

March 2026

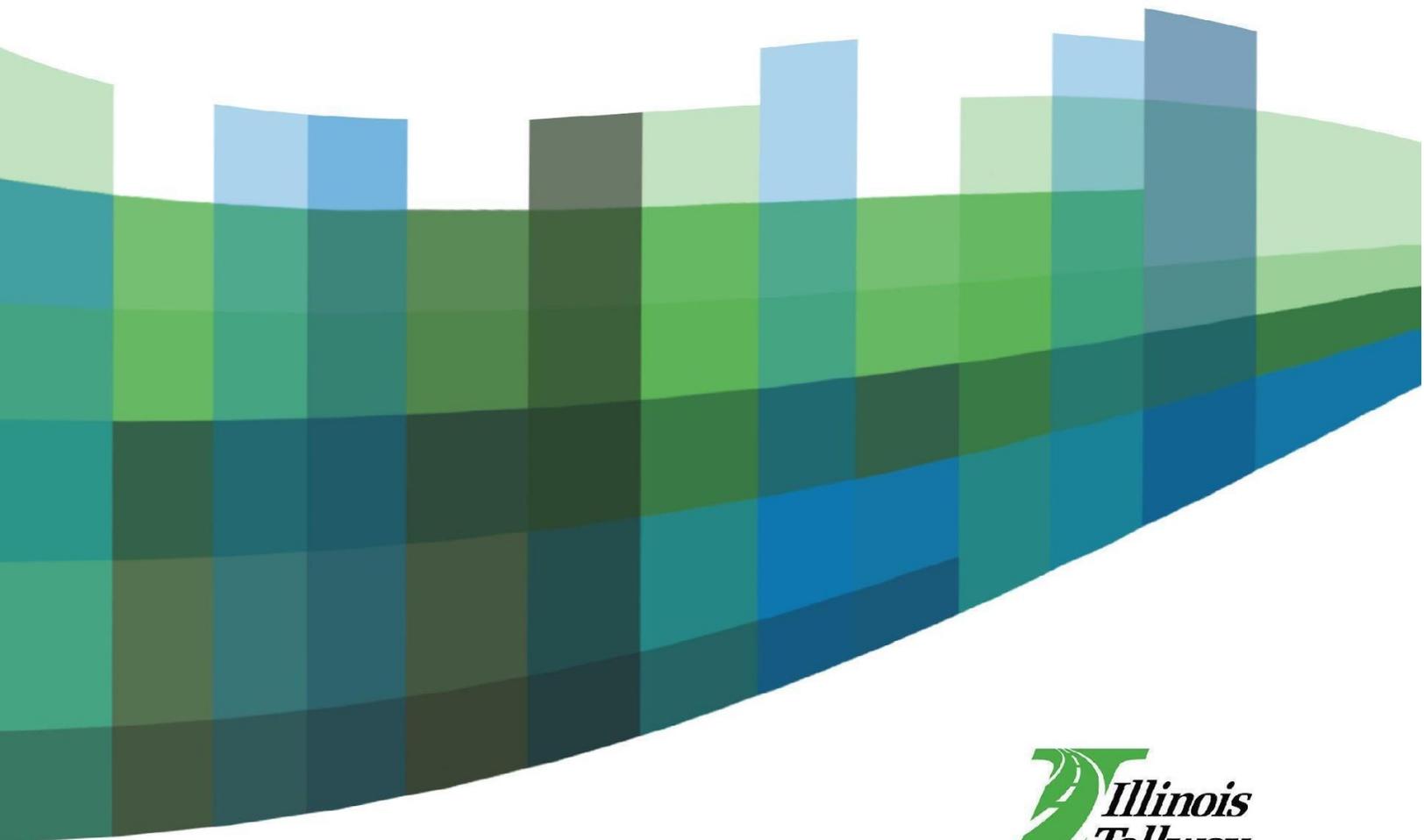
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# Erosion Control and Landscape Manual

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ILLINOIS STATE TOLL HIGHWAY AUTHORITY

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# OVERVIEW

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## Erosion Control and Landscape Manual

The Erosion Control and Landscape Manual provides guidance on the Illinois Tollway standards for ensuring the protection of existing water resources, natural areas and property through a comprehensive erosion and sediment control and landscape program. The manual's content provides a detailed listing of criteria, guidelines, policies and procedures for the Design Section Engineer to implement erosion and sediment control measures and landscape design elements for construction on Illinois Tollway

right-of-way, temporary easements and borrow sites. The content is intended to minimize impacts to water quality, aquatic ecosystems and sensitive environmental resources before, during and after construction, prevent erosion and sediment damage to the roadway, and associated right-of-way and adjacent properties and to provide a landscape that is both visually and environmentally compatible and aesthetically pleasing with the surrounding areas.



The Erosion Control and Landscape Manual dated March 2026 replaces the Erosion Control and Landscape Manual dated March 2025.

**Major Revision Highlights**

<b>Section 4.0: Landscape</b>	
<a href="#">Article 4.1.1(1)</a>	Added reference to Appendix J – Illinois Tollway Tree Survey Protocol
<a href="#">Article 4.2</a>	Revised Appendix J, K and L references to their new corresponding Appendix sections throughout Article 4.2
<a href="#">Article 4.2.12</a>	Added reference to Appendix L USDA Illinois Plant Hardiness Zone Map
<b>Appendices</b>	
<a href="#">Appendix J</a>	Added Illinois Tollway - Tree Survey Protocol as Appendix J
<a href="#">Appendix K</a>	Reassigned Illinois Tollway - Preservation, Removal and Replacement of Trees as Appendix K
<a href="#">Appendix L</a>	Reassigned USDA Illinois Plant Hardiness Zone Map as Appendix L

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## SECTION 1.0 INTRODUCTION

### 1.1 Purpose and Use

The Illinois State Toll Highway Authority (Illinois Tollway) strives to lead the industry in innovative and best practices and to support a transportation system that preserves and enhances the environment. The Illinois Tollway also endeavors to design and build a more sustainable transportation infrastructure in Illinois. In support of these goals, the Illinois Tollway is committed to ensuring the protection of existing water resources and natural areas by implementing and maintaining an erosion and sediment control and landscape program as part of all Illinois Tollway projects.

This document provides the criteria, guidelines, policies and procedures to be followed by the Design Section Engineer (DSE) or Designer for incorporation of erosion and sediment control measures and landscape design elements for construction on Illinois Tollway right-of-way (ROW), temporary easements and borrow sites. These criteria, guidelines, policies and procedures are intended to prevent erosion and sediment damage to the roadway, associated ROW and adjacent properties; to reduce impacts to water quality, aquatic ecosystems and sensitive environmental resources before, during and after construction; and to provide a landscape that is both visually and environmentally compatible and aesthetically pleasing with the surrounding areas.

This manual provides general guidelines for plan preparation and for obtaining required permits for erosion and sedimentation control, as well as landscape planning and design. It is the responsibility of the Designer to be familiar with the Illinois Tollway landscape management practices and to be knowledgeable in the principles of erosion and sediment control, roadside landscape design and of current practices and applicable regulations as they may affect Illinois Tollway projects. The Designer shall also be knowledgeable of the most sustainable method for managing stormwater runoff. The Designer shall ensure that the proposed grading and drainage designs for any project are coordinated with the landscape design to minimize conflicts and take full advantage of design opportunities and efficiencies.

The Construction Manager (CM) shall be experienced in the development and implementation of erosion and sediment control plans to ensure they can be effectively implemented by the Contractor during the construction phase of the project. In addition, it is the responsibility of the CM to ensure continuous monitoring of the effectiveness of the implemented erosion and sediment control measures throughout construction of Illinois Tollway projects and that all actions and record-keeping is maintained to ensure permit compliance requirements are met.

The criteria, guidelines, policies and procedures specified in this manual are for use in ensuring fulfillment of commitments for erosion and sediment control associated with Section 402 and Section 404 permits of the Clean Water Act issued by the United States Army Corps of Engineers (USACE), on such commitments made to the Illinois Environmental Protection Agency (IEPA) and other and natural resource agencies during project implementation. The National Pollutant Discharge Elimination System (NPDES) program of the Federal Clean Water Act imposes erosion and sediment control requirements on construction activities that involve a land disturbing activity of 1 acre or more and discharges stormwater to waters of the United States. The IEPA has issued a statewide General Construction Permit (ILR10) that details the NPDES requirements for construction projects.

As an operator of a small municipal separate storm sewer system (MS4) and ILR40 permittee from the IEPA, the Illinois Tollway is required to reduce the discharge of pollutants from their MS4 to the maximum extent practicable, to protect water quality and to satisfy the appropriate water quality requirements of the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act. Accordingly, it is the policy of the Illinois Tollway that all construction operations be conducted in a manner that minimizes the potential to impact stormwater. To this end, the Illinois Tollway requires that all construction operations, regardless of the area of disturbance, be conducted to minimize erosion and to implement measures to protect stormwater from impacts due to other construction related sources of pollution.

## 1.2 Abbreviations and Acronyms

AASHTO	American Association of State Highway Transportation Officials
AISWCD	Association of Illinois Soil and Water Conservation Districts
BMPs	Best Management Practices
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CM	Construction Manager
CPESC	Certified Professional in Erosion and Sediment Control
CSMA	County Stormwater Management Agency
DBH	Diameter at Breast Height
DSE	Design Section Engineer
EP	Environmental Planner
EPA	Environmental Protection Agency
ESCM	Erosion and Sediment Control Manager/Inspector
ESCP	Erosion and Sediment Control Plan
EVA	Existing Vegetative Assessment
FAA	Federal Aviation Administration
IDOT	Illinois Department of Transportation
IEPA	Illinois Environmental Protection Agency
Illinois Tollway	Illinois State Toll Highway Authority
Illinois Tollway DDM	Illinois Tollway <i>Drainage Design Manual</i>
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
PM	Project Manager
PAM	Polyacrylamide
PLP	Permanent Landscape Plan
ROW	Right-of-Way
SWCD	Soil and Water Conservation District
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Loads
USACE	United States Army Corps of Engineers
WBPM	Web-Based Program Management system (e-Builder)

### 1.3 Definitions

**Best Management Practice (BMP):** Design, construction and maintenance practices and criteria for stormwater facilities that promote infiltration, minimize impacts from stormwater runoff rates and volume, prevent erosion and capture pollutants.

**Clear Zone:** The clear zone is defined by the *AASHTO Roadside Design Guide* as “The unobstructed, traversable area provided beyond the edge of the through traveled way for the recovery of errant vehicles”. See Illinois Tollway Traffic Barrier Guidelines Article 5.3 for detailed definition and application of the clear zone by the Illinois Tollway.

**Community:** Any municipality or unincorporated County, within Illinois acting as a unit of local government.

**Construction Manager (CM):** The Engineer or firm of engineers and their duly authorized employees, agents and representatives retained by the Illinois Tollway to observe the project work to determine whether or not it is being performed and constructed in compliance with the Contract.

**Contract:** The written agreement executed between the Illinois Tollway and the successful Bidder and any supplemental agreements duly executed, establishing the terms and conditions for the performance and construction of the work and to furnish labor, equipment and materials and by which the Illinois Tollway is obligated to compensate the Contractor therefore at the established rate or price. The Contract includes the Advertisement to Bidders, Instructions to Bidders, the Proposal, Bonds, the Standard Specifications, the Illinois Tollway Supplemental Specifications, the Contract Plans, the Special Provisions, and all Addenda and any Extra Work Order, Change Order or Supplemental Agreement after execution of the Agreement.

**Dam:** Any obstruction, wall embankment, check dam, or barrier, together with any abutments and appurtenant works, constructed to store or direct water or to create a pool (not including underground water storage tanks).

**Designer:** The person (or consultant team) responsible for performing a design task for an Illinois Tollway project. Although this is typically the Design Section Engineer (DSE), it may also include a person (or consultant team) hired by a Contractor to perform design as part of a Value Engineering Proposal or part of a Performance Based Design. This document shall use the term “Designer” which covers anyone performing design and shall only use the term “DSE” when discussing tasks specific to the DSE.

**Design Section Engineer:** The Engineer or firm of engineers and their duly authorized employees, agents and representatives retained by the Illinois Tollway to prepare the Contract Plans for a Design Section.

**Detention:** The storage and controlled release of stormwater following a precipitation event by means of excavated pond, enclosed depression, pipe or tank used for stormwater peak flow reduction, storage and pollutant removal. Both dry and wet detention facilities can be applied. Special conditions for wet detention ponds apply on the Illinois Tollway right-of-way.

**Development:** Any activity, excavation or fill, alteration, subdivision, change in land use or practice, undertaken by private or public entities that affects the discharge of stormwater; or substantial improvement to any portion of a building in the floodplain. The term "development" does not include maintenance of stormwater facilities.

**Drainage.:** The removal of excess surface or ground water from land or roadway pavement by means of surface or subsurface drains.

**Drainage/Tributary Area:** The area of land from which the water drains to a given point.

**Erosion Control:** Measures proposed and provided to prevent or reduce the displacement of soil by the running water on road embankment fills, banks and at various drainage structures (i.e., culvert inlets and outlets, channels, detention pond overflow areas, junctions, etc.).

**Filter Strip:** A vegetative planting used to retard or to collect sediment or pollutants for protection of diversions, drainage basins or other drainage structures.

**Floodplain:** The channel and adjoining area which has been or may be subject to inundation by water exceeding a certain discharge. The floodplain is composed of floodway and the flood fringe. Unless qualified “floodplain” shall correspond to the base flood discharge.

**Floodway:** The channel and that portion of the floodplain adjacent to a stream or watercourse that shall be kept free of any encroachment in order to convey the base flood without increase in flood height.

**Hydrology:** The science of the behavior of water, including its dynamics, composition and distribution in the atmosphere, on the surface of the earth and underground.

**Issues and Opportunities Diagram:** A diagram of the site and adjacent properties that delineates the existing landscape character, features, view sheds, aesthetic opportunities, natural plant divisions, historic features, topographic features and identification of agencies and municipalities to be coordinated with.

**Land Disturbing Activity:** Any change in land, which may result in soil erosion from water or wind and the movement of sediments into state waters or on to lands in the State, including but not limited to, the tilling, clearing, grading, excavating, rehabilitating, transporting, depositing or filling of land.

**Landscape Design Section Engineer:** The landscape architect or firm of consultants and their authorized employees, agents and representatives engaged by the Illinois Tollway to prepare plans and Special Provisions for the landscape Design Section of a project.

**Landscape Materials List:** A list of plant material to be installed on a site. It includes the item number and the quantity and description of plant material consisting of scientific name, common name, size of plant at time of installation and delivered condition (balled and burlapped, bare rooted, containerized) and typical plant spacing.

**Maintenance:** The selective removal of woody material and accumulated debris from or repairs to, a stormwater facility so that such facility may perform its natural functions or the functions for which it was designed and constructed.

**Mitigation:** The sequencing of the degree of the effects to a resource or receptor. This includes the avoidance, minimization and finally compensation for an impact.

**Municipality:** Any community or the unincorporated County, within Illinois acting as a unit of local government.

**National Pollutant Discharge Elimination System (NPDES):** A provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the Environmental Protection Agency (EPA), a state or other designated regional agency.

**Polyacrylamide:** An anionic polyacrylamide flocculent used for sediment removal in construction site dewatering.

**Runoff:** The waters derived from melting snow or rain falling within a tributary drainage basin that exceeds the infiltration capacity of the soils of that basin.

**Sediment:** Mineral or organic soil material that was removed from the surrounding landscape and carried away by flowing water.

**Sheet Flow/Overland Flow:** Storm runoff flowing in a thin layer over the ground surface.

**Special Provisions:** Special clauses, directions and requirements supplemental to the Standard Specifications, setting forth requirements specific to the work included in the Construction Contract.

**Specifications:** The general term comprising the directions, provisions, instructions and requirements contained and labeled Standard Specifications, the Special Provisions, any Supplemental Specifications and Addenda.

**Structure:** Unless otherwise defined in the Specifications, structures shall comprise all objects constructed of materials other than earth, required by the contract to be built or to be removed, but not including surfacing, base courses, sub bases, gutters, curbs, sidewalks and driveway pavement, buildings, bridges, culverts, headwalls, sewers, constructed channels, outfalls, retaining walls and their appurtenances.

**Subgrade:** The top surface of a roadbed upon which pavement and shoulders are constructed.

**Sustainability:** For the purposes of this Manual, the goal of Sustainability can be described with the "triple bottom line", which includes giving consideration to three principles: Social (also known as equity or people), Environmental (also known as ecology or planet), and Economic (also known as money or profit). The goal of Sustainability is the satisfaction of basic social and economic needs, both present and future, and the responsible use of natural resources, all while maintaining or improving the well-being of the environment on which life depends.

**Tree Preservation Plan:** A plan delineating existing trees on-site that should be preserved and protected during the construction process.

**Tree Stand Delineation:** A general accounting of existing vegetation, both in quality and quantity, on any project site. It shall provide an overview of tree groupings and other natural attributes as well as limitations of the site.

**Watershed:** All land area drained by or contributing water to the same stream, lake or stormwater facility.

**Wetlands:** Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence

of vegetation typically adapted for life in saturated soil conditions for growth and reproduction (i.e., swamps, marshes, sloughs, wet meadows, river overflows, mud flats and natural ponds).

**Zone 1:** The area of ROW directly adjacent to the roadway that will need special treatment due to increased salt pollutant exposure and proximity to traffic.

**Zone 2:** The area of ROW beyond Zone 1 often including the ditch bottom and back-slope.

**Note:**

This manual follows the traditional definitions for **shall**, **should** and **may**. **Shall** is used to mean something that is required or mandatory; while **should** is used to mean something that is recommended, but not mandatory; and **may** is used to mean that it is optional and carries no requirement or recommendation.

## SECTION 2.0 GENERAL INFORMATION

### 2.1 Scope of this Manual

This manual guides Designers through the process of preparing the following documents:

- Stormwater Pollution Prevention Plan (SWPPP) narrative (Special Provision 111.2);
- Erosion and Sediment Control Plan (ESCP) plan sheets; and
- Permanent Landscape Plan (PLP) plan sheets.

The SWPPP narrative describes all the construction site operator's activities to prevent stormwater contamination, control sedimentation and erosion and comply with the requirements of the Clean Water Act. It defines and describes the Best Management Practices (BMPs) for erosion and sediment control, good housekeeping measures, liquid and solid waste handling, spill prevention and spill control measures to be used to keep sediment and other pollutants from exiting the site.

The ESCP defines how properties and surface water(s) located within and outside of the project area will be protected from erosion and sediment damage using temporary control measures. Erosion and sediment controls are the structural and non-structural practices used during the construction process to keep sediment in place (erosion control) and to capture any sediment that is moved by stormwater before it leaves the site (sediment control).

The PLP defines how the properties and surface water(s) located within and outside the project area will be permanently protected from erosion and sediment damage using permanent ground cover and vegetation.

The temporary and permanent erosion control measures function best when proper operation and maintenance of these measures are based on implementing the following main elements:

- Data collection and evaluation of the project vicinity to identify areas that are susceptible to erosion;
- Assessment of the project site and determination of landscape requirements;
- Review of the regulatory requirements for erosion and sediment control and landscape in the project area;
- Planning and design for the most suitable and sustainable erosion and sediment control and landscape measures; and
- Proper inspection, installation and maintenance of the proposed erosion and sediment control and permanent landscape control measures coordinated with the construction schedule.

All Designers and CM personnel working on the preparation and implementation of the ESCP and PLP for a specific project shall be knowledgeable of the current Illinois Tollway design criteria for Erosion and Sediment Control and Landscape Design.

## 2.2 Applicability and Exemptions

### 2.2.1 Construction Stormwater Permitting

All Illinois Tollway projects that disturb 1 acre or more of soil are required to apply for coverage under the Statewide General NPDES Permit for Storm Water Discharges from Construction Site Activities (ILR10). The ILR10 permit applicability also extends to stormwater discharges associated with construction activities on sites that:

- Disturb less than 1 acre of total land but are part of a larger common plan of development or sale if the larger common plan will ultimately disturb one or more acres of total land area; or
- Disturb less than 1 acre of total land and are designated by IEPA to have the potential for contribution to a violation of water quality standards or significant contribution of pollutants to waterways. This includes waters designated by the IEPA as “impaired waters” pursuant to Section 303(d) of the Clean Water Act.

Projects seeking coverage under the ILR10 permit must apply for coverage by submitting a Notice of Intent (NOI) to the IEPA at least 30 days prior to construction. The NOI including supporting documentation, shall be prepared electronically by the DSE for CM and submitted to the Tollway Certifier (Signatory). An example NOI is included as Appendix A. Unless notified by IEPA to the contrary, the Illinois Tollway is authorized to discharge stormwater from construction sites 30 days after the date the NOI is received by IEPA. For more information on this other necessary IEPA documentation see Environmental Studies Manual.

### 2.2.2 SWPPP and Erosion and Sediment Control Plans

Projects with 1 Acre or More of Earth Disturbance. A SWPPP and an ESCP are required for all projects that meet the ILR10 permit applicability criteria. If a single project involves a cumulative land disturbance of 1 acre or more, such as repair/replacement of guardrail at numerous locations, a SWPPP and an ESCP are required as a condition of the ILR10 permit.

Projects with less than 1 Acre of Earth Disturbance. As an operator of a small MS4 and ILR40 permittee from the IEPA, the Illinois Tollway is required to reduce the discharge of pollutants from their MS4 to the maximum extent practicable, to protect water quality and to satisfy the appropriate water quality requirements of the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter 1) and the Clean Water Act. Accordingly, it is the policy of the Illinois Tollway that all construction operations be conducted in a manner that minimizes the potential to impact stormwater.

To this end, the Illinois Tollway also requires a SWPPP for projects which have a reasonable potential to impact stormwater quality, regardless of the area of disturbance. Examples of activities which have a reasonable potential to impact stormwater and also require a SWPPP include:

- Bridge cleaning and painting operations;
- Bulk petroleum or chemical storage;
- Demolition activities;
- Bulk solid waste generation and storage;
- Regular on-site equipment fueling and maintenance operations;
- Storm sewer cleaning;

- Dewatering operations;
- Pavement grinding and saw cutting;
- Structural bridge repairs over water; and
- Concrete pours (washout areas).

The following are examples of routine construction and maintenance operations that will not require a SWPPP:

- Maintenance and installation of lighting fixtures, signing, traffic signals and guardrail;
- Weed spraying;
- Pavement marking;
- Seal coating;
- Pavement crack sealing;
- Planting woody landscape materials; and
- Landscape maintenance (tree trimming, mowing).

Illinois Tollway projects which involve clearing and grubbing, excavation, stockpiling of soil and aggregate, borrow, construction of embankment or otherwise require the use of temporary erosion and sediment control measures require the preparation of an ESCP by the Designer.

Although some Illinois Tollway construction operations do not require an ESCP or an NPDES permit, all construction operations must be conducted in a manner that minimizes erosion and offsite sedimentation pursuant to the Illinois Tollway's General NPDES Permit ILR40.

For construction operations that constitute an earth disturbing activity, appropriate temporary and permanent erosion and sediment control measures must be installed and maintained. Temporary erosion and sediment control measures must be installed to minimize and/or correct erosive conditions that develop during construction and to stabilize inactive construction areas. All necessary erosion control measures must be maintained until disturbed areas are stabilized.

## 2.3 Policies and Regulations

### 2.3.1 Illinois Tollway

The need for erosion and sediment control measures shall be evaluated in the early design stages, prior to the preparation of design plans, so that the identified needed measures can be accounted for later in the ESCP and PLP design phases. The ESCP shall identify the types of erosion and sediment control practices to be used, their locations and when they shall be installed in relation to the sequence of construction operations that will expose soil. In some cases, the Designer may recommend specific sequences of construction in order to address the protection of a sensitive area from erosion and sediment damage. Permanent landscape features, such as proposed trees and shrubs, shall also be provided on the PLP when included in the scope of work.

The ESCP and/or PLP shall incorporate green infrastructure where appropriate and practicable, some of which may be limited to off-system locations. Potential green infrastructure practices include but are not limited to the following practices:

- Bioretention facilities: including bio-swales and bio-retention basins;

- Land conservation: including protecting open space, natural features and sensitive natural areas;
- Vegetated swales;
- Vegetated filter strips;
- Habitat restoration: pollinator landscaping, prairie and wetland restoration with Illinois native plants;
- Maximizing overland surface drainage;
- minimizing impervious surfaces; and
- On-site stormwater detention.

Stormwater management should mimic natural processes, such as directing stormwater over vegetated land to areas where infiltration, evapotranspiration or water quality facilities are utilized. Infiltration practices shall not be implemented in areas where vehicle fueling or maintenance activities will occur, where there is shallow bedrock, in areas with contaminated soil or groundwater or in areas within 400 feet of a community drinking water supply or 200 feet of a private water supply well. Natural buffers shall be provided or maintained adjacent to surface waters to the maximum extent practical based on actual site conditions. See Illinois Tollway Standard K sheets for minimum buffer distances. In no cases shall buffer areas be less than 50 feet wide without the use of additional erosion and sediment controls. Soil compaction should be minimized, and topsoil preserved, unless infeasible.

The ESCP and/or PLP shall attempt to incorporate one or more of the following strategies, in order of preference:

- Preservation of natural features of the site, including open space, natural stormwater storage and infiltration features;
- Preservation of existing natural streams, channels and drainage ways;
- Minimization of new impervious surfaces or unnecessary soil compaction;
- Conveyance of stormwater in open vegetated channels;
- Habitat restorative landscaping;
- Development of wildlife corridors; and
- Construction of structures that provide both water quality and water quantity control with structures serving multiple sites is preferable to those serving individual sites.

The Designer shall collect and analyze the existing site conditions as described in Article 3.1 Planning, Design Guidelines and Submittal Requirements.

For further information beyond that provided in this manual, the Designer shall refer to the statutes, regulations and references provided in Section 2.3.2 for requirements related to SWPPP, ESCP and PLP preparation.

### **2.3.2 Federal Statutes, Regulations and Policies**

Applicable regulations overseen by multiple federal agencies relative to landscaping and erosion and sediment control include the EPA, USACE, the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) and the U.S. Fish and Wildlife Service. Key statutes, regulations and policies administered by these agencies include:

- 42 U.S. Code 4321, National Environmental Policy Act
- 33 U.S. Code 1251-1387, Clean Water Act: Sections 309, 319, 401, 402, 404
- 23 U.S. Code 319, Landscaping and Scenic Enhancement

- 23 Code of Federal Regulations (CFR) 650, Subpart B Erosion and Sediment Control on Highway Construction Projects
- 23 CFR 752, Landscape and Roadside Development
- 40 CFR 450, Effluent Limitation Guidelines and Standards for the Construction and Development Point Source Category

### 2.3.3 Illinois Statutes and Regulations

Illinois statutes and regulations contain requirements relevant to landscaping and erosion and sediment control include but are not limited to the following:

- 615 Illinois Compiled Statutes 5, Rivers, Lakes and Streams Act
- 35 Illinois Adm. Code, Subtitle C, Chapter I

### 2.3.4 Guidance Documents

A number of guidance documents are available to assist in planning, design and implementation of landscaping and erosion and sediment control measures for the Illinois Tollway projects (all documents shall be the latest revision or edition), including:

- AASHTO – Guide for Transportation Landscape and Environmental Design
- AASHTO – A Guide for Achieving Flexibility in Highway Design
- AASHTO – Roadside Design Guide
- EPA – “Developing Your Stormwater Pollution Prevention Plan; A Guide for Construction Sites” (EPA-833-R-06-004 / 2007)
- EPA Office of Water – “Controlling Nonpoint Source Runoff Pollution from Roads, Highways and Bridges” (EPA-841-F-95-008a / 1995)
- Illinois Tollway – Design Section Engineers Manual
- Illinois Tollway – Drainage Design Manual
- Illinois Tollway – Environmental Studies Manual
- Illinois Tollway – Design Guidelines (Architecture, Landscape, Signage, etc.)
- Illinois Tollway – Standard K Drawings and Section M Base Sheets
- Illinois Tollway – Supplemental Specifications to the Illinois Department of Transportation (IDOT) Standard Specifications for Road and Bridge Construction
- Illinois Tollway – Criteria for Removal and Replacement of Trees
- Illinois Tollway – Roadside Mowing Policy
- IDOT – Bureau of Design and Environmental Manual, Chapter 41 – Construction Site Storm Water Pollution Control
- IDOT – Bureau of Design and Environmental Manual, Chapter 59 – Landscape Design
- IDOT – Standard Specifications for Road and Bridge Construction
- IDOT – Erosion and Sediment Control Field Guide for Construction Inspection
- NRCS/Association of Illinois Soil and Water Conservation Districts (AISWCD) – Illinois Urban Manual

As manuals are updated and re-issued, please ensure that the most recent version of the document is being used for guidance.

If there is any conflict between this *Erosion Control and Landscape Manual* and any reference document or specification, the Designer shall discuss this conflict with the Illinois Tollway Project Manager (PM) before proceeding.

## 2.4 Coordination and Documentation

### 2.4.1 Coordination

Below is a discussion of coordination activities needed during the preparation of the soil erosion and sediment control plans and permanent landscape plans.

1. Coordination between technical design disciplines (e.g., engineering, landscape architecture, biology, hydrology and others) is needed during project design to meet the proper environmental requirements. This is necessary not only for large and complex projects but also for small and simple projects. The Designer shall obtain all available inputs to ensure a coordinated, environmentally based, integrative design approach.
2. Coordination with state and federal regulatory agencies is necessary where Illinois Tollway projects involve wetlands, endangered species, Illinois natural areas, nature preserves, historic sites, naturally or culturally sensitive areas or where the planned construction activities are adjacent to public natural resources such as streams, forests or forest preserves. The design aspect of these projects shall be identified by the Designer and coordinated by the assigned Illinois Tollway PM.
3. The Designer shall support the Illinois Tollway PM when coordination is needed with local jurisdictional agencies or adjacent property/landowners affected by Illinois Tollway projects. Coordination at the local level includes counties, municipalities, schools, park and forest preserve districts, chambers of commerce, residential and commercial developments and other special districts. Coordination at the local level should include groups that could have valuable input to the project or have special requirements. The Designer shall prepare documentation of local entity requests or requirements that are more stringent than those of the Illinois Tollway; these requests or requirements shall be considered in the development of the ESCP and the PLP. If the proposed ESCP or the PLP does not meet or exceed the expectations of the local entity, the Designer shall summarize for the Illinois Tollway the information and consideration for the differences and explain why the request or requirements cannot be met. The Illinois Tollway will review the information submitted and provide the Designer with direction on continuing development of the contract documents.
4. The NPDES General Construction Permit to regulate the discharge of stormwater from a construction site, which is granted to the Illinois Tollway by the IEPA, requires certain documents be prepared, kept current and filed by the CM and must be incorporated into the SWPPP. Refer to Part IV of the NPDES General Construction Permit for more details regarding the requirements for developing the SWPPP. Appendix A the various IEPA NPDES forms that may be applicable to a project.
5. In consultation with the Illinois Tollway Environmental Unit, the Designer shall assess the need to coordinate with the County Soil and Water Conservation District (SWCD) and/or County Stormwater Management Agency (CSMA). When required, the DSE shall ensure that the requirements are incorporated into the Contract Plans and documents and secure the necessary approvals. The need for such coordination and approval is generally limited to projects in which the Illinois Tollway is partnering with local agencies, projects with a Section 404 permit from the USACE or for projects which are outside of the Illinois Tollway ROW.

## 2.4.2 Documentation

The Illinois Tollway's *Environmental Studies Manual* provides guidance on the necessary coordination and documentation for different types of projects.

Preparation of the documentation for ESCPs and/or PLPs involves the following steps and documentation.

1. Data Collection:
  - a. Topography;
  - b. Climate and precipitation (rainfall frequency and intensities);
  - c. Drainage patterns, hydrologic features and surface water quality and impairments;
  - d. Soil types and characteristics;
  - e. Ground cover;
  - f. Adjacent land use(s);
  - g. Wetlands and other sensitive environmental resources;
  - h. Existing erosional features or issues;
  - i. Existing soil and groundwater contamination; and
  - j. Utilities, ITS components and other similar physical constraints.
  
2. Data Analysis
  - a. Topography, including slope length and steepness and areas of existing erosion;
  - b. Climate and precipitation, including rainfall frequency, intensities and durations;
  - c. Drainage patterns, including areas where sheet or concentrated flows enter or leave Illinois Tollway property, groundwater seeps and water from nearby construction projects;
  - d. Hydrology, including runoff calculation(s) and runoff coefficient(s);
  - e. Soil types, including characteristics such as erodibility, permeability, shrink-swell potential, texture, water table depth and depth to bedrock;
  - f. Vegetation and ground cover, including condition and types of existing vegetation such as trees, shrubs, grassy areas, native grasses and existing denuded or exposed soil;
  - g. Natural features to be preserved, including trees, specimen or high-quality trees, bioswales or other ecologically significant vegetation;
  - h. Areas of special attention, including impaired waterways, wetlands, streams and other waterways, buffer zones, wildlife corridors, threatened and endangered species habitat and floodplains;
  - i. Land use, including areas with known/suspected environmental contamination;
  - j. Physical site constraints, including utilities, wells or drain fields which require protection from damage;
  - k. Locations along the corridor where snow storage is critical to maintenance operations and plantings should not be placed; and
  - l. Locations of existing and proposed ITS and permitted outdoor advertising component viewsheds which must remain unobstructed.
  
3. Development of SWPPP, ESCP and PLP
  - a. Erosion & Sediment Control Memorandum of Findings;
  - b. Erosion & Sediment Control Technical Memorandum;
  - c. SWPPP narrative, permit submittals, contract special provisions and ESIS;

- d. Overview drawings and detailed plans;
- e. Construction details;
- f. Supporting calculations;
- g. Preparation of the Erosion and Sedimentation Control Plan Technical Review Checklist; and
- h. Applicable Section 4.0 requirements for PLP.

### **2.4.3 Design Deviations**

If the landscape or erosion control design submitted by the Designer deviates from the criteria specified in this manual, the Designer shall prepare and submit a Design Deviation to the Illinois Tollway in accordance with Article 10.1.5 of the DSE Manual.

## SECTION 3.0 EROSION AND SEDIMENT CONTROL

### 3.1 Planning, Design Guidelines and Submittal Requirements

#### 3.1.1 Planning

An effective ESCP shall minimize the amount of sediment displacement and erosion due to construction activities. The success of the ESCP depends mainly on planning, coordination, maintenance and operation. The following outlines the main principles of planning a successful ECSP.

1. The Designer shall coordinate with all disciplines to understand construction staging and drainage patterns tributary to and within the project limits. The Designer shall obtain delineations of drainage divides, tributary areas and drainage flow routes from drainage reports (if available).
2. The Designer shall understand the erosion potential of existing soils, including classifications, slopes, permeability, shrink-swell potential, texture, erodibility factor, water table depth and depth to bedrock and shall identify critical areas such as highly erodible soils, steep slopes, areas of existing erosion and seepage zones.
3. The Designer shall identify potential project-specific issues or conditions which will likely affect the implementation of erosion and sediment control measures and identify potential solutions. Considerations should include, but not be limited to, adjacent property use; distance and sensitivity of receiving waters; receiving waters with impairments [303(d) listed] or total maximum daily loads (TMDLs); watershed plans developed for constituents associated with roadways or construction; adjacent high quality natural resources/wetlands; the use of rubblized concrete for road base; special management areas, the presence of existing soil or groundwater contamination; access for construction and maintenance of erosion and sediment control measures; the need for temporary stream crossings, diversions or dewatering; difficult-to-manage areas and construction activities that are at high risk for erosion and sediment control issues, etc.
4. The Designer shall identify local agencies and stakeholders that will require coordination meetings. The Designer shall prepare a listing of issues that will need to be discussed at the meetings and be prepared to present solutions to identified issues.
5. The Designer shall plan the use of appropriate erosion and sediment control BMPs. No single BMP can address all pollutants associated with construction activities. Erosion control BMPs and sediment control BMPs should be selected and used in a complimentary manner to maximize effectiveness. Each type of BMP has certain limitations based on drainage area served, available land space, cost, pollutant removal efficiency, as well as a variety of site-specific factors (e.g., soil types, slopes, depth of groundwater table, etc.). Careful consideration of these factors is necessary in the selection of the appropriate BMP or group of BMPs for a particular location or situation. Changes to the designed ESCP may be required during construction to prevent stormwater pollution. The Contractor may recommend changes in the ESCP, as appropriate. The CM will accept or reject Contractor suggestions and advise Contractor of same. The CM has the authority to change the ESCP and is responsible for erosion and sediment control oversight to ensure proper

measures are installed, effective and maintained throughout all phases of construction, including shutdown periods.

6. Throughout all phases of design, the Designer shall implement a thorough review process involving both design and construction personnel. The Designer shall include a review program of the plans and specifications to assure that local concerns are addressed, and regulatory requirements are met.
7. The Designer shall ensure that all BMP's and other elements of the plan comply with and fulfill the requirements of the ILR10 permit including, but not limited to, prohibitions on non-stormwater discharges, discharges into receiving waters with an approved TMDL, controls measures (erosion and sediment controls, stabilization practices, structural practices, use of treatment chemicals, BMPs for impaired waters, pollution prevention, other controls and post-construction stormwater management), natural buffers and maintenance.
8. The Designer shall use, prepare and submit the ESCP Technical Review Checklist for each design phase.

The Illinois Tollway Supplemental Specifications Section 280, Special Provision 111-Erosion and Sediment Control, Standard K1 Drawings and Section M Base Sheets are available to the Designer. The most current versions shall be obtained from the Illinois Tollway's website and WBPM system. Also see the Illinois Urban Manual for additional practice standards for erosion and sedimentation control. For further guidance see Appendix B for the EPA's *Stormwater Phase II Final Rule, Small Construction Program Overview*.

### 3.1.2 Design Guidelines

The Designer shall use the design guidelines provided to develop erosion and sediment control solutions for individual site conditions. Consideration shall be given to erosion and sediment control early in the design process to properly account for it in the design process. These guidelines are included to provide the Designer with a general sense of the important factors that need to be accounted for throughout the design. The design guidelines are listed below by category:

1. General Design Considerations
  - a. Plan the construction to take advantage of existing topography, soils, drainage patterns and natural vegetation.
  - b. Protect and minimize the impact to existing natural resources.
  - c. Consider the application of erosion control practices prior to construction to reduce on-site erosion and prevent off-site sediment discharge.
  - d. Complete coordination meetings with local agencies and stakeholders early in the design process to solicit input and comments to be incorporated in the ESCP and PLP.
  - e. If the Designer determines that there is a need for additional measures not covered under Illinois Tollway guidelines, the Designer can use one of the drawings included in the Illinois Urban Manual or design details from IDOT's Bureau of Design and Environmental Manual, Chapter 41. The Designer may also provide a project-specific

design tailored to the site-specific requirements. The Designer shall submit project-specific design drawings to Illinois Tollway for review and acceptance.

