19.4: Grouted Riprap
   19.5: Design Guidance

10-10-21: Erosion Bale Barriers
   21.1: Definition
   21.2: Application
   21.3: Limitations
   21.4: Design Guidance
   21.5: Estimating Quantities

10-10-22: Temporary Ditch Checks
   22.1: Definition
   22.2: Application
   22.3: Limitations
   22.4: Design Guidance
   22.5: Estimating Quantities

10-10-23: Silt Fence
   23.1: Definition
   23.2: Application
   23.3: Limitations
   23.4: Design Guidance
   23.5: Estimating Quantities

10-10-25: Stone or Rock Ditch Checks
   25.1: Definition
   25.2: Application
   25.3: Design Guidance

10-10-27: Storm Drain Inlet Protection
   27.1: Definition
   27.2: Application
   27.3: Design Guidance

10-10-29: Culvert Inlet Protection
   29.1: Definition
   29.2: Application
   29.3: Design Guidance

10-10-31: Outlet Protection
   31.1: Definition
   31.2: Application
   31.3: Design Guidance

10-10-33: Subsurface Drains
   33.1: Definition
   33.2: Application
   33.3: Design Guidance

10-10-37: Diversion Dikes/Intercepting Embankments
   37.1: Definition
   37.2: Application
   37.3: Design Guidance

10-10-39: Benching
   39.1: Definition
   39.2: Application
   39.3: Design Guidance

Attachment 39.1: Benched Slope Examples

10-10-41: Dust Control
   41.1: Definition
   41.2: Application
   41.3: Design Guidance

10-10-42: Tracking Pads
   42.1: Definition
   42.2: Application
Section 10-15 Appendix

10-15-1 ...... Glossary
10-15-5 ...... Erosion Control CADD Cells
    Attachment 5.1 ...... Runoff Coefficient Table
    Attachment 5.2 ...... Detail of Sod Slopes at Structures
    Attachment 5.3 ...... Sod Detail for Ditches
    Attachment 5.4 ...... Sod Inlet Sediment Filter
    Attachment 5.5 ...... Sod Treatment at Culverts
    Attachment 5.6 ...... Detail of Sod Flume
    Attachment 5.7 ...... Sod Flume Detail at Curb Ends
    Attachment 5.8 ...... Sod Flume Detail at Curb Ends
    Attachment 5.9 ...... Detail of Sod Flume
    Attachment 5.10 ...... Erosion Mat Detail for Ditches
    Attachment 5.11 ...... Erosion Mat Treatment at Culverts
    Attachment 5.12 ...... Detail for Heavy Riprap in Ditches
    Attachment 5.13 ...... Detail for Special Ditch with Heavy Riprap & Geotextile Fabric
    Attachment 5.14 ...... Detail for Heavy Riprap Ditch
    Attachment 5.15 ...... Detail for Riprap in Ditches
    Attachment 5.16 ...... Detail for Medium Random Riprap in Ditches
Section 10-25 Stormwater Quality

10-25-1 Stormwater Control Measure Selection
  1.1 Introduction
  1.2 Determining Project Water Quality Objective Goals
  1.3 Stormwater Report Development
  1.4 Stormwater Quality Matrix
  1.5 Stormwater Technical Standard and Procedure Links
  1.6 Stormwater Retrofit Projects

Attachment 1.1 Post Construction Stormwater Quality Management Goals
Attachment 1.2 Treatment Efficiencies for WisDOT Stormwater Control Practices as Required for Highway Facilities Covered Under TRANS 401

10-25-5 The Effects of Urbanization on Stormwater Quality
  5.1 Introduction
  5.2 Urbanization
  5.3 Hydrologic Changes
  5.4 Pollutants
  5.5 References

Section 10-30 Stormwater Quality Analysis

10-30-1 Project Stormwater Quality Analysis Process
  1.1 Description and Purpose
  1.2 Water Quality Analysis Instructions
  1.3 Stormwater Report Applicability
  1.4 Water Quality Spreadsheet Description

Attachment 1.1 Water Quality Results Summary Sheet
Attachment 1.2 Water Quality - Wet Detention Ponds Summary Sheet
Attachment 1.3 Water Quality - Catchbasins Summary Sheet

Section 10-35 Stormwater Control Measure Selection

10-35-1 Stormwater Quality Practice Selection
  1.1 Introduction
  1.2 Project Scoping for Stormwater Quality
FDM Chapter 10 Table of Contents

1.3........Physical Site Suitability
1.4........Cost Effectiveness
1.5........Maintenance Requirements
1.6........Effect on Other Resources
1.7........Public Acceptance
1.8........Suspended Solids Reduction Design Process
1.9........Effectiveness in Reducing Peak Discharges

10-35-5 ...... Grass Swales
5.1.........Description and Purpose
5.2.........Target Pollutants
5.3.........Planning Issues
5.4.........Design Recommendations
5.5.........Maintenance
5.6.........Grass Swale Water Quality Design Example
5.7.........References

Attachment 5.1 ...... Grass Swale Analysis Summary Spreadsheet

10-35-10 ...... Filter Strips
10.1.........Description and Purpose
10.2.........Targeted Pollutants
10.3.........Effectiveness
10.4.........Planning Issues
10.5.........Design Recommendations
10.6.........Maintenance
10.7.........Filter Strip Water Quality Design Example
10.8.........References

Attachment 10.1 ...... Filter Strip Water Quality Design Charts
Attachment 10.2 ...... Filter Strip Analysis Summary Spreadsheet
Attachment 10.3 ...... Filter Strip Sand Amendment Analysis

10-35-15 ...... Wet Detention Pond Stormwater Quality Design
15.1.........Description and Purpose
15.2.........Target Pollutants
15.3.........Effectiveness
15.4.........Planning Issues
15.5.........Design Recommendations
15.6.........Maintenance
15.7.........Wet Detention Pond Water Quality Analysis Using the WisDOT Stormwater Report Spreadsheet
15.8.........References

Attachment 15.1 ...... Calculation of Preliminary Permanent Pool Surface Area for TSS Reduction
Attachment 15.2 ...... Pond Volume/Discharge Design Curve
Attachment 15.3 ...... Rainfall and Runoff Tables
Attachment 15.4 ...... Conceptual Pond Design Illustrations
Attachment 15.5 ...... Wet Detention Pond Analysis Summary Spreadsheet

10-35-20 ...... Catchbasin Design and Maintenance
20.1.........Description and Purpose
20.2.........Target Pollutants
20.3.........Effectiveness
20.4.........Planning Issues
20.5.........Design Recommendations
20.6.........Maintenance
20.7.........Catchbasin Water Quality Design Example
20.8.........References

Attachment 20.1 ...... Typical Cross Section Type 5 Illustration
Attachment 20.2 ...... Catchbasin Water Quality Design Charts for Cross Section Type 5
Attachment 20.3 ...... Typical Cross Section Type 8 Illustration
Attachment 20.4 ...... Catchbasin Water Quality Design Charts for Cross Section Type 8
Attachment 20.5 ...... Catchbasin Analysis Summary Spreadsheet

Section 10-40 Maintenance Best Management Practices (BMPs)
10-40-1 ...... Introduction
10-40-5 ...... Street Sweeping
5.1.........Description and Purpose
5.2.........Target Pollutants
5.3.........Planning Considerations