- f. Design erosion control features to facilitate timely maintenance, repair and replacement of impaired measures.
- g. Use the most practical and cost-effective measures to restore and enhance the quality of the environment while considering site compatibility.
- h. Evaluate the control of erosion based on changes in drainage patterns for various construction phases, time of year and site conditions.
- i. Determine if rubblized or recycled concrete will be used. If so, identify locations where Illinois Tollway stormwater leaves the Illinois Tollway ROW and affects stormwater quality and/or plantings. The Illinois Tollway utilizes recycled concrete for roadway rehabilitation projects. Excavated concrete is broken up and crushed into smaller pieces, often in situ, to create an aggregate base for new pavement. The use of recycled or rubblized concrete creates unique challenges for erosion and sediment control design. The Designer shall be mindful of the fine material that is washed away during storm events, often continuing beyond the completion of construction. In addition, the presence of limestone in the rubblized concrete can significantly alter the pH of the stormwater runoff. Where rubblization is to be utilized, the Designer shall investigate the current technology and identify locations and design devices that will allow for the remediation of rubblized concrete fines prior to discharging stormwater to outside of the ROW. In many instances, the material can be removed via vegetated ditches as long as there is sufficient time and space for removal prior to the discharge of the stormwater to outside the ROW or to receiving waters.

If stormwater will discharge to sensitive ecological systems, such as creeks or wetlands or interfere with the growth of adjacent plants and grasses, methods for neutralizing the pH shall also be assessed. In no instance shall live plants/plugs be installed near underdrain outfalls. The Designer shall identify methods for preventing impacts to stormwater discharging to outside the Illinois Tollway ROW from rubblized concrete and provide plans to the Illinois Tollway for review and acceptance. Contract documents shall incorporate appropriate BMPs into project plans to prevent these types of sediments from leaving Illinois Tollway ROW.

The Illinois Tollway Drainage Design Manual (Illinois Tollway DDM) has additional requirements for subsurface drainage design in areas constructed with rubblized concrete. See Article 9.7.2 of the Illinois Tollway DDM for additional information.

## 2. Factors Affecting Soil Erosion

### Overview

Construction activities involving earthwork (e.g., clearing and grubbing, grading, importing fill material, utility installation) disturb the soil such that when the vegetation is removed, the soil becomes exposed and vulnerable to excessive erosion. This results in sediment being the most common pollutant associated with construction activities. Sediment can be detrimental to aquatic life by interfering with photosynthesis, respiration, growth, reproduction and oxygen exchange in waterways. In addition, sediment particles can

transport other pollutants that are attached to them, including nutrients, trace metals and hydrocarbons. Sediment particles (e.g., silts and clays) are the primary components of total suspended solids, a common water quality parameter.

Construction activities involving building materials, vehicular use and landscaping have the potential to contribute pollutants to stormwater. Common pollutants related to these construction activities include vehicle fluids, curing compounds, solvents, paints, emulsions, oil and grease, metals organics, pesticides, nutrients, trash, debris and floatables, as well as other miscellaneous waste.

### Erosion and Sedimentation Processes

Erosion is the process of soil particle detachment from the land surface by the forces of wind, water or gravity. After the soil particles have been detached (eroded), the suspended soil particles in transport are referred to as sediment. Sedimentation occurs where suspended sediment settles out and is deposited. Note that gravels and sands tend to drop out of suspension more rapidly than finer particles (e.g., silts and clays) due to differences in size, density and shape.

Where soil is cleared or disturbed, erosion occurs at a much higher rate due to direct exposure to erosive forces (e.g., raindrop impacts, sheet erosion, rill erosion). Land clearing disturbances can also alter the natural structure of soil and weaken the reinforcing matrix of plant roots and organic compounds. The EPA estimates that unprotected construction sites can experience erosion at over 100 times the natural rate. As a result, primary emphasis shall be placed on erosion control practices as they are preventative source controls, while sediment control practices are secondary measures designed to contain sediment after it is in transport, preventing it from leaving the site. Sediment control is often more expensive than erosion control.

### Types of Erosion

- a. Erosion from Raindrop Impact. The dislodgement of soil particles by falling raindrops is a primary agent of erosion, particularly on soils with sparse vegetative cover. Individual soil particles can be splashed over 1.5 feet in height and 5 feet to the side.
- b. Sheet Erosion. Splashed soil particles are moved in a semi-suspended layer uniformly over the land surface. The distance of sheet flow depends on slope, soil roughness, type of vegetative cover and rainfall intensity.
- c. Rill and Gully Erosion. As runoff concentrates, tiny channels form called rills. Rill erosion is the form that produces the greatest amount of soil loss worldwide. Rills are channels small enough to be smoothed by normal tillage. As the runoff accumulates in the rills, they erode further, causing gullies to form. Gullies are so large that they cannot be smoothed by normal tillage. The rate of rill erosion can easily be 100 times greater than that of sheet flow and the rate of gully erosion can easily be 100 times greater than rill erosion. Due to the significant amount of sediment generated by rill and gully erosion, these types of erosion shall be given top priority for elimination, reduction and control.
- d. Ditch and channel erosion are produced by a concentrated flow moving within a ditch or channel without energy dissipation such as the access to a floodplain. This type of

erosion can undermine channel banks and erode ditch/channel bottoms. Depending on the channel capacity, this form of erosion can do severe damage to a drainage system.

Influence of Environmental Conditions on Erosion

- a. The soil erosion hazard varies with soil type, soil surface conditions, the slope of the lands (S) and the length of the slope exposed to the stormwater runoff (L). General guidelines are as follows:

Low Erosion Hazard: for S = < 4% and L > 300 feet  
 Moderate Erosion Hazard: for S = 4 to 7% and L > 150 feet  
 High Erosions Hazard: for S = > 7%

- b. The higher the erosion hazard, the more critical the design, practice, installation and maintenance of the erosion and sediment control measures. Table 1 below demonstrates this principle.

**Table 1:  
 Influence of Environmental Conditions on Erosion\***

Soil Conditions vs. Erosion		Slope Angle and Soil Type vs. Erodibility		
Soil Conditions vs. Erosion		Slope angle	Erodibility	Soil type
<i>If soil is:</i>	<i>Erosion will be:</i>	50%		Silt
Compacted and smooth	30 percent more	40%		Silty sand
Tracks across slopes	20 percent more	30%		Clayey sand
Tracks up and down slopes	10 percent less	20%		Organic soil
Rough or irregular	10 percent less	15%		Clays
Rough & loose to 12" deep	20 percent less	10%		Silty gravel
		5%		Sand
		< 5%	Gravel	
			Very low	

\*Table above used with permission, courtesy of the Kentucky Division of Water's *Kentucky Best Management Practices (BMPs) for Controlling Erosion, Sediment and Pollutant Runoff from Construction Sites Planning and Technical Specifications Manual*, (undated), Tetra Tech, Inc.

- c. Soil Erodibility. The vulnerability of a soil to erosion is known as erodibility. Erodibility is influenced by soil particle size and gradation (texture), percentage of organic matter and soil structure. Generally, the most erodible soils contain high proportions of silt and very fine sand. The presence of clay or organic matter tends to decrease soil erodibility. Clays are sticky and tend to bind soil particles together, which along with organic matter helps to maintain a stable soil structure.
- d. Vegetative Cover. There are several ways in which vegetation protects soil from erosive forces of rainfall. Vegetation shields the soil surface from the impact of raindrops while the root mass holds soil particles in place. Vegetation filter sediment slows the velocity of runoff and helps maintain the infiltration capacity of a soil. Maintaining and establishing vegetation are the most important factors in combating erosion. The goal is to expose as small an area as possible for the shortest length of time. By minimizing the time and extent of soil exposure, the erosion potential is reduced.

- e. Topography. Slope length and steepness are key influences on both the volume and velocity of surface runoff. Longer slopes deliver more runoff to the base of slopes and steeper slopes increase runoff velocity; both conditions enhance the potential for erosion.
- f. Climate. Erosion potential is also affected by the climate of an area. Rainfall characteristics (i.e., frequency, intensity and duration) directly influence the amount of runoff generated. As the frequency of rainfall increases, water has less chance between storms to drain through the soil. The soil will remain saturated for longer periods of time and stormwater runoff volume will be greater when rainfall events are more frequent, intense or lengthy. Seasonal variation in temperature and rainfall defines periods of high erosion potential during the year. Snow will not cause erosion as it falls, but when rapid melts occur, erosion may result.

### 3. Drainage and Runoff Control

- a. Understand existing drainage patterns within the project limits and offsite flows tributary to the project area.
- b. Where and when possible, keep off-site runoff from entering the construction site through the use of diversion dikes or temporary swales. It is critical that diversions be stabilized immediately following installation to prevent erosion of the diversion itself.
- c. Keep runoff velocities low and retain sediment loaded runoff on the construction site.
- d. Design any temporary facilities intended for the conveyance of stormwater to withstand the velocities of peak discharges.
- e. Control peak flow and discharge rates to minimize erosion at outlets and downstream channels or streambanks.
- f. Ensure outlets are stabilized to withstand designed discharges.
- g. Divert runoff from critical areas, such as highly erodible soils and steep slopes and convey to stable areas.
- h. Provide temporary bridges or culverts for construction equipment to cross natural or constructed channels. Bridge and culvert crossings shall be sized to accommodate peak discharges without causing undesirable water flow restrictions and without creating flood and scour conditions.
- i. Maintain or encourage sheet flow wherever feasible; use dispersion or energy dissipation BMPs to help prevent concentrated flows from developing.
- j. Provide stabilization methods adequate to minimize erosion of all conveyance systems.
- k. Temporary ditch checks or rock check dams are to be used in all proposed or temporary ditches or swales to reduce velocity and to prevent excessive erosion. These devices are not considered as a substitute for sediment trapping devices, such as sediment traps or basins.

The Designer shall take into consideration all variables in the design and selection of the type of ditch checks used, including but not limited to soil types, surface water flow velocities and other physical site conditions unique to the individual project which may impact erosion and sediment control structures. Calculations supporting spacing shall be submitted for review.

- l. Vegetated stream buffers are to be used and maintained to the maximum extent possible to retain channel capacity and stability and to reduce the movement of pollutants into the waterway. If the minimum required buffer width is infeasible, additional erosion and sediment control BMPs are required in order to reasonably ensure the same amount of pollutant removal that a natural vegetated buffer would provide.
- m. Perimeter Silt Fence barriers are to be used to decrease the velocity of sheet flows and detain sediment in sheet flow runoff within the project limits.
- n. Super Silt Fence shall be considered for perimeter sediment control when slope angle and/or the contributing slope results in high sheet flow volumes and/or the design life of the Silt Fence needs to exceed 6 months. Super Silt Fence shall be used to protect environmentally sensitive areas.

Silt Fence and Super Silt Fence barriers are not to be used in drainage ditches, swales, channels, streams or other drainage features where concentrated flows will occur. The fences may be undercut and damaged by the impact of concentrated channel flow.

- o. Utilize inlet protection measures to prevent conveyance of sediment into culverts or inlets to minimize the potential for clogging or loss of capacity in the drainage system. There are multiple types of inlet protection which have different applications depending on site conditions and inlet type.
4. Soils, Excavation and Disturbed Area Considerations
- a. Understand soil conditions within the project limits.
  - b. Minimize the extent of area exposed at any one time and the duration of the exposure. Appropriate sequencing of construction activities can be a cost-effective way to provide necessary controls and restore protective cover.
  - c. Coordinate clearing limits and construction phases to avoid unnecessary disturbance to existing vegetation for as long as possible.
  - d. Rock check dams shall be placed such that the resultant ponding will not cause flooding to adjacent areas or structures.
  - e. Establish a protective vegetative lining or installation of a structural channel lining before flow is confined to a temporary ditch rather than installing temporary rock check dams.
  - f. Because well-planned sediment traps and basins are key measures to preventing off-site sedimentation, they shall be installed in the initial stage of construction.

- g. Sediment traps and basins require regular maintenance and shall be made readily accessible for periodic sediment removal and other necessary maintenance. Locations for sediment disposal shall be part of the selection of trap locations.
  - h. Use perimeter control practices to protect disturbed areas from off-site runoff and prevent sedimentation damage to areas located downslope of the disturbed areas.
  - i. Protect disturbed areas from erosion in a timely manner and erosion stabilization measures shall be initiated as soon as practicable in all portions of the site.
  - j. For portions of the site where construction activities have permanently or temporarily ceased and will not resume within 14 days (e.g., the total time period that construction activity is temporarily ceased will be 14 days or more), stabilization measures shall be initiated within 1 working day from the time activities have ceased unless precluded by snow cover. In portions of the site where construction activities have permanently ended, final stabilization measures shall be initiated immediately whenever possible.
  - k. Continuously maintain sediment control measures in place after construction has temporarily or permanently ended, until final stabilization is complete.
  - l. Implement same-day stabilization as outlined in Illinois Tollway Supplemental Specification Article 280.15(c). Same-day stabilization is to be used to minimize erosion and the movement of soils at those areas shown on the Contract Plans or as directed by the CM to stabilize erosive prone areas or critical disturbed areas where there is a risk that sediment laden runoff may enter environmentally sensitive areas. The primary method to perform same-day stabilization is Temporary Stabilization with Straw Mulch, with permanent measures installed at the earliest opportunity and on a priority basis. This item provides compensation for the continuous or expedited application of stabilization measures. Stabilization methods and materials shall be measured and paid for at the Contract unit price for those items.
  - m. Reduce erosion of new embankment slopes by construction of temporary berms with temporary pipe slope drains at the end of each construction day. The size and distance between pipes are to be designed in accordance with the Illinois Urban Manual or Illinois Tollway Standard Drawings. Calculations supporting spacing shall be submitted for review.
  - n. Construction plans and specifications shall reflect that permanent erosion and sediment control measures will be implemented as quickly as practical.
5. Construction Practices and Issues
- a. All temporary diversions, swales, ditches, etc. shall be installed in a manner that protects these areas from erosion during construction.
  - b. Apply and maintain the appropriate erosion and sediment control measures on the project site during all phases of construction, including construction shut down periods.
  - c. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

- d. Clearly define wherever dewatering is expected to be needed, specifying the need to pass the sediment laden water through a sediment trapping device prior to leaving the construction site. Dewatering shall not outlet directly to sewers, wetlands or surface waters.
- e. Temporary stream crossings shall be in service for the shortest practical period of time and shall be removed as soon as their function is completed. The Designer shall be aware that such structures are subject to the rules and regulations of the USACE for in-stream work (Section 404 permit).
- f. Turbidity curtains must be selected based on the flow conditions within the water body including flow direction and velocity. Turbidity curtains are designed and installed to trap sediment, not to halt the movement of water. In most situations, turbidity curtains shall not be installed across channel flows. In any such cases, the plans and specifications should clearly indicate the design intent.
- g. Ensure that temporary sediment traps and basins are fully stabilized prior to accepting flows to ensure maximum efficiency and avoid erosion of these measures.
- h. Super Silt Fence shall be used to protect wetlands and other environmentally sensitive areas within and adjacent to the project.
- i. Silt Fence and Super Silt Fence barriers are not to be used in drainage ditches, swales, channels, streams or other drainage features where concentrated flows will occur. The fences may be undercut and damaged by the impact of concentrated channel flow.
- j. Clearly define ways that the Contractor can ensure all sediment laden water originating on the site will flow through sediment control devices prior to leaving the site.
- k. The effectiveness of temporary stabilized construction entrances over the duration of construction is largely dependent upon frequency of use and maintenance. Once the stone becomes clogged with mud, the practice will not serve its intended purpose until the stone is replaced.
- l. Existing vegetated buffers shall be protected to the maximum extent practical from equipment and work activities that can damage the grass cover and affect uniform sheet-flow distribution, limiting the effectiveness of this measure.
- m. Clearly define the requirements for any in-stream work including access, timing of work, cofferdam construction, in-stream access, by-pass pumping, temporary crossings, dewatering, polymer treatment and allowable discharge water quality.
- n. Whenever possible, construction in a waterway shall be sequenced to begin at the most upstream point and work progressively downstream, installing required channel and grade control facilities. Work should be completed in small segments, exposing as little of the channel at a time as possible and performed only under low-flow conditions. Each segment shall be completed prior to beginning the next segment. The size of each segment shall consider the anticipated level of disturbance, quality of the water resource, physical access constraints and hydrological characteristics of the waterway.

- o. It is critical that temporary slope drains be installed properly since failure often results in severe gully erosion and sedimentation below the slope. The entrance section must be securely entrenched, all connections must be watertight, and the conduit must be staked securely.
- p. Temporary concrete washout facilities must be located and maintained to provide adequate holding capacity and to protect Waters of the U.S., wetlands and storm drainage systems.
- q. Upon completion of construction and/or permanent stabilization, temporary erosion and sediment control measures shall be removed. Temporary erosion control measures may be left in place for a period of time following construction if construction included rubblized/recycled concrete. Under these circumstances, temporary erosion and sediment control measures shall be left in place until fines from the rubblized/recycled concrete are no longer being washed out from the subbase. Temporary erosion and sediment control measures cannot be left in place on a permanent basis unless consistent with standards from the Illinois Tollway DDM. In no instance may temporary riprap or rock check dams be left in place unless the CM obtains written acceptance from the Illinois Tollway Environmental Unit and it does not pose a hazard to motorists.

Refer to the information in Article 3.2.4 of this manual for information regarding various erosion and sediment control measures and the applications to which each of them is best suited for Illinois Tollway projects. For further guidance see the EPA's *Developing Your Stormwater Pollution Prevention Plan, A Guide for Construction Sites*. A copy can be obtained at [https://www3.epa.gov/npdes/pubs/sw\\_swppp\\_guide.pdf](https://www3.epa.gov/npdes/pubs/sw_swppp_guide.pdf).

### 3.1.3 Concept Design Submittal

The design concept shall be developed in conjunction with the overall design team, following the guidelines provided. The primary focus of this submittal will be to understand the existing conditions, plan the overall erosion and sediment control concept and define the permit requirements. Coordination with all project disciplines including Landscape Architect, Drainage Engineer, Environmental Planner (EP), local jurisdictional agencies and adjacent property/landowners affected by the project will be critical during this phase of the project. The Designer shall identify any special requirements that need to be met including any additional ROW needs. The following elements need to be addressed and included in the design concept narrative and plan.

#### 1. Project Site Evaluation

- a. Define project boundaries, identify adjacent land uses and gain a basic understanding of the site topographic features.
- b. Determine the erosion potential of existing soils, including classifications, slope lengths, permeability, shrink-swell potential, texture, erodibility factor, water table depth and depth to bedrock and identify critical areas such as hydric soils, soils which are highly susceptible to wind or water erosion, steep slopes, areas of existing erosion and groundwater seepage zones.

Information on soils within the project boundaries can be found through use of the U.S. Department of Agriculture (USDA) web-based soil survey:

<https://websoilsurvey.sc.egov.usda.gov/app/>

- c. Field studies are helpful and often necessary to verify the accuracy of online data, especially when work is to be performed adjacent to sensitive areas and for areas within the existing Illinois Tollway ROW where native soils have been previously disturbed. Accordingly, available geotechnical reports or data shall be consulted for relevant information regarding soil conditions. The geotechnical report may either provide or contain information related to the soil particle size organic content, soil structure and soil permeability than can be used by the Designer to assess the erosion potential of soils within the project limits.
- d. Determine if a TMDL allocation, listing as a 303(d)-impaired water or Watershed Management Plan is approved for any water body into which stormwater will directly discharge; determine if a TMDL allocation, impairment or watershed management plan has any requirements for control of stormwater discharges or pollutants likely to be found associated with road construction or roadway use.

Information on TMDLs and impaired waters can be found at the IEPA's website, water quality page:

<https://epa.illinois.gov/topics/water-quality/watershed-management/tmdls.html>

- e. Define the existing drainage network, including storm sewers, culverts, ditches, swales, constructed bioswales, channels, wetlands, streams and rivers that enter, cross or may be impacted by the construction of the project. Obtain previous delineations of drainage divides, tributary areas and drainage flow routes from drainage reports (if available) so that the drainage plan and ESCP designs match. Identify locations where off-site drainage will enter the project area and specific locations where stormwater discharge will leave the project.
- f. Identify all receiving waters for the project including MS4's, wetlands, lakes, creeks and rivers. Determine whether any receiving water is listed by the IDNR as a Biologically Significant Stream. The list of IDNR Biologically Significant Streams can be found on the IDNR website at: <https://dnr.illinois.gov/conservation/biologicalstreamratings.html>
- g. Based on a 25-year, 24-hour storm event, determine the amount of runoff (peak flow and runoff volume) from the project area and tributary watershed areas.
- h. Identify all locations where existing ditches, swales, channels, streams and rivers will need to be diverted to facilitate construction.
- i. Identify the locations of any native or mature vegetation, specimen or high-quality trees, bioswales or other ecologically significant vegetation. Define areas where protection of existing vegetation will be required.
- j. Identify the type and location of any special management areas such as floodplains, floodways, wetlands, creeks, rivers, protected habitats, nature preserves, etc.

- k. Define any additional ROW or construction easements necessary to accommodate the implementation of the erosion and sediment control measures.
  - l. Identify areas of known environmental contamination which, when disturbed, could potentially impact stormwater quality (see the Illinois Tollway Environmental Studies Manual for information).
  - m. Estimate the total area of earth disturbance associated with work activities.
2. Complete Governmental and Regulatory Agency Coordination
- a. Evaluate the project for a USACE Section 404 Permit or other federal regulatory agency requirements.
  - b. Evaluate the project for an IEPA ILR10 NPDES permit. If required, begin necessary coordination related to the National Historic Preservation Act and Endangered Species Act which must be provided as part of the NOI.
  - c. Evaluate the project for coordination with the County SWCD. The need for coordination is determined on a case-by-case basis as directed by the Illinois Tollway Environmental Unit. Coordination is generally only required for projects in which the Illinois Tollway is partnering with local agencies, projects with a Section 404 permit from the USACE or for projects which are outside of the Tollway ROW.
  - d. Evaluate the project for municipal MS4 requirements. Requirements established by agencies of a lower level of government that exceed or are more restrictive than Illinois Tollway criteria shall be considered and followed to the maximum extent possible. The Illinois Tollway is exempt from permitting by lower levels of government and shall not apply for such permits.
3. Submittal Requirements
- a. Provide an Erosion & Sediment Control Technical Memorandum, including a Project Narrative, Erosion and Sediment Control Overview Drawings and any additional drawings or exhibits considered necessary to support the concept design. The memorandum shall provide an analysis of project characteristics related to erosion and sediment control, describe of the overall design concept and demonstrate compliance with the established design criteria. At a minimum, the memorandum shall consist of a Project Narrative and Erosion and Sediment Control Overview Plans as described below.
  - b. The Project Narrative shall include and provide a thorough discussion of the following:
    - i. Project Description. This section shall include a description of the construction activity, major earth disturbing work activities and locations and an estimate of the total area of soil disturbance.
    - ii. Site Evaluation. This section shall include the findings and conclusions reached from the Project Site Evaluation (Refer to Section 3.1.3.1). Where sensitive environmental resources and landscape features have the potential to be impacted by the project shall be identified, the DSE shall examine and discuss

whether the project can avoid or minimize resource impacts. A decision on avoidance may not be possible at this point in project development, but avoidance possibilities shall be examined. Refer to Section 6.10.3 of the Environmental Studies Manual for additional information. Site constraints, areas with existing erosion issues and special design considerations shall be noted as appropriate. Digital photographs shall be provided (as an Exhibit) and referenced to document existing stormwater facilities, major water features, representative site conditions and features and areas with existing erosion issues.

- iii. Erosion and Sediment Control BMPs. This section shall include a description of the erosion and sediment control plan concept to minimize the discharge of sediment-related pollutants from the project to the maximum extent practical. The narrative shall include rationalization for the selection of BMPs to mitigate project impacts and demonstrate compliance with the Illinois Tollway's ILR10 and ILR40 permits. The design concept and proposed erosion and sediment control BMPs shall be discussed in terms of the following components, to be discussed individually:
  1. Control stormwater volume and velocity within the site to minimize soil erosion;
  2. Control stormwater discharges including both peak flow rates and total storm water volume to minimize erosion at outlets and to minimize downstream channel and streambank erosion;
  3. Minimize the amount of soil exposed during construction activity through the use of project phasing or other appropriate techniques;
  4. Minimize the disturbance of steep slopes;
  5. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting storm water runoff and soil characteristics, including the range of soil particle sizes expected to be present on the site;
  6. Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, where feasible;
  7. Minimize soil compaction and, where feasible, preserve topsoil;
  8. Minimize sediment track-out; and
  9. Minimize dust.
- iv. Additional Controls: The Designer shall provide a narrative description of the approach and control measures to comply with the ILR10 and ILR40 permits pertaining to the following plan elements:

1. Non-stormwater discharges;
  2. Discharges into receiving waters with an approved TMDL;
  3. Use of treatment chemicals;
  4. BMPs for impaired waters;
  5. Pollution prevention;
  6. Other controls, including those for waste management and disposal; and
  7. Post-construction stormwater management.
- v. Special Details and Requirements. Describe the design details or special provisions necessary to address items not covered by the Supplemental Specifications or Standard Drawings; and
  - vi. Permit Requirements. Describe the anticipated or potential environmental permit requirements related to erosion and sediment control.
- c. The Erosion and Sediment Control Overview drawings shall be at a scale of 1 inch = 50 feet (or larger) with text and symbols at a size to be read clearly at 11 inches x 17 inches reduced plan size. See Appendix C for an example. These drawings shall show and label:
- i. Existing and conceptual proposed drainage patterns;
  - ii. Areas of anticipated earth disturbance;
  - iii. Project centerline, stationing and ramp baselines as applicable;
  - iv. Existing and proposed roadway geometry;
  - v. ROW limits and areas of any planned ROW acquisition;
  - vi. Existing contours and elevations (half tone);
  - vii. Existing tree masses, shrub masses, constructed bioswales, areas with trees 6-inch diameter at breast height (DBH) and greater specimen trees, natural buffer areas and natural and mature vegetation;
  - viii. Existing fence lines and walls;
  - ix. Drainage areas within and tributary to the project, label with associated acreages;
  - x. Existing drainage network and structures, including storm sewers, culverts, headwalls, swales, ditches, channels, creeks, streams, rivers and outlets;

- xi. Floodplain and floodway limits; and
  - xii. Special management areas such as floodplains, floodways, wetlands, streams and other waterways, existing natural buffers, floodplains, bioswales, threatened and endangered species habitat, nature preserves and historic/archeological resources.
- d. Provide ESIS Part I and supporting technical documents or reports (see the Illinois Tollway *Environmental Studies Manual* for information on ESIS).
  - e. Provide cost estimates, including costs associated with any additional ROW needed for erosion and sediment control, for implementing the ESCP. This will be used in updating the initial planning cost estimate.
  - f. Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section A, Design Concept Submittal, located in Appendix D.
  - g. Provide any additional information required by the Illinois Tollway PM.

### 3.1.4 Preliminary Design Submittal

#### 1. Project Site Analysis

The preliminary design of an ESCP begins with a Project Site Analysis. The purpose of this analysis is to take information obtained in the Project Site Evaluation and define efficient and practical erosion and sediment control measures for the project site. At this phase in the design, sufficient information should be available to begin detailing the ESCP. The Designer shall work with all disciplines including the Landscape Architect, the Drainage Engineer and the EP to resolve all issues identified in the Design Concept Phase and layout the overall design concept. Plans shall be prepared showing a basic layout of all erosion and sediment control measures. The Designer shall not be required to fully detail the plans for this submittal; however, it shall be the Designer's responsibility to ensure that the measures proposed will work within the ROW and construction sequencing will work as proposed. In preparing the ESCP, erosion control shall be considered initially with sediment control designed as secondary control measures. Based on soils report information, refine soil classifications and adjust ESCP concept as necessary. Any new information revealed in the soils report that would require significant changes to the ESCP shall be discussed with the Illinois Tollway PM prior to initiating changes.

#### 2. Prepare Preliminary Erosion and Sediment Control Drawings

- a. Provide a preliminary plan sheet with Erosion and Sediment Control General Notes. The DSE shall include and modify the notes in Appendix E applicable to the project and provide additional general notes as required. See Appendix C for an example.
- b. Provide a preliminary Erosion and Sediment Control Legend plan sheet. Show standard symbols, non-standard symbols and abbreviations. See Appendix C for an example.
- c. Provide a preliminary Erosion and Sediment Control Schedule plan sheet. The schedule shall include the anticipated pay items, pay item measurement units, pay

item numbers and rows for plan sheet numbers. Include an additional row labeled “At Engineers Discretion” and a row labeled “Record Quantities” for use by the CM. At this stage of design development, actual quantities shall be provided to the maximum extent possible. Multiple sheets may be required based on the number of control measures specified. See Appendix C for an example.

- d. Provide preliminary plan sheet with Wetlands and In-Stream Notes for any projects involving work within or near wetlands and waterways. The DSE shall include and modify the notes in Appendix E applicable to the project and provide additional general notes as required. See Appendix C for an example.
- e. Provide a preliminary Overview Drawing(s) reflecting any revisions called for in the previous review. The preliminary drawings shall also be revised to show any areas with hydric soil or soils with a high susceptibility to erosion identified in the soil information obtained since the prior submittal.
- f. Provide erosion and sediment control drawings at a scale of 1 inch = 50 feet showing a basic layout of all measures to be installed, before and during construction, with text and symbols at a size to be read clearly at 11 inches x 17 inches reduced plan size. See Appendix C for an example. These drawings shall:
  - i. Show all information provided on overview drawings, including existing contours, structures and features at half tone and preliminary proposed contours at full tone;
  - ii. Delineate disturbed areas and provide drainage patterns for proposed conditions. Make special note of drainage areas used to size the perimeter controls, sediment traps or detention basins. Also include areas that will be disturbed for the Contractor to access the work area(s);
  - iii. Show the direction of sheet flow, existing and proposed ditch flows and outlets;
  - iv. Identify areas that will require the use of staged construction, with temporary or permanent stabilization of slopes, before subsequent excavation or fill placement stages;
  - v. Show erosion and sediment control measures in phases designed to correspond to the project construction phasing. As a general rule, a separate set of ESCP sheets are needed for each phase of the construction, depending on the overall size and complexity of the project. Temporary erosion and sediment control measures are typically constructed in conjunction with maintenance of traffic (MOT) phasing, therefore for temporary erosion and sediment control plans shall correspond with MOT phasing plans. Work stage drawing(s) that define the suggested sequencing of construction shall limit the size of the disturbed area to 20 acres for any given phase;
  - vi. Indicate areas with known environmental contamination. Note: The SWPPP must describe how affected materials (e.g. solid and/or hazardous waste from construction) are to be handled to prevent stormwater pollution;

- vii. Show recommended topsoil stockpile and on-site borrow locations with erosion and sediment control measures around the perimeter of the stockpiles;
  - viii. Identify tree protection and temporary sediment control measures that must be in place prior to initial grading. These include Sediment Basins, Sediment Traps and Silt Fence. These practices shall be identified on the plan as Initial Construction;
  - ix. Identify wetlands, surface water features and other existing environmentally sensitive areas within and adjacent to, the project limits and which portions of these (if any) may be impacted. Provide preliminary control measures for protection of these resources against sediment runoff and accidental intrusion. These measures shall be identified on the plan as Initial Construction;
  - x. Show all locations where temporary stream diversions or cofferdams will be needed for installation or maintenance of culverts or bridges. These measures shall be identified on the plan as Initial Construction;
  - xi. Identify the permanent and temporary stormwater management measures that must be in place before grading occurs in each specific area along the route. These include temporary storm sewers and culverts, stormwater detention sites, stabilized channel outlets, stabilized temporary swales or diversion dikes and any needed stream diversions. These measures shall be identified on the Plans as Initial Construction;
  - xii. Identify reaches that will have temporary pipe slope drains and temporary berms (fill areas/embankments); Identify floodplain and floodway elevations; and
  - xiii. Layout the ESCP showing the type and location of erosion and sediment control practices to be used. Annotate as needed to clearly define design intent. Complete detailing is not required at this phase.
- g. Provide a preliminary ESCP cost estimate.
  - h. Provide preliminary ESCP Special Provisions.
  - i. Provide any additional information required/requested by the Illinois Tollway PM.
  - j. Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section B, Preliminary Design Submittal, located in Appendix D.
  - k. Provide Permanent Landscape Plans at 1 inch = 50 feet showing all landscape, post construction features and permanent seeding. Refer to Section 4.0 of this Manual for requirements.
  - l. Provide ESIS Part II and supporting technical documents or reports (see the Illinois Tollway Environmental Studies Manual for information on ESIS).

For general design information, responsibilities and permits refer to Article 2.3 of this manual.

### 3. Prepare Preliminary SWPPP

For projects that will result in the disturbance of 1 acre or more of total land area, the Illinois Tollway is responsible for preparing and updating, as necessary throughout the period of construction, a SWPPP (S.P. 111.2) that meets the requirements listed in Part IV of the NPDES ILR10 permit. In addition, it is Illinois Tollway policy that a SWPPP be prepared for any project which has a reasonable potential to impact stormwater quality, regardless of the area of disturbance. Refer to Section 2.2 of this manual for additional information.

A SWPPP is a project-specific document that identifies potential sources of stormwater pollutants; describes pollutant mitigation, operational activities and physical controls (BMPs); and describes pollutant monitoring that will be used to prevent the discharge of pollutants into the Waters of the United States for the duration of a construction project. To prepare an effective SWPPP, it must be tailored to the unique and specific conditions associated with each project and address the foreseeable issues of concern prior to construction.

Every effort has been made to ensure the accuracy of all instructions and guidance contained herein and in the SWPPP template; however, the actual obligations of regulated construction activities are determined by the relevant provisions of the permit. In the event of a conflict between the SWPPP template and any corresponding provision of the current ILR10 permit, the Illinois Tollway must abide by the requirements in the permit.

The Designer shall have read the current ILR10 permit and developed an understanding of the underlying requirements before beginning preparation of a SWPPP. In order to develop a truly effective and useful SWPPP, it is important to carefully consider each of the requirements therein and develop a site-specific plan for each construction project. It is similarly critical to ensure that the most recent version of the SWPPP template is used. A copy of the most current version of the SWPPP template is included in the 100 Series Special Provisions that can be found on the Illinois Tollway WBPM system. At the time of submittal, it is expected that the preliminary SWPPP be fully developed based on the current project design. The 100 series provides further guidance to the DSE on what sections are applicable and the information and values to include.

The information provided in Appendix F is intended to be used as guidance for completing the SWPPP development process and to help ensure that the SWPPP addresses all necessary elements specified in the ILR10 permit. The outline used is consistent with the current version of the SWPPP template.

#### 3.1.5 Pre-Final Design Submittal

The erosion and sediment control submittal for this phase shall include the plans, specifications and cost estimate submitted at the Preliminary Design Phase developed to a 95% level of completeness. Submit permit applications, including NPDES NOI and supporting documentation at 100% level for use by Illinois Tollway in permit submittals. Items to be addressed or included in this submittal are:

1. Address, in writing, all Illinois Tollway comments from previous submittal.

2. Provide Pre-Final Erosion and Sediment Control General Notes sheet and Erosion Control Legend sheet that includes any changes to the overall design since the prior submittal.
3. Provide Pre-Final Erosion and Sediment Control Schedule. Summarize, by drawing number, the measures to be installed, pay items, pay item numbers and quantities. Provide additional quantities over and above the plan quantities for use "At Engineer's Discretion". Coordinate the discretionary quantities with the Illinois Tollway PM prior to submitting plans.
4. Provide Pre-Final Wetlands and In-Stream Notes. The DSE shall include any modifications to the preliminary notes as applicable to the project and provide additional notes as required.
5. Provide Erosion and Sediment Control Construction Sequence sheet. Show sequences for installing and removing control measures in relation to specific stages of construction and earth disturbance activities.
6. Provide detailed design sheets using the Section M Base Sheets for any measures not covered by the Section K Standard Drawings. Provide the dimension, material and installation details.
7. Provide Pre-Final Erosion Control Overview Drawings reflecting any changes to the overall design. Show work stages that define the suggested sequencing of construction intended to limit the size of the disturbed area to a maximum of 20 acres for any given phase.
8. Provide Pre-Final ESCP Drawings reflecting any changes to the overall design.
9. Identify any erosion or sediment control measure that will serve as a permanent erosion or sediment control measure after construction is complete.
10. Verify that sediment traps, sediment basins, dewatering basins, temporary swales and temporary channel diversions will fit in the intended area(s).
11. Label the specific location(s), size(s) and length(s) of all erosion and sediment control measures shown on the drawings and not specified on the Erosion and Sediment Control Schedule.
12. Provide the area, in acres, controlled by each temporary sediment basin, sediment trap, temporary diversion, temporary swale or culvert inlet protection.
13. Show the location and label the size and I.D. number of existing wetland areas, other environmentally sensitive areas and label which portions of these (if any) will be impacted. Labels shall include the total acreages within the project limits and any associated temporary fill or permanent impacts. Identify each feature or portion thereof to be protected as a "No Intrusion Area" and protect with Super Silt Fence.
14. Provide a Pre-Final Erosion and Sediment Control Technical Memorandum.
15. Provide a Pre-Final cost estimate.

16. Provide Pre-Final Special Provisions.
17. Prepare Pre-Final SWPPP. The SWPPP shall not be considered complete until the Designer has fully prepared the site description, along with identification, implementation and maintenance of BMPs to reduce pollutants in stormwater discharges. This is required to comply with the provisions of the NPDES Permit Number ILR10 issued by the IEPA for stormwater discharges from construction site activities.
18. Provide any additional information required/requested by the Illinois Tollway PM.
19. Provide the NPDES NOI form. Current process can be found on the USEPA website: <https://cdxnodengn.epa.gov/net-cgp/action/login>
20. Provide SWCD submittal (if required).
21. Provide CSMA submittal (if required).
22. Provide submittal information for other agencies, as required.
23. Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section C, Pre-Final Design Submittal, located in Appendix D.

### 3.1.6 Final Design Submittal

The erosion and sediment control submittal for this phase shall include the plans, specifications and cost estimate developed to a 100% level of completeness. Items to be addressed or included in this submittal are:

1. Address, in written form, all Illinois Tollway comments from previous submittal.
2. Provide final overview and ESCP drawings.
3. Provide final Special Provisions and SWPPP (Special Provision 111.2).
4. Provide final cost estimate.
5. Provide final quantity and design calculations.
6. Provide Professional Engineer's seal and signature on the plans.
7. Provide any additional information required by the Illinois Tollway PM.
8. Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section D, Final Design Submittal, located in Appendix D.

### 3.1.7 References

- Illinois Tollway Standard K1 and applicable Section M Base Sheet Drawings
- Illinois Tollway Supplemental Specifications

- IEPA's NPDES Stormwater Permit No. ILR10, - General Permit for Stormwater Discharges Associated with Construction Sites
- Illinois Urban Manual, AISWCD and NRCS
- IDOT – Bureau of Design and Environmental Manual, Chapter 41 – Construction Site Storm Water Pollution Control
- Appendix D, Illinois Tollway Erosion and Sediment Control Plan Technical Review Checklist

## 3.2 Design Criteria

All above grade, un-shielded soil erosion and sediment control measures shall be located outside the clear zone. Soil erosion and sediment control measures shall be designed and located to ensure that roadside obstacles are not created.

### 3.2.1 Runoff Control

Runoff plays an important role in soil and sediment erosion and in the collection and movement of chemicals (e.g., nutrients and pesticides) from soil and vegetative cover. Runoff control applies both to on-site and off-site runoff.

1. On-site runoff is generally either conveyed through the site or stored on-site.
  - a. Runoff conveyance is generally done through temporary or permanent ditches, swales or channels and is intended to convey the runoff generated within the project area through the site. The conveyance facilities shall be designed according to the Illinois Tollway DDM and protected against erosion, using temporary and/or permanent erosion control measures.
  - b. Storage of on-site runoff can be done using temporary or permanent detention basins.
2. Off-site runoff shall generally be diverted from the construction site using diversion dikes and diversion channels. The diversion shall not cross the watershed drainage boundaries for the site. If diversion is not possible, the off-site runoff is to be conveyed through the site in such manner that untreated on-site runoff does not mix with the off-site runoff. Generally, the off-site runoff shall outlet into an undisturbed or a stabilized area, at a non-erosive velocity. The diversion channels shall be designed and constructed to withstand the expected velocity for the 25-year, 24-hour frequency storm without erosion. All constructed or modified channels shall be stabilized within 48 hours. If separation of on-site and off-site runoff is not possible, size sediment traps, basins and other measures for both on-site and off-site runoff.
3. The following is a brief description of possible erosion control measures that will achieve runoff control:
  - a. Temporary ditch checks or rock check dams shall be used in the existing, proposed and temporary ditches to control velocity. These types of erosion control practices are not intended to trap sediment but are used as a temporary measure to control velocity.

Spacing of rock check dams shall be equal to the height of the ditch check divided by the slope. This ensures that the base of the upstream check is at the same elevation as the crest of the downstream check. Spacing for manufactured ditch checks shall be such that the elevation of the bottom of the ditch check upstream will be equal to the elevation of the top of the ditch check downstream, unless otherwise specified by the manufacturer.

- b. Diversion dikes shall be used to route off-site flows away from disturbed areas. The diverted runoff from an undisturbed area shall outlet into an undisturbed or a stabilized area at non-erosive velocities.
- c. Temporary channel diversion shall be used to carry existing stream flow through or around the construction site. A dewatering discharge basin shall be provided with either a minimum storage capacity (in cubic feet) equal to the dewatering pump capacity (in gallons per minute) times 32 or a minimum size of 10 feet x 10 feet x 3 feet in depth, whichever is more stringent.

### 3.2.2 Erosion Control

1. Erosion control shall apply measures that:
  - a. Limit the exposure duration of unprotected soil to erosion factors and/or
  - b. Ensure the proper temporary and permanent soil protection; i.e., through vegetative measures or structural measures.
2. The following general criteria shall be used for the design of vegetative and structural erosion control measures as part of Illinois Tollway projects:
  - a. All necessary erosion and sediment control measures shall be constructed and functional prior to initiating clearing, grading, stripping, excavating or fill activities. Illinois Tollway Standard K1 Base Sheet Drawings provide the standard symbols that shall be used for the erosion and sediment control measures.
  - b. Disturbed areas are to be protected from erosion in a timely manner. Erosion stabilization measures shall be initiated within 1 day, in portions of the site where construction activities have temporarily or permanently ceased, except portions of the construction site where activities will resume within 14 days (e.g., the total time period that construction activity is temporarily ceased will be less than 14 days). Adjacent sediment control measures shall remain continuously in place during construction.
  - c. Same-day stabilization is to be implemented as outlined in the Illinois Tollway Supplemental Specification Article 280.15(c). Same-day stabilization is used to minimize erosion and the movement of soils at those areas shown on the Contract Plans or as directed by the CM to stabilize erosive prone areas or critical disturbed areas where there is a risk that sediment laden runoff may enter sensitive environmental areas. Same-day stabilization is typically applied within 100 feet of surface waters, wetlands or other environmentally sensitive areas and each day any soil disturbance occurs as a result of Contractor's operations. The primary method to perform same-day stabilization is through the use of Temporary Stabilization with Straw Mulch, with permanent measures installed at the earliest opportunity and on a

priority basis. This item provides compensation for the continuous and expedited application of stabilization materials. Stabilization methods and materials shall be measured and paid for at the Contract unit price for those items.

- d. Site plans shall show the existing vegetation that shall be preserved and disturbed areas of the site that shall be stabilized. Stabilization practices shall include temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation or other appropriate non-vegetative measures.
- e. Areas having slopes greater than 1:10 (V:H) shall be stabilized with erosion blankets in combination with permanent seeding as soon as possible. Provide temporary seeding and appropriate mulch or erosion control blanket control measures on all slopes if permanent seeding is not immediately installed.
- f. Channel lining shall be provided where the design discharge velocity exceeds the scour velocity of the soil. See Article 4.2.10.2 Treatment of Drainage Channels and Ditches for guidance.
- g. Fabric formed concrete mats shall be avoided on Illinois Tollway drainage facilities due to maintenance difficulties. Permanent riprap protection shall generally be avoided and may only be used in applications where water flow energy dissipation is necessary and is beyond the clear zone. Locations where riprap is used shall be evaluated for maintenance access, energy dissipation needs and for aquatic habitat. Refer to Illinois Urban Manual and Hydraulic Engineering Circular No. 15 (HEC-15), current edition for guidance on riprap design. Open cell articulated concrete block mats or other environmentally friendly methods such as turf reinforcement mats with open patterns and cost-effective products shall be considered. Refer to Illinois Tollway DDM, Ditch and Channel Design for permanent erosion control measures.
- h. Each project shall be evaluated for the need for stabilized construction entrance(s) based on the construction activity, existing ground conditions and the frequency of vehicular/equipment access.

### 3.2.3 Sediment Control

Sediment is the most common non-point source of pollutants. The design of Illinois Tollway sediment control measures shall consider the following general principles.

1. For disturbed areas draining less than 1 acre, filter barriers (including silt fence or equivalent control measures) shall be constructed to control all runoff leaving the site. Generally, these are appropriate sediment control measures for small drainage areas where concentrated flow is not present. Vegetative filter strips, with a minimum width of 50 feet, may be used as an alternative in areas where only sheet flow runoff is expected. In areas of high environmental significance, high amounts of sheet flow or where the ponded water depth may exceed 18 inches, Super Silt Fence shall be provided.
2. For disturbed areas draining more than 1 acre but less than 5 acres, a sediment trap or sediment basin shall be constructed at the down-slope point of the disturbed area. Sediment traps will normally adequately control the sediment in areas where concentrated flow is likely to be present.

3. For disturbed areas draining more than 5 acres, a sediment basin shall be provided at the down-slope point of the disturbed area. A maximum of 20 acres may be disturbed at a single time. The sediment traps or basins shall be designed to store 3600 cubic feet per acre for the entire on-site and off-site drainage area tributary to the basin or as determined necessary by soil erosion calculations. Where reduced sized basins will be used, a general note needs to be added on the erosion control plans indicating that these traps/basins shall need to be cleaned out more frequently. This shall be properly reflected in the quantity estimate for the Erosion and Sediment Control – Clean-out pay item.
4. Design of any stormwater detention basin shall be coordinated with the need for sediment traps or basins. If properly designed, located and maintained, the permanent detention basins can be easily modified to serve as temporary sediment basins until the project area is stabilized.
5. Temporary pipe slope drains shall be used to convey runoff from the top of fill slopes to conveyance systems at the base of slopes as the embankments are constructed. Pipe slope drains are to remain in place until gutters or shoulders are constructed and the slopes are seeded and mulched or otherwise stabilized.
6. Anionic flocculent polymers (PAMs) may also be applied where extreme turbidity exists and/or as a pre-treatment for sediment laden water, before draining into sediment traps or basins.

All temporary and permanent erosion and sediment control measures shall be inspected, maintained and repaired as needed to assure effective performance of their intended function. At a minimum, the Contractor shall inspect measures weekly and within 24 hours of a rainfall event with 0.5 inch or greater of precipitation (5 inches of snow).

Upon completion of construction and/or permanent stabilization, temporary erosion and sediment control measures shall be removed. (Temporary erosion control measures may be left in place for a period of time following construction if construction included rubblized/recycled concrete.) Temporary erosion and sediment control measures cannot be left in place on a permanent basis unless consistent with standards from the Illinois Tollway DDM. In no instance may temporary riprap or ditch checks be left in place unless the CM obtains written acceptance from the Illinois Tollway Environmental Unit and it is not a hazard to motorists.

### **3.2.4 Control Practices and Applications**

For the ESCP to be implemented correctly, practices need to be applied within their intended use. The following is provided to help guide the Designer and CM.

Refer to the latest Illinois Tollway Supplemental Specifications Section 280 for detailed descriptions of control practices and pay items. Refer to Standard K1 and applicable Section M Base Sheet Drawings for control device details and construction notes. The *Illinois Urban Manual* (NRCS) and *Bureau of Design and Environmental Manual*, Chapter 41 (IDOT) may also be used for reference.

## 1. Dust Control

### Pay items:

JS107360 - DUST CONTROL WATERING  
 JS107361 - APPLY DUST SUPPRESSION AGENTS

### Description and Purpose:

This item, discussed in Article 107.36 of the Illinois Tollway Supplemental Specifications, consists of applying water or chemical products to exposed soil surfaces to prevent the movement of dust that may be harmful to human health or the environment. Dust controls reduce the surface and air transport of dust, thereby preventing pollutants from infiltrating into stormwater.

Dust palliatives are used to temporarily control fugitive dust generated during construction activities. Dust palliatives include water, dust suppressants and soil stabilizers. Palliatives are used for public safety to control dust caused by vehicles and for environmental reasons to reduce wind-caused fugitive dust. The most common dust palliative to be used is water, but the Designer shall specify that dust suppression agents or soil stabilizers be used as dust palliatives in some situations as described below.

### Application:

- This item is to be used to control dust resulting from construction operations exclusively.
- Dust control shall only be conducted when directed by the Engineer.
- The Dust Control Watering pay item shall not be used in the compaction of earth embankments.
- The Designer shall evaluate the work for construction activities that will require use of dust palliatives. Typical construction activities that require dust control are:
  - Clearing, excavation and grading;
  - Use of unpaved roads and staging areas;
  - Structural demolition; Aggregate and soil loading and unloading;
  - Pavement crushing; and
  - Mobile concrete batch plants
    - Pay items for dust control shall be included in the Contract Documents whenever the potential exists for dust to create a nuisance, become a hazard to motorists or if dust may drift beyond the ROW.

Design Criteria:

- The Contractor shall be required to prepare and submit a Dust Control Plan in accordance with Article 107.36 of the Illinois Tollway Supplemental Specifications for approval by the CM.
- Dust Control Watering can provide onsite control of fugitive dust on disturbed surfaces on an as-needed basis. The frequency of watering depends on several factors, including weather, soil type and construction traffic. Water treatment is typically only effective for 0.5 hour to 12 hours. Water shall be applied at a rate so that the soil surface is wet, but not saturated or muddy. If watering is to be employed, conditions shall be monitored to prevent mud from being spread on local streets.
- Dust Control Watering shall consist of the uniform application of sprinkled water and shall be applied only when directed and in a manner accepted by the CM.
- For quantity estimating purposes for Dust Control Watering, consider using an application rate of 2,000 gallons of water per acre for each day where watering may be required. The need for dust control watering shall generally be limited to the period from May through September.
- Dust Suppression Agents are a mid to long term measure, may require multiple applications per year. They shall be applied according to manufacturers' recommendations and according to the guidance in the IDOT *Bureau of Design and Environmental Manual*, Article 41-2.03.
- Dust suppression agents shall be considered for temporary haul roads; construction staging, material storage and laydown areas; or aggregate base roads.
- Dust suppression agents shall be water soluble, non-toxic, non-reactive, non-volatile and non-foaming. Only plant-based or polyacrylamide-based products shall be used as a Dust Suppression agent; the use of petroleum or petroleum-based agents for dust control is strictly prohibited. Chloride, gypsum or plaster-type sprayable mulches cannot be used without prior acceptance from the Illinois Tollway Environmental Unit.

**2. Management of Erosion and Sediment Control**Pay Item:

JS280020 - MANAGEMENT OF EROSION AND SEDIMENT CONTROL

Description and Purpose:

This item, described in Article 280.02 of the Illinois Tollway Supplemental Specifications, consists of the management of erosion and sediment control aspects of the project. This item includes inspections, meetings, schedule adherence and maintenance and repair not included in the various erosion and sediment control pay items.

Application:

This item is to be used for all projects requiring the use of erosion and sediment control measures.

Design Criteria:

The Designer shall provide the pay item and quantity necessary for the Contractor to manage the erosion and sediment control aspects of a project for the full duration necessary to ensure compliance with the NPDES permit (if required), contract plans and specifications.

**3. Erosion and Sediment Control – Excavation**Pay Item:

JS280030 - EROSION AND SEDIMENT CONTROL - EXCAVATION

Description and Purpose:

This item, described in Article 280.03 of the Illinois Tollway Supplemental Specifications, is comprised of earth and rock excavation associated with erosion control construction.

Application:

This item to be used for excavation and backfilling of sediment basins, sediment traps, dewatering basins, temporary swales and temporary channel diversions.

This item does not include excavation of permanent ditches parallel to the roadway, at the toe of embankments or at the top of cuts.

Design Criteria:

The Designer shall provide the pay item and quantity necessary to construct the applicable sediment control structures.

**4. Erosion and Sediment Control – Cleanout**Pay Item:

JS280040 - EROSION AND SEDIMENT CONTROL - CLEANOUT

Description and Purpose:

This item, described in Article 280.04 of the Illinois Tollway Supplemental Specifications, consists of the maintenance excavation required for the removal of accumulated sediment from within and areas adjacent to installed sediment control measures.

Application:

- a. Use this item at all locations where Erosion and Sediment Control – Excavation is used.
- b. Applicable to clean-out of traps, basins and the areas adjacent to Silt Fence, Super Silt Fence, Rectangular Inlet Protection, Filter Fabric Inlet Protection, ditch checks and any other clean out excavation of accumulated sediment that will impede the measure's ability to function properly.

Design Criteria:

- a. Sediment shall be removed from devices when 50% full or when 50% of the device height is reached.
- b. Material from clean-out may be reused once it is dried and it meets embankment requirements.

**5. Silt Fence**Pay Item:

JS280050 - SILT FENCE

Description and Purpose:

Silt Fence is a temporary, linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow or shallow overland flow. Silt Fence allows sediment to settle from runoff before water leaves the construction site, it does not filter sediment from runoff. This item is described in Article 280.05 of the Illinois Tollway Supplemental Specifications.

Application:

- Use of Silt Fence is appropriate for the following locations:
  - below the toe of exposed and erodible slopes;
  - downslope of exposed soil areas;
  - at the perimeter of a construction site; and
  - around temporary erodible stockpiles.
- May be used as mid-slope protection on shallow slopes.
- Silt Fence should not be installed along ridges, near drainage divides or other locations where there is little movement of water.
- Not intended for use in stream, channels or any location of concentrated flow or to divert flow.

Design Criteria:

- Do not install Silt Fence in areas that receive concentrated flows [over 0.5 cubic feet per second (cfs)] drainage channels or above or below drainage pipes. Water filters through Silt Fence very slowly, too slowly to treat concentrated flow. Concentrated flows will overtop Silt Fence or collapse it altogether.
- The maximum drainage area for sheet flow shall not exceed ½ acre per 100 feet of Silt Fence.
- When installed as a stand-alone practice on a slope, the parallel spacing shall not exceed the maximum slope lengths for the appropriate slope as specified in the following table:

Slope Steepness (V:H)	Max Slope Distance(feet)
1:4	50
1:5	75
1:7.5	125
1:10	175
1:10 or less	200

- Silt Fence shall be constructed along the contour lines to prevent concentration of flow, which increases the likelihood of failure.
- To create a small containment system, the end posts shall be turned upslope a minimum of 5 feet to prevent water from flowing around the ends and prevent sediment by-pass. The end posts shall be shown on the plans.
- Silt fence shall not be used as mid-slope protection where slopes are steeper than 1:4 (V:H). Fiber logs or wattles shall be used under those conditions.
- Silt Fence shall not be employed where water ponding behind the fence may cause flooding or fence failure or where washout of the fence may cause environmental damage.
- To prevent damage to Silt Fence from construction activity, include a vegetated buffer between the construction limits and the fence to the extent practical.
- Silt Fence which must be installed along a slope (at an angle of 30 degrees or greater from parallel to the contours) shall be installed in short lengths terminated with “J-hooks” to capture sediment where flows will travel along the fence. The J-hooks shall extend at least 10 feet from the line of the fence installation and shall be spaced based on the slope angle. J-hooks shall be used at the ends of runs longer than 200 feet and at intervals as deemed necessary by the Designer and according to site conditions. The following maximum spacing for J-hooks is recommended:

Slope Steepness	Maximum Distance Between J-Hooks
3:1 or higher	25
4:1	50
5:1	75

7.5:1	125
10:1	175
10:1 or less	200

- Silt Fence constructed in an area where ponding depth may exceed 18” shall be constructed as a Super Silt Fence.
- If damage to Silt Fence is anticipated due to heavy equipment operation, consider the use of Super Silt Fence.
- Reference Standard Drawing K1 for additional information.

**6. Re-Erect Silt Fence**

Pay Item:

JS280051 - RE-ERECT SILT FENCE

Description and Purpose:

This item, described in Article 280.05(b) of the Illinois Tollway Supplemental Specifications, consists of re-erecting Silt Fence damaged by natural causes.

Application:

- This item to be used for replacement of the Silt Fence that has become damaged or ineffective as a result of natural forces.
- Silt fence damaged by the Contractor’s operations or negligence shall not be re-erected under this item.
- This item only covers the replacement of pay item JS280050 - Silt Fence.

Design Criteria:

- For contract estimating purposes, consider a quantity for Re-Erect Silt Fence in the range of 15 to 25% of the silt fence quantity.
- If damage to Silt Fence has been caused by high flow volumes, consider replacement with Super Silt Fence.

**7. Temporary Swales**

Pay Items:

JS280060 - TEMPORARY SWALE, TREATMENT TYPE I  
 JS280061 - TEMPORARY SWALE, TREATMENT TYPE II  
 JS280062 - TEMPORARY SWALE, TREATMENT TYPE III

Description and Purpose:

A temporary swale is an excavated drainageway designed to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet or to intercept sediment laden water and divert it to a sediment-trapping device. This item is described in Article 280.06 of the Illinois Tollway Supplemental Specifications. This measure requires the Designer to prepare a design plan detail; reference Illinois Tollway Section M Base Sheet.

Application:

- To intercept and divert runoff from one undisturbed area to another undisturbed stabilized area at a non-erosive velocity.
- To transport off-site flows across disturbed areas such as right-of-way.
- To intercept sediment laden water from a disturbed area and divert it to a sediment trapping device.

Design Criteria:

- Temporary swales shall have uninterrupted positive grade to an outlet.
- Diverted runoff from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
- Hydraulic design of temporary swales shall accommodate a 25-year, 24-hour storm frequency. In cases where temporary swale failure would endanger the roadway or other Illinois Tollway facilities, hydraulic design shall accommodate the 50-year event. The lining design shall accommodate a 10-year, 24-hour storm.
- For Temporary Swale, Treatment Type I, consisting of temporary ground cover and heavy-duty erosion control blanket, the maximum channel velocity shall not exceed the manufacturer's recommended velocity for the erosion control blanket. Generally, the channel slope shall not exceed 3%.
- For Temporary Swale, Treatment Type II, consisting of coarse aggregate CA 3 for the ditch lining in a layer of 3 inches in thickness over filter fabric (designed for use with riprap), pressed into the soil with construction equipment, the maximum channel velocity shall not exceed 3 feet per second. Generally, the channel slope shall not exceed 5%.
- For Temporary Swale, Treatment Type III, consisting of gradation RR 3 riprap in a layer at least 8 inches thick over filter fabric (designed for use with riprap), pressed into the soil with construction equipment, the maximum channel velocity shall not exceed 4.5 feet per second. Generally, the channel slope shall not exceed 8%.
- Temporary swales may require the design of a velocity dissipation device at their outlet to prevent localized erosion.

- Swales collecting runoff from disturbed areas shall be specified to remain in place until the disturbed areas are permanently stabilized.
- The use of Type II and Type III Treatments shall be approved by the Illinois Tollway Environmental Unit.
- Side slopes of the diversion dike shall be 2:1 (V:H) or flatter.

## 8. Stabilized Construction Entrance

### Pay Item:

JS280070 - STABILIZED CONSTRUCTION ENTRANCE

### Description and Purpose:

A Stabilized Construction Entrance, described in Article 280.07 of the Illinois Tollway Supplemental Specifications, is a stabilized pad of riprap, or coarse aggregate of a similar gradation, underlain by a commercially available geotextile product located at any point of entrance/exit to a construction site to reduce the tracking of mud and dirt onto public roads by construction vehicles.

### Application:

- Place stabilized entrances at all points of construction ingress and egress where sediment may be tracked from the construction site.
- Stabilized Construction Entrances should not be provided where the existing access will prevent tracking of sediment onto public ROW, on projects where only infrequent or random access will occur to areas with established vegetative cover or projects where other best management practices can effectively control track-out.

### Design Criteria:

- At sites where traffic volume is high, the entrance shall be wide enough to pass two vehicles and shall have an adequate turning radius where it meets existing roads to accommodate larger vehicles.
- A temporary culvert will be required to convey stormwater beneath the entrance area when the Stabilized Construction Entrance is placed across a ditch or other area of concentrated flow. Temporary culverts are paid for separately.
- The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto roadways. This may require periodic top dressing with additional stone, paid as temporary riprap. The Designer shall include a quantity of temporary riprap in the Contract for large projects or projects with significant grading and hauling activity to maintain the entrance/exit areas. The minimum quantity provided per entrance shall be 160 square yards.
- On particularly large projects or projects where it is difficult to determine where access will occur, the Designer should include Stabilized Construction Entrance quantities in

the Contract Documents to allow for additional stabilized entrances not shown in the initial ESCP. The additional quantity will enable the Contractor to install them where needed with the approval of the Engineer.

- The entrance must be sloped away from the paved surface or a mountable berm provided so that stormwater from the site does not discharge through the entrance onto roadways.
- Reference Standard Drawing K1 for additional information.

## 9. Silt Curtain

### Pay Item:

JS280082 – SILT CURTAIN

### Description and Purpose:

A Silt Curtain, described in Article 280.08 of the Illinois Tollway Supplemental Specifications, is designed specifically to contain and control the dispersion of turbidity and silt in a water body caused by marine construction, shoreline work, pile driving, dredging activities and other similar work. Floating turbidity barriers consist of a top flotation boom, a fabric curtain extending downward underwater, an anchoring system and a heavy galvanized steel chain sealed into a hem along the bottom of the curtain to provide ballast.

### Application:

- This item is to be used to control turbidity encountered during construction when working in or adjacent to a stream or waterway.
- Where construction activities extend down a bank of the waterbody to the water surface, the Silt Curtain is installed along the length of disturbed area to function as a down slope perimeter control.
- The barrier is used where projects cross a waterbody, construction extends into a waterbody or temporary cofferdams are installed to facilitate construction.

### Design Criteria:

- Install and anchor the Silt Curtain to one shoreline of stream or waterway in accordance with manufacturer's recommendations, to prevent drift towards the shore or downstream.
- A Silt Curtain shall not be installed perpendicular to the flow of a flowing body of water.
- The bottom of the Silt Curtain shall be weighted to prevent drift.
- The Silt Curtain shall be located beyond the lateral limits of the construction and shall be installed so it will not be disturbed by construction activities.

- When determining the overall length of the Silt Curtain, the Designer shall provide an additional 10% to 20% beyond the straight-line measurements to facilitate installation and to reduce stress on the barrier when installed.
- The area isolated by the Silt Curtain shall be the minimum necessary to complete the work and in no case shall encompass more than 1/3 of the total stream width.
- Reference Standard Drawing K1 for additional information.

## 10. Super Silt Fence

### Pay Item:

JS280100 - SUPER SILT FENCE

### Description and Purpose:

Super Silt Fence, described in Article 280.10 of the Illinois Tollway Supplemental Specifications, is designed to handle a higher amount of water and silt runoff than standard silt fence and to protect wetlands and other sensitive environmental resources. It features a permeable fabric and chain link fence for support. Super Silt Fence is capable of withstanding more severe erosion conditions than standard Silt Fence while providing maximum protection for critical landscapes.

### Application:

- Use Super Silt Fence where the slope steepness or slope length criterion for Silt Fence cannot be met or where additional protection is warranted such as adjacent to wetlands, streams or other environmentally sensitive areas.
- Super Silt Fence is to be used to control high sheet flow volumes. It shall not be used as velocity checks in ditches or swales or placed where it will intercept concentrated flow.
- Super Silt Fence shall be used when the contributing slope is longer than 100' and/or the design life of the silt fence needs to exceed 6 months.
- Super Silt Fence shall not be used in ditches or obstruct flow of drainage channels.

### Design Criteria:

- The maximum drainage area shall not exceed 1/2 acre per 100 linear feet of fence.
- Super Silt Fence shall be constructed along the contour lines.
- Reference Standard Drawing K1 for additional information.

## 11. Temporary Pipe Slope Drain

### Pay Item:

JS280110 - TEMPORARY PIPE SLOPE DRAINS  
 JS280140 – TEMPORARY RIPRAP

### Description and Purpose:

Temporary Pipe Slope Drain, described in Article 280.11 of the Illinois Tollway Supplemental Specifications, is a pipe used to intercept and direct surface runoff or groundwater down the face of unstabilized slopes in order to minimize erosion on the slope face. Slope drains discharge into a stabilized watercourse, trapping device or stabilized area. Slope drains are used with lined ditches to intercept and direct surface flow away from slope areas to protect cut or fill slopes.

Slope drains are generally used in conjunction with earthen dikes (berms) that direct the runoff to the temporary pipe slope drain with flared end section. This measure requires the Designer to prepare a design plan detail. Reference Illinois Tollway Section M Base Sheet.

### Application:

This item shall be used to control erosion on the embankment slope face during construction of the embankment.

### Design Criteria:

- The maximum allowable drainage area is 5 acres per slope drain.
- Temporary Pipe Slope Drains shall be maintained in place until shoulders are constructed and embankment slopes are permanently stabilized.
- At the end of each day of embankment construction, the Temporary Pipe Slope Drain shall be extended to the top of the embankment.
- Discharge from the Temporary Pipe Slope Drain shall release into a sediment trap, sediment basin or to a stabilized ditch discharging to a trap or basin.
- Design criteria for capacity, pipe size, inlet and outlet shall be in accordance with the Illinois Urban Manual.

## 12. Tree Protection

### Pay Item:

JS280120 - TREE PROTECTION

### Description and Purpose:

Tree Protection, described in Article 280.12 of the Illinois Tollway Supplemental Specifications, consists of temporary fencing to protect the critical root area important to the tree's health.

Application:

- Used to protect trees from disturbance and from heavy equipment traveling over the root zone.
- Used for trees identified to be protected in the Tree Preservation Plans.

Design Criteria:

- Tree Protection can either be erected for single trees or around groups of trees based on the spacing of the trees to be protected, according to the judgment of the Designer.
- Tree Protection shall be high visibility plastic fence or other approved material that can last through the duration of the protection period.
- Tree Protection shall be constructed as part of Initial Construction, prior to starting grading.
- Tree Protection shall be located outside the drip line of the tree or trees to be preserved and in no case closer than 5 feet to the trunk of any tree.
- Reference Standard Drawing K1 for additional information.
- See Standard Specification Section 201 – Clearing, Tree Removal and Protection, Care and Repair of Existing Plant Material.

**13. Temporary Riprap**Pay Items:

JS280140 - TEMPORARY RIPRAP

Description and Purpose:

Temporary Riprap, described in Article 280.14 of the Illinois Tollway Supplemental Specifications, consists of filter fabric and a protective layer of dumped or hand-laid stone used to protect soil from erosion in areas of concentrated runoff. Riprap can also be used on slopes that are unstable due to water seepage problems.

Application:

Use Temporary Riprap to stabilize cut-and-fill slopes; channel side slopes and bottoms; inlets and outlets for culverts, bridges, slope drains, grade stabilization structures, storm drains; streambanks and grades; and as rock check dams.

Design Criteria:

- In no instance shall riprap be located in the roadway clear zone.
- Riprap shall not be left in place on a permanent basis unless consistent with standards from the Illinois Tollway DDM and it is not a hazard to motorists. The CM shall obtain written approval from the Illinois Tollway Environmental Unit for any such use.

- Riprap installations for outlet protection shall be designed to accommodate the flow velocity and shall be designed in accordance with Article 41-2.05(a) of the IDOT Bureau of Design and Environmental Manual and the IDOT Drainage Manual.
- Filter fabric is to be installed under all Temporary Riprap. Additional reference on Filter fabric can be found in Standard Specification Article 1080.03.

#### 14. Temporary Stabilization with Straw Mulch

##### Pay Item:

JS280150 - TEMPORARY STABILIZATION WITH STRAW MULCH

##### Description and Purpose:

Temporary Stabilization with Straw Mulch, described in Article 280.15 of the Illinois Tollway Supplemental Specifications, consists of placing temporary seed followed by a uniform layer of straw and anchoring it with a stabilizing tackifier. This method is used as a temporary erosion control method to stabilize the soil and reduce erosion caused by wind and water.

##### Application:

- Appropriate for disturbed areas that require temporary stabilization that cannot at the time be stabilized with permanent vegetative measures.
- Appropriate for areas where construction activities have permanently or temporarily ceased and will not resume within 14 days (e.g., the total time period that construction activity is temporarily ceased will be 14 days or more).
- Appropriate for areas that require same-day stabilization.
- Appropriate for temporary erosion control where slopes are 1:3 (V:H) or flatter.
- Not suitable for use in ditches or other areas of concentrated flow.

##### Design Criteria:

- Erosion control blanket or alternate mulch methods (IDOT Mulch Method 3A ) shall be considered for temporary erosion control on slopes steeper than 1:3 (V:H) or when Temporary Stabilization with Straw Mulch is not effective.
- Gypsum or plaster-type sprayable tackifiers shall not be used without prior approval from the Illinois Tollway Environmental Unit.
- This item may not be effective as the only means of erosion control in areas where concentrated flows occur due to its susceptibility to be washed away. When necessary, use with other soil stabilization and sediment control BMPs. In those cases, consider the use of Erosion Control Blanket, Turf Reinforcement Mat (with open patterns) or sod.

- A minimum plan quantity sufficient for one application to all disturbed areas should be provided. Multiple applications to the same area may be required depending on the construction sequencing, to comply with ILR10 permit requirements for temporary stabilization or other conditions which may require the Designer to provide additional plan quantities.

## 15. Same-Day Stabilization

### Pay Item:

JS280151 - SAME-DAY STABILIZATION

### Description and Purpose:

Same-day stabilization consists of the operations necessary for the continuous or expedited application of stabilization materials to disturbed areas as outlined in the Illinois Tollway Supplemental Specification Article 280.15(c). Stabilization methods and materials shall be measured and paid for at the Contract unit price for those items.

### Application:

- Same-Day Stabilization is used to stabilize erosive prone areas or critical disturbed areas where there is a risk that sediment laden stormwater runoff may occur and discharge into environmentally sensitive areas.
- Used at the discretion of the Engineer to strengthen the erosion control measures as needed during construction. The Engineer may order use at any time during the contract.

### Design Criteria:

- Same-Day Stabilization may consist of either temporary erosion control measures or the permanent landscaping. The permanent landscaping shall be implemented as same-day stabilization whenever possible. This means that the Contractor shall stage their work so that portions of the slopes and ditches can be brought to finished grade, covered with topsoil and landscaped prior to the end of the workday.
- When permanent landscaping is not possible, due either to construction staging or project constraints, Same-Day Stabilization shall consist of temporary erosion control measures.
- The primary temporary erosion control method to be used along with Same-Day Stabilization shall be Temporary Stabilization with Straw Mulch. If appropriate, other methods for temporary erosion control shall be specified in the Contract Documents.
- The Designer shall indicate on the plans the locations where Same-Day Stabilization is anticipated to be necessary. The Engineer may adjust the location of use based on project conditions.

- A plan quantity for Same-Day Stabilization shall be provided for disturbed areas within 100 feet, at a minimum, of surface waters, wetlands and other environmentally sensitive areas within or adjacent to the construction limits.
- Plan quantities of Same-Day Stabilization (and the specified temporary erosion control method) shall account for multiple applications based on staging and duration of construction. The Engineer may adjust the frequency of application based on project conditions.
- In addition to the plan quantity, a nominal quantity for Same-Day Stabilization shall also be considered for use at the Engineer's discretion to stabilize other areas where field conditions create the urgent need to protect sensitive environmental resources. A nominal quantity is not necessary when there are no plan quantities for same-day stabilization.

## 16. Diversion Dike

### Pay Items:

JS280160 - DIVERSION DIKE, TREATMENT TYPE I  
 JS280161 - DIVERSION DIKE, TREATMENT TYPE II  
 JS280162 - DIVERSION DIKE, TREATMENT TYPE III

### Description and Purpose:

A Diversion Dike, described in Article 280.16 of the Illinois Tollway Supplemental Specifications, is an earthen perimeter control consisting of a ridge of compacted soil, often accompanied by a ditch or swale at the top or base of a sloping disturbed area, constructed to control the velocity of or route sediment-laden stormwater runoff. This measure requires the Designer to prepare a design plan detail. Reference Illinois Tollway Section M Base Sheet.

When on the upslope side of a site, earthen perimeter controls help to prevent surface runoff from entering a disturbed construction site. An earthen structure located upslope can improve working conditions on a construction site. It can prevent an increase in the total amount of sheet flow runoff traveling across the disturbed area and thereby lessen erosion on the site.

Earthen perimeter control structures also can be located on the downslope side of a site. They divert sediment-laden runoff created onsite to onsite sediment-trapping devices, preventing sediment from leaving the disturbed area.

### Application:

- To intercept and divert runoff from an undisturbed area to an undisturbed stabilized area at non-erosive velocity.
- To intercept sediment laden water and divert it to a sediment trapping device.
- To divert surface runoff from entering a disturbed area.

Design Criteria:

- All Diversion Dikes shall have positive drainage to an outlet.
- Dike and embankment flow stabilization dimensioning to be sized for the drainage area.
- Design capacity to carry the peak runoff for a 100-year, 24-hour storm.
- Earth dikes shall have an outlet that functions without eroding the surrounding area. Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin where either the dike channel or the drainage area above the dike is adequately stabilized.
- Diverted runoff from an undisturbed area shall outlet to an undisturbed, stabilized area at a non-erosive velocity.
- For Diversion Dike, Treatment Type I, consisting of temporary ground cover and a heavy-duty erosion control blanket, the maximum channel velocity shall not exceed the manufacturer's recommended velocity for the erosion control blanket.
- For Diversion Dike, Treatment Type II, consisting of coarse aggregate CA 3 for ditch lining, 3 inches in thickness over filter fabric (designed for use with riprap), pressed into the soil with construction equipment, the maximum channel velocity shall not exceed 3 feet per second.
- For Diversion Dike, Treatment Type III, consisting of gradation RR 3 riprap in a layer at least 8 inches thick over filter fabric (designed for use with riprap), pressed into the soil, the maximum channel velocity shall not exceed 4.5 feet per second.
- The use of Type II and Type III treatments shall be approved by the Illinois Tollway Environmental Unit.
- Diversion dikes may require the design of a velocity dissipation device at their outlet, to prevent localized erosion.

**17. Dewatering Basins**Pay Items:

JS280030 - EROSION AND SEDIMENT CONTROL - EXCAVATION  
 JS280040 - EROSION AND SEDIMENT CONTROL - CLEANOUT  
 JS280140 - TEMPORARY RIPRAP

Description and Purpose:

Dewatering Basins, described in Article 280.17 of the Illinois Tollway Supplemental Specifications, are structures formed by excavation or construction of an embankment designed to settle sediment from pumped water before it enters receiving waters. The purpose of the basin is to temporarily detain the discharged water for a sufficient period of time to allow sediment to drop out of suspension prior to discharge through a control

structure. This measure requires the Designer to prepare a design plan detail. Reference Illinois Tollway Section M Base Sheet.

Application:

- Appropriate for use wherever water is pumped from excavated areas and the water is not being routed through an adequately sized sediment trap or sediment basin.
- Appropriate for use when water (e.g., groundwater, water from cofferdams, etc.) must be pumped from a work area to facilitate construction.
- Where large volumes of water over extended periods of time will be pumped from the work area and exceed the capacity or applicability of a Sediment Filter Bag.

Design Criteria:

- Effective for the removal of gravel, sand and silt.
- May be combined with a passive polymer treatment system to provide higher sediment removal rates for fine silt and clay soil particles.
- Discharge must be released into a natural drainageway or stabilized conveyance.
- The minimum storage capacity of the Dewatering Basin in cubic feet shall be the dewatering pump capacity in gallons per minute times 32 or the minimum size (10 feet x 10 feet x 3 feet in depth), whichever is more stringent.
- Shall not be located within existing ditch lines, waterways or live streams.

## 18. Rectangular Inlet Protection

Pay Item:

JS280180 - RECTANGULAR INLET PROTECTION

Description and Purpose:

Rectangular Inlet Protection, described in Article 280.18 of the Illinois Tollway Supplemental Specifications, is used at storm drain inlets located in unpaved areas and that are subject to runoff from construction activities. They are used to detain and/or filter sediment-laden runoff to allow sediment to settle and/or filter prior to discharge into storm drainage systems or watercourses.

Application:

This device is to be used to protect existing and new inlets, catch basins and manholes with open lids in non-paved areas.

Design Criteria:

- Maximum drainage area to each rectangular inlet protection device shall not exceed 1 acre.
- Use in conjunction with additional upstream protective measures, such as silt fence and temporary ditch checks.
- Reference Standard Drawing K1 for additional information.

## 19. Geotextile Fabric, Class C

### Pay Item:

JS280190 - GEOTEXTILE FABRIC, CLASS C

### Description and Purpose:

Geotextile Fabric Class C, described in Article 280.19 of the Illinois Tollway Supplemental Specifications, is an engineered textile designed to reinforce soil structures and to separate fine grained from coarse grained materials. Additional reference on Geotextile Fabric can be found in Standard Specification Article 1080.02.

### Application:

Placed on top of the ground surface to line temporary channel diversions.

### Design Criteria:

- Can be used alone as a protective cover for soil or if the temporary channel diversion is lined with riprap, as a separator between the aggregate and soil base.
- Geotextile Fabric Class C shall be used alone only channels with intermittent flow.

## 20. Filter Fabric Inlet Protection

### Pay Item:

JS280205 - FILTER FABRIC INLET PROTECTION, COVER TYPE  
JS280210 - FILTER FABRIC INLET PROTECTION, BASKET TYPE

### Description and Purpose:

Filter Fabric Inlet Protection devices, described in Article 280.20 of the Illinois Tollway Supplemental Specifications, consists of inlet basket and fabric insert or inlet dam placed in front of curb inlet to trap and prevent sediment and other debris from entering the storm drain system.

### Application:

- Use at storm drain inlets in paved areas that are subject to runoff from construction activities.

- Use to protect existing and new inlets, catch basins and manholes with open lids in paved areas only.

Design Criteria:

- Cover type inlet protection devices shall not be used at pavement sags.
- Field expedient inlet filters comprising a layer of filter fabric or geotextile fabric laid under the inlet cover shall be prohibited.
- Reference Standard Drawing K1 for additional information.

## 21. Stone Outlet Structure Sediment Trap

Pay Items:

JS280030 - EROSION AND SEDIMENT CONTROL - EXCAVATION  
 JS280040 - EROSION AND SEDIMENT CONTROL - CLEANOUT  
 JS280140 - TEMPORARY RIPRAP

Description and Purpose:

A Stone Outlet Structure Sediment Trap, described in Article 280.21 of the Illinois Tollway Supplemental Specifications, consists of the formation of a small ponding area (sediment trap) behind a stone and filter fabric berm which allows sediment deposition from the collected runoff. This measure requires the Designer to prepare a design plan detail. Reference Illinois Tollway Section M Base Sheet

Application:

- Used to collect sediment laden water in existing, proposed and temporary ditches/swales of all types.
- Used to reduce the velocity of runoff flow and capture entrained sediments.
- Typically used for long term (up to 18 months) applications where a sediment basin would not be feasible due to site or construction method restrictions.
- Installed at locations where concentrated flows require a protected outlet to contain sediment prior to discharge.
- May be used in combination with check dams when erosive velocities exist in the swale upstream of the sediment trap.

Design Criteria:

- The detention storage shall be composed of equal volumes of “wet” and “dry” detention storage.
- The wet and dry storage areas shall each be sized according to guidance provided by the Illinois Urban Manual or the IDOT Bureau of Design and Environmental Manual.

- The minimum length to width ratio for a sediment trap shall be 2:1. The length to width ratio shall be maximized to the extent practical; ratios between 3:1 and 10:1 are preferable.
- The spillway weir length shall be determined based on drainage runoff from the contributing areas.
- The maximum drainage area allowed per sediment trap is 5 acres, including both on-site and off-site tributary areas.
- If the drainage area is over 5 acres, use a sediment basin or multiple sediment traps in series.
- Generally ineffective in removing fine silt and clay particles without combining with the passive application of polymer treatment systems.

## 22. Sediment Basin

### Pay Items:

JS280030 - EROSION AND SEDIMENT CONTROL - EXCAVATION  
 JS280040 - EROSION AND SEDIMENT CONTROL - CLEANOUT  
 JS280220 - SEDIMENTATION BASIN DEWATERING DEVICE  
 JS280140 - TEMPORARY RIPRAP

### Description and Purpose:

A Sediment Basin, described in Article 280.22 of the Illinois Tollway Supplemental Specifications, is a temporary basin formed by excavating and/or constructing an embankment so that sediment-laden runoff is temporarily detained under inactive conditions, allowing sediment to settle out before the runoff is discharged. This measure requires the Designer to prepare a design plan detail. Reference Illinois Tollway Section M Base Sheet.

### Application:

- At the outlet of large disturbed soil areas generally between 5 and 10 acres.
- At the perimeter of the site, at the outlet of any runoff conveyance that will discharge sediment-laden water or along the flow path of runoff being conveyed through the site.
- At locations where permanent stormwater detention structures will be constructed.
- Not suitable for use in live waterways or streams.

### Design Criteria:

- Design the live storage volume for the runoff from a 2-year, 24-hour storm event draining into the basin under maximum runoff conditions or 3600 ft<sup>3</sup> of runoff per acre tributary to the basin, whichever is greater.

- Multiple basins and/or additional volume may be required to accommodate site-specific rainfall and soil conditions.
- In restrictive right-of-way areas, the basin may be designed to store 1800 ft<sup>3</sup> per acre of contributing drainage area. Where reduced sized basins will be used, a general note needs to be added on the erosion and sediment control plans indicating that these basins shall need to be cleaned out more frequently.
- The minimum length to width ratio for a sediment trap shall be 2:1. The length to width ratio shall be maximized to the extent practical; ratios between 3:1 and 10:1 are preferable.
- Basin should have a minimum depth of 3 ft and a maximum of 5 ft in order to maximize safety and efficiency.
- The side slopes of the required storage volume shall not be steeper than 3:1 (H:V).
- The side slopes of the sediment storage shall not be steeper than 2:1 (H:V).
- Provide erosion controls and velocity dissipation devices at the inlet and outlet to prevent erosion of the sediment basin.
- Sediment basins shall be designed to facilitate maintenance, including sediment removal from the basins, as necessary.
- Employ either a floating outlet structure or riser pipe outlet. The Designer shall select the appropriate type structure based on the project characteristics.
- When a sediment basin aggregate berm is used for outlet control, the detention storage shall be composed of equal volumes of “wet” and “dry” storage.
- Sediment basin aggregate berm shall be used when existing or proposed detention basin or infield area is used for a sediment basin.
- May be designed as temporary basins to provide sediment control during construction and/or may be designed as permanent sediment controls to remove sediment from stormwater before discharging to outside Illinois Tollway ROW.
- Detention basins shall have an emergency outlet designed to release water levels that exceed basin capacity. This emergency outlet shall allow sediment to be filtered from stormwater prior to release. Both temporary and Permanent Sediment basin emergency outlets shall be designed to pass the 25-year, 24-hour storm.

### 23. Temporary Ditch Check

Pay Item:

JS280305 - TEMPORARY DITCH CHECK

Description and Purpose:

A Temporary Ditch Check, described in Articles 280.23 and 280.24 of the Illinois Tollway Supplemental Specifications, is a sediment control device constructed across a swale or drainage ditch or along the contour lines of slopes, to reduce the velocity of flowing water, thereby allowing sediment to settle.

Application:

- Use where grading activity occurs in areas of concentrated flows with slopes less than 8% and flow velocities less than 8 cfs and a temporary measure is needed to control erosion of the channel until permanent stabilization practices can be implemented.
- Appropriate for use in ditches that cannot receive a permanent non-erodible lining, either synthetic or vegetated, due to ongoing construction activity
- Use to slow water velocity in a ditch while permanent vegetation is being established. Maintain in place until permanent ground cover is established.
- Can be used in existing, proposed or temporary ditches.

Design Criteria:

- Using a series of manufactured ditch checks will increase their effectiveness.
- Must be installed perpendicular to flow.
- Spacing (L) between ditch checks shall be determined from the following formula:
  - $L = \text{Height (Feet)} / \text{Ditch Grade (\%)} \times 100$  unless otherwise specified by the manufacturer. A height of 9 inches should be used for design purposes and in no case should the spacing exceed 75 feet.
- Must be installed to ensure the center of the structure is at least 6 inches lower than outside edges of check to allow water to flow over the middle of the ditch check and not around the edges.
- This item is paid per linear foot. For quantity purposes when a standard Tollway 4 foot ditch is used, the ditch check length is 10 feet. The length of the ditch check can be adjusted accordingly in situations when a non-standard ditch is used.
- Additional reference on prefabricated ditch checks can be found in Article 41-3.04(b) of the IDOT Bureau of Design and Environmental Manual, Chapter 41.

**24. Temporary Rock Check Dam**Pay Item:

JS280140 - TEMPORARY RIPRAP

Description and Purpose:

A Temporary Rock Check Dam, described in Article 280.25 of the Illinois Tollway Supplemental Specifications, reduces scour and channel erosion by reducing flow velocity and encouraging sediment settlement. A check dam is a small structure constructed of riprap placed across a natural or man-made channel or drainage ditch.

Application:

- Suitable for use in steep swales or ditches with velocities exceeding 5 ft/sec and slopes up to 20%.
- Appropriate for use in ditches that cannot receive a permanent non-erodible lining, either synthetic or vegetated, due to ongoing construction activity.
- Use to slow water velocity in a ditch while permanent vegetation is being established.
- Can be used to control flow in existing, proposed or temporary ditches.

Design Criteria:

- Maintain in place until permanent ground cover is established.
- The maximum drainage area to each Rock Check Dam shall not exceed 10 acres.
- If scouring occurs on downstream side of the Rock Check Dam, install erosion control blanket to prevent further erosion.
- Must be installed to ensure the center of the structure is at least 6 inches lower than outside edges of check to allow water to flow over the middle of the ditch check and not around the edges.
- The maximum height of the rock check dam shall not exceed 3.0 feet.
- Construct on filter fabric in accordance with Article 1080.03 of the Standard Specifications. Filter fabric shall extend 5 feet beyond upstream and downstream toes, to facilitate cleanup of the aggregate.
- Consider using other measures if access to the area of installation is difficult, if cleanup of stone at end of construction will be difficult or if rock check dam/cleanup will cause environmental damage.
- Upon completion of construction and/or permanent stabilization, temporary rock check dams shall be removed. In no instance shall temporary riprap or ditch checks be left in place unless the CM obtains written acceptance from the Illinois Tollway Environmental Unit and it is not a hazard to motorists.
- Reference Standard Drawing K1 for additional information.
- Spacing (L) between rock check dams to be determined from the following formula:
  - $L = \text{Height (Feet)} / \text{Ditch Grade (\%)} \times 100$ . See the following table for reference.

TEMPORARY ROCK CHECK DAM SPACING		
% SLOPE	HEIGHT AT CENTER/ OVERFLOW POINT OF DITCH CHECK	SPACING OF DITCH CHECK IN FEET
8%	1.0'	13'
	1.5'	20'
	2.0'	26'
7%	1.0'	14'
	1.5'	21'
	2.0'	28'
6%	1.0'	17'
	1.5'	26'
	2.0'	34'
5%	1.0'	20'
	1.5'	30'
	2.0'	40'
4%	1.0'	25'
	1.5'	38'
	2.0'	50'
3%	1.0'	33'
	1.5'	50'
	2.0'	66'
2%	1.0'	50'
	1.5'	75'
	2.0'	100'
1% & BELOW	1.0'	100'
	1.5'	150'
	2.0'	200'

**25. Culvert Inlet Protection Fence**

Pay Item:

JS280100 - SUPER SILT FENCE

Description and Purpose:

Culvert Inlet Protection Fence, described in Article 280.26 of the Illinois Tollway Supplemental Specifications, is a protective barrier for the immediate area around the inlet of a pipe or culvert subject to erosion. It protects the upstream end (inlet) of the culvert from the transport and deposition of sediment. Culvert inlet protection fence is used to protect against sheet flows.

Application:

- This item to be used to protect culvert inlets from sediment carried by sheet flow.
- Provides protection from disturbed area above the culvert in addition to the culvert opening.

Design Criteria:

- The maximum drainage area to the culvert being protected is 1 acre.
- The immediate area leading to the culvert should generally be flat with less than 5% slope.
- The placement of the Super Silt Fence shall be a minimum of 6 feet from the culvert in the direction of incoming flow, creating a "horseshoe" shape.
- If the drainage area exceeds 1 acre or flow and/or velocity of the flow to the culvert inlet is excessive and may breach the structure, use Culvert Inlet Protection -Stone.
- Reference Standard Drawing K1 for additional information.

**26. Culvert Inlet Protection Stone**Pay Items:

JS280140 - TEMPORARY RIPRAP

Description and Purpose:

Culvert Inlet Protection Stone, described in Article 280.27 of the Illinois Tollway Supplemental Specifications, is a protective barrier for the immediate area around the inlet of a pipe or culvert subject to erosion. It protects the upstream end (inlet) of the culvert from the transport and deposition of sediment. Culvert inlet protection stone is used to protect against concentrated flows.

Application:

- This item to be used to protect culvert inlets from sediment carried by concentrated or channel flow.
- Design the structure to accommodate the 25-year, 24-hour storm.
- The maximum drainage area to the culvert being protected is 3 acres.
- The maximum height of the stone berm shall be 3 feet.
- Side slopes of the stone berm section shall not exceed 2:1 (H:V)
- The stone berm shall be tied into the culvert embankment a minimum of 1 foot above the design elevation of the stone berm.

- Construct Culvert Inlet Protection Stone on a blanket of filter fabric blanket; it shall extend 5 feet beyond upstream and downstream toes, to facilitate cleanup of the aggregate.
- Consider using other measures if cleanup of stone at end of construction will be difficult or inlet protection stone/cleanup will cause environmental damage.
- Upon completion of construction and/or permanent stabilization, Culvert Inlet Protection Stone shall be removed. In no instance may temporary riprap or ditch checks be left in place unless the CM obtains written approval from the Illinois Tollway Environmental Unit and it is not a hazard to motorists.
- Reference Standard Drawing K1 for additional information.

## 27. Creek Buffer Strip and Silt Fence

### Pay Items:

JS280100 - SUPER SILT FENCE  
 JS280305 - TEMPORARY DITCH CHECKS

### Description and Purpose:

Creek Buffer Strip and Silt Fence, described in Article 280.28 of the Illinois Tollway Supplemental Specifications, is a protective strip of land along the edge of waters of the U.S., including wetlands, that is maintained in native vegetation. Buffers protect shorelines and banks from erosion, provide wildlife habitat, filter pollutants from the water and protect environmentally sensitive areas from potential effects of development. Creek buffer strips are densely vegetated areas that collect and slow runoff, filtering out sediments and insoluble pollutants and encourage infiltration. As the runoff flows through the vegetation, its velocity is reduced, resulting in its load of suspended solids being released. Buffer strips are uniformly graded and are located down slope from disturbed or impervious areas or adjacent to waterways. Stormwater flows into a buffer strip through the Silt Fence and is used as a device to convert concentrated flow into sheet flow. The gaps protected with Temporary Ditch Checks are to allow floodwater to flow into the creek without damage to the Silt Fence.

### Application:

- This item to be used to protect streams and wetlands from sediment carried by sheet flow.
- Natural buffer preservation is not required adjacent to road ditches, stormwater conveyance channels, storm drain inlets and permanent sediment basins.
- A natural buffer is not intended to take the place of other required erosion and sediment control measures. Runoff and flow must be treated prior to the stormwater being discharged into the existing natural vegetated buffer area.
- It is not required to enhance the quality of the existing buffer vegetation although enhancement of existing vegetation is allowed and encouraged.

Design Criteria:

- Buffer strips shall be a minimum of 50 feet wide, however, minimum widths vary based on the resource being protected. The minimum widths specified are to be maintained to the maximum extent practical based on actual site conditions. Any variation from the following minimum width dimensions shall be noted on the plans:
  - For any waters of the U.S. determined to be a high-quality aquatic resource, the buffer shall be a minimum of 100 feet.
  - For any waters of the U.S. that do not qualify as wetland (e.g. lakes, rivers, ponds, etc.), the buffer shall be a minimum of 50 feet from the Ordinary High-Water Mark (OHWM).
  - For any jurisdictional wetland, the buffer shall be a minimum of 50 feet.
- Any buffer areas shall be delineated in the SWPPP and on the ESCPs.
- The Creek Buffer Strip and Silt Fence provides Silt Fence along the edge of the wetland or stream bank with Temporary Ditch Checks installed in 5-foot-wide gaps in the Silt Fence. The Temporary Ditch Checks shall be a rolled wood fiber product; manufactured ditch checks shall not be used for this purpose.
- Protection measures shall be installed prior to the commencement of any construction activity.
- Protective measures shall remain in place and in working, functional order until all site development activities have ceased, or the surrounding area has been stabilized.
- The Creek Buffer Strip and Silt Fence BMP shall be used only in areas where concentrated flows are discharged from the project to the buffer zone. Protection measures shall be located at the limits of the buffer area or 1 foot outside the perimeter of the leaf canopy if a stand of trees is to be protected.
- Created buffers should be established on 1:6 (V:H) or gentler slopes. Grade the filter strip as uniformly as practical. Minimum slope along the fall line shall be 1%.
- Provide permanent plantings to restore any disturbance to or to enhance the buffer strip.
- Reference Standard Drawing K1 for additional information.

**28. Sediment Filter Bag**Pay Item:

JT280500 - SEDIMENT FILTER BAG

Description and Purpose:

A Sediment Filter Bag is a geotextile bag fitted with a connection for a dewatering pump discharge hose. Discharge water is filtered through the bag wall and the sediment is retained in the bag for disposal. This measure requires the Designer to prepare a design plan detail, reference Illinois Tollway Section M Base Sheet.

Application:

- Sediment Filter Bag is considered an alternative for sites where a Sediment Basin or Dewatering Basin installation is problematic.
- Suitable for in-stream work with cofferdams, trenching and excavation and maintenance or repair of stormwater drainage systems.
- Suitable for use where an area within the construction site needs to be dewatered as the result of a large storm event, groundwater or existing ponding conditions.
- May also be used to filter water pumped from sediment storage areas including sediment basins and sediment traps.
- This item shall be used where dewatering pumps are employed.
- Sediment Filter Bags are best used as sediment filters on pump discharges, where the bag can be matched to the output of a pump.

Design Criteria:

- Sediment Filter Bags shall be sized according to the quantity of sediment being pumped, the particle size being trapped, and the volume of water being pumped, quantity and type of sediment.
- Multiple discharges into a single bag shall be prohibited.
- Sediment Filter Bags shall be located in areas where discharge from the bag will not cause additional erosion or sediment transport.
- Requires replacement of the bag when it becomes ½ full of sediment or when sediment has reduced the discharge flow rate below design requirements.
- Requires a “Dewatering Plan” to be developed by the Contractor and submitted to the Engineer for review prior to beginning dewatering related work.
- Requires use of secondary containment and a rock leveling pad below or around the bag. See Section M Base Sheets for details.
- Temporary Ditch Checks shall be located downstream from the secondary containment system to prevent erosion from the discharge.

## 29. Floc Log

### Pay Item:

JT280510 - FLOC LOG

### Description and Purpose:

A Floc Log is a semi-hydrated block of anionic or nonionic polyacrylamide (PAM) placed in turbid water with suspended sediment to bind soil particles, remove suspended particles and act as a construction aide. Sediment laden water mixes with the PAM, forming a flocculate that settles out of the stormwater. PAMs are manufactured in various forms to be used on specific soil types. Effectiveness is highly dependent on the PAM being thoroughly dissolved and mixed in the turbid water. Specific blended PAM logs or blocks may be constructed in various ways to allow varying degrees of dosage application. This allows for multiple passive types of applications and a large degree of versatility for construction sites. The use of a Floc Log or multiple Floc Logs within a carefully balanced mixing system and collection area allows for the removal of sediment, thereby reducing turbidity prior to discharge.

### Application:

- PAMs remove sediment via a chemical process and therefore shall be considered when mechanical sediment control methods are insufficient to clarify the water.
- Floc Logs are suitable for use in flow-through treatment systems associated with dewatering, pipe discharges, channelized or concentrated flow paths and temporary piped diversions. The turbulence of flowing water is necessary for mixing the polymer with the suspended soil.
- Swales and channels, upstream of a Sediment Basin, Stone Outlet Sediment Trap, Check Dam or other detention structures are effective locations for use of Floc Logs. These locations give the polymer time to mix before velocities are slowed by the sediment control, where the newly formed flocs can be settled or filtered.
- Floc Logs shall not be applied at perimeter controls or outfalls, as this will result in flocs forming after the stormwater has been discharged from the site.
- Anionic PAM is intended for use in areas that contain high amounts of fine silt, clay or colloidal soils.

### Design Criteria:

- PAMs are soil specific. Soil and water samples from the project location shall be tested with different PAM formulas to ensure the most effective type is used. Requires the Contractor's Certified Professional in Erosion and Sediment Control (CPESC) to test and provide a written report of site-specific testing results, demonstrating that a performance of 95% or greater of nephelometric turbidity units (NTU) or total suspended solids (TSS) is achieved from the samples taken.

Requires the Contractor's supplier to provide a written toxicity report, which verifies that the PAM, PAM mix or PAM blend, exhibits acceptable toxicity parameters which meet or exceed the requirements for the State and Federal Water Quality Standards.

- Mixing procedures and required time for mixing vary by site conditions. The Contractor's CPESC shall design the installation plan for the polymers based on mix time and point of entry. A "PAM Use Plan" shall be submitted and approved by the Engineer prior to use.
- Pipe mixing systems have the ability to react the turbid water with PAM rather quickly and settling times of particulates once reacted with the blended PAM logs or blocks are greatly reduced. Refer to the In-Line Flocculation System pay item for further information.
- Only anionic or nonionic PAMs shall be used. Cationic formulations of PAMs are not allowed.
- PAM shall not be applied directly to Waters or discharge directly to a waterbody or storm sewer.
- Anionic PAM shall not be over applied. Excessive application of Anionic PAM can lower infiltration rates or increase suspended solids in water. The application rates of Anionic PAM above those suggested by the manufacturer will not provide additional effectiveness.
- PAM may be detrimental to aquatic life if introduced in inappropriate quantities or not properly selected for site conditions. The manufacturer's specification, including SDS sheet and LC-50 testing, shall be submitted to the CM for approval as part of the PAM Use Plan.
- Once the PAM is introduced into the water being treated, the water needs to be directed through a sediment trapping device to allow the flocs to settle or be trapped.
- Downstream sediment deposition from the use of PAM will require periodic sediment removal to maintain normal function. Sediment build up shall be removed when the containment area becomes  $\frac{1}{2}$  full of sediment or when sediment has reduced the discharge flow rate below design requirements. Retained sediment can be re-spread onsite and stabilized.
- Floc Logs shall be installed in locations and in a manner that minimizes the potential for it to be in standing water a prolonged period of time. If the Floc Log is found to be submerged in standing water, it shall be removed and re-installed at a new location where it will only be in contact with flowing stormwater.
- As with any other BMP, Floc Logs require maintenance. A "Floc Log Maintenance Plan" shall be submitted as part of the mixing system design. PAM system components and floc logs shall be replaced when no longer effective.

### 30. Temporary Stream Crossing

Pay Item:

5421A008 - 5421A108 - PIPE CULVERTS TEMPORARY, Various items  
 JS280140 - TEMPORARY RIPRAP

Description and Purpose:

Temporary Stream Crossing, described in Article 280.09 of the Illinois Tollway Supplemental Specifications, is a culvert crossing installed across a stream or watercourse for short-term use by construction equipment and traffic. The purpose of this practice is to minimize or limit the impact of construction traffic crossing of streams or creeks. The intent is to minimize, to the extent practicable, the discharge of erodible soil into the waterway, the damage or alteration of the stream banks and stream channel, the adverse alteration of flood flows and the impact to stream flora and fauna.

Application:

- Use where construction equipment must be moved from one side of a stream channel to another and/or where construction traffic must cross the stream channel for a short period of time.
- Where an existing permanent stream crossing is not available.

Design Criteria:

- Temporary Stream Crossings shall only be placed in the following locations:
  - Where no endangered or threatened species are present that would be impacted by the crossing.
  - Where the stream bed can support culverts.
  - Where the drainage area is one square mile or less in an urban/suburban watershed or ten (10) square miles or less in a rural watershed.
  - Where riparian wetlands along the stream channel would not be impacted by the temporary crossing, otherwise compensatory mitigation or credits need be purchased and/or restoration in accordance with any permits.
  - Where the temporary crossing can be removed within a year or less.
  - Where crossing intermittent or flowing streams and non-navigable waters.
  - Where there are no underlying utilities.
  - Where no constructed bioswales are located for stormwater quality treatment.
  - Where a low potential for erosion exists by evaluating channel geometry, slopes and side slope material.

- Temporary stream crossings shall be designed to be overtopped by high flows or by debris or ice-laden flows.
  - Design the crossing to pass the peak flow from a 2-year frequency, 24-hour duration storm event (using ISWS Bulletin 70 rainfall data and applicable local rainfall data requirements). The design shall include a designated overflow route for storm events greater than the 2-year frequency, 24-hour duration storm event and provide a protected overflow path.
  - In cases where channel banks are overtopped by this design storm event, the crossing structure shall be designed and constructed such that it will not cause erosion or damage due to increases in water surface profiles to adjacent properties.
  - The design capacity of the crossing structure shall not create a damaging or potentially damaging increase in flood heights (<0.10 feet) or velocities over existing conditions.
  - It shall not create a threat to public health, safety and welfare or impair the natural hydrologic functions of the floodplain or channel.
- Erosion and sediment control, structural stability, utility protection and overall safety must all be evaluated when designing temporary stream crossings.
- Approach grades to the temporary crossing shall be less than 10%.
- The width of the crossing shall be sized to the vehicles using the crossing and to prevent spillage directly into the stream.
- Placement of temporary structures in or over surface water will likely require permits from state, local and/or federal regulatory agencies. Local, state or federal requirements supersede and may go beyond the criteria in this standard.
- Temporary stream crossings represent channel constrictions in most cases and thus they shall be in service for the shortest practical period of time and shall be removed as soon as their purpose is complete to avoid the potential to cause or exacerbate flooding.
- Ensure that velocity at design flow at the outlet of the crossing structure is non-erosive for the receiving stream channel. This shall be accomplished by carefully evaluating the placement of the crossing, the size of the downstream opening in the crossing and flow velocities under all conditions.
- Aggregate used for the roadway approach and crossing shall be properly sized based on expected flows and velocities. A minimum layer of stone or recycled concrete that is ½ the diameter of the culvert pipe or 12 inches thick, whichever is greater shall be used. Riprap aggregate RR 3 shall be used unless conditions warrant an alternate size. The aggregate used shall be sized to meet site specific conditions to ensure stability in the design storm event.

- The aggregate shall be placed on Filter Fabric meeting the requirements in Article 1080.03 of the Standard Specifications.
- Streams shall be crossed in a straight reach, rather than on a bend, if possible. Crossings shall be installed as close to perpendicular to the stream channel flow path as possible.
- Ensure that all necessary materials and equipment are on-site before any work is begun. Complete construction in an expedient manner so that the crossing can be removed and then any disturbed areas stabilized immediately.
- Equipment or vehicles shall not be stored on the crossing.
- Upon removal of the crossing, the portion of the side slope that is above the observed water elevation shall be stabilized as specified in the plans prior to accepting flows. The substrate and toe of slope that has been disturbed due to construction activities shall be restored to proposed or pre-construction conditions and fully stabilized prior to accepting flows.
- Limit the area of ground disturbance and implement appropriate soil erosion and sediment control measures. Alteration to the stream banks and bed shall be kept to the minimum necessary for an effective and safe crossing.
- Fish passage shall be evaluated when crossing a stream with aquatic life, which may require an assessment of what is present in the stream. Timing of crossing activities shall avoid impacting fish spawning runs. Impacts to mussel beds and endangered or threatened species shall be avoided.
- If not sized correctly, culverts can offer the greatest obstruction to flood flows and are subject to blockage and washout. Culverts shall be sized, and the materials specified based on site-specific conditions and meet all flow criteria described above.
- Culverts shall be installed to allow for fish passage and to maintain low flow conditions. The downstream invert of the culvert shall be lower than the upstream invert to allow for positive drainage at low flow conditions. For projects within the USACE Chicago District boundaries, the culvert inverts must be embedded 12 inches below the streambed elevation unless determined to be infeasible.
- Both the length and diameter of the culvert must be determined in the design. Multiple pipes shall be evaluated to provide adequate flow capacity while keeping the vertical height of the crossing at a minimum.
- Aggregate cover over the culvert pipes shall be at least  $\frac{1}{2}$  the diameter of the pipe or 12 inches thick, whichever is greater, to support anticipated loads.

### 31. Temporary Channel Diversion

Pay Item:

JS280140 - TEMPORARY RIPRAP

JS280030 - EROSION AND SEDIMENT CONTROL - EXCAVATION

## JS280190 - GEOTEXTILE FABRIC CLASS C

Description and Purpose:

Temporary Channel Diversion, described in Article 280.13 of the Illinois Tollway Supplemental Specifications, is a temporary channel used to convey stream flow around a construction site. The purpose of this practice is to maintain stream flows and water quality while providing a dry work area.

Application:

- Work within a stream or part of a stream is required.
- Flows are low enough and / or the watershed is small enough to be handled in a temporary diversion channel.
- Diversion channels are generally limited to drainage basins of 5 to 10 acres.
- Consider a piped or pumped diversion for lower flow volumes and shorter-term use.

Design Criteria:

- The construction of any Temporary Stream Diversion shall not cause a significant water level difference upstream or downstream of the project site (not to exceed 0.1 feet or less if local ordinances are more restrictive). The velocity of the stream flow offsite shall be maintained.
- Erosion and sediment control devices shall be in place prior to starting construction to prevent sediment from entering the diversion or the stream and shall include temporary stabilization of the inlet and outlet of the Temporary Stream Diversion. The inlet and outlet of the temporary channel diversion shall be stabilized using riprap over filter fabric.
- Capacity: The design capacity shall take into account the length of time the practice will be in use. Where flood hazards exist, the capacity shall be increased per the potential damage.
- Timing – The construction shall be planned to minimize the time needed for the temporary stream diversion. The temporary stream diversion shall be properly stabilized prior to accepting flows. The Temporary Stream Diversion shall be removed as soon as practicable and only after the worksite on the existing stream has been stabilized.
- Cross section - The diversion channel shall be trapezoidal. The side slopes shall be no steeper than 2:1 horizontal to vertical. The depth and grade of the diversion channel is variable and shall be dependent upon site conditions.
- Channel Lining – The diversion channel shall be lined with geotextile fabric and riprap to prevent erosion of the channel and sedimentation in the stream. The process of excavation and stabilization shall be continuous.

- Removal of Water – The water within the construction area shall be removed in accordance with required dewatering practices. Dewatering from the construction area shall not be discharged directly to the stream. Discharges from dewatering of construction areas where streams are being diverted shall not alter the water quality or cause erosion or sedimentation in the stream or the temporary stream diversion.
- Removal – Once the work is complete and the existing stream channel has been stabilized, the dams shall be removed starting at the downstream end. Then the temporary channel shall be removed. The temporary channel, if used, shall be properly filled and stabilized using appropriate erosion control practices.

### 32. In-Line Flocculation System

Pay Item:

JT280530 - IN-LINE FLOCCULATION SYSTEM

Description and Purpose:

An In-Line Flocculation System is a closed-pipe manufactured pump system containing Flocc Logs with an added agitation component that is placed in-line with stormwater flows or construction site dewatering hoses to remove fine particles and reduce TSS. Requires the Contractor to submit drawings and design calculations prepared and/or approved by a CPESC showing the proposed design. These drawings shall be prepared and submitted to the Engineer and approved prior to the start of construction.

Application:

- The system shall be used when passive methods of sediment control are not possible or practical.
- This system is for use on sites with extremely limited space or when pumping water under pressure.
- The closed pipe system is used to introduce site-specific polymers to turbid waters in such a manner to facilitate mixing and reaction between the polymer and the suspended particles.

Design Criteria:

- PAM Charging Units shall be provided to secure the Flocc Logs inside a closed pipe in a manner to facilitate mixing and reaction between the polymer and the suspended particles.
- A minimum of two (2) PAM Charging Units shall be placed in a series, one after another. The number of units is determined by the flow rate of the water and the reaction time required. The minimum distance between each PAM unit shall be 25 feet.
- Sediment is to be collected before final discharge using a sediment collection system (sediment trap, sediment filter bag, filter, etc.).

- The length of the hose/pipe between the final PAM unit and the primary sediment collection device is determined by the reaction time required for the polymer. The hose/pipe shall be a minimum of 100 feet.
- System operation will require replacement Floc Logs. The frequency of replacement depends on the duration of use, water flow rates and sediment loading.
- Refer to Floc Log pay item for additional information.

### 33. Mulch and Erosion Control Blanket

#### Pay Items:

25100105 – MULCH, METHOD 1  
 25100115 – MULCH, METHOD 2  
 25100127 – MULCH, METHOD 3A

25100630 – EROSION CONTROL BLANKET  
 25100635 – HEAVY DUTY EROSION CONTROL BLANKET

J1251010 – EROSION CONTROL BLANKET, BIODEGRADABLE NETTING  
 J1251015 – HEAVY DUTY EROSION CONTROL BLANKET, BIODEGRADABLE NETTING

#### Description and Purpose:

While mulch and erosion control blankets are used to aid in establishing permanent vegetative cover, they are also temporary soil stabilization BMPs capable of eliminating or reducing erosion of disturbed soil areas and reducing the transport of sediment and pollutants by stormwater from exposed and unworked soils. These temporary soil stabilization BMPs can be used in conjunction with each other and sediment control BMPs to reduce erosion and sediment transport. Selection is based on site-specific factors and the estimated duration of the needed function (temporary stabilization until permanent stabilization will occur). When selecting temporary stabilization BMPs, factors such as the project location and time of year, and site conditions such as climate, slope length and gradient, and soil type should be considered.

Mulch is a protective covering of organic material used to protect bare soil from rain drip erosion. Mulch also enhances seed germination and plant establishment by conserving moisture; holding fertilizer, seed, and topsoil in place; and moderating soil temperatures. Straw mulch consists of an applied uniform layer of straw over a disturbed soil area to temporarily stabilize the soil and reduce erosion caused by wind and water. Straw mulch for temporary stabilization may include loose application by hand and blown straw anchored by mechanical stabilizer, crimper, or overspray of hydraulic mulch. Hydraulically applied mulch is a combination of organic fiber and tackifiers, which are sprayed onto disturbed soil areas using hydro mulching equipment. The applied hydraulic mulch bonds to the top layer of soil but consists of a permeable surface so rain can infiltrate.

Mulch methods approved for temporary erosion control are described below. Refer to Article 251.03 of the Standard Specifications and Illinois Tollway Supplemental Specifications for additional information.

*Mulch, Method 1*

Application of loose straw mulch by hand or machine applied at a rate of 2 tons/acre.

*Mulch, Method 2*

Placement of straw mulch by blower, followed by stabilization using mechanical or chemical procedures. The straw mulch is applied at a rate of 2 tons/acre and is stabilized using either a mechanical stabilizer or crimper, an overspray of light-duty hydraulic mulch and tackifier applied at a rate of 750 pounds/acre and water at a rate of 1,000 gallons/acre, or an overspray of an approved chemical binder.

*Mulch, Method 3A*

Application of heavy-duty hydraulic mulch and tackifier applied using hydro mulching equipment applied at a minimum rate of 3,000 pounds per acre.

Erosion control blanket is a temporary protective blanket of degradable materials such as straw, wood, coconut, jute or a blend of these materials bound into a mat, usually with a plastic or degradable mesh or netting on one or both sides. Erosion control blankets can be biodegradable, or both biodegradable and photodegradable. Biodegradable blankets are typically composed of fibers such as jute, straw, coconut, or a combination of straw and coconut fibers. The netting, stitching, and/or adhesives that bind an erosion control blanket together must be biodegradable for an erosion control blanket to be 100 percent biodegradable. Biodegradable and photodegradable blankets are composed of biodegradable fibers such as excelsior (curled wood fiber), wood, jute, straw, coconut, or a combination of straw and coconut fibers, and photodegradable polypropylene or polyethylene netting.

Erosion control blankets approved for temporary erosion control are described below. Refer to Article 251.04 of the Standard Specifications for additional information.

*Erosion Control Blanket*

This item is a single net, rolled erosion control product intended for short-term use on shallow slopes. The netting is constructed of synthetic materials and is intended to photodegrade in 90 days. The blanket material can be wood excelsior or knitted straw. Refer to Articles 1081.10(a) and Articles 1081.10(b) of the Standard Specifications for additional information.

*Heavy Duty Erosion Control Blanket*

This item is a double net, rolled erosion control product intended for longer term use on steeper slopes. The netting is constructed of synthetic materials. The top netting is intended to photodegrade in 12 to 18 months. The bottom netting is intended to remain in service as turf reinforcement. Refer to Article 1081.10(c) of the Standard Specifications for additional information.

*Erosion Control Blanket, Biodegradable Netting*

This item is comparable to EROSION CONTROL BLANKET as described above but is constructed using 100% biodegradable netting and is intended to biodegrade within 12 months.

*Heavy Duty Erosion Control Blanket, Biodegradable Netting*

This item is comparable to HEAVY DUTY EROSION CONTROL BLANKET as described above but is constructed using 100% biodegradable netting and is intended to biodegrade in 18 to 24 months.

Application:*Mulch Method 1*

Limited applicability to Illinois Tollway projects as its use is limited to small flat areas where wind displacement will not carry mulch onto the roadway or off Illinois Tollway property. Suitable for use on finely graded soil surfaces. Not for use in areas containing concentrated flows or high-volume sheet flow.

*Mulch Method 2*

Suitable for use on slopes of 1V:4H or flatter. Not for use in areas containing concentrated flows or high-volume sheet flow. Suitable for use on finely graded soil surfaces.

*Mulch Method 3A*

Appropriate for areas where straw mulch is ineffective due to wind, slopes, or ground surface. Not suitable for use in areas containing swift-moving concentrated flow. Suitable for use in shallow ditches when used in combination with additional measures to control flow velocities. May be applied to uneven or rough graded surfaces. Suitable for use on slopes of 1V:3H or flatter. Suitable for areas where straw cannot effectively be blown.

*Erosion Control Blanket*

Typically used to aid in establishing permanent vegetation but may be used as a temporary stabilization measure particularly for steep slopes (e.g., 1V:3H and steeper), areas of concentrated flow, slopes and shorelines adjacent to waterways or environmentally sensitive areas and adjacent to shoulders where traffic may blow away other mulches. Generally, not suitable for sites that are excessively rocky where they may be unable to maintain complete contact with the soil surface.

Design Criteria:*Mulch Method 1*

- Straw mulch may be used for immediate stabilization (unlike hydraulic mulch that requires a drying time).
- The use of straw mulch may be limited by seasonal availability.

- The potential exists for introduction of unwanted weed species.
- If wind or displacement by traffic is a potential problem, straw mulch will need to be anchored (see Mulch Method 2).
- Straw mulches are biodegradable and shall be replaced if decomposition has compromised the stabilizing properties of the product.
- Shall not be used in areas containing swift-moving concentrated flows or high-volume sheet flow because it tends to be washed away.
- Manual installation decreases the ability to easily disperse straw mulch over large areas and limit the amount of surface area that can be covered in a timely, cost effective manner.
- Ineffective on rough graded surfaces due to reduced contact with the soil surface.

#### *Mulch Method 2*

- Suitable for use on slopes of 1V:4H or flatter.
- Shall not be used in areas containing swift-moving concentrated flows or high-volume sheet flow because it tends to be washed away.
- The use of straw mulch may be limited by seasonal availability.
- The potential exists for introduction of unwanted weed species.
- Straw mulches are biodegradable and should be replaced if decomposition has compromised the stabilizing properties of the product.
- Due to the equipment limitations, installing straw mulch with a straw blower requires that the disturbed soil be in close proximity (within 100 to 150 feet) of a surface or road having the ability to support heavy equipment.
- When necessary, use with other soil stabilization and sediment control BMPs to reduce the slope lengths and limit run-on flows to areas where the straw mulch is applied.
- Ineffective on rough graded surfaces due to reduced contact with the soil surface.

#### *Mulch Method 3A*

- Not appropriate for slopes steeper than 1V:3H.
- Requires 12 to 24 hours to dry before the product is effective.
- Shall not be used in areas containing swift-moving concentrated flow. When necessary, use with other soil stabilization and sediment control BMPs to reduce the slope lengths and limit run-on flows to the areas where the hydraulic mulch is applied.
- May be applied to even or rough graded surfaces.

- Reapplication of hydraulic mulch may be necessary to effectively stabilize the disturbed soil for a full growing season.
- Can be applied to areas beyond the range of blown straw through use of hoses to apply the material.

#### *Erosion Control Blanket*

- To be effective, the product must maintain contact with the surface of the disturbed soil area. The ground surface should be relatively free of rocks, clogs, sticks, and vegetation and rills and/or gullies should be filled and compacted.
- Provides immediate stabilization of disturbed soil regardless of temperature and precipitation.
- ECBs are biodegradable and should be replaced if decomposition has compromised the stabilizing properties of the product.
- Because all rolled erosion control products have flow rate limitations not all are suitable for channelized flow. Flow rate limitations and tensile strength must be considered.
- Blanket with biodegradable netting for temporary erosion control should only be used when specifically directed by Illinois Tollway Environmental.
- Use of erosion control blanket with degradable netting requires use of a Contract Special Provision.

### 34. TRACKOUT CONTROL MAT

#### Pay Item:

JS280072 – TRACKOUT CONTROL MAT

#### Description and Purpose:

Trackout control mat consists of a manufactured system specifically designed to remove soil and mud from vehicle tires and aid in preventing trackout onto roadways. The mat system is formed of a flexible material with upstanding structures, grid, or other design elements which cause tires to be shaken and flexed to dislodge rocks, dirt and other debris from the tire treads. The mat is intended to be easy to transport and fast to deploy.

#### Application:

Trackout control mat is an alternative to a stabilized construction entrance for contractor access to the job site. This item may be used on projects with minimal earth disturbance, short construction duration, access locations where placement of fill material is not desired or prohibited, or other situations where constructing an aggregate stabilized construction entrance is not practical or warranted.

Design Criteria:

- Mats should be placed near entry / exit to sites and / or furthest point of egress.
- Mats shall be flexible to conform to the existing surface and shall not involve or require disturbance to the underlying ground surface or the placement of fill materials to install the mat.
- The ground surface should be free and clear of obstacles, uneven surfaces, and low-lying areas.
- Mat bodies, when arranged in series, shall establish an egress path of a specified length and width.
- Mats shall be connected together and anchored to the ground with required hardware per manufacturer's specifications.
- Mats shall be cleaned throughout the duration of the project to maintain effectiveness in controlling trackout.
- Mats and all associated hardware shall be completely removed from the job site upon completion of work.
- Requires use of a Contract Special Provision.

**3.2.5 Permanent Erosion and Sediment Control**

For permanent seeding, sodding, mulching and erosion control blanket for disturbed areas, refer to Section 4 – Landscape Design. Install permanent measures as soon as site conditions allow.

For permanent erosion control measures including riprap, ditch linings, concrete ditch checks and open cell articulated concrete block mats, see the Illinois Tollway DDM.

**3.3 Responsibilities****3.3.1 Illinois Tollway**

1. Will facilitate the coordination necessary with EPA, USACE, regulatory agencies and local governments after the Designer determines and identifies the need for permits.
2. Will provide Illinois Tollway Supplemental Specifications, which are to be used to prepare the ESCP, if requested. (The most recent Illinois Tollway Supplemental Specifications are available on the Illinois Tollway website.)
3. Will review the plans prepared by the Designer for technical adequacy and confirm that the bid schedule includes the ESCP measures.
4. Illinois Tollway Staff Responsibilities:(Description of staff responsibilities can vary by contract and is presented for guidance only.)

- a. Illinois Tollway PM – The PM will be the primary point of contact with the Designer. The PM will be responsible for ensuring that the Designer complies with the directives of this section and for disseminating information and submittals to the appropriate individuals. Permit submittals shall be prepared by the Designer and submitted to the Illinois Tollway PM. The Illinois Tollway PM will submit permit applications to the Illinois Tollway EP.
  - b. Illinois Tollway EP – The EP will be responsible for ensuring that the PM and thus the Designer, is aware of how environmental concerns affect the project or study. The EP will review all related submittals, including permit applications, submitted to the Illinois Tollway by the Designer and other reports and contract documents as necessary. The EP will be the primary point of contact with state and federal resource and regulatory agencies. The EP will be responsible for filing the NOI, IONs and Notices of Termination (NOTs) with the IEPA.
  - c. Illinois Tollway Landscape Architect – The Landscape Architect will primarily administer the Illinois Tollway policy and procedures for the application and planning of natural/constructed elements, vegetation impacts and erosion/sediment control, with a concern for stewardship, green strategies and conservation of natural resources.
5. Refer to Article 4.4.1 of this manual for additional responsibilities.

### 3.3.2 Designer

1. Shall review current Illinois Tollway Standard Drawings, Specifications and Supplemental Specifications for the latest criteria.
2. Shall define necessary control measures; design control measures utilizing Standard Specifications and Standard Drawings; and shall prepare Plans, Special Provisions and detail drawings as required.
3. Shall prepare preliminary ESCP by describing the control measures and maintenance of controls for the project site.
4. Shall determine and identify the need for permits for compliance with Federal, County or local agency requirements.
5. Shall incorporate any special requirements by the County or local agencies into the ESCP and SWPPP.
6. Shall prepare background documentation needed to submit permit applications and fill out the application forms that shall be submitted by Illinois Tollway. Background documentation and application forms shall be submitted to the Illinois Tollway at pre-final plan submittal for review.
7. Shall fill out and submit to the Illinois Tollway the Soil and Erosion Control Checklist Technical Review Form. See Appendix D for the form.
8. Shall attend the Erosion and Sediment Control Preconstruction Meeting and give a review of the ESCP. See the Illinois Tollway's WBPM system for the most recent A-40 form.

9. Shall start the NOI by completing the owner, construction site, type of construction, historic preservation and endangered species compliance and receiving waters information sections.
10. Refer to Article 4.4.2 of this manual for additional responsibilities.

### 3.3.3 Construction Manager

1. Will be responsible for scheduling and holding the Erosion and Sediment Control Preconstruction Meeting. If the project involves a USACE Section 404 permit, consult with the Illinois Tollway Environmental Unit on the need to notify and invite the SWCD, County Stormwater Management Commission and the USACE. Will ensure that meeting minutes and attendance sheets are uploaded to the Illinois Tollway's WBPM system. See Article 3.5.2 of this manual, Preconstruction Meeting, for a list of attendees. See the Illinois Tollway's WBPM system for the most recent version of form A-40.
2. Will be responsible for providing qualified personnel to inspect installation and maintenance of the measures identified in the ESCP until the site has been stabilized with final landscaping.
3. Will review ESCP plans and specifications for thoroughness and constructability issues, obtain the Contractor(s) signature on the SWPPP (Special Provision 111.2) and obtain the materials inventory for the Pollution Prevention Plan, the names of the Contractor's Spill Coordinator(s) and credentials of the Contractor's Erosion and Sediment Control Manager at the Preconstruction Meeting.
4. Working in conjunction with the Contractor, will develop the finalized NOI and provide the same to the Illinois Tollway Environmental Unit. The NOI will be finalized by completing the contractor information, SWPPP information, dates of construction start/end and any missing information from the type of construction information sections. Will ensure that NOI is uploaded to the Illinois Tollway's WBPM system and the Illinois Tollway Environmental Unit submits the same to the IEPA.
5. Will ensure that the ESCP is installed in accordance with the plans and specifications and will consult with the Designer or other Illinois Tollway designated representative if the ESCP needs to be adjusted or modified.
6. Shall review any proposed changes to the ESCP against the Erosion Control Manual and the Illinois Tollway DDM prior to approving any changes. The proposed changes shall be consistent with Illinois Tollway standards. The CM shall neither approve nor permit leaving temporary erosion control measures in place on a permanent basis, unless consistent with standards from the Illinois Tollway DDM and it is not a hazard to the motorist. In no instance may temporary riprap or ditch checks be left in place unless the CM obtains written acceptance from the Illinois Tollway Environmental Unit.
7. Will inspect (or appoint a dedicated person to act in their stead) the installed measures in cooperation with the Contractor's Erosion and Sediment Control Manager/Inspector (ESCM) for necessary maintenance at least once every 7 calendar days and within 24 hours of a rainfall event with 0.5 inch of precipitation or greater (5 inches of snow). The CM, in conjunction with the Contractor's ESCM, will prepare an inspection report after each inspection. A photographic log of these inspections will be maintained with the

inspection forms. See the Illinois Tollway's WBPM system for the most recent version of the A-38 inspection form.

8. Will ensure that the roadway is kept clean and any trucks exiting the work zone do not have excess dirt or debris on the tires.
9. If the inspections determine concrete fines are discharging as a result of roadway reconstruction, the CM shall ensure that the discharge does not exit the ROW. Additionally, the CM shall immediately test the pH levels of the affected discharge runoff to determine the average pH levels. Where pH levels exceed 9.0, the CM shall recommend remediation strategy to reduce the alkalinity to acceptable levels before allowing it to exit the ROW or discharge to environmentally sensitive locations.
10. Will provide the Illinois Tollway EP with an electronic copy of the completed NOI and SWPPP. These documents will be submitted a minimum of 35 days prior to start of construction.
11. Will fill out any ION forms and provide them to the Illinois Tollway Environmental Unit for submission to the IEPA. See Appendix A for forms.
12. Will provide the Illinois Tollway EP with a copy of the NOT when the construction site has achieved 70% stabilization with permanent landscaping.
13. Will complete the A-40 form (Erosion and Sediment Control Preconstruction Meeting Agenda) and ensure that it is filed in the Illinois Tollway's WBPM system.
14. Monitor and Enforce SWPPP and ESCP Compliance: The CM shall monitor and instruct the Contractor with regard to SWPPP and ESCP compliance on the ROW. The Standard Specifications, Supplemental Specifications, Special Provisions and/or Contract plans and documents provide the requirements to ensure the Contractor's actions comply with the environmental permit requirements.
15. Ensure that ESCP, SWPPP, ILR10 General NPDES permit, IEPA NPDES Permit Coverage Letter, Erosion and Sediment Control Schedule, signed Contractor Certification Statements, Erosion Control Inspection Report (A-38's), Erosion Control Preconstruction meeting minutes (A-40), ESCM qualifications, ESCSR qualifications, NOT, SWPPP Amendments, ESCP Amendments and any IONs are filed in the Illinois Tollway WBPM system.
16. Refer to Article 4.4.3 of this manual for additional responsibilities.

#### **3.3.4 Contractor**

1. Shall appoint an ESCM. This employee shall be thoroughly trained and experienced in all aspects of highway construction and in stormwater BMP implementation, maintenance standards and repairs. This employee shall have the primary responsibility and sufficient authority for implementation of the approved erosion and sediment control schedules and methods of operation. At least 10 days prior to the beginning of work, the name and credentials of this employee shall be submitted to the CM for acceptance. This person is required to have taken an approved sediment and erosion control training course. Reference Section 3.3.5 for additional information.

2. If it is determined that concrete fines are discharging into the ditch, in cooperation with the CM, the Contractor's ESCM shall ensure that no discharge of noted sediments occurs from the Illinois Tollway ROW. Additionally, if directed by the CM, shall act to ensure the pH of the contaminated stormwater does not exceed 9.0.
3. Shall attend and support the CM in coordinating a pre-construction erosion and sediment control meeting at least five business days prior to start of work.
4. Shall finalize the preliminary SWPPP provided by the Designer. Finalize the ESCP by providing the materials inventory for the Pollution Prevention Plan and the names of the Contractor's Spill Coordinator(s) and sign the Contractor Certification Statement. Copy of completed SWPPP to be provided to the Illinois Tollway CM within 21 days of Notice of Award and prior to any ground disturbing activities.
5. Shall provide support to the CM to finalize the NOI by providing the contractor information.
6. Shall develop and maintain an Erosion and Sediment Control Schedule. The Erosion and Sediment Control Schedule to be submitted to the Illinois Tollway CM within 21 days of Notice of Award and prior to any ground disturbing activities.
7. Shall ensure proper installation, functionality and maintenance, clean-up and removal of all and sediment controls as specified in the Supplemental Specifications, the Contract Plans and documents, as directed by the Engineer and in accordance with manufacturer's recommendations.
8. Coordinate and oversee the work of their subcontractors and ensure the full execution of erosion and sediment control measures for each operation and stage of work.
9. Ensure effective preventative BMPs are in place, recommend BMP changes for the CM's approval and coordinate with the CM to amend the SWPPP or construction plan sheets to document changes.
10. Ensure all NPDES documents are provided to the CM to be kept at the CM Field Office and on the Illinois Tollway's WBPM for viewing by inspectors or the public.
11. Shall complete an A-50 form (Request Staging and Fill Sites) for any requests for Illinois Tollway's approval of borrow, use and waste sites using the submittal process of the Illinois Tollway WBPM system.

### **3.3.5 Contractor's Erosion and Sediment Control Manager/Inspector**

1. Shall have sufficient training and experience to carry out all aspects of erosion control during construction. This employee shall be thoroughly trained and experienced in all aspects of highway construction and in stormwater best management practice (BMP) implementation, maintenance standards and repairs of erosion and sediment control and construction. This person is required to have taken an approved sediment and erosion control training course. Reference CM manual Article 4.1.2.2.9 for approved sources of Erosion and Sediment Control training.
2. Participate in the Erosion and Sediment Control Pre-Construction Meeting.

3. Participate in weekly and rainfall inspections and coordinate with the CM to complete Erosion and Sediment Control inspection reports.
4. Ensure proper installation, functionality and maintenance, clean-up and removal of all erosion and sediment controls as specified in the Supplemental Specifications, the Contract Plans and documents, as directed by the CM and in accordance with manufacturer's recommendations. Shall be responsible for confirming appropriate corrective actions have been taken within the timeframe specified by the CM.
5. Direct the implementation of the Erosion and Sediment Control Schedule.
6. Direct the implementation of storm and winter shutdown procedures.
7. Coordinate the work of subcontractors and ensure the full execution of erosion and sediment control measures for each operation and stage of work.
8. Coordinate with the Contractor's Superintendent to ensure that all labor, material and equipment needed to install, maintain and remove BMPs are available as needed.
9. Oversee the work of subcontractors and ensure the subcontractors undertake erosion and sediment preventive measures at each stage of the work.
10. Coordinate with the Superintendent to implement necessary actions to reduce anticipated or presently existing water quality or erosion problems resulting from construction activities.
11. Attend construction meetings to discuss the erosion control schedule and inspections as required.
12. Provide for erosion and sediment control methods for temporary work not shown on the plans.
13. Ensure effective preventative BMPs are in place, recommend BMP changes for the Engineer's approval and coordinate with the Engineer to amend the SWPPP or construction plan sheets to document changes.

### 3.4 Permits and Approvals

The Designer shall prepare background documentation needed to submit permit applications and shall prepare the application forms for submittal by the Illinois Tollway.

#### 3.4.1 National Pollutant Discharge Elimination System

In general, any "construction activity" that will disturb, or that is part of a common plan of development that will disturb, 1 or more acres of soil and discharges stormwater to waters of the U.S. must obtain NPDES permit coverage. Note that there are situations in which construction activities can be waived or excused from the requirement to obtain NPDES permit coverage. Construction activities include earth-disturbing activities, such as the clearing, grading and excavation of land, and other construction-related activities (e.g., stockpiling of fill materials;

placement of raw materials at the site; equipment staging yards; material storage areas; excavated material disposal areas, borrow sites) that could lead to the generation of pollutants.

For projects subject to an NPDES permit, a NOI shall be submitted for each individual project so the permit can be closed out by submittal of a NOT (by the CM) after that project is complete. For NPDES forms, refer to Appendix A.

An electronic copy of the NOI shall be provided to the Illinois Tollway EP a minimum of 35 days prior to the start of construction.

### **3.4.2 Soil and Water Conservation District**

Coordination with the SWCD will be on a case-by-case basis as determined by the Illinois Tollway Environmental Unit. Coordination is generally only required for projects in which the Illinois Tollway is partnering with local agencies or for projects which are outside of the Tollway ROW. In cases where SWCD coordination is required, the SWCD submittal shall include the application form, permit review fee, site plan checklist, narrative checklist and narrative. The application form can be obtained at the appropriate County's stormwater management web page. The Designer shall obtain current forms and fee schedule from the appropriate SWCD.

The Designer shall determine the disturbed area involved and the required permit review fee. The fee will be paid for by the Designer and reimbursed by the Illinois Tollway.

### **3.4.3 County Stormwater Management Agency**

A review of the ESCP and a permit may be required from the CSMA and shall be on a case-by-case basis as determined by the Illinois Tollway Environmental Unit. When required, the Designer shall obtain the latest requirements from the County including the required permit review fee. The fee will be paid for by the Designer and reimbursed by the Illinois Tollway.

### **3.4.4 Municipalities**

For most locations, the CSMA generally handles the ESCP review. In some cases, the municipality is designated a waiver community and performs the review. Coordination with a Waiver Community will be determined on a case-by-case basis as determined by the Illinois Tollway Environmental Unit. When required, the Designer shall determine which agency governs and shall obtain the requirements from that agency.

## **3.5 Construction Requirements**

### **3.5.1 General**

1. The Illinois Tollway requires that the Contractor assign an employee to the project to serve as an ESCM. This employee shall be experienced and have satisfactorily completed an Erosion and Sediment Control Training program. Proof of compliance with the above shall be provided at the Preconstruction Meeting.
2. Prior to construction, it is important that all parties responsible for implementing the ESCP understand why the proposed measures are needed and how they must be installed, operated and maintained.

3. If during construction, adjustments or modifications to the ESCP are necessary, the adjustments or modifications shall be reviewed and accepted by the CM or their representative. A copy of the revised ESCP shall be kept on-site during construction.
4. During construction, a comprehensive inspection, maintenance and prompt repair program shall be implemented.
5. After construction is completed, the temporary erosion control measures shall be removed, as called for in the plan and the final permanent measures installed. Temporary erosion control measures cannot be left in place on a permanent basis unless consistent with standards, the Illinois Tollway DDM and approved by the Illinois Tollway CM. In no instance may temporary riprap or ditch checks be left in place unless the CM obtains written acceptance from the Illinois Tollway Environmental Unit and it is not a hazard to motorists.
6. A maximum of 20 acres is allowed to be disturbed at a single time. In addition, stabilization of cut or fill slopes is required whenever the cut or fill activity reaches 8' vertically or the finished slope equals 50', whichever is more restrictive.
7. All construction personnel (including the CM) shall be required to wear highly visible fluorescent orange, fluorescent yellow/green or a combination of fluorescent orange and fluorescent yellow/green vests at all times while on the construction site. These vests shall meet the requirements of ANSI/ISEA 107-2004 for Conspicuity Class 2 garments.
8. All construction activities that require quantified erosion or sediment control measures shall include Special Provision 111. Of those construction activities that result in 1 acre or more of soil disturbance and subject to NPDES requirements, Special Provisions 111.1 and 111.2 (the SWPPP) shall also be included. The Contractor shall complete and sign the Contractor Certification Statement in Special Provision 111.2 indicating that they understand the requirements of the NPDES Permit and the SWPPP.
9. The Designer and CM shall be aware that the permitting authority may elect to make periodic on-site inspections, especially at the main stages of the project or after completion of the following construction stages:
  - a. upon completion of installation of sediment and runoff control measures, prior to proceeding with any other earth disturbance or grading;
  - b. after stripping and clearing;
  - c. after rough grading;
  - d. after final grading;
  - e. after seeding and landscaping; or
  - f. after final stabilization and landscaping, prior to the removal of temporary sediment control measures.

If a permitting authority does make an on-site inspection, the CM shall notify the Illinois Tollway Environmental Unit and provide an inspection report indicating the results of the inspection.

10. Inspection of the construction site shall be performed by qualified personnel familiar with the current Illinois Tollway erosion and sediment control practices, as well as the other regulatory agency requirements. Inspections to determine necessary maintenance shall be done by the CM in cooperation with the Contractor's ESCM at least once every 7 calendar days and within 24 hours of a rainfall event with 0.5 inch of precipitation or greater (5 inches of snow).
  - a. The IEPA's General NPDES Permit No. ILR10 is a required reference for completing inspections.
  - b. The CM shall complete an A-38 form and create a photographic log of each inspection. This log shall be attached to the A-38 form and both shall be saved as part of the project file.
  - c. See the Illinois Tollway's WBPM system for the most recent version of the A-38 inspection form.
11. Hard copies of the A-38 form and the photographic log of the inspections shall be given to the Contractor for signature. Electronic copies of each report shall be signed by the CM and the Contractor and shall be filed in the Illinois Tollway's WBPM system.
12. The A-50 form shall be approved for the Contractor's use of borrow, use and waste sites prior to the placement of materials at the site. All items must be free of contaminants and all loads are to be inspected and tested prior to placement.

### **3.5.2 Preconstruction Erosion and Sediment Control Meeting**

A Preconstruction Erosion and Sediment Control Meeting shall be held prior to any land disturbance to discuss the ESCP, the Landscape Plan, project permits, Contractor's schedule, installation of controls and inspections to be performed. The Contractor's Certification Statement is to be signed at this Meeting.

1. The Preconstruction Erosion and Sediment Control Meeting shall be attended by the DSE, Landscape DSE, CM, Illinois Tollway Coordinator, Contractor's ESCM and the Contractor's erosion/landscape subcontractor. Minutes and the sign-in sheet shall be uploaded to the WBPM system. See the Illinois Tollway's WBPM system for the most recent version of the A-40 form.
2. If the project involves a USACE Section 404 permit, consult with the Illinois Tollway Environmental Unit on the need to notify and invite the SWCD, County Stormwater Management Commission and the USACE.
3. The Preconstruction Erosion and Sediment Control Meeting shall include an onsite field review of the ESCP.

## SECTION 4.0 LANDSCAPE

### 4.1 Design Factors and Data Requirements

#### 4.1.1 Design Approach

The Landscape Design Section Engineer (Landscape DSE) shall consider any Context Sensitive Solutions (CSS) developed in previous design phases as a basis for the design approach to a project. Through the landscape design, the Designer shall identify the need and purpose, while incorporating design standards, flexibility, safety, aesthetics, environmental stewardship and community sensitivity with the goal of constructing safe roadways that improve mobility, while enhancing the qualities of place. The landscape design approach for the project should be clearly described in the Concept Report narrative. Key site features and landscape opportunity areas should be clearly indicated with hatching and labels on 30% design plans.

##### 1. Inventory and Data Collection

The Landscape DSE shall contact and coordinate with the Illinois Tollway PM, EP, Landscape Architect and other members of the project team to carry out an in-the-field investigation to systematically examine the site, collect data and then analyze the existing site conditions, along with data developed during previous design or planning stages. This Landscape DSE-led team field investigation should occur for all projects that include tree removals and/or landscape tree plantings.

Depending on the site's natural features and the scope of the project, the Illinois Tollway may require the Landscape DSE to examine the existing landscape character and prepare an Existing Vegetative Assessment (EVA). In the EVA, the main components of the landscape, built and natural, shall be identified and recorded on a Field Analysis Map and described in a brief written narrative supplemented with photographs and sketches and including those in the narrative with descriptive captions. The information distilled from the field analysis shall be recorded on the Issues and Opportunities Schematic Plan and submitted to the Illinois Tollway for approval and for use when evaluating the landscape design through subsequent submittals. The EVA informs the landscape design opportunity areas, preservation areas, removal areas and plant and seed mix opportunities and allows the Illinois Tollway to provide direction on the design before the design and survey work gets started.

The EVA is typically generated in the Master planning stage for use and further evaluation in planning and design. The EVA may include a Tree Stand Delineation and/or Tree Survey map.

The Tree Stand Delineation is a general accounting of existing vegetation, both in quality and quantity. It shall provide an overview of the tree groupings, other natural attributes and limitations of the site. General information may include groupings of similar trees, individual trees of significance and important roles or value of the vegetative groupings.

Where more detailed and precise information is needed, a Tree Survey may be necessary. The map resulting from the tree survey shall identify and briefly describe all trees of importance, show tree species, trunk diameter (DBH) and base locations with elevations of each tree so potential impacts of grade changes can be easily determined. Description

of the Tree Survey protocol to be used on the Illinois Tollway is provided in Appendix J - Illinois Tollway Tree Survey Protocol.

## 2. Issues and Opportunities Schematic Plan

The design considerations listed below should be evaluated and applied, as applicable, to every landscape design. For certain projects, the Illinois Tollway Landscape Architect will require the Landscape DSE to prepare an EVA that includes a written narrative and a graphic Issues and Opportunities Schematic Plan. The Issues and Opportunities Schematic Plan shall delineate the following:

- a. The identification, by text and illustration (photograph or graphic image), of the landscape character of the project and adjacent sites and surrounding land use;
- b. Landscape features to be preserved or that may influence the design;
- c. Integration of maintenance and safety requirements;
- d. Opportunities to include Illinois Tollway initiatives, such as the Pollinator Program or the Chicago Region Trees Initiative;
- e. Any important viewsheds that are to be protected or enhanced;
- f. Any important features, natural or built, within or outside the Illinois Tollway ROW that may influence the design shall be identified and recorded;
- g. Aesthetic opportunities and views to or from the site that should be screened;
- h. Natural plant divisions and existing native tree and plant species;
- i. Historic features or influences;
- j. Topographic and hydraulic features, including existing runoff patterns and erosion control deficiencies;
- k. The overall strengths and weaknesses of the site and potential design opportunities; and
- l. Identification of any agencies, municipalities, community groups or individuals that the design team will have to coordinate with to achieve a successful landscape design.

### 4.1.2 Design Considerations

#### 1. Planting of Woody Plants

- a. No woody plantings are permitted on side slopes or around headwalls of stormwater detention basins.
- b. Tree Plantings along roadways shall be located well outside of the clear zone classified for each road type and roadside condition.

- c. Tree plantings shall be coordinated with ITS camera and outdoor advertising viewsheds and shall not be located where they may block the view of ITS cameras or outdoor advertising signs when the trees reach maturity.
- d. Identify and avoid slopes which are too steep for planting and topographic restrictions.
- e. Identify drainage paths and restrictions of plantable areas.
- f. Offsets from structures and utilities: Comply with utility agency tree and plant offset requirements and as directed by the Illinois Tollway.
- g. Identify all environmentally sensitive locations.

## 2. Seeding

- a. Select or specify groundcover seeding that is appropriate for the site conditions. The seed mix should remain simple and respond to topography, wet or dry conditions, Illinois Tollway mowing criteria, channelized storm drainage facilities and should protect sensitive native and natural areas to remain.
- b. Apply the Illinois Tollway policy on reducing mowing maintenance (see Appendix G for Illinois Tollway's Roadside Mowing Guide) when identifying seeding areas and seed mixes. Reduced mowing maintenance areas are an opportunity to specify native grass plus forb seed mixes to enhance erosion control, create seasonal interest and beauty and create habitat for pollinator species.
- c. Tall Fescue, K31 or Kentucky 31 fescue, red fescue, rye and smooth brome, Bermuda grass, perennial ryegrass, winter rye and Kentucky bluegrass are identified as non-native invasive species of grass that spread and impact beneficial native grass and forb species in Illinois and throughout the United States. Avoid specifying their use near natural drainage features and native natural areas to remain.
- d. Provide station and mile post locations on the Landscape Plans for easier field reference. Locate beginning and end of seeding limits and typical widths of separate bands of seed mixes using road station and offset distances and typical dimensions as applicable.

## 3. Mowing Field Indicators

- a. Areas of native grass and forb mixes that are to be mowed and those areas which are to be left natural should be identified on the plans.
- b. Special habitat or areas of newly planted or desired volunteer woody tree and shrub plantings to remain should be identified on the plans to protect the areas during construction or maintenance.
- c. The use of permanent or temporary mowing stakes should be coordinated with the Illinois Tollway Landscape Architect and Illinois Tollway Maintenance prior to use.

#### 4. Snow Fence Criteria

- a. Designer should coordinate with the Illinois Tollway to evaluate the project site topography, any existing areas of concern and prevailing winter wind direction for the opportunity to provide temporary or permanent snow fence protection at appropriate locations on the Illinois Tollway ROW.
- b. Designer should refer to current best practices for design of a structural or planted snow fence systems such as the Snow Fence Guide (SHRP-W/FR-91-106) by Ronald D. Tabler, Tabler & Associates, Strategic Highway Research Program, National Research Council, Washington, DC, 1991 and the Illinois Tollway Design Guide.

#### 5. Limited Maintenance Access Areas

- a. In areas where it would be difficult or impossible for Illinois Tollway maintenance equipment or personnel to access for routine maintenance or mowing activities, the DSE should evaluate treatment options on a case-by-case basis and consider site conditions such as size, scale, slope, drainage, access, etc. for each location. Coordination with the PM, the Illinois Tollway Environmental Unit and the Illinois Tollway Maintenance Unit are encouraged during the design process.
- b. Examples of such areas may be a small triangular space between a mainline barrier wall and an adjacent ramp barrier, or a narrow area between a mainline barrier wall and another retaining or noise wall, where Illinois Tollway Maintenance mowers would not be able to access if typical permanent seeding application was specified.
- c. Potential treatment considerations for these areas may include simple permanent hardscape treatments, a combination of hardscape and landscape treatments or other low maintenance landscape alternatives such as dense shrub beds, if applicable. The intent is to provide aesthetically pleasing and functional solutions that can be properly maintained with minimal care and access.

#### 4.1.3 Design Concept Development

The landscape design concept shall be developed in conjunction with the overall design team. Particular attention shall be paid to developing a single clear landscape concept that unites and uses drainage, grading and planting to maximize functional effect. The design concept shall consider the information obtained from the Site Analysis and the Issues and Opportunities Schematic Plan. Additional site visits shall be carried out to evaluate preliminary concepts as they are developed by the team. Special attention shall be given to working with and reducing the impact on the existing ecological systems and areas surrounding the site, to seek out aesthetic and functional opportunities and to maintain a high level of environmental stewardship. The design shall be as self-maintaining as possible. The Designer shall inform the Illinois Tollway PM of any agencies, municipalities, community groups or individuals that the Landscape DSE should coordinate with to achieve a successful landscape design.

The following are the minimum requirements to be considered for the Landscape Design Concept Submittal. The submittal shall be developed to a 30% level of completeness:

- Site location map;
- Table of suggested and required agencies, municipalities, groups or individuals with whom coordination is desirable;
- Table of potential utility conflicts;
- An Issues and Opportunities Schematic plan and/or conceptual drawings with existing topography, utility lines and structures and existing trees and vegetation masses shown;
- A plan view showing the conceptual layout and labeling of the landscape opportunity areas or areas available for tree and shrub planting, the proposed landscape design, suggested plant species and seeding mix treatments (see Appendix G for Illinois Tollway's Roadside Mowing Guide). The plan or plans shall be coordinated with drainage and grading design concepts and any utility layouts to ensure the development of a single, clear landscape design and the avoidance of any future conflicts on-site;
- Views to or from the site that should be screened and any important viewsheds that are to be protected or enhanced, shall be indicated on the plans;
- Show all sensitive environmental areas to be protected, enhanced and/or mitigated (including but not limited to wetlands). Include location, size and I.D. number of existing wetland areas, other environmentally sensitive areas;
- Cross sections or enlargements shall display the viability of the conceptual design;
- The plans shall be at a maximum 1 inch = 100 feet scale to represent the overall concept and typical landscape treatments and at a minimum of 1 inch = 50 feet to adequately represent typical segments of the concept where additional detail is desirable;
- A list or copies of the relevant information and design criteria collected through the coordination process;
- A list of plant types intended to be used, including appropriate background information, if needed;
- A rough cost estimate;
- Any additional information required by Illinois Tollway PM; and
- Prepare and submit the Landscape Design Submittal Checklist, Section A, Landscape Design Concept Submittal located in Appendix H.

#### **4.1.4 Use of Design Factors and Data Requirements**

The Landscape DSE shall use an integrative approach and these Design Factors provided as a guide in developing innovative design solutions for project conditions. The Landscape DSE shall consider all design elements of the roadway landscape and create a facility that is functional in overall form and detail, while providing appropriate aesthetics. Grading, safety, visual quality, erosion control, environmental issues, materials and maintenance practices are some of the design elements that must be considered. Every factor may not apply to all projects, nor will those

described in this section cover all project situations. However, all landscape designs shall be developed in conjunction with the drainage, grading, utilities and erosion control concepts; and with an overall commitment to protect, preserve and enhance environmental resources, while applying green strategies and promoting environmental sustainability. Contracts including landscape disturbance or addition of trees, shrubs, environmental mitigation or protection shall include design and quality control review by a licensed Professional Landscape Architect having roadside revegetation experience, throughout the design process. The design and quality control review of final plans for landscape improvement contracts shall be conducted by a licensed Professional Landscape Architect.

#### 1. Application of Design Factors

The application of the criteria to projects will depend on the scope and type of proposed improvements as follows:

- Landscape improvement projects: The design factors and data requirements in this document shall be applied.
- Rehabilitation/reconstruction, widening or lane addition projects: The design factors and data requirements shall be used in the design of the project section to correct any deficiencies identified in the proposed improvement and to ensure that the completed project has a coordinated design intent.

#### 2. Illinois Tollway Publications to be Referenced

Reference shall be made to the current editions of following Illinois Tollway publications when designing any landscape installation:

- Environmental Studies Manual,
- Erosion and Sediment Control sections of this manual,
- Drainage Design Manual,
- Design Section Engineer's Manual and
- Other publications as directed by Illinois Tollway.

#### 4.1.5 Preliminary Plans and Special Provisions

The landscape design shall be developed by a licensed Professional Landscape Architect, in conjunction with the overall design team and shall be coordinated with and complimentary to the proposed drainage, grading and lighting designs. Any alternative drainage systems and grading solutions proposed shall be described in the text and displayed in plan and cross section format. All planting plans shall be coordinated with any utility drawings to eliminate potential conflicts. The background documentation maintained by the Designer shall meet the requirements in the Illinois Tollway *Environmental Studies Manual*. The documentation shall also identify any special requirements used to select specific measures.

The following are the minimum requirements for the Preliminary Landscape Design Submittal. The submittal shall contain a minimum of the following, which shall be developed to a 60% level of completeness:

- A comment disposition log that addresses each and all Illinois Tollway comments from the previous submittal;
- Site location map and construction area map;
- Plan views showing the layout of the overall landscape design. The overall design shall be delineated at a scale of 1 inch = 50 feet and at 1 inch = 20 feet in areas where additional detail is required (see Appendix I for example). The plans shall be coordinated with and complimentary to the proposed drainage, grading and utility drawings;
- Tree preservation plan that will include existing tree locations; size; species; methods of protection, including fencing and wrapping; and a defined safe area needed to protect tree root structures of trees to be protected based on the analysis of the existing vegetative assessment;
- Show all sensitive environmental areas to be protected, enhanced and/or mitigated (including but not limited to wetlands). Include location, size and I.D. number of existing wetland areas, other environmentally sensitive areas;
- Preliminary planting and construction details needed to clarify design intent, including plans of any atypical or special areas;
- Details of any hard landscape elements, such as paving or special features;
- Cross sections that adequately display significant changes in grade or width of the area to be planted and the viability of the landscape concept;
- Plant quantities, types, scientific name, common name, sizes, delivery condition and spacing between plants shall be indicated on the plan. The Landscape DSE shall determine the viability of the plant material selection with due consideration to site conditions, soils and salt tolerance. Provide a plant name abbreviation key to be used on all plan drawings;
- Utilities matrix sheet that identifies any utility interferences;
- Plan drawing set, which shall typically include a cover sheet, index of drawings, general and landscape notes, suggested progress schedule, summary of quantities, schedule of quantities, maintenance of traffic, drawing key plan, required erosion control plans, plan drawings and details;
- A preliminary cost estimate;
- Proposed preliminary mowing patterns and delineations, as needed;
- Special Provisions to the Standard Specifications (J pages) and Schedule of Prices (P pages) that follow accepted Illinois Tollway standards;

- A suggested schedule for all work and inspection of the planting material shall be coordinated with all other roadway/project construction schedules that are in the vicinity;
- Any additional information required by Illinois Tollway PM; and
- Prepare and submit the Landscape Design Submittal Checklist, Section B, Preliminary Plans and Special Provisions, located in Appendix H.

#### 4.1.6 Pre-Final Plans and Special Provisions

The landscape design submittal for the Pre-Final Plan phase shall include the plans, text and specifications submitted at the Preliminary Plans and Special Provisions Phase developed to a 95% level of completeness. This submittal shall include the following:

- Address in written comment disposition log all Illinois Tollway comments from the previous submittal. Landscape drawings shall include all applicable components of the Landscape Design Submittal checklist. All drawings shall be coordinated with the appropriate agencies and shall include the drainage, grading, lighting, signage and utility packages (see Appendix H for Landscape Design Submittal checklist).
- All drawings shall be fully annotated and show scale, north arrow, road names, station and offset distances, dimensions, landscape notes, general notes, references, symbols, legends, labels, cover sheet, index, suggested progress schedule, drawing key plan, maintenance of traffic and required erosion control.
- Include proposed typical tree and plant spacing for each plant species. Plant spacing for shrubs, perennials and groundcovers should respect consensus horticulture industry plant width growth range characteristics for each plant at maturity.
- The drawings shall be cross referenced to a fully detailed Summary of Quantities and Schedule of Quantities. The Summary of Quantities shall fully delineate the pay item number, species, type, unit of measure and quantity of all plants selected. The Schedule of Quantities shall provide pay item numbers, key names, item names and quantities to be found on each sheet.
- All details, hardscape and special features shall be completed and cross referenced to the plans, suggested schedule and drawing key plans.
- Special Provisions shall follow the Illinois Tollway format and shall be complete with all materials and ways and means specified.
- The submittal shall include a construction cost estimate to reflect adjustments to the landscape plan.
- A completed utilities matrix,
- A list of any additional information required by Illinois Tollway PM and
- Prepare and submit the Landscape Design Submittal Checklist, Section C, Pre-Final Plans and Special Provisions, located in Appendix H.

#### 4.1.7 Final Plans and Special Provisions

All comments and questions received during the review of the Pre-Final Plans shall be adequately addressed and provided in writing on the comment disposition log and resolved by revisions to the final plans and Special Provisions. The design and quality control review of final plans and Special Provisions shall be conducted by a licensed Landscape Architect.

Upon final review, if comments or changes are needed to the Final Plans or Special Provisions, the Designer shall provide a Final Advertising Submittal to include all completed plans and Special Provisions. An updated Engineer Estimate shall be provided with the submittal.

Prepare and submit the Landscape Design Submittal Checklist, Section D (Appendix H), Final Plans and Special Provisions.

#### 4.1.8 Addenda, Bidding, Tagging and Construction Observation

The Landscape DSE shall, at the request of the Illinois Tollway, produce the technical information as appropriate to interpret, clarify or expand on the Construction Documents. When addendums are required, the Designer will prepare the documents, the Illinois Tollway will issue the addenda and perform the complete bidding process. The Illinois Tollway or the CM is usually responsible for nursery tagging, as determined necessary and concurrence of the final location of plants on-site. Reference shall be made to the Standard Specifications Sections 253 and 254 for transportation, temporary storage and planting procedures.

The Landscape DSE shall also be responsible for attending the Preconstruction Erosion and Sediment Control Meeting.

## 4.2 Design Criteria

### 4.2.1 Permanent Seeding/Sodding Design Requirements

When planning for the use of seeding classes provided in the Standard Specifications and Illinois Tollway Supplemental Specifications, the Landscape DSE shall recognize the mowing policy and maintenance practices and general seeding zones. Locations for each seeding class and sod type shall be clearly shown on the plans, along with typical dimensions, station and offset distances for key limits, a graphic legend and quantity summary for each sheet.

#### 1. Topsoil and Compost

##### Pay Items:

J1211110 - TOPSOIL EXCAVATION AND PLACEMENT  
 J1211124 through J1211126 – TOPSOIL FURNISH AND PLACE, Various items  
 J1211134 through J1211136 – COMPOST FURNISH AND PLACE, Various items

##### Description and Purpose:

Topsoil shall be obtained from within the limits of the ROW per Standard Specifications 211; on-site topsoil material shall comply with the materials requirements in Article 1081.05 of the Standard Specifications. If approved for material composition, topsoil must

also be approved for environmental re-use. See Article 6.6.4 of the Tollway Environmental Studies Manual for further guidance. Topsoil use/non-reuse should be tabulated on the earthwork base sheet. When the site is prepared, the topsoil shall be spread at the specified depth in the final location.

Application:

- During pavement widening projects, a 6-foot-wide swath of the existing on-site topsoil along the existing pavement often has the highest salt concentrations and should be evaluated and considered for removal and disposal off-site at a proper location. The remainder of the existing on-site topsoil shall then be tested on-site for use and nutrient requirements.
- The Designer shall complete a visual inspection of the project area and remove topsoil locations that display signs of obvious contamination.
- Topsoil replacement should be used when there is an insufficient quantity of existing on-site topsoil that meets the requirements of Articles 211.03 and 1081.05 of the Standard Specifications.
- As appropriate, the Designer shall complete an inspection of the project area to evaluate the condition of existing slopes. If the field inspection indicates slope failure or erosion concerns, a plan shall be developed for the repair of the site.
- When compost is specified, it shall be incorporated with the topsoil at a specified blend and depth and shall meet the requirements of Article 1081.05 of the Standard Specifications.

**2. Seeding (for Bare Earth and Interseeding)**

Pay Items:

J1250100 through J1250110 – SEEDING, Various Classes  
 JS250220 through JS250350 – SEEDING, Various Classes  
 JT250335 through JT250491 – SEEDING, Various Classes  
 JT250522 through JT250529 – INTERSEEDING, Various Classes

Description and Purpose:

The seeding classes shown in Section 250 of the Standard Specifications are typically used for bare earth seeding but some of the seeding classes may also be considered for interseeding into existing turf. The seeding can generally be broken into the following zones. See Figure 1 (Article 4.2.1.2 of this manual, General Seed Class Usage Zones). The use of Illinois Tollway Supplemental Specifications takes precedence over Standard Specifications if both could apply.

Application:

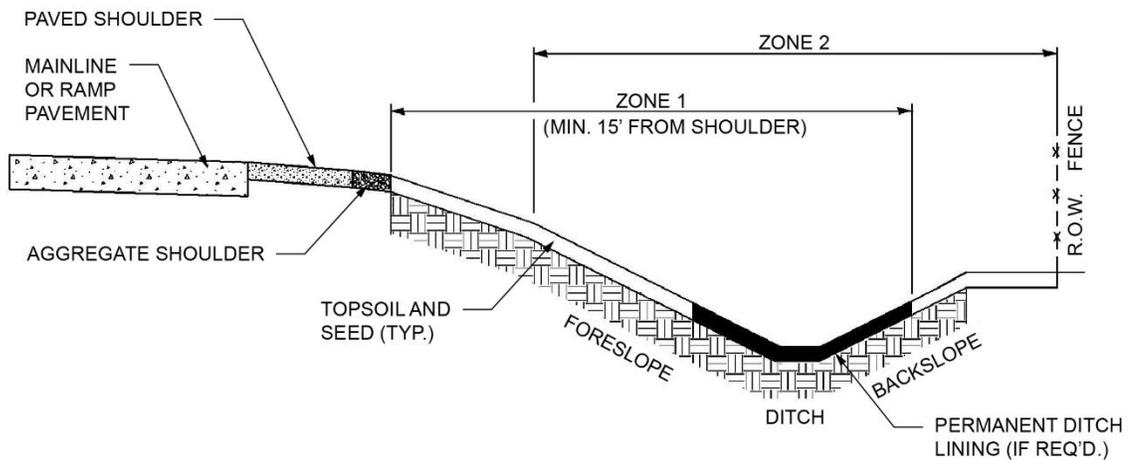
1. Zone 1 Seeding

The turf immediately adjacent to the roadway is normally the most intensively managed part of the ROW (see Figure 1, General Seed Class Usage Zones). This area also receives the highest concentrations of salt laden drainage and spray. This portion of the roadside requires a seeding mixture that can tolerate salt concentrations and regular mowing while still maintaining an acceptable appearance and resistance to erosion. This area would typically extend a minimum of 15 feet from the edge of shoulder or to the ditch when the distance between the shoulder and ditch line becomes narrow. Seeding in this zone would typically be accompanied with erosion control blanket, even on flatter slopes. The mixes developed for this use is:

- Class 2E, Salt Tolerant Roadside Mixture, as shown in Article 250.07 of the Illinois Tollway Supplemental Specifications.
- Other locations that may be considered for this mix are in dry ditches, around parking areas or in other well-drained locations that receive salt-laden water.

2. Zone 2 Seeding

In areas beyond Zone 1 the seeding type that is normally desirable, particularly in rural areas, will reduce routine ROW mowing cycles and contribute to the preservation of plant, pollinator and wildlife environments. See Figure 1 (Article 4.2.1.2 of this manual, General Seed Class Usage Zones) and Appendix G (Roadside Mowing Guide). Seeding in Zone 2 areas must control surface erosion while maintaining an acceptable natural appearance both to adjacent neighbors and to motorists. Below are seeding classes which have been developed to meet the needs for these conditions:



**FIGURE 1 – GENERAL SEED CLASS USAGE ZONES**  
(Includes seed type descriptions as well as diagram)

- Class 2F, IT Roadside Mixture is commonly used in zones near residential or urban areas where more frequent mowing or manicured appearance is desirable. This mix does not include native prairie grasses or forbs.

- Class 3E, IT Slope Mixture also includes native prairie grasses, has reduced mowing requirements and is formulated to assist in stabilizing slopes steeper than 1:3 (V:H).
- Class 4B, Wetland Grass and Sedge Mixture may be specified in wetlands or ponded retention or other suitable areas. The mix is suited to wet locations where no mowing is desirable.
- Class 4E, IT Native Grass includes native prairie grasses to produce a natural appearance where decreased mowing frequency and reduced maintenance is preferred. Typically for limited use in rural areas, where taller grasses may be acceptable. Class 5 or 5A may also be added to this mix where flowering forbs for pollinators are desirable.
- Class 4F, IT Low Profile Native Grass also includes native prairie grasses where decreased mowing frequency and reduced maintenance is preferred, but where taller grasses are not acceptable. This mixture is generally used for most backslope conditions where native grasses are preferred. Class 5 or 5A seeding may also be added to this mix where flowering forbs for pollinators are desirable.
- Class 4G, IT Pollinator Mixture includes low profile native grasses and flowering forbs. This mix is suited to dry, upland areas such as back slopes, basin sides or embankments with full sun that are to be mowed infrequently. The forbs within the mix were selected to provide blooms for pollinators throughout the growing season. It is an option for designers with the goal of providing habitat for pollinators at select and approved locations. Locations designated for use of this mix should be reviewed and discussed with the Illinois Tollway Landscape Architect prior to use.
- Class 5, Forbs with Annuals Mixture may be specified to be added with the class 4E and/or 4F mixtures in areas near natural features and areas proposed for reduced mowing where flowering forbs for pollinators are desirable.
- Class 5A, Large Flower Native Forb Mixture may be specified to be added with the class 4E and/or 4F mixtures typically in limited high-profile areas where larger, showier flowers are desired. Selective Mowing Stakes may be needed when adding this mix to assist the maintenance crews by directing mowing activities. The seed mix includes taller species and the locations designated for its use shall be reviewed and discussed with the Illinois Tollway Landscape Architect prior to use.
- Class 5B, Wetland Forb Mixture may be specified in wetlands or occasionally ponded retention areas. The mix is suited to wet locations and is to be combined with Class 4B mixture where flowering forbs and no mowing is desired, to enhance erosion control and to create habitat for pollinators.

Additional seed mixes may be required for project sites within 5 miles of an airport, detention basins, retention basins, wetlands, restoration areas or other site-specific conditions. These mixes shall be addressed individually, reviewed with the Illinois Tollway Landscape Architect and be included in the contract special provisions. The Illinois Tollway has a seed mix approved by the Federal Aviation Administration (FAA) for use within 5 miles of an airport and can be provided upon request.

All seeds shall meet Article 1081.04 of the Standard Specifications requirements.

For seeding in swales, the maximum velocity for seeding is to be determined by Illinois Tollway DDM Table 7.0, *Permissible Flow Velocities for Grass Lined Channels*.

### 3. Bare Earth Seeding

Pay Items:

J1250100 through J1250110 – SEEDING, Various Classes  
 JS250220 through JS250350 – SEEDING, Various Classes  
 JT250335 through JT250491 – SEEDING, Various Classes  
 JT250522 through JT250529 – INTERSEEDING, Various Classes

Description and Purpose:

Bare earth seeding will require seed bed preparation prior to applying seed. The area to be seeded shall be cleared and prepared as detailed in Articles 250.05 and 250.06 of the Illinois Tollway Supplemental Specifications.

Application:

No seeds shall be sown until the seed bed has been approved by the Engineer.

### 4. Interseeding (for Existing Turf)

Pay Item:

J1250105 through J1250110 - INTERSEEDING, Various Classes  
 JT250522 through JT250529 - INTERSEEDING, Various Classes

Description and Purpose:

Interseeding in areas of existing turf shall be done in conformance with Article 250.06 of the Standard Specifications.

Application:

- Where desirable, native grasses and forbs may be interseeded into existing turf in the process of converting previously mowed areas to reduced mowing areas. This procedure is used in selected Zone 2 seeding areas only.
- In select reduced mowing areas where added diversity is desired, Class 5, Forbs with Annuals Mixture or Class 5A, Large Flower Native Forb Mixture may be sowed into existing native turf to provide food and habitat for native pollinators and to highlight or further enhance the appearance of an area. Selective Mowing Stakes may be utilized to delineate the reduced mowing area and assist the maintenance crews by clearly directing future mowing activity.

These grasses and forbs may take several years to establish and are generally implemented to reduce mowing, enhance erosion control, support pollinators, supplement

or convert existing turf and provide a natural meadow ground cover appearance. Repeated monthly mowing at a 10-inch height year one then 12-inch height year two and early winter reseeding shall be required for the first two growing seasons to improve sun exposure and reduce grass competition as the forb species become established. A Special Provision to the Specifications may be needed to perform this work.

## 5. Fertilizer and Agricultural Ground Limestone Application

### Pay Items:

25000400 - NITROGEN FERTILIZER NUTRIENT  
 25000500 - PHOSPHORUS FERTILIZER NUTRIENT  
 25000600 - POTASSIUM FERTILIZER NUTRIENT  
 25000700 - AGRICULTURAL GROUND LIMESTONE

### Description and Purpose:

Fertilizer should be specified for newly seeded areas. Agricultural limestone and phosphorus are typically not required for seeding on Illinois Tollway ROW. In the absence of soil testing, the application rate provided in Article 250.04 of the Supplemental Specifications should be used.

### Application:

Soil testing should be conducted during the initial stages of the design process where existing topsoil is to be re-used on the site. The soil tests should be used, along with visual inspection, to determine areas where existing topsoil is unacceptable for re-use, resulting in the need for removal from the site. The tests may then be used to more accurately determine fertilizer application rates to supplement natural fertility levels of the re-used topsoil.

When re-use of site topsoil is considered, soil tests shall be taken from the in-place material at its natural location. Locations not acceptable for use as topsoil shall be clearly shown on the drawings and/or special provisions for removal prior to stockpiling. The Designer is responsible for initiating and directing soil testing that is to be carried out by a state laboratory or a recognized commercial laboratory, using approved methods. Soil tests shall include the following:

- a. Chemical Analysis
  - i. Bioassay Tests shall be provided to determine the persistence of plant damaging chemical residue and its damage potential. Should the bioassay tests on any samples disclose the presence of chemical activity adverse to acceptable plant growth, the material represented by those samples shall be disqualified for use as topsoil.
  - ii. Soluble Salt Tests indicating salt content in parts per million (ppm) shall be provided. If the tests disclose soluble salt concentrations in excess of 1000 ppm, the material represented by those samples shall either be disqualified for use as topsoil or a cost-effective reclamation process shall be recommended.

- iii. PH Tests shall be provided to measure acidity and alkalinity levels to assist in determining the availability of nutritional material in the soil and the consequent ability of plants to extract materials from the soil.
- iv. Phosphorus and Potassium Tests shall be provided to indicate the available nutrient levels in the soil.

b. Mechanical Analysis

- i. Percent sand, silt and clay shall be provided. Turf grown on different soils may respond differently to the same fertilizer. It is therefore important to review and understand the soil type.

c. Laboratory Recommendation

Rates for application of nitrogen, phosphorus, potassium and agricultural ground limestone or sulfur shall be provided by the testing agency. Nutrients that are already available to the plants in adequate amounts shall not be added and the use of phosphorus shall be minimized.

Soil samples shall be collected from a series of sub-sample points equally distributed across the area to be represented. All sub-samples representing the sample area near the shoulder shall be taken within 10 feet of the shoulder. These soil sub-samples shall be taken to a depth of 6 inches to 8 inches for each representative area. The sub-samples shall be thoroughly mixed together for each representative test area prior to testing. A minimum of 3 sub-samples shall be gathered for each soil sample area representing approximately 1 acre of in-place topsoil.

The Designer shall visually review areas such as ramp side slopes and snow disposal locations which show evidence of heavy erosion, poor turf growth or salt saturation as possible locations for topsoil removal. A 6 feet wide strip of topsoil along the edge of the pavement shall be removed and disposed of on mainline and ramp widening improvements. This is in addition to soil in other areas identified for removal by visual inspection and/or topsoil testing.

Additional specifications for fertilizer application use on existing trees and sod can be found in:

- Care of Existing Plant Material, Section 201 of the Standard Specifications
- Ground Preparation for Sodding, Section 252 of the Standard Specifications

## 6. Seeding and Sodding Times

### Description and Purpose:

Article 250.07 (Note 7) of the Illinois Tollway Supplemental Specifications and Article 252.04 of the Standard Specifications provide seeding and sodding dates. The Designer shall carefully consider the seasonal planting limitations for each seeding and sodding item and coordinate their timing into the construction schedule.

## 7. Selective Mowing Stakes

### Pay Item:

25000775 – SELECTIVE MOWING STAKES

### Description and Purpose:

Selective mowing stakes may be used in seeding to assist in delineating reduced or no-mow areas, in compliance with Article 250.08 of the Standard Specifications. Selective mowing stakes are installed to assist the maintenance crews by clearly directing future mowing activity at approved locations.

## 8. Mulch, Erosion Control Blankets

### Pay Items:

25100105 through 25100135 – MULCH, Various Methods

JS251105 through JS251115 – MULCH, Various Methods

25100630 – EROSION CONTROL BLANKET

25100635 – HEAVY DUTY EROSION CONTROL BLANKET

25100900 – TURF REINFORCEMENT MAT

J1251005 – EROSION CONTROL BLANKET, SHORT TERM

J1251010 – EROSION CONTROL BLANKET, BIODEGRADABLE NETTING

J1251015 – HEAVY DUTY EROSION CONTROL BLANKET, BIODEGRADABLE NETTING

### Description and Purpose:

Mulch is a protective covering of organic material typically used with permanent seeding and is laid over the soil to reduce erosion, retain moisture, retain seed and protect plantings.

These items consist of furnishing, transporting and placing straw and/or wood fiber mulch on seeded areas (Article 251.03 of the Standard Specifications and Illinois Tollway Supplemental Specifications). Material shall be in conformance with Article 1081.06 of the Standard Specifications. Refer to IDOT's Bureau of Design and Environmental Manual, Sediment Control Practices Reference Table (Figure 41-3.C) for treatments to be considered and recommended.

Article 251.04 of the Standard Specifications provides guidance on placing erosion control blankets on seeded areas. Erosion control blankets are most commonly used with permanent seeding. Materials shall be in conformance with Article 1081.10 of the Standard Specifications.

These items can be used in conjunction with Section 250 (Seeding), Section 253 (Planting Woody Material), Section 254 (Planting Perennial Plants) and subject to Article 1081.06 of the Standard Specification requirements.

Application:

Mulch, Straw, Fiber, Compost

Use with permanent seeding on prepared slopes up to 1:10 (V:H) unless erosion control blanket is provided; and

Provide erosion control blanket immediately after permanent seeding when slopes meet or exceed 1:10 (V:H).

Provide sod or seed and erosion control blanket in swales.

Unless dictated by the necessities of the project or other reasons where, in the Designer's judgment, one procedure is preferable, the Contractor should be allowed to use any or all of the following procedures:

a. Mulch Method 1

- i. Mulch Method 1 comprises the application of loose straw mulch by hand or machine.
- ii. Use in flat areas where wind displacement will not carry mulch onto the roadway or off Illinois Tollway property.
- iii. Apply at a rate of 2 tons/acre.

b. Mulch Method 2

- i. Mulch Method 2 comprises the application and stabilization of straw mulch by mechanical or chemical procedures. This method consists of the application of straw mulch at a rate of 2 tons/acre and the mulch is to be stabilized using on the following procedures:
  1. Procedure 1 consists of anchoring the straw mulch by means of mechanical stabilizer or crimper.
  2. Procedure 2 comprises the placement of straw mulch by blower, followed by an overspray of hydraulic mulch. This procedure is particularly suited to confined areas where access by a tractor might be difficult and on areas which have been hydroseeded. The hydraulic mulch is to be applied at a rate of 750 pounds/acre and water at a rate of 1,000 gallons/acre.
  3. Procedure 3 comprises the application of chemical stabilizer to blown straw mulch. The chemical binder and application rate shall be accepted by the Engineer prior to use to ensure the product is environmentally safe and acceptable. Do not use gypsum, emulsified asphalt, or plaster-like binders.

- c. Mulch Method 3
  - i. Mulch Method 3 is not used individually on the Illinois Tollway.
- d. Mulch Method 3A
  - i. This method is to be used for temporary erosion control only. Refer to Section 3.2.4.33 for more information.
- e. Mulch Method 4
  - i. This method consists of applying compost combined with a performance additive designed to bind/stabilize the compost.
  - ii. The compost/performance additive mixture shall be applied to the surface of the slope to a depth of 2 inches using a pneumatic blower.
  - iii. Mulch Method 4 can only be used if approved by the Illinois Tollway Landscape Architect.

*Erosion Control Blanket:*

- These items are typically more effective than mulch alone and consist of furnishing and installing erosion control blankets over prepared permanent seeding beds as shown on the plans or as directed by the Engineer.
- Provide erosion control blanket immediately after permanent seeding when slopes meet or exceed 1:10 (V:H).
- Because of continuing new technology in erosion control, the Designer is encouraged to explore new methods and materials beyond those shown in the Standard Specifications for erosion control and turf reinforcement. The Designer shall be familiar with such products, evaluate and recommend their use when appropriate. For example, if there is a slope failure as a result of regular subsurface drainage, other methods shall be employed to correct the problem prior to application of erosion control blanket surface treatments or when innovative methods and/or materials may be beneficial to prevent scour at drain outlets.
- Erosion control blankets are typically used in conjunction with permanent seeding, as per Section 250 of the Illinois Tollway Supplemental Specifications and Article 1081.04 of the Standard Specifications.
  - Erosion Control Blanket, Biodegradable Netting
    - This item is a single net Rolled Erosion Control Product (Erosion Blanket) intended for short term use on shallow slopes. The netting is intended to biodegrade in 90 days. This product is described in Articles 1081.10(a) and (b) of the Standard Specifications.
    - Excelsior Blanket or Knitted Straw Mat can be used interchangeably.

- Shall be used in conjunction with permanent seeding, Section 250 of the Illinois Tollway Supplemental Specifications.
  - Blanket with biodegradable netting should be used in environmentally sensitive areas to avoid potential wildlife entrapment and/or as specifically directed by Illinois Tollway Landscape Architect or EP.
  - Use in swales where the hydraulic shear is less than 2.1 pounds per square foot.
  - To be used on all slopes within a 30 feet wide strip adjacent to the roadway and ramp pavements where wind and debris create a difficult environment for seed germination.
  - May be used with Temporary Ground Cover, Article 280.04(f) of the Standard Specifications, for temporary erosion control in swales with a maximum velocity of 6 feet per second.
- Heavy Duty Erosion Control Blanket, Biodegradable Netting
    - This item is a double net Rolled Erosion Control Product (Erosion Control Blanket) intended for short term use on steeper slopes. The bottom netting is intended to remain in service as turf reinforcement. This product is described in Article 1081.10(c) of the Standard Specifications.
    - To be used as a permanent, non-degradable liner primarily to stabilize channel configurations while permanent vegetation is establishing. This blanket works best when drainage can be diverted until turf is established.
    - To be used with permanent seeding of specified channels or ditches with velocities between 4 feet and 6 feet per second.
    - When velocities exceed 6 feet per second, line channel or ditch per Illinois Tollway DDM, Section 6.0 – *Ditch and Channel Design*.
    - Heavy duty blanket with biodegradable netting should be used in environmentally sensitive areas to avoid potential wildlife entrapment and/or as specifically directed by Illinois Tollway EP.

## 9. Sodding

### Pay Items:

25200100 – SODDING

25200110 – SODDING, SALT TOLERANT

Description and Purpose:

In general, sodding is to be used on a limited basis at specifically designated areas, such as toll plazas, applicable ditches, maintenance buildings, oasis or other support complexes. Sodding (salt tolerant) shall be used in designated areas within 15 feet minimum from the edge of pavement, around parking lots and in other well-drained locations that receive salt-laden drainage and spray. Salt tolerant sod may also be considered for use in swales or shallow drainage ditches where flow velocities do not exceed 4 feet per second and slope is no more than 10%. A channel lining shall be required where the flow velocity exceeds 4 feet per second and ditch slope exceeds 10%. For additional details see Section 252 of the Standard Specifications and the Illinois Tollway DDM, Section 6.0 Ditch and Channel Design. Sodding shall be done in conformance with Article 1081.03 of the Standard Specifications.

**10. Perennial Plugs**Pay items:

JT254010 through JT254019 – BIOSWALE PLUGS  
 JT254100 – WETLAND PLUGS  
 JT254110 – DETENTION BASIN PLUGS

Description and Purpose:

Native plugs should be used on a limited basis when standing water prevents the use of seed. In instances where shallow standing water is the norm within wet bottomed retention/detention ponds and/or ditches with backwater from waterways, plugs should be considered in place of seed. In all other instances, seed and erosion control blanket will be used in conformance with Article 4.2.1 of this manual. For additional details, see Section 254 of the Standard Specifications. The planting of plugs shall be done in conformance with Article 1081.02 of the Standard Specifications.

Application:

- If contract completion date is later than October 1st, plugs shall not be utilized unless written authorization from the Illinois Tollway Landscape Architect.
- Plugs through erosion control blanket may be used in project specific inclusion of bioswales or wetland mitigation.

**11. Watering and Supplemental Watering**Pay Item:

25200200 – SUPPLEMENTAL WATERING

Description and Purpose:

Supplemental watering may be required for sod during periods of heat or drought, per Article 252.09 (Sodding) of the Standard Specifications.

Application:

- During the period of establishment, watering is typically incidental for woody plants (Article 253.15 of the Standard Specifications) and Perennial Plants (Article 254.09 of the Standard Specifications) and is not considered supplemental.
- If woody plant supplemental watering and seeding supplemental watering is needed, it shall be provided in the Special Provisions for each contract.
- Supplemental Watering is used in conjunction with sodding and is most critical during the initial 60-day establishment period. This item is typically used to supplement the contractors required watering during the first 30 days in the event of hot or dry periods and/or for watering needed beyond the first 30 day growing period. This item is not required for seeding.

**12. Herbicide and Weed Control**Description and Purpose:

Weed control should be used for weed management opportunities and may be needed either before planting or during the period of establishment. Weeding for woody plants shall be done during the period of establishment per Article 253.15 of the Standard Specifications and at the end of the period of establishment for perennial beds per Article 254.09 of the Standard Specifications. Additionally, weed control may be used for existing areas or as required at the direction of the Engineer.

Weed control may be accomplished through the use of Weed Barrier Fabric, as specified in Article 1081.14; mulch for woody plants, as specified in Article 253.11; or mulch for perennial beds, as specified in Article 254.07 (all of the Standard Specifications).

**13. Filter Fabric**Pay Item:

28200200 - FILTER FABRIC

Description and Purpose:

Filter fabric is used to provide a separation between fine grained and open graded materials in order to prevent intermingling of the materials. For example, it may be used to separate planting mix from drain stone, drain stone from subgrade or planting mix from coarse subgrade. Filter fabric shall be in accordance with Article 1080.03 of the Standard Specifications.

**4.2.2 Planting, Removal and Care**

Per Sections 253 and 254 of the Standard Specifications, all placements of plantings along the roadside shall comply with Illinois Tollway and AASHTO safety recommendations, including those for clear zones and distance from signage and shall follow the overall guidelines to blend the facility into the surrounding areas.

When trees must be removed, opportunities for providing replacement shall be pursued (See Appendix K). The addition of vegetation can be reviewed once all existing desirable vegetation has been protected.

The adjacent land use and topography shall provide direction for the intensity of the planting. Rural areas may require little or no planting, while more urban sites should be more heavily planted in an effort to blend into the adjacent community. A natural and sustainable landscape shall be the basis for all roadside design.

## 1. Clearing, Tree Removal and Protection, Care and Repair of Existing Plant Material

### Pay Items:

20100110 through 20101700

### Description and Purpose:

Clearing shall consist of removal and disposal of obstructions, logs and vegetation according to Article 201.01 of the Standard Specifications. Clearing shall be used when vegetation interferes with construction activities, when dead or diseased trees are present in the work zone or as directed by the Illinois Tollway, except when specified in the plans that the tree should be protected. The Landscape DSE and CM shall review and inventory the existing vegetation and complete site inspections to save or protect existing vegetation of value, whenever possible.

### Application:

- Care of existing plant material consists of pruning, fertilizing and watering of existing vegetation to remain and shall be done in accordance with Articles 201.05 and 201.06 of the Standard Specifications. Repair or replacement of existing plant material consists of restoring plants damaged by the Contractor to its original condition, per Article 201.07 of the Standard Specifications. The need for protection or repair of existing plant material will be identified by the Landscape DSE during the design phase. These determinations will be made based on field inspections; project specific conditions; plant size, type, condition; and professional judgment. Plant material damaged by the Contractor shall be repaired at no additional cost to the Illinois Tollway.
- The need for the repair or replacement of existing plant material shall be evaluated during design by the DSE's Landscape Architect.

## 2. Planting Woody Plants and Perennial Plants

### Pay Items:

A2000086 through B2013920 – TREES, Various  
 C2C00124 through C3006024 – SHRUBS, Various  
 D2000090 through D2C055G3 – EVERGREENS, Various  
 E20010G1 through E20342GP – VINES, Various  
 F30010Y2 through H20040Y2 – SEEDLINGS, Various  
 K0012970 through K0013110 – PERENNIALS, Various

Description and Purpose:

Landscape within the Illinois Tollway ROW accomplishes multiple purposes, including permanent erosion control, aesthetics, pollinator habitat and visual screening of adjacent residential or commercial properties. It is important to design this border to be aesthetically appealing and to blend in with surroundings, but it is also important to provide a landscape that is functional and easily maintained. Maintenance activities, such as mowing, can be minimized through the use of woody plants (trees, shrubs, evergreens, vines) or perennial herbaceous plants (ornamental plants or native plants, including wetland, woodland or prairie plants). Plants shall be chosen based on general landscape design, location, growing requirements, maintenance requirements and aesthetics. Materials for planting of woody and perennial plants shall be done in conformance with Section 1081 of the Standard Specifications.

Application:

- The Illinois Tollway may initiate adjacent landowner or municipal outreach. The adjacent entities may provide input for the Illinois Tollway to consider and may result in cost-participation by the local entity to increase quality or quantity of the landscape plan.
- All placement of plantings along the roadside shall comply with Illinois Tollway and AASHTO safety recommendations, including clear zones and distance from signage and shall follow overall guidelines to blend the facility into the surrounding areas.
- When trees must be removed, opportunities for providing replacements shall be pursued (See Appendix K, Preservation, Removal and Replacement of Trees). The addition of vegetation can be reviewed once all existing desirable vegetation has been protected.
- The adjacent land-use and topography should provide direction for the intensity of the planting. Rural areas may require little or no planting while more urban sites should be more heavily planted in an effort to blend into the adjacent community. A natural effect should be the basis for all roadside design.
- The Landscape DSE shall also address maintenance, such as mowing expectations. Mowing and Turf Maintenance activities should be minimized in areas of woody plants (trees, shrubs, evergreens, vines) or perennial herbaceous plants (ornamental plants or native plants, including wetland, woodland or prairie plants). Plants shall be chosen based on general landscape design, location, growing requirements, maintenance requirements and aesthetics.

**4.2.3 Protection of Existing Resources**

Certain existing landscape features, whether manmade or natural, shall be protected through a process of identification; enhancement, restoration or preservation; avoidance; or incorporation into the design of the highway improvement. A variety of techniques may be employed to protect identified resources, including both temporary and permanent measures, as appropriate. The appropriate technique shall be determined during the design concept phase. Consider the following when protecting existing features.

### 1. Review Previous Commitments

Review commitments in environmental documents, ESIS, tree surveys, wetland reports, public hearing records and other project documents for areas requiring attention or protection during project development and implementation.

### 2. Statute Protection

Determine which features of the project area are protected by statute. These may include wetlands, endangered species, nature preserves, natural areas and cultural sites.

### 3. Cultural Environment

Establish the project's setting or cultural environment. Determine if the project is in a rural, urban or a transitional area. The design shall be influenced by the cultural and physical environment adjacent to it. Existing features shall be protected when possible.

## 4.2.4 Grading and Alignment

The portion of the design process concerning grading and alignment offers the best opportunity to fit the highway into the landscape, thereby avoiding unnecessary environmental impacts and yielding a functional and aesthetically pleasing form. The basic guidelines for grading and alignment are included in the AASHTO *"Guide for Transportation Landscape and Environmental Design"*. In addition, consider the following:

### 1. Environmental Commitments

During Master Planning, ensure that all environmental commitments, including the EVA and tree inventories, are reviewed and noted so that these issues can appropriately influence alignment and grading decisions. These commitments will also serve as controls during Design Phase plan preparation.

### 2. Surrounding Landscape

Consider the surrounding landscape and the best application of site cut and fill for functional use and balancing. Blend the alignment and grading to fit the existing topography with minimal visual or physical disruption. Where appropriate, screen unsightly views of industrial areas, junkyards, etc. Vegetative screens should also be provided as visual buffers for residential development.

### 3. Clearing and Construction Limits

Carefully plan and define the establishment of clearing and construction limits. Consider both existing landscape features and critical areas.

### 4. Plant Survival

Consider the survival potential of both existing plantings to be preserved and proposed plantings at the time that grading decisions are made. Existing plantings are vulnerable when there is the potential for disturbance to root zones or drainage patterns. This is

especially critical in confined areas where landscape features such as screening are proposed.

## 5. Animal Crossings

Consider the need for amphibian, animal and ungulate crossing needs along rivers, creeks and ditches below bridge structures. Check with local law enforcement officials about animal strike issues in the area of roadway improvements. Roadways that cross through wooded areas, grasslands or farm fields likely will have animal movement needs that can be accommodated with additional soil path widths and high-water concrete abutment ledges along water resources below bridge spans. Consider raising bridge height or lengthening bridge spans to accommodate crossings below roadways. Consider lower right-of-way fence sections or openings to accommodate ungulate pass-through at safe bridge underpass locations. Coordinate with Illinois Tollway Landscape Architect and EP to determine the best course of action.

### 4.2.5 Erosion Control

The measures incorporated in the Landscape Plans shall permanently protect the site from erosion and sediment damage to adjacent sites.

Every effort shall be made to schedule the permanent erosion control to be completed as early as practical, to minimize the cost of the temporary control measures.

All projects shall comply with current provisions of the EPA's "Clean Water Act" (see Illinois Tollway DDM). Erosion control plans shall clearly describe the location, type of controls and scheduling to be implemented in each stage of construction. Special resources, such as wetlands, shall be clearly identified along with erosion protection measures. Specific project needs, problem areas and erosion control philosophy shall be identified and discussed at the Preconstruction Erosion and Sediment Control Meeting. The Preconstruction Erosion and Sediment Control Meeting also includes a field review.

### 4.2.6 Drainage

Design of the highway drainage system shall be part of and not separate from, the natural hydrology of the environment. Consider the environmental impacts of drainage, stormwater management, detention or retention basin design shapes and the impact that water retention and/or soil saturation will have on existing or proposed plant material. See the Illinois Tollway DDM for more detailed guidance.

### 4.2.7 Visual Quality

Encouraging a visual change that will improve or enhance the surrounding landscape ensures a project's visual quality. Define the visual environment by identifying key views, analyzing resources, depicting the project's proposed appearance and assessing its visual impacts. Manmade features such as buildings, bridges, retaining walls, sound walls and other structures shall also be assessed during the project design and integrated successfully into the Illinois natural landscape.

To support the reduction of maintenance and enhance visual quality in a project, evaluate the project's relationship with regards to the following:

- Natural landscape elements;
- Topographical, physical characteristics and functional use of cut and fill;
- Ecological influences;
- Residential areas and their character;
- Historical features;
- Visual and psychological values;
- Existing land uses; and
- Existing and proposed project profile and structures.

#### **4.2.8 Safety**

Safety shall be the highest functional goal of every Illinois Tollway design and all landscape and environmentally based design principles shall be compatible with such criteria. During design, consider the following:

- Soil erosion/pollution control;
- The location, size and height (mature size, height) of plantings in relation to sight distance, drainage and clear zones;
- Pedestrian safety in areas such as oasis areas, toll plazas and bikeways;
- Reduction of headlight glare and late-day solar glare;
- Directional and feature delineation or screening;
- Snow drifting and environmental conditions control; and
- Sound abatement.

#### **4.2.9 Historical Influences**

Historical influences may affect the project by way of a nearby destination, an adjacent feature or in some cases, as a part of the roadway or its appurtenances. Pay particular attention to such influences and prepare the project design to be compatible or to harmonize with them. Historical markers, structures, districts and bridges all may influence the design of a project. Required avoidance of or mitigation of impacts to, historical resources are usually identified in early project coordination, but the Landscape DSE shall be alert for any unidentified items. Special consideration may need to be given to landscape treatment within designated National Register Historic Districts.

#### 4.2.10 Planting Treatments

##### 1. Treatment of Mainline ROW

- a. Roadside plantings under normal conditions are viewed at high speeds. The amount, spacing and size of planting shall be sufficient to produce a grouping that will be recognized by the passing motorists. At high speeds, the angle of a driver's vision narrows, and distant views are held for a longer time. Therefore, typically, lineal and more extensive swaths of planting masses shall be used along mainline locations with decreasing plant bed size near or at plazas.
- b. There should be an overall naturalistic theme for the landscape design, with groups of primarily native trees following free form lines, unless a specific localized design intent requires a more formal planting. Shrub planting beds shall follow contour lines in defined, intentional shapes. Shrubs shall be spaced close enough, so plants grow together, reducing future maintenance.
- c. Maintenance shall be a prime consideration of the landscape design. Integration of tree, shrub and turf areas shall be designed to minimize mowing around individual plants. This may be achieved by using architectural mow lines to create areas where mowing is reduced and by planting predominantly in natural groupings. Trees shall be located within no mowing zones or reduced mow areas whenever possible. Selective Mowing Stakes shall be considered to delineate areas that do not require mowing.
- d. All tree and shrub plantings shall be kept out of the clear zone as defined in AASHTO - Roadside Design Guide and a minimum distance of 60 feet beyond the edge of pavement as noted on Illinois Tollway Standard K1 – Landscape Planting Details. Refer to the Illinois Tollway Traffic Barrier Guidelines for more information. Typically, tree and shrub plantings shall not be located within Zone 1 as shown in Figure 1 (Article 4.2.1.2 of this manual, General Seed Class Usage Zones). In locations where improvements are proximate to aviation facilities, planting plans shall consider FAA Advisory Circular AC150/5200-33C, Hazardous Wildlife Attractants on or Near Airports and apply appropriate plant types.
- e. The need for salt tolerant plant material and maintenance concerns limit the Designer's choice of plant material. However, where possible in Zone 2, in areas where there is increased ROW, the Designer may expand the range of plant material to include a variety of tree and shrub material.
- f. All public and Illinois Tollway utilities, including overhead wires and ITS cameras, shall be carefully reviewed and located when determining locations for plant material during the design. Tall growing trees shall not be proposed where conflict with overhead wires is possible. Trees shall not be planted where the spread of its branches could interfere with or obstruct ITS camera views or the lighting of any luminaries or signs. To avoid potential conflicts, trees and shrubs shall be offset from utilities a minimum distance as indicated on the Standard Drawings and any additional clearance required by Utility Companies.
- g. Locations adjacent to wooded areas may require agency coordination and plantings to create the effect of bringing the woods onto the ROW. This design

principle helps to break up the appearance of cleared linear roadway space and better blends the project into the surroundings. Tree species and spacing shall be similar to those in the existing wooded area, if possible.

- h. The plant selection shall identify the project location relative to adjacent aviation facilities. Woody plants proximate to the airport shall conform with the USDA-WS Illinois Preferred Airport Plant List. Seeding of Illinois Tollway ROW within 5 miles of an airfield shall use the Illinois Tollway FAA Approved seed mixes as appropriate.
- i. Trees and shrubs shall be planted in natural groupings rather than individual specimens whenever possible. Individual plantings may be considered only when accentuating a site or architectural feature is desirable.
- j. The Landscape DSE shall check with the Illinois Tollway coordinator to locate any areas where experience has demonstrated the need for control of drifting snow. Proper shrub plantings shall be considered at these locations to form a snow barrier to control drifting.
- k. Examine the highway alignment to determine where to maximize the visual experience and safety. Screening of undesirable views and enhancing scenic views shall be considered to provide less distraction to motorists. In order that natural features may be preserved, the Illinois Tollway Landscape Architect shall be consulted during the conceptual planning stage.
- l. When planting is desirable near signage, the appropriate plants shall be positioned behind highway signs. This shall be done only to provide a background or frame for better visibility and shall not obstruct views to any signage. Plantings near signs shall be positioned so that there is enough space between the plantings and the sign for a mower or the sign is to be positioned in the planting bed. Plantings shall not be placed where they may interfere with the operation of any breakaway devices.
- m. Existing trees shall be conserved and protected whenever practical. When removal of existing vegetation is required, the Landscape DSE shall consider the Illinois Tollway's tree replacement policy and where appropriate, add additional plant material to help compensate for their loss. The trees to be saved, the method of protection and any maintenance requirements shall be shown on the construction plans.
- n. The design shall take into consideration salt spray and drifting from winter plowing operations. Assume winter winds will be predominantly from the north, northwest and west. Salt drifting can extend to approximately 150 feet, with heavy concentrations of salt spray up to 30 feet from the edge of pavement. The design shall address ramps, plazas and other areas where concentrations of salt saturated surface runoff may affect adjacent turf.
- o. Large planting projects may include a small percentage of fast-growing trees to provide the immediate benefit of large plant material while slower growing plants mature.

- p. Subsurface drainage on cut slopes that interferes with soil sediment control or proper vegetation establishment shall be identified and evaluated for repair.

## 2. Treatment of Drainage Channels and Ditches

Ditch bottom erosion and the depositing of sediment from the erosion of side slopes, are prevailing problems with ditches. Erosion control treatment of these slopes shall be handled in accordance with Article 3.2.1 of this manual, to ensure minimum sedimentation of drainage ways during turf establishment.

A minimum of 0.3% longitudinal slope shall be maintained in any channel and ditch bottom where positive drainage is expected. Flatter minimum grades will produce pockets of standing water and cattail growth and may increase the need for future maintenance. For roadside ditches with a longitudinal slope less than 0.3% (i.e., due to some special local conditions), a ditch lining shall be provided. Consult the Illinois Tollway DDM for details.

The ditch cross section shall typically be trapezoidal in shape and maintain a 4-foot wide bottom whenever possible. (Per the Illinois Tollway Roadway Design Criteria Manual, ditches shall maintain a minimum 4-foot wide bottom.) The erosion control measures shall be salt tolerant sodding for low-volume ditches or swales, salt tolerant wetland grass, sedge and forb seeding with erosion control blanket lining or open cell articulated concrete block mats, depending on specific slope and hydraulic conditions. Wetland plant plugs and any other available erosion control product existing on the market can be used if cost effective, upon the acceptance by the Illinois Tollway PM.

See Article 4.2.1, Paragraph 8 for applications of Erosion Control Blankets. When salt tolerant sod or wetland grass, sedge and forb seeding is used in ditch bottoms, it is best to restrict flowing water until turf or wetland plants are established. When sodding is used, water velocities up to 4 feet per second may remain without being restricted during establishment. Properly placed sod is normally the preferred cover in swales because there is no time lag between installation and the time when the channel is protected by vegetation. Sod also offers more flexibility in the timing of installation than seeding. Channel lining shall be required where the design discharge velocity exceeds the scour velocity of the soil. See Illinois Tollway DDM Section 6.0 – Ditch and Channel Design Section for additional information.

Trees or shrubs shall not be planted in or near drainage ways where their presence would interfere with the flow of water or access to drainage structures.

## 3. Treatment of Toll Plazas

The pavement at toll facilities may receive increased salt applications during winter snow removal. The Landscape DSE shall consider salt drifting and higher concentrations of brine associated with snow plowing operations in these locations. Pavers matching the building materials or other sustainable options, shall be considered at appropriate locations along curbs and adjacent to pavements into turf areas. The paver's width shall be approximately 24 inches wide. The Landscape DSE should consider material that compliments the building at manned toll plazas.

Plantings around manned plazas shall leave views open from the toll plaza to the adjacent mainline travel lanes. All plaza plantings shall avoid plant types and massing that people or vehicles could hide in or behind or cause visual obstructions for safety or security. These

plantings shall be selected from the most salt tolerant plants on the plant schedule. Appropriately placed irrigation links shall be considered at manned toll plazas to allow easy irrigation hook-ups for plant material.

#### 4. Treatment of Interchanges

All new interchange projects require evaluation for design opportunities of grading, reduced mowing maintenance areas and landscape plantings. The actual quantity of landscape material used will vary depending on the surrounding terrain and the details of the specific interchange. Trees shall be used to blend the improvement into the surrounding area and the use of shrubs shall typically be minimal. The use of low-profile native grasses with flowering forbs is encouraged in the interior of appropriate infields to reduce the requirement for mowing and create pollinator habitat. Interchanges and ramps may be viewed as gateways to some local communities. The Landscape DSE shall consider any defined character developed by local municipalities when preparing design concept options.

It is important to plan for the use of salt on ramps. Damage to turf areas where pavement runoff exits the pavement shall also be addressed in the design. Erosion control blanket shall be used on all slopes within 30 feet of the edge of pavement on the ramps. Gutter may be used on ramp shoulders in locations shielded by guardrails or where flow concentrations require its use. Surface and subsurface drainage outlets shall be located to minimize erosion potential of concentrated water outfalling on slopes.

When additional fill is available on-site or from nearby contracts, the Designer shall consider reducing the steepness of slopes as much as practical on crossroad embankments. This may reduce project cost and guardrail quantity, increase safety, decrease maintenance and improve aesthetics.

#### 5. Treatment of Maintenance Facilities

These sites may benefit from plantings and grading that serve to benefit the site and screen portions of the site from the roadway. Screening of undesirable views and enhancing scenic views shall be considered to provide less distraction to the motorists.

The runoff from these sites may contain high concentrations of salt or other material being stored at the facility. Therefore, salt-tolerant vegetation shall be used where practical near pavements. Use of a vegetative filter strip where the runoff leaves the site is recommended.

#### 4.2.11 Protection of Existing Plants

Refer to Appendix K in this manual, for the Illinois Tollway policy and guidelines for the preservation, removal and replacement of trees. Preservation measures shall be evaluated whenever existing vegetation is present in the construction area or when adjacent existing vegetation may be affected by the construction operations. See Article 3.2.4.12 of this manual. Tree Protection in this manual and the Illinois Tollway Standard K1 Drawings for the tree protection detail. The following summarizes the key points in the Illinois Tollway's policy on treatment of trees.

##### 1. Removal of Trees

In deciding whether trees should be removed, the environmental, aesthetic and functional value of the trees shall be considered, along with the potential hazard posed by the trees. An on-site inspection shall be made by a team which includes expertise in roadside safety, landscape architecture and environmental impact analysis to help evaluate these factors.

## 2. Replacement of Trees

A landscape inventory is typically made during the Phase 1 project planning stage. A minimum quantity of replacements shall be established based on the Illinois Tollway criteria for removal and replacement of trees. In summary, trees with a trunk size of 6 inches or more DBH and other desirable trees planted within the previous 15 years shall be replaced. Minimum ratios for replacement of trees shall be as provided in Appendix K and as determined by analysis of the vegetative assessment information.

### 4.2.12 Plant Materials

Roadway trees often have reduced growth rates compared to their woodland counterparts. Poor soils, compacted soils, salt drifting, harsh microclimates and low maintenance are some of the conditions that affect the roadway landscape. Generally, native or indigenous plants are most suited to meet these conditions. Only plants within the hardiness zone and eco-regional native plants grown within 200 miles of the specific landscape project shall be specified (as designated in the current publication, *Plant Hardiness Zones*, by the Agricultural Research Service, U.S. Department of Agriculture, listed in the FHWA Ecoregional Revegetation Application (ERA) plant selection spreadsheet tool (<http://www.nativerevegetation.org/era/>) and mapped as native from the same County or counties surrounding the project site per the USDA Plants Database and Map application . See Appendix L for details.

#### 1. Size

The favored planting size for shade trees is from 1 inch to 2 ½ inches in caliper (diameter) measured at 6 inches above root flare, intermediate trees, evergreen trees between 4 feet and 6 feet in height and shrubs between 18 inches and 30 inches in height. These sizes are general requirements and shall be evaluated for each individual project and plant species. Some specimen trees near plazas or other features, for example, may be larger than typical mainline plantings. Using larger sizes provides immediate visual impact but requires longer periods for the plant to become established and therefore increases maintenance.

#### 2. Root

All deciduous trees larger than 1-inch in caliper or 4 feet in height shall be specified as “balled and burlapped root type”. All evergreen trees shall be specified as “balled and burlapped” root type. Shrubs shall be specified as either “balled and burlapped” or “container grown”. Bare root material may be used for smaller plant material but shall be approved by the Illinois Tollway’s Landscape Architect prior to specifying.

#### 3. Plans and Legend

When the scope of work includes the planting of trees and shrubs as part of the general roadway improvement plans, a separate Plant Materials List shall be included in the plans in addition to that provided in the Summary of Quantities (See Table 3). If conditions prevent the

planting work from being performed concurrently, the landscape plans shall be able to be removed and function independently.

**Table 2  
Landscape Materials List**

Pay Item	Description	Unit	Quantity	Record Quantity	Typical Plant Spacing	Comments
20101400	Nitrogen Fertilizer Nutrient	Pound	300			30 pound/acre
20101600	Potassium Fertilizer Nutrient	Pound	900			90 pound/acre
25200110	Sodding (Salt Tolerant)	SY YD	8,500			No fertilizer
JIA20011	Tree, <i>Gleditsia triacanthos inermis</i> 'Skyline' (Skyline Thornless Common Honeylocust), 1-1/2" Caliper, Balled and Burlapped	Each	36		35' o.c. or as indicated	Specimen qual. B&B root
JIA20020	Tree, <i>Quercus macrocarpa</i> (Bur Oak), 1-1/2" Caliper	Each	50		40' o.c. or as indicated	Specimen qual. B&B root
JIC20010	Shrub, <i>Lonicera tatarica</i> Arnold Red, (Arnold Red Tatarian Honeysuckle), 6" Height	Each	32		7' o.c.	Specimen qual. B&B root
JIC20015	Shrub, <i>Cephalanthus occidentalis</i> (Buttonbush) Container Grown, 3-Gallon	Each	160		6' o.c.	Full specimen
Jl251010	Erosion Control Blanket, Biodegradable Netting	SQ YD	104,544			Observe stapling requirements
JS250220	Seeding, Class 2E	Acre	21.6			Salt tolerant
JT253020	Summer Watering	Unit	102			
K0026710	Tree Care Mulch	Lump Sum	1			

The Illinois Tollway desires durable, diverse, native and hardy non-native landscape materials as identified in the approved plant lists. The Designer is encouraged to review the Illinois Tollway's current plant selection list and to work with the Illinois Tollway Landscape Architect when developing initial project plant lists, so the most current landscape developments and initiatives can be considered. The Designer shall also work with Illinois Tollway and local nurseries to determine the availability and condition of the plant types selected. If specific

plant types are not available, the Designer shall work with Illinois Tollway to find suitable alternates for incorporation into the design documents.

The need for plant substitutions during the construction phase of the project shall be avoided wherever possible. The design documents shall indicate that the contractor is to locate and secure the plant materials as soon as possible to avoid the need for substitutions. The Designer shall provide a process by which a list of substitutions (if required) are to be provided to the Illinois Tollway for review and approval. The process shall require the contractor to provide documentation from local sources that the specified materials are unavailable and indicate the proposed substitution for each unavailable species. The substitution process may also include the option to provide the specified species in smaller sizes and or numbers or a combination thereof. Potential sources for determining plant substitutions may include:

- Illinois Tollway Plant Materials Selection List
- Morton Arboretum  
<http://www.mortonarb.org/trees-plants/tree-and-plant-advice/tree-species-list/filters>
- FHWA Ecoregional Revegetation Application (ERA)  
<http://www.nativerevegetation.org/era/>
- USDA Plants Database  
<https://plants.usda.gov/>
- Chicago Botanic Garden  
<https://www.chicagobotanic.org/plantinfo/plantprofiles>

Proposed plant material for substitution shall closely match the criteria of the original plant species such as habit, size, flowering/fruit, hardiness, growth rate, disease resistance, drought and salt tolerance, solar exposure, texture and other physical attributes. Consideration shall be given to surrounding land use requirements, such as FAA flight zones and other physical limitations when evaluating the appropriateness of a plant substitution.

The tree and shrub materials listed below have provided satisfactory performance in roadway environments. The list is not intended to be all inclusive and the designer shall use the resources listed above along with the most current Illinois Tollway Plant List Selection Matrix to expand plant lists where necessary to meet the site-specific requirements for each project.

#### **Shade Trees:**

*Celtis occidentalis*, Common Hackberry  
*Gleditsia triacanthos var. inermis*, Thornless Common Honeylocust\*  
*Ginkgo biloba*, Ginkgo\*  
*Gymnocladus dioica*, Kentucky Coffeetree\*  
*Quercus alba*, White Oak\*  
*Quercus bi-color*, Swamp White Oak  
*Quercus macrocarpa*, Bur Oak  
*Salix alba var.*, Weeping Willow\*  
*Ulmus*, var., Elm, several varieties

#### **Intermediate Trees:**

*Acer tataricum*, Tatarian Maple  
*Crataegus crus-galli 'thornless'*, Cockspur Hawthorn  
*Malus varieties*, Crabapple, several varieties  
*Syringa reticula*, Japanese Tree Lilac\*

**Evergreen Trees:**

*Picea abies*, Norway Spruce  
*Picea pungens*, Colorado Spruce\*  
 \* Designates Species with some tolerance to salt drifting

**Shrubs:**

*Cornus racemosa*, Gray Dogwood  
*Forsythia x intermedia*, Border Forsythia  
*Juniper var.*, Junipers, several varieties  
*Lonicera, non-invasive varieties*  
*Rhus aromatica*, Fragrant Sumac  
*Rhus typhina*, Staghorn Sumac  
*Ribes alpinum*, Alpine Currant  
*Spiraea bumalda 'froebelii'*, Froebel Spirea  
*Syringa vulgaris*, Lilac, several varieties  
*Viburnum*, several varieties

4. Graphic Symbols

See Appendix I for sample drawings used with the Landscape Plans.

5. Recurring General Planting Notes

Refer to current Illinois Tollway Standard Drawing: Section K – Erosion Control & Landscape for various Landscape Planting Details and Planting Notes that identify additional required criteria for planting design and installation of plant material.

**4.2.13 Restoration of Staging Areas**

When a staging area is provided in the design, Restoration Plans shall be provided in the contract documents. When staging area restoration is not required in the contract plans, the Contractor shall provide a Restoration Plan for review and acceptance by the Illinois Tollway. The Contractor shall obtain a permit from the Illinois Tollway and post a bond for the completion of restoration work. Requirements for Use of Illinois Tollway Property to Support Construction Activities form shall be completed and provided to the Illinois Tollway. This form (which can be found on the Illinois Tollway's WBPM system) details general requirements for the use of staging areas and documents efforts needed to support this activity.

When the staging site is ready to be restored in accordance with the approved Restoration Plan, the CM will advise the Illinois Tollway's PM and Landscape Architect. At that time, any replacement trees should be tagged and inspected at the nursery prior to arriving at the site. Once the final grading and permanent seeding work is completed, inspected and approved, the tree

locations may be staked by the Illinois Tollway's Landscape Architect. The Contractor shall maintain and guarantee the trees in accordance with the Standard Specifications and Provisions.

### 4.3 Landscape Plans

The landscape plans, special provisions and ESCPs that are part of the total erosion and sediment control program for the site shall identify all measures to be installed; indicate a planting schedule; and provide maintenance, care and fertilizer requirements. Maintenance, care and fertilizer shall be for a 3-year establishment period (Standard and Supplemental Specifications Section 253). Incorporate a tree preservation plan and define what standard drawing/specification is to be used to ensure that the correct measure is applied. See Appendix I of this Manual for examples of Landscape Drawings developed for the Illinois Tollway and refer to Standard and Supplemental Specifications.

The background documentation maintained by the Designer shall meet the requirements in the Illinois Tollway *Environmental Studies Manual*. This documentation shall also identify any special requirements used to select specific measures.

Additional Special Provisions may be developed for payment of plant care, materials and labor needed to encourage the proper health of the plantings over the establishment period.

### 4.4 Responsibilities

Below is a discussion of the responsibilities of the various entities.

#### 4.4.1 Illinois Tollway Responsibilities

1. General
  - a. Will facilitate the coordination necessary with other agencies and local governments;
  - b. Will determine, with the assistance of the Designer, the potential impacts of the project and the need for permits and/or approvals. The impact of the project and need for permits and/or approvals shall be identified by the Landscape DSE.
  - c. The Illinois Tollway will review the plans prepared by the Designer for technical adequacy, compliance with the Landscape Goals established for the project and confirm that the bid schedule includes all relevant measures.
  - d. Illinois Tollway Staff Responsibilities:  
(Description of staff responsibilities can vary by contract and is for guidance only.)
2. Illinois Tollway Project Manager (PM)

The PM will be the primary point of contact with the Designer. The PM will be responsible for ensuring that the Designer complies with the directives of this manual and for disseminating information and submittals to the appropriate individuals. Permit submittals,

when needed, shall be prepared by the Designer and submitted to the PM. The PM will submit permit applications to the appropriate Tollway staff or outside agencies.

### 3. Illinois Tollway Environmental Planner

The EP will be responsible for ensuring that the PM and therefore the Designer and the Landscape DSE, is aware of how environmental concerns affect the project or study. The EP will review all related submittals, including permit applications to the Illinois Tollway by the Designer and other reports and contract documents as necessary and will ensure that the landscape plans follow the Landscape Goals for the project. The EP will be the primary point of contact with state and federal resource and regulatory agencies.

### 4. Illinois Tollway Landscape Architect

The Landscape Architect will primarily administer the Illinois Tollway policy and procedures for the application and planning of natural elements and the reduction of impacts on the landscape, including but not limited to, vegetation. The Landscape Architect will administer Illinois Tollway policies and procedures with a concern for stewardship and conservation of natural resources, aesthetics and sensitivity to the community, with the goal of constructing roadways that improve mobility while enhancing the qualities of a place. The responsibilities of the Landscape Architect can vary by contract. The Landscape Architect, on a typical project, will guide the work as follows:

- a. Advise the Designer, EP, Landscape DSE and other members of the project team on in-the-field site investigations, the systematic examination of the site, the collection of site data and analysis of existing site conditions;
- b. Determine the need and requirement of an EVA. Review the Issues and Opportunities Diagram and EVA, as applicable, to assist in establishing the Landscape Goals for the project;
- c. Determine tree replacement requirements for proposed tree removals.
- d. Review any landscape design standards developed by County, local agencies or municipalities with the Designer and the Landscape DSE and determine to what extent they should be adopted for use on the project;
- e. Assist in establishing the Landscape Goals for the project;
- f. Advise the Designer and the Landscape DSE on the selection of seed mixes, plant material and on the site and landscape design direction;
- g. Make the final assessment of the seed mixes and plant material selected to determine its suitability for site conditions and salt tolerance;
- h. Approve the selection of bare root plant material where appropriate;
- i. Review any addenda for compliance with Landscape Goals of the project; and
- j. Work with the CM to nursery tag plant material and review placement of plant material on-site.

#### 4.4.2 Designer Responsibilities

- Ensuring that the approach to the project follows the principles of “Context Sensitive Design” as stated in Article 4.1.1. Design Approach of this manual;
- Coordinating with the Illinois Tollway EP, Illinois Tollway Landscape Architect, the Landscape DSE and other members of the project team to facilitate in-the-field investigations, systematic examination of the site, collection of site data and the analysis of existing site conditions;
- Ensuring that the finding of the data collection and analysis phase and the EVA is recorded on the Issues and Opportunities Diagram;
- Verifying County or local agency requirements under the direction of the PM;
- Reviewing any landscape design standards developed by County, local agencies or municipalities with the Illinois Tollway’s Landscape Architect and the Landscape DSE and determining to what extent they should be adopted for use on the project;
- Assisting in establishing the Landscape Goals for the project;
- Reviewing current Illinois Tollway Standard Drawings, Specifications and Supplemental Specifications for the latest criteria;
- Ensuring that the landscape concept design is coordinated with the grading and drainage concepts;
- Ensuring that the landscape design addresses all the issues and opportunities delineated on the Issues and Opportunities Diagram;
- Ensuring that the landscape plans conform to Illinois Tollway Standard Specifications and Standard Drawings and preparing or directing the preparation of Plans, Special Provisions and Special Drawings as required;
- Reviewing design submittals to ensure that the landscape concepts are coordinated and complimentary to the proposed drainage, grading, ITS camera and lighting designs; as well as for technical adequacy, compliance with the landscape goals established for the project and confirming that the bid schedule includes all relevant measures;
- Filling out and submitting to the Illinois Tollway the Landscape Design Submittal Checklist;
- Assisting the Landscape DSE in making the final assessment of the plant material selected in determining its suitability for site conditions and salt tolerance
- Ensuring that invasive, aggressive, poisonous and high maintenance plants are not specified for use within the Illinois Tollway corridors;
- Ensuring that proposed tree and shrub locations do not encroach on clear zones or required offset distances from roadway pavement and utility lines.

- Reviewing, if required, any addenda for clarity and accuracy;
- Ensuring that background documentation meets the requirements of the Illinois Tollway *Environmental Studies Manual*; and
- Attending the Erosion and Sediment Control Preconstruction Meeting.

#### 4.4.3 Construction Manager Responsibilities

- Scheduling and holding the Preconstruction Erosion and Sediment Control Meeting. See the Illinois Tollway's WBPM system for the most recent version of the A-40 form;
- Nursery tagging, transporting, storing and on-site locating of all plant materials in accordance with Standard Specification Sections 253 and 254 – Planting, under the guidance of the Illinois Tollway Landscape Architect;
- Ensuring that the plant material and other landscape features are installed in accordance with the plans and specifications and consulting with the Illinois Tollway's Landscape Architect or other Illinois Tollway designated representatives if the landscape plans need to be changed;
- Developing the A-37, Period of Establishment form and providing copies to the Illinois Tollway PM, Illinois Tollway Landscape Architect and Landscape Contractor (See the Illinois Tollway's WBPM system for the most recent version of the A-37 Landscape Period of Establishment form);
- Ensuring that electronic copies of these forms shall be filed in the Illinois Tollway's WBPM system;
- Ensuring that the Landscape Design Submittal Checklist is filed in the Illinois Tollway's WBPM system; and
- Inspecting the installed measures, in cooperation with the Contractor's Landscape Manager, to ensure compliance with all plans, specifications and procedures.

## 4.5 Approvals

### 4.5.1 Coordination with Other Agencies/Municipalities

Illinois Tollway facilities cross and interconnect with State, Township, County and Municipal properties and roadways. Requirements, design standards or defined landscape character established by these agencies/municipalities should be followed, if possible, within, adjacent to or leading to that agency's jurisdiction. Opportunities to expand local partnerships or apply innovative designs should also be explored. It is the responsibility of the Designer to obtain the requirements of all agencies within and directly adjacent to the project limits, as well as identify opportunities to expand local partnerships. The Designer, in coordination with the Illinois Tollway PM, shall evaluate these requirements and opportunities and determine their applicability to the Illinois Tollway project. The Illinois Tollway PM will be informed of all coordination efforts to be performed prior to contact being made with any agencies. Special attention shall be paid in the coordination of the following:

- Any public outreach or presentations that may be required by the municipality or agency in question;
- The potential of developing gateway treatments at the intersections, with roadways leading into towns or other important facilities;
- The potential of developing gateway treatments at the crossing of boundaries such as county lines or the crossing of natural features such as rivers;
- The preservation of viewsheds that are deemed important by the municipality or agency;
- The screening of views to or from the Illinois Tollway facility; and
- The blending of the Illinois Tollway facility into the landscape character of its surroundings.

#### **4.5.2 Coordination with Other Design Disciplines**

The character and concept for the landscape design will be developed in conjunction with the overall design team in an integrative design approach. The drainage systems, grading and other elements shall be part of the same overall landscape character as defined in the Landscape Goals developed for the project. Coordination with the other disciplines of the design team shall take place throughout all phases of the project. The Landscape DSE shall consider structures, site furnishings, plant materials, topography, grading, swales and ponds in order to develop innovative design solutions and collaborative problem solving. The design, however, shall comply with the criteria as laid out in the Illinois Tollway DDM or other Illinois Tollway criteria and shall also place safety as the highest concern.

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## APPENDIX A IEPA NOI Form Sample



# Illinois Environmental Protection Agency

Bureau of Water • 1021 North Grand Avenue East • P.O. Box 19276 • Springfield • Illinois • 62794-9276

## Division of Water Pollution Control Notice of Intent (NOI) for General Permit to Discharge Storm Water Associated with Construction Site Activities

### Permit Information

Master Permit Number: ILR100000

NPDES ID: ILR10ZA8Q

State/Territory to which your project/site is discharging: IL

Is your project/site located on federally recognized Indian Country Lands? No

By Indicating "Yes" below, I confirm that I understand that this General Permit only authorizes the allowable stormwater discharges in Part I.B.1 and Part I.B.2. Any discharges not expressly authorized in part I.B.3 of this permit cannot become authorized or shielded from liability under CWA Section 402(k) by disclosure to EPA, State, or local authorities after issuance of this permit via any means, including the Notice of Intent (NOI) to be covered by the permit, the Stormwater Pollution Prevention Plan (SWPPP), during an inspection, etc. If any discharges requiring NPDES permit coverage other than the allowable stormwater discharges listed in Part I.B.1 and Part I.B.2, they must be covered under another NPDES permit.

Yes

Is your construction site less than one acre? No

### Owner and Operator Information

#### Owner (Company) Information

Owner (Company) Name: Illinois Tollway

Owner Type: State

#### Owner (Company) Mailing Address

Address Line 1: Illinois Tollway

Address Line 2: 2700 Ogden Ave

City: Downers Grove

ZIP/Postal Code: 60515

State: IL

#### Owner (Company) Point of Contact Information

First Name Middle Initial Last Name: Bryan Wagner

Professional Title: Env Program and Policy Manager

Phone: 630-241-6800

Ext.:

Email: BWagner@getipass.com

#### Operator (Contractor) Information

Is the Operator Information the same as the Owner Information? No

Operator (Contractor) Name: Lorig Construction Company, LLC

#### Operator (Contractor) Mailing Address

Address Line 1: 250 E Touhy Ave

Address Line 2:

City: Oak Brook

ZIP/Postal Code: 60523

State: IL

#### Operator (Contractor) Point of Contact Information

First Name Middle Initial Last Name: Mary Althison

Professional Title: PM

Phone: 847-989-1369

Ext.:

Email: malthison@lorigconstruction.com

#### NOI Preparer Information

This NOI is being prepared by someone other than the certifier.

### Project/Site Information

Project/Site Name: 4352: Windsor Road Bridge Reconstruction

## Project/Site Location

Address Line 1: Windsor Drive over I-88, MP 29.7

Address Line 2:

City: Oak Brook

ZIP/Postal Code: 60523

State: IL

County or Similar Division: DuPage

## Latitude/Longitude for the Project

Latitude/Longitude Format: Degrees Minutes Seconds

Latitude/Longitude: 41° 51' 3.9996"N, 87° 55' 30"W

## Other Project Information

Approximate Construction Start Date: 02/03/2021

Approximate Construction End Date: 05/03/2021

Total Size of Construction Site in Acres: 2021

Type of Construction: Transportation

SIC Code:

Type a detailed description of the Project:

The improvements to be constructed under this contract shall be performed along Windsor Drive between Station 11+25 to Station 16+75 in DuPage County, Illinois. The work under this contract includes, but is not limited to:  
1.) Existing Bridge No. 299 Demolition, 2.) Existing Bridge No. 299 Replacement, 3.) Pavement Removal, 4.) Roadway Pavement Construction, 5.) Grading & Earth Embankment, 6.) Erosion Control & Landscaping, 7.) Lighting, 8.) Associated Maintenance of Traffic

### SWPPP Information

Has the SWPPP been prepared in advance of filing this NOI as required? Yes

## SWPPP Contact Information

First Name Middle Initial Last Name: Karl Wilson

Organization:

Professional Title: CM

Phone: 847-636-4456

Ext.:

Email: kwilson@patrickco.com

## Project Inspector

Is the Project Inspector Information the same as the SWPPP Contact Information? Yes

Use the space below to upload a copy of your SWPPP.

Name	Uploaded Date	Size
 PT_IEPA_SWPPP_4352_01272021.pdf (attachment/1318161)	02/03/2021	4.58 MB

### Receiving Water Information

Does your storm water discharge directly to: Storm Sewer

Owner of Storm Sewer System: Illinois Tollway

Name of closest receiving waterbody to which you discharge: Salt Creek

### Historic Preservation and Endangered Species Compliance

Has the project been submitted to the following state agencies to satisfy applicable requirements for compliance with Illinois law on:

➔ Historic Preservation Office: Yes

Use the space below to upload a copy of your Historic Preservation Office approval letter.

Name	Uploaded Date	Size
 4352C_4352D_HARGIS.pdf (attachment/1318235)	02/03/2021	335.18 KB
 MOU.pdf (attachment/1318236)	02/03/2021	1.98 MB

➔ IDNR Impact Assessment Section: Yes

Use the space below to upload a copy of your EcoCAT approval letter.

Name	Uploaded Date	Size
 MOU.pdf (attachment/1318240)	02/03/2021	1.98 MB

Name	Uploaded Date	Size
 4352C_4352D_ECOCAT.pdf (attachment/1318239)	02/03/2021	1.19 MB

Certification Information 

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Signing an electronic document on behalf of another person is subject to criminal, civil, administrative, or other lawful action.

**Certified By:** Kelsey Musich

**Certifier Title:** Senior Environmental Planner

**Certifier Email:** kmusich@getipass.com

**Certified On:** 02/03/2021 8:01 PM ET

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**APPENDIX B EPA's Stormwater Phase II Final Rule,  
Small Construction Program Overview**



# Storm Water Phase II Final Rule

## Small Construction Program Overview

### Storm Water Phase II Final Rule Fact Sheet Series

#### Overview

1.0 – Storm Water Phase II  
Proposed Rule: An Overview

#### Small MS4 Program

2.0 – Small MS4 Storm Water  
Program Overview

2.1 – Who's Covered? Designation  
and Waivers of Regulated Small  
MS4s

2.2 – Urbanized Areas: Definition  
and Description

#### *Minimum Control Measures*

2.3 – Public Education and  
Outreach

2.4 – Public Participation/  
Involvement

2.5 – Illicit Discharge Detection  
and Elimination

2.6 – Construction Site Runoff  
Control

2.7 – Post-Construction Runoff  
Control

2.8 – Pollution Prevention/Good  
Housekeeping

2.9 – Permitting and Reporting:  
The Process and Requirements

2.10 – Federal and State-Operated  
MS4s: Program Implementation

#### Construction Program

3.0 – Construction Program  
Overview

3.1 – Construction Rainfall  
Erosivity Waiver

#### Industrial "No Exposure"

4.0 – Conditional No Exposure  
Exclusion for Industrial Activity

The 1972 amendments to the Federal Water Pollution Control Act, later referred to as the Clean Water Act (CWA), prohibit the discharge of any pollutant to navigable waters of the United States from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit. Efforts to improve water quality under the NPDES program traditionally have focused on reducing pollutants in industrial process wastewater and municipal sewage treatment plant discharges. Over time, it has become evident that more diffuse sources of water pollution, such as storm water runoff from construction sites, are also significant contributors to water quality problems.

Sediment runoff rates from construction sites are typically 10 to 20 times greater than those from agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction activity can contribute more sediment to streams than can be deposited over several decades, causing physical and biological harm to our Nation's waters.

In 1990, EPA promulgated rules establishing Phase I of the NPDES storm water program. Phase I addresses, among other discharges, discharges from large construction activities disturbing 5 acres or more of land. Phase II of the NPDES storm water program covers small construction activities disturbing between 1 and 5 acres. Phase II became final on December 8, 1999 with small construction permit applications due by March 10, 2003 (specific compliance dates will be set by the NPDES permitting authority in each State). This fact sheet outlines the construction activities covered by Phase I and Phase II, including possible waiver options from Phase II coverage, and the Phase II construction program requirements.

### Who Is Covered Under the Phase I Rule?

#### Sites Five Acres and Greater

The Phase I NPDES storm water rule identifies eleven categories of industrial activity in the definition of "storm water discharges associated with industrial activity" that must obtain an NPDES permit. Category (x) of this definition is construction activity, commonly referred to as "large" construction activity. Under category (x), the Phase I rule requires all *operators* of construction activity *disturbing 5 acres or greater of land* to apply for an NPDES storm water permit. Operators of sites disturbing less than 5 acres are also required to obtain a permit if their activity is part of a "larger common plan of development or sale" with a planned disturbance of 5 acres or greater. "Disturbance" refers to exposed soil resulting from activities such as clearing, grading, and excavating. Construction activities can include road building, construction of residential houses, office buildings, industrial sites, or demolition.

### What Is Meant by a "Larger Common Plan of Development or Sale"?

As defined in EPA's NPDES storm water general permit for large construction activity, a "larger common plan of development or sale" means a contiguous area where multiple separate and distinct construction activities are occurring under one plan (e.g., the operator is building on three half-acre lots in a 6-acre development). The "plan" in a common plan of development or sale is broadly defined as any announcement or piece of documentation

(including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that construction activities may occur on a specific plot.

### What Is the Definition of an “Operator” of a Construction Site?

As defined in EPA’s storm water general permit for large construction activity, an “operator” is the party or parties that has:

- ❑ Operational control of construction project plans and specifications, including the ability to make modifications to those plans and specifications; *or*
- ❑ Day-to-day operational control of those activities that are necessary to ensure compliance with a storm water pollution prevention plan (SWPPP) for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions).

There may be more than one party at a site performing the tasks related to “operational control” as defined above. Depending on the site and the relationship between the parties (e.g., owner, developer, contractor), there can either be a single party acting as site operator and consequently be responsible for obtaining permit coverage, or there can be two or more operators, all obligated to seek permit coverage. It is important to note that NPDES-authorized States may use a different definition of “operator” than the one above.

### How Is the Phase II Construction Rule Related to the Phase I Construction Rule?

In 1992, the Ninth Circuit court remanded for further proceedings portions of EPA’s existing Phase I storm water regulation related to the category (x) discharges from large construction activity (NRDC v. EPA, 966 F.2d at 1292). EPA responded to the court’s decision by designating under Phase II storm water discharges from construction activity disturbing less than 5 acres as sources that should be regulated to protect water quality. The Phase II Rule designates these sources as “storm water discharges associated with *small construction* activity,” rather than as another category under “storm water associated with *industrial* activity.”

### Who Is Covered Under the Phase II Construction Rule?

#### Sites Between One and Five Acres

The Storm Water Phase II Rule automatically designates, as small construction activity under the NPDES storm water permitting program, all operators of construction site activities that result in a *land disturbance of equal to or greater than 1 and less than 5 acres*.

#### Sites Less Than One Acre

Site activities disturbing less than 1 acre are also regulated as small construction activity if they are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than 1 acre and less than 5 acres, or if they are designated by the NPDES permitting authority. The NPDES permitting authority or EPA Region may designate construction activities disturbing less than 1 acre based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the United States.

### Are Waivers Available for Operators of Regulated Construction Activity?

Yes, but only for small, not large, construction activity. Under the Phase II Rule, NPDES permitting authorities have the option of providing a waiver from the requirements to operators of small construction activity who certify to either one of two conditions:

- ① Low predicted rainfall potential (i.e., activity occurs during a negligible rainfall period), where the rainfall erosivity factor (“R” in the Revised Universal Soil Loss Equation [RUSLE]) is less than 5 during the period of construction activity; *or*
- ② A determination that storm water controls are not necessary based on either:
  - (A) A “total maximum daily load” (TMDL) that address the pollutant(s) of concern for construction activities; **OR**
  - (B) An equivalent analysis that determines allocations are not needed to protect water quality based on consideration of instream concentrations, expected growth in pollutant concentrations from all sources, and a margin of safety.

**Pollutants of concern** include sediment or a parameter that addresses sediment (such as total suspended solids, turbidity, or siltation) and any other pollutant that has been identified as a cause of

The intent of the waiver provision is to waive only those sites that are highly unlikely to have a negative effect on water quality. Therefore, before applying for a waiver, operators of small construction activity are encouraged to consider the potential water quality impacts that may result from their project and to carefully examine such factors as proximity to water resources and sensitivity of receiving waters.

**a. What is the Rainfall Erosivity Factor in Waiver ❶?**

**W**aiver ❶ uses the Rainfall Erosivity Factor to determine whether the potential for polluted discharge is low enough to justify a waiver from the requirements. It is one of six variables used by the Revised Universal Soil Loss Equation (RUSLE)—a predictive tool originally used to measure soil loss from agricultural lands at various times of the year on a regional basis—to predict soil loss from construction sites. The Rainfall Erosivity Factor waiver is time-sensitive and is dependent on when during the year a construction activity takes place, how long it lasts, and the expected rainfall and intensity during that time. For information about the rainfall erosivity waiver, see Fact Sheet 3.1. Charts detailing the value of the Rainfall Erosivity Factor by particular regions can be found in Chapter 2 of the RUSLE user’s guide, which can be downloaded at: <http://www.epa.gov/owm/sw/phase2>.

**b. What is a “TMDL” in Waiver ❷?**

**F**or impaired waters where technology-based controls required by NPDES permits are not achieving State water quality standards, the CWA requires implementation of the TMDL process. The TMDL process establishes the maximum amount of pollutants a waterbody can assimilate before water quality is impaired, then requires that this maximum level not be exceeded.

A TMDL is done for each pollutant that is found to be contributing to the impairment of a waterbody or a segment of a waterbody. To allow a waiver for construction activities, a TMDL would need to address sediment, or a parameter that addresses sediment such as total suspended solids, turbidity, or siltation. Additional TMDLs addressing common pollutants from construction sites such as nitrogen, phosphorus, and oil and grease also may be necessary to ensure water quality protection and allow a waiver from the NPDES storm water program.

A TMDL assessment determines the source or sources of a pollutant of concern, considers the maximum allowable level of that pollutant for the waterbody, then allocates to each source or category of sources a set level of the pollutant that it is allowed to discharge into the waterbody. Allocations to point sources are called wasteload allocations.

**How Would an Operator Qualify for, and Certify to, Waiver ❷?**

**E**PA expects that when TMDLs, or equivalent analyses are completed, there may be a determination that certain classes of sources, such as small construction activity, would not have to control their contribution of pollutants of concern to the waterbody in order for the waterbody to be in attainment with water quality standards (i.e., these sources were not assigned wasteload allocations). In such a case, to qualify for waiver ❷, the operator of the construction site would need to certify that its construction activity will take place, and the storm water discharges will occur, within the area covered either by the TMDLs or equivalent analysis. A certification form would likely be provided by the NPDES permitting authority for this purpose.

**What Does the Phase II Construction Program Require?**

**T**he Phase II Final Rule requires operators of Phase II small construction sites, nationally, to obtain an NPDES permit and implement practices to minimize pollutant runoff. It is important to note that, locally, these same sites also may be covered by State, Tribal, or local construction runoff control programs (see Fact Sheets 2.6 and 2.7 for information on the Phase II small MS4’s construction program). For the Phase II small construction program, EPA has taken an approach similar to Phase I where the program requirements are not fully defined in the rule but rather in the NPDES permit issued by the NPDES permitting authority.

EPA recommends that the NPDES permitting authorities use their existing Phase I large construction general permits as a guide to developing their Phase II small construction permits. In doing so, the Phase II requirements would be similar to the three general Phase I requirements summarized below.

- ❑ Submission of a *Notice of Intent* (NOI) that includes general information and a certification that the activity will not impact endangered or threatened species. This certification is unique to EPA’s NOI and is not a requirement of most NPDES-delegated State’s NOIs;
- ❑ The development and implementation of a *Storm Water Pollution Prevention Plan* (SWPPP) with appropriate BMPs to minimize the discharge of pollutants from the site; and

- ❑ Submission of a *Notice of Termination* (NOT) when final stabilization of the site has been achieved as defined in the permit or when another operator has assumed control of the site.

### Can the Permitting Authority Reference a Qualifying Erosion and Sediment Control Program in NPDES Construction Permits?

Yes. The Phase II Rule allows the NPDES permitting authority to include in its NPDES permits for large and for small construction activity conditions that incorporate by reference qualifying State, Tribal, or local erosion and sediment control program requirements. A qualifying program must include the following requirements:

- ❑ Requirements for construction site operators to implement appropriate erosion and sediment control best management practices;
- ❑ Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste that may cause adverse impacts to water quality;
- ❑ Requirements for construction site operators to develop and implement a storm water pollution prevention plan; and
- ❑ Requirements to submit a site plan for review that incorporates consideration of potential water quality impacts.

In addition to the four elements above, a qualifying program for large construction activities must also include any additional requirements necessary to achieve the applicable technology-based standards of “Best Available Technology” (BAT) and “Best Conventional Technology” (BCT) based on the best professional judgment of the permit writer.

Should a State, Tribal, or local program include one or more, but not all, of the elements listed above, the permitting authority can reference the program in the permit, provided it also lists the missing element(s) as a condition in the permit.

### What are Some Recommended BMPs for Small Construction Sites?

The approach and BMPs used for controlling pollutants in storm water discharges from small construction sites may vary from those used for large sites since their characteristics can differ in many ways. For example, operators of small sites may have more limited access to qualified design personnel and technical information. Also, small sites may have less space for installing and maintaining certain BMPs.

As is the case with all construction sites, erosion and sediment control at small construction sites is best accomplished with proper planning, installation, and maintenance of controls. The following practices have shown to be efficient, cost effective, and versatile for small construction site operators to implement. The practices are divided into two categories: non-structural and structural.

#### ❑ Non-Structural BMPs

- Minimizing Disturbance
- Preserving Natural Vegetation
- Good Housekeeping

#### ❑ Structural BMPs

##### *Erosion Controls*

- Mulch
- Grass
- Stockpile Covers

##### *Sediment Controls*

- Silt Fence
- Inlet Protection
- Check Dams
- Stabilized Construction Entrances
- Sediment Traps

Most erosion and sediment controls require regular maintenance to operate correctly. Accumulated sediments should be removed frequently and materials should be checked periodically for wear. Regular inspections by qualified personnel, which can allow problem areas to be addressed, should be performed after major rain events.

### For Additional Information

#### Contact

- ☞ U.S. EPA Office of Wastewater Management
  - Internet: [www.epa.gov/npdes/stormwater](http://www.epa.gov/npdes/stormwater)
  - Phone: (202)-564-9545
  
- ☞ Your local soil conservation district office. They can provide assistance with RUSLE and other conservation related issues.
  - A list of conservation district contacts is available at: [www.nacdnet.org/resources/cdsonweb.html](http://www.nacdnet.org/resources/cdsonweb.html)

#### Reference Documents

- ☞ Storm Water Phase II Final Rule Fact Sheet Series
  - Internet: [cfpub.epa.gov/npdes/stormwater/swfinal.cfm](http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm)
  
- ☞ Storm Water Phase II Final Rule (64 FR 68722)
  - Internet: [www.epa.gov/npdes/regulations/phase2.pdf](http://www.epa.gov/npdes/regulations/phase2.pdf)
  
- ☞ *Agricultural Handbook Number 703, Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE)*, Chapter 2, pp. 21-64, January 1997.
  - Internet: [www.epa.gov/npdes/pubs/ruslech2.pdf](http://www.epa.gov/npdes/pubs/ruslech2.pdf)
  
- ☞ *Guidance for Water Quality Based Decisions: The TMDL Process*. April 1991. U.S. EPA Office of Water. EPA 440/4-91-001.
  - Internet: [www.epa.gov/OWOW/tmdl](http://www.epa.gov/OWOW/tmdl)
  
- ☞ *NPDES General Permit for Storm Water Discharges from Construction Activities* (63 FR 7857).
  - Internet: [www.epa.gov/npdes/pubs/cgp-nat.pdf](http://www.epa.gov/npdes/pubs/cgp-nat.pdf)  
[www.epa.gov/npdes/pubs/cgp-nat2.pdf](http://www.epa.gov/npdes/pubs/cgp-nat2.pdf)  
[www.epa.gov/npdes/pubs/cgp-nat3.pdf](http://www.epa.gov/npdes/pubs/cgp-nat3.pdf)  
[www.epa.gov/npdes/pubs/cgp-nat4.pdf](http://www.epa.gov/npdes/pubs/cgp-nat4.pdf)

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## **APPENDIX C Illinois Tollway Sample Erosion Control Plans**

# EROSION AND SEDIMENT CONTROL CONSTRUCTION SEQUENCE

## PRESTAGE

I-290  
INSTALL DITCH CHECKS AS SHOWN ON PLAN. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #4 WITH TEMPORARY CULVERT AND CULVERT INLET PROTECTION FENCE ALONG THE EAST SHOULDER OF WESTBOUND I-290 AT APPROXIMATELY STATION 332+00. CONSTRUCT STONE OUTLET STRUCTURE SEDIMENT TRAP #1 IN EXISTING WB I-290 DITCH AT STA. 328+70. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH ON DISTURBED AREAS.

RAMP I  
INSTALL DITCH CHECKS AS SHOWN ON PLAN. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #6 WITH TEMPORARY CULVERT AND CULVERT INLET PROTECTION FENCE ALONG THE EAST SHOULDER AS TEMPORARY PAVEMENT IS INSTALLED. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH ON DISTURBED AREAS.

EXISTING RAMP H  
CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #1 WITH TEMPORARY CULVERT AND CULVERT INLET PROTECTION FENCE ALONG RAMP H AT APPROXIMATELY STA. 120+00. CONSTRUCT CULVERT INLET PROTECTION #1 (STONE) AND ERECT SILT FENCE PRIOR TO GRADING AND CONSTRUCTION OF TEMPORARY RAMP H. USE SAME-DAY STABILIZATION ON EAST EMBANKMENT OF TEMPORARY RAMP H. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH.

INSTALL RECTANGULAR INLET PROTECTION AND DITCH CHECKS TO THE SOUTHWEST OF RAMP H. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #3.

THORNDALE AVENUE/RAMP G  
INSTALL CULVERT INLET PROTECTION FENCE, ERECT SILT FENCE, AND INSTALL DITCH CHECKS. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #2 ALONG RAMP G AT APPROXIMATELY STA. 17+00. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH WHEN GRADING FOR TEMPORARY PAVEMENT IS COMPLETED.

## STAGE 1

I-290  
BEFORE REMOVING EXISTING NOISE WALL, INSTALL SILT FENCE ON BOTH SIDES FROM STA. 328+00 TO STA. 350+50. MAINTAIN BOTH SILT FENCES UNTIL CONSTRUCTION OF PROPOSED NOISE WALL IN THIS AREA IS COMPLETED.

INSTALL DITCH CHECKS AND CONSTRUCT SILT FENCE ALONG RIGHT OF WAY. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH AS SHOWN ON PLANS AS GRADING IS COMPLETED. INSTALL RECTANGULAR INLET PROTECTION AT EACH PROPOSED INLET, IN NON-PAVED AREAS, AS THEY ARE COMPLETED.

RAMP G5  
AS PROPOSED DRAINAGE DITCH IS CONSTRUCTED BETWEEN STA. 509+00 AND STA. 519+00, INSTALL CULVERT INLET PROTECTION FENCES AT THE UPSTREAM END OF EACH CULVERT. INSTALL FILTER FABRIC INLET PROTECTION (FIP) AT EACH PROPOSED INLET, IN PAVED AREAS, AS THEY ARE COMPLETED. INSTALL RECTANGULAR INLET PROTECTION AT EACH PROPOSED INLET, IN NON-PAVED AREAS, AS THEY ARE COMPLETED.

USE SAME-DAY STABILIZATION ON EMBANKMENT AT STA. 619+00. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH AS DITCH GRADING IS COMPLETED.

RAMP K4/RAMP K3  
CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #5 WITH TEMPORARY CULVERT AND CULVERT INLET PROTECTION FENCE ALONG THE SOUTH SHOULDER OF THORNDALE AVENUE AT APPROXIMATELY STA. 120+75. PRIOR TO CLEARING AND GRUBBING FOR EMBANKMENT CONSTRUCTION OF RAMP K4 AND RAMP K3. CONSTRUCT SEDIMENT BASIN DEWATERING DEVICE #1 AT STA. 332+00. AS GRADING IS COMPLETED, INSTALL DITCH CHECKS, ECB & TS, AND TEMPORARY STABILIZATION WITH STRAW MULCH AS SHOWN IN PLANS.

INSTALL FIP AT EACH EXISTING INLET ALONG PARK BOULEVARD, AS SHOWN ON PLANS.

AS DRAINAGE SYSTEM IS CONSTRUCTED, INSTALL CULVERT INLET PROTECTION FENCES AT THE UPSTREAM END OF EACH CULVERT. INSTALL FIP AT EACH PROPOSED INLET, WITHIN PROPOSED ROADWAY, AS THEY ARE COMPLETED. INSTALL RECTANGULAR INLET PROTECTION AT EACH PROPOSED INLET, IN NON-PAVED AREAS, AS THEY ARE COMPLETED.

## STAGE 1 (CONTINUED)

CONSTRUCTION OF PIERS NOS. 3, 4, 5, 7, AND 8  
PRIOR TO CONSTRUCTION, CONSTRUCT CULVERT INLET PROTECTION #2 AND INSTALL ALL DITCH CHECKS AND SILT FENCE AS SHOWN ON PLANS.

USE TEMPORARY STABILIZATION WITH STRAW MULCH ON GROUND DISTURBED BY CONSTRUCTION.

TEMPORARY PAVEMENT FOR DETOURS  
CONSTRUCT TEMPORARY PAVEMENT WITH TEMPORARY CULVERT AND CULVERT INLET PROTECTION FENCE AS SHOWN ON PLANS AT STA. 108+30 AND STA. 91+60.

## STAGE 2

I-290  
MAINTAIN EROSION CONTROL MEASURES PLACED PREVIOUSLY FOR AS LONG AS WORK ZONE REMAINS ACTIVE. INSTALL FIP ALONG CENTER MEDIAN BETWEEN STA. 362+50 AND STA. 380+50 AT EACH EXISTING INLET AND AT EACH PROPOSED INLET AS THEY ARE COMPLETED.

TEMPORARY CONNECTION RAMP J  
INSTALL DITCH CHECKS AS SHOWN ON PLAN. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH AS GRADING IS COMPLETED. CONSTRUCT TEMPORARY PAVEMENT WITH TEMPORARY CULVERT AND CULVERT INLET PROTECTION FENCE.

CONSTRUCTION AROUND PIERS NOS. 3, 4, 5, 7, AND 8  
MAINTAIN CULVERT INLET PROTECTION AND SILT FENCES. USE TEMPORARY STABILIZATION WITH STRAW MULCH ON GROUND DISTURBED BY CONSTRUCTION AND REPLACE DITCH CHECKS, AT THE DISCRETION OF THE ENGINEER.

## STAGE 2B

I-290  
MAINTAIN FIP'S ALONG I-290 MEDIAN UNDER RAMP G5 FLYOVER AS SHOWN ON PLANS.

BEFORE OVERHEAD SIGN TRUSS AND DYNAMIC MESSAGING SIGN FOUNDATION CONSTRUCTION ALONG I-290 THE CONTRACTOR MUST INSTALL FIP'S, DITCH CHECKS, AND SILT FENCE AS SHOWN ON EROSION CONTROL DETAIL SHEET EC-21.

RAMP G5 SOUTH EMBANKMENT  
PRIOR TO CONSTRUCTION AND GRADING, CONSTRUCT CULVERT INLET PROTECTION #3 (STONE) AND INSTALL ALL DITCH CHECKS AND SILT FENCE AS SHOWN ON PLANS.

RAMP G5 SOUTH APPROACH EMBANKMENT SHALL BE CONSTRUCTED PER TOLLWAY STANDARD K1-07. TEMPORARY PIPE SLOPE DRAINS SHALL BE INSTALLED PER STANDARD. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH AS GRADING IS COMPLETED PER STANDARD.

USE TEMPORARY STABILIZATION WITH STRAW MULCH ON GROUND DISTURBED BY CONSTRUCTION, AT THE DISCRETION OF THE ENGINEER.

PARK BOULEVARD  
WETLAND SITE 150 IS A PROTECTED WETLAND AND SHALL BE DISTURBED LESS THAN 0.01 ACRES BY POND GRADING AND PARK BOULEVARD CONSTRUCTION ACTIVITIES. INSTALL SUPER SILT FENCE ALONG EXISTING RIGHT OF WAY AND ALONG THE PERIMETER OF WETLAND SITE 150 AS SHOWN ON PLANS. INSTALL SILT CURTAIN IN WETLAND SITE 149 AT THE LIMITS OF GRADING AND INSTALL CULVERT INLET PROTECTION AT THE INLET AT STA. 104+45.4 O/S +230.6' PRIOR TO CONSTRUCTION AND GRADING ACTIVITIES.

MAINTAIN FIP'S AT EXISTING INLETS TO REMAIN ALONG PARK BOULEVARD THAT WERE INSTALLED IN STAGE 1. INSTALL FIP AT EACH PROPOSED INLET AS THEY ARE COMPLETED. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH AND DITCH CHECKS AS GRADING IS COMPLETED.

CONSTRUCTION AROUND PIERS NOS. 3, 4, 5, 7, AND 8  
MAINTAIN CULVERT INLET PROTECTION AND SILT FENCES. USE TEMPORARY STABILIZATION WITH STRAW MULCH ON GROUND DISTURBED BY CONSTRUCTION AND REPLACE DITCH CHECKS, AT THE DISCRETION OF THE ENGINEER.

RAMP G5 NORTH EMBANKMENT  
CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE #7 ALONG THE WEST SHOULDER OF RAMP G1. PRIOR TO CONSTRUCTION, CONSTRUCT SEDIMENT BASIN DEWATERING DEVICE #2 AND INSTALL ALL DITCH CHECKS AS SHOWN ON PLANS. INSTALL ALL SILT FENCE EXCEPT AT TOE OF SLOPE. INSTALL CULVERT INLET PROTECTION FENCE ON BOTH ENDS OF THE EXISTING CULVERT NEAR CONSTRUCTION ENTRANCE #7.

RAMP G5 NORTH EMBANKMENT SHALL BE CONSTRUCTED PER TOLLWAY STANDARD K1-07. TEMPORARY PIPE SLOPE DRAIN SHALL BE INSTALLED PER STANDARD. INSTALL TEMPORARY STABILIZATION WITH STRAW MULCH AS GRADING IS COMPLETED PER STANDARD.

USE TEMPORARY STABILIZATION WITH STRAW MULCH ON GROUND DISTURBED BY CONSTRUCTION, AT THE DISCRETION OF THE ENGINEER. SILT FENCE AT TOES OF SLOPE SHALL BE INSTALLED WHEN EMBANKMENT REACHES 10' IN HEIGHT.

## PERMANENT STABILIZATION / REMOVAL OF EROSION AND SEDIMENT CONTROL ITEMS

EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE WHILE CONSTRUCTION HAS TEMPORARILY OR PERMANENTLY ENDED UNTIL FINAL EROSION STABILIZATION IS COMPLETED. FOR AREAS DISTURBED BY SEDIMENT CONTROL REMOVALS, INSTALL PERMANENT SEEDING AND EROSION CONTROL BLANKET ON DISTURBED AREAS.

FILE LOC = #FILEL\$  
PLOT DATE = #DATE\$  
PLOT SCALE = #SCALE\$

<b>DRAWN BY</b>	XXX	<b>DATE</b>	X/XX/XX
<b>CHECKED BY</b>	XXX	<b>DATE</b>	X/XX/XX



REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. XXXXX
EROSION AND SEDIMENT CONTROL CONSTRUCTION SEQUENCE

SHEET NO. EC-X
DRAWING NO. XX OF XXX

## EROSION AND SEDIMENT CONTROL GENERAL NOTES

1. FOR STANDARD EROSION AND SEDIMENT CONTROL GENERAL NOTES SEE STANDARD K1 DRAWINGS.
2. SHOULD IT BE NECESSARY TO REMOVE ANY EROSION OR SEDIMENT CONTROLS FOR CONSTRUCTION REASONS, THE CONTRACTOR SHALL FIRST OBTAIN PERMISSION FROM THE ENGINEER AND SHALL REPAIR OR REPLACE THE REMOVED CONTROLS THE SAME DAY. THE COST OF REMOVING AND RE-INSTALLING THE DEVICE SHALL BE INCLUDED IN THE CONTRACT.
3. THE CONTRACTOR SHALL CONFINE CONSTRUCTION ACTIVITIES WITHIN THE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS. AREAS OUTSIDE THE SHOWN CONSTRUCTION LIMITS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED AND STABILIZED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
4. THE CONTRACTOR SHALL UTILIZE THE MAINTENANCE GUIDELINES OUTLINED IN THE SWPPP TO ENSURE GOOD AND EFFECTIVE OPERATING CONDITIONS OF THE MEASURES TO PROTECT STORMWATER QUALITY ON THE PROJECT.
5. THE CONTRACTOR SHALL TREAT DISTURBED AND OTHER PROJECT AREAS TO CONTROL DUST. WATER SHALL BE APPLIED TO SUCH AREAS AS DIRECTED BY THE ENGINEER, CALCIUM CHLORIDE SHALL NOT BE USED FOR THIS PURPOSE. DUST SHALL BE CONTROLLED THROUGH A UNIFORM APPLICATION OF SPRAYED WATER IN A MANNER MEETING ENGINEER APPROVAL AND IN ACCORDANCE WITH THE CONTRACTOR'S DUST CONTROL PLAN SUBMITTED IN ACCORDANCE WITH ARTICLE 107.36 OF THE TOLLWAY SUPPLEMENTAL SPECIFICATIONS. THE NUMBER OF APPLICATIONS AND THE AMOUNT OF WATER SHALL BE BASED ON FIELD AND WEATHER CONDITIONS.
6. A NOMINAL QUANTITY FOR ITEM JS280070 STABILIZED CONSTRUCTION ENTRANCE HAS BEEN PROVIDED FOR INSTALLING AND MAINTAINING ENTRANCES SUBJECT TO APPROVAL BY THE ENGINEER.
7. THE PERMANENT VEGETATION PLAN SHALL BE USED ON ALL DISTURBED AREAS WHENEVER POSSIBLE. A QUANTITY FOR ITEM JS280150 TEMPORARY STABILIZATION WITH STRAW MULCH HAS ALSO BEEN PROVIDED FOR TEMPORARY STABILIZATION OF ALL ANTICIPATED DISTURBED AREAS.
8. A NOMINAL QUANTITY FOR ITEM JS280051 RE-ERECT SILT FENCE HAS BEEN PROVIDED. RE-ERECTION OF SILT FENCE SHALL BE AS APPROVED AND DIRECTED BY THE ENGINEER.
9. A NOMINAL QUANTITY FOR ITEM JS280151 SAME-DAY STABILIZATION HAS BEEN PROVIDED FOR USE AS DIRECTED BY THE CM TO STABILIZE EROSION PRONE AREAS OR CRITICAL DISTURBED AREAS WHERE THERE IS A RISK THAT SEDIMENT LADEN RUNOFF MAY ENTER SENSITIVE ENVIRONMENTAL AREAS.

## IN-STREAM AND STREAMSIDE NOTES

1. NO WORK IN FLOWING WATER  
  
NO WORK SHALL BE PERFORMED IN FLOWING WATER. WORK IN AND NEAR CRITICAL AREAS SHALL BE ISOLATED FROM CONCENTRATED FLOWS OR STREAM FLOW. ONCE WORK IN THE AREA BEGINS, PRIORITY SHALL BE GIVEN TO COMPLETION OF THE WORK AND FINAL STABILIZATION OF ALL DISTURBED AREAS.
2. ISOLATED WORK AREA  
  
ALL DISTURBED AREAS AND WORK AREAS MUST BE ISOLATED FROM WATERWAY FLOWS AT ALL TIMES. THE DIVERSION/ISOLATION OF FLOW MUST BE CONSTRUCTED FROM NON-ERODIBLE MATERIALS. THE USACE MUST BE IN AGREEMENT WITH THE OVERALL METHODS OF DIVERSION/ISOLATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. WORK IN WATERWAYS
  - A. DURING WORK ON THE BANKS OF THE SWALE/RIVER/STREAM/WETLAND, WORK MUST BE TIMED TO TAKE PLACE DURING LOW OR NO FLOW CONDITIONS.
  - B. CONCENTRATED FLOW MUST BE ISOLATED FROM THE WORK AREA USING A NON-ERODIBLE COFFERDAM, STEEL SHEETS, AQUA BARRIERS, JERSEY BARRIERS, ETC. THE EXACT MEANS AND METHODS SHALL BE DISCUSSED DURING A SCHEDULED PRE-CONSTRUCTION IN-STREAM WORK MEETING. EARTHEN COFFERDAMS ARE NOT PERMISSIBLE.
  - C. THE IN-STREAM WORK PLAN WILL BE DESIGNED TO ALLOW FOR THE CONVEYANCE OF THE 2-YEAR PEAK FLOW PAST THE WORK AREA WITHOUT OVERTOPPING THE COFFERDAM. THE USACE HAS THE DISCRETION TO REDUCE THIS REQUIREMENT IF DOCUMENTED TO BE INFEASIBLE OR UNNECESSARY.
  - D. COFFERDAMS MUST BE CONSTRUCTED FROM SHORE AND NO EQUIPMENT MAY ENTER FLOWING WATER ANY TIME. IF THE INSTALLATION OF THE COFFERDAM CANNOT BE COMPLETED FROM SHORE, CONSTRUCTION OF A CAUSEWAY WILL BE NECESSARY TO ENSURE THAT EQUIPMENT DOES NOT ENTER FLOWING WATER. EQUIPMENT MAY ENTER THE COFFERED AREA ONCE THE COFFERDAM IS IN PLACE AND THE ISOLATED AREA IS DEWATERED.
  - E. IF BYPASS PUMPING IS NECESSARY, THE INLET OF THE PUMP SHALL BE PLACED IN A SUMP PIT AND THE OUTLET PLACED ON A NON-ERODIBLE ENERGY DISSIPATING SURFACE PRIOR TO REJOINING THE WATERWAY FLOW OR WETLAND. FILTERING OF BY-PASS WATER IS NOT REQUIRED UNLESS THE BYPASS WATER HAS BECOME SEDIMENT-LADEN AS A RESULT OF CONSTRUCTION ACTIVITIES.
  - F. IF DEWATERING THE CONSTRUCTION AREA IS NECESSARY, ALL WATER REMOVED FROM THE WORK AREA SHALL BE FILTERED USING FILTER BAGS OR AN ALTERNATE APPROVED MEASURE. WATER MUST HAVE SEDIMENT REMOVED BEFORE BEING ALLOWED TO RETURN TO THE SOURCE CREEK/STREAM/RIVER/WETLAND. DISCHARGE FROM DEWATERING SHALL BE TO A STABLE SURFACE THAT EXTENDS TO THE POINT WHERE WATER RE-ENTERS THE WATERWAY. DISCHARGED WATER SHALL BE NO MORE TURBID THAN THE RECEIVING WATER. DISCHARGE SHALL BE IMMEDIATELY STOPPED IF RECEIVING WATERS SHOW EVIDENCE OF CLOUDY WATER, EROSION, OR SEDIMENT ACCUMULATION.
  - G. THE SIDE SLOPES MUST BE RE-SEEDED AND STABILIZED WITH APPROPRIATE EROSION CONTROL BLANKET PRIOR TO ACCEPTING FLOWS. THE BOTTOM OF THE SWALE MUST BE BROUGHT BACK TO ITS ORIGINAL GRADE AND STABLE ENOUGH TO ACCEPT FLOWS.
  - H. AN IN-STREAM WORK PLAN MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY WORK NEAR WETLANDS OR WATERS OF THE U.S. ADDITIONALLY, A PRE-ACTIVITY MEETING SHALL BE HELD WITH THE ENGINEER AND TOLLWAY ENVIRONMENTAL UNIT TO DISCUSS THE CONTRACTOR'S MEANS AND METHODS.

## WETLAND AND WATERS OF THE U.S. NOTES

1. WETLAND AREAS OUTSIDE OF THE WORK ZONE ARE TO BE AVOIDED. IF THE CONTRACTOR SHOULD ENCROACH UPON ANY WETLAND AREA THAT IS NOT WITHIN THE CONSTRUCTION LIMITS AND/OR PERMITTED FOR IMPACT THROUGH THE USACE, THE CONTRACTOR IS SUBJECT TO FINES. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY WETLAND IMPACTS OUTSIDE OF THE WORK ZONE. IMPACTED AREAS SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR IN COORDINATION WITH AND TO THE SATISFACTION OF THE USACE.
2. ALL IMPACTS TO WETLANDS, WATERS OF THE U.S., AND OPEN WATER DETENTION FACILITIES ARE SUBJECT TO THE REVIEW AND APPROVAL BY RESOURCE AND REGULATORY AGENCIES. THOSE AGENCIES INCLUDE, BUT ARE NOT LIMITED TO, THE USACE, THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES, AND THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

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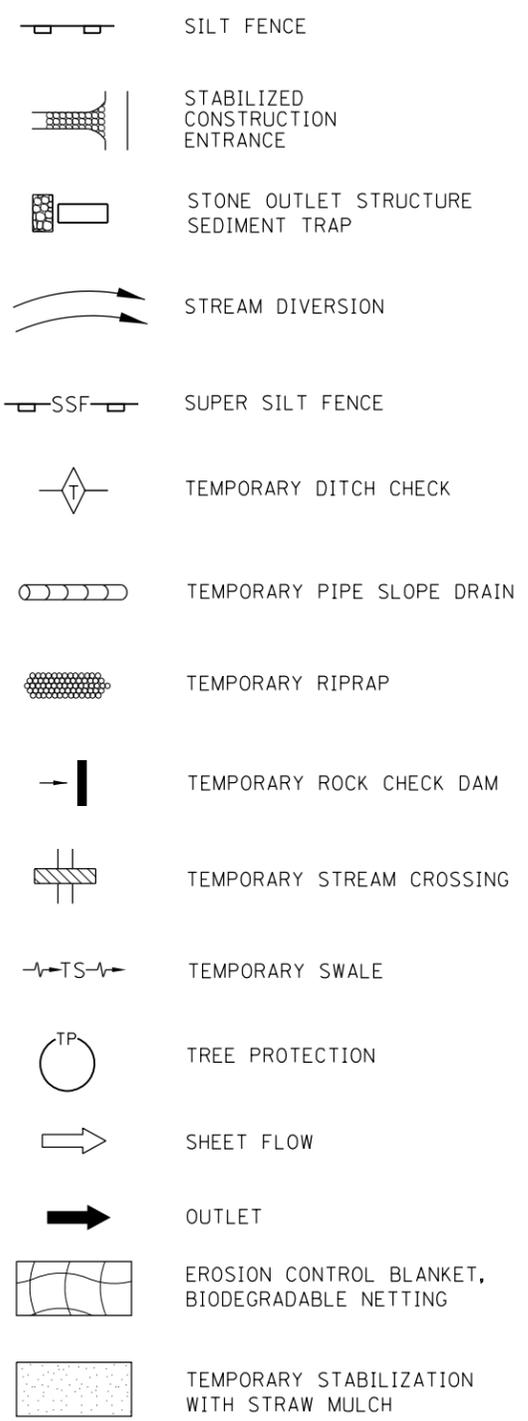
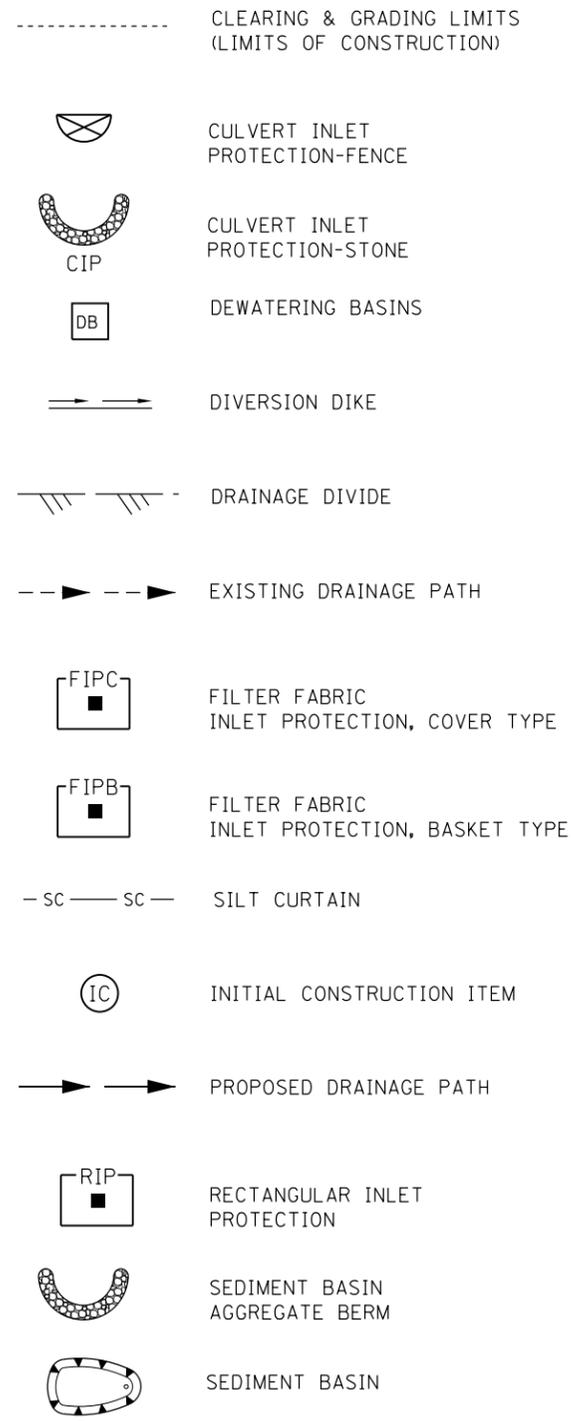


**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. XXXXX  
 EROSION AND SEDIMENT CONTROL GENERAL  
 STREAM / WETLANDS / WOUS NOTES

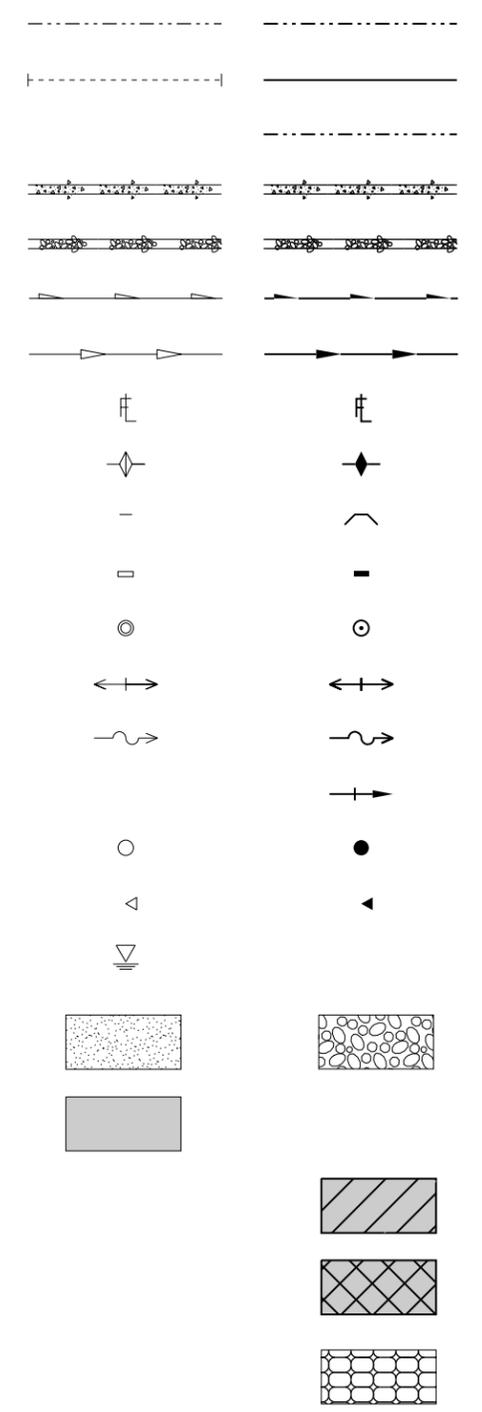
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 DRAWING NO.  
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**DRAINAGE ITEMS**

- CHANNEL OR STREAM LINE
- CULVERT LINE
- GRADING & SHAPING DITCHES
- PAVED DITCH
- AGGREGATE DITCH
- PIPE UNDERDRAIN
- STORM SEWER
- FLOWLINE
- DITCH CHECK
- HEADWALL
- INLET
- MANHOLE
- SUMMIT
- ROADWAY DITCH FLOW
- SWALE
- CATCH BASIN
- CULVERT END SECTION
- WATER SURFACE INDICATOR
- RIPRAP
- EXISTING WETLAND/WOUS
- TEMPORARY WETLAND/WOUS IMPACT
- PERMANENT WETLAND/WOUS IMPACT
- ARTICULATED CONCRETE BLOCK REVETMENT SYSTEM

**EXISTING      PROPOSED**



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REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. XXXXX  
**EROSION AND SEDIMENT CONTROL  
LEGEND**

SHEET NO.  
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DRAWING NO.  
XX OF XXX



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MISCELLANEOUS EROSION AND SEDIMENT CONTROL ITEMS												
	25100630	JS280050	JS280051	JS280100	JS280150	JS280151	JS280180	JS280210	JS280230	JS280500	JT280510	JT280530
	EROSION CONTROL BLANKET	SILT FENCE	RE-ERECT SILT FENCE	SUPER SILT FENCE	TEMPORARY STABILIZATION WITH STRAW MULCH	SAME-DAY STABILIZATION	RECTANGULAR INLET PROTECTION	FILTER FABRIC INLET PROTECTION, BASKET TYPE	TEMPORARY DITCH CHECKS	SEDIMENT FILTER BAG	FLOC LOG	IN-LINE FLOCCULATION SYSTEM
SHEET	SQ YD	FOOT	FOOT	FOOT	ACRE	SQ YD	EACH	EACH	FOOT	EACH	EACH	EACH
EC-04	1250	1000	200	200	0.25	2000	1	8	160	1		
EC-05	1250	1250	250	125	0.25	2000	2	9	160		3	
EC-06	1250	900	180		0.25	2000	2	7	160		3	
EC-07	1500	658	132		0.25	2000	1	7	120	1		
EC-08	1500	1236	247	365	0.25	2000	1	10	120			1
EC-09	1500	1575	315	79	0.25	2000	4	11	200		3	
EC-10	1350	194	39	589	0.25	2000	4	9	200		3	
EC-11	1350	1364	273		0.25	2000	5	9	100	1		
EC-12	1350	129	26		0.25	2000	6	8	80	1		
EC-13	1500	654	131	123	0.25	2000	1	6	220		3	
FOR USE AT ENGINEER'S DISCRETION (10%)	1380	896	179	148	0.25	2000			152			
TOTAL	15180	9856	1971	1629	2.75	22000	27	84	1672	4	15	1
RECORD QUANTITY												

STABILIZED CONSTRUCTION ENTRANCE SCHEDULE					
NO.	STATION	OFFSET	LENGTH	WIDTH	QUANTITY
			FEET	FEET	SQ YD
1	1005+25	102	75	24	227
2	1006+75	98	75	24	227
3	1008+15	112	100	20	245
4	1010+35	101	125	24	361
5	1012+85	85	75	16	165
6	1014+94	79	115	20	292
TOTAL					1517
RECORD QUANTITY					

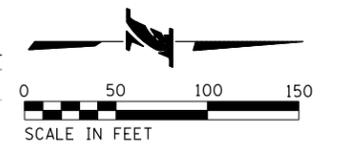
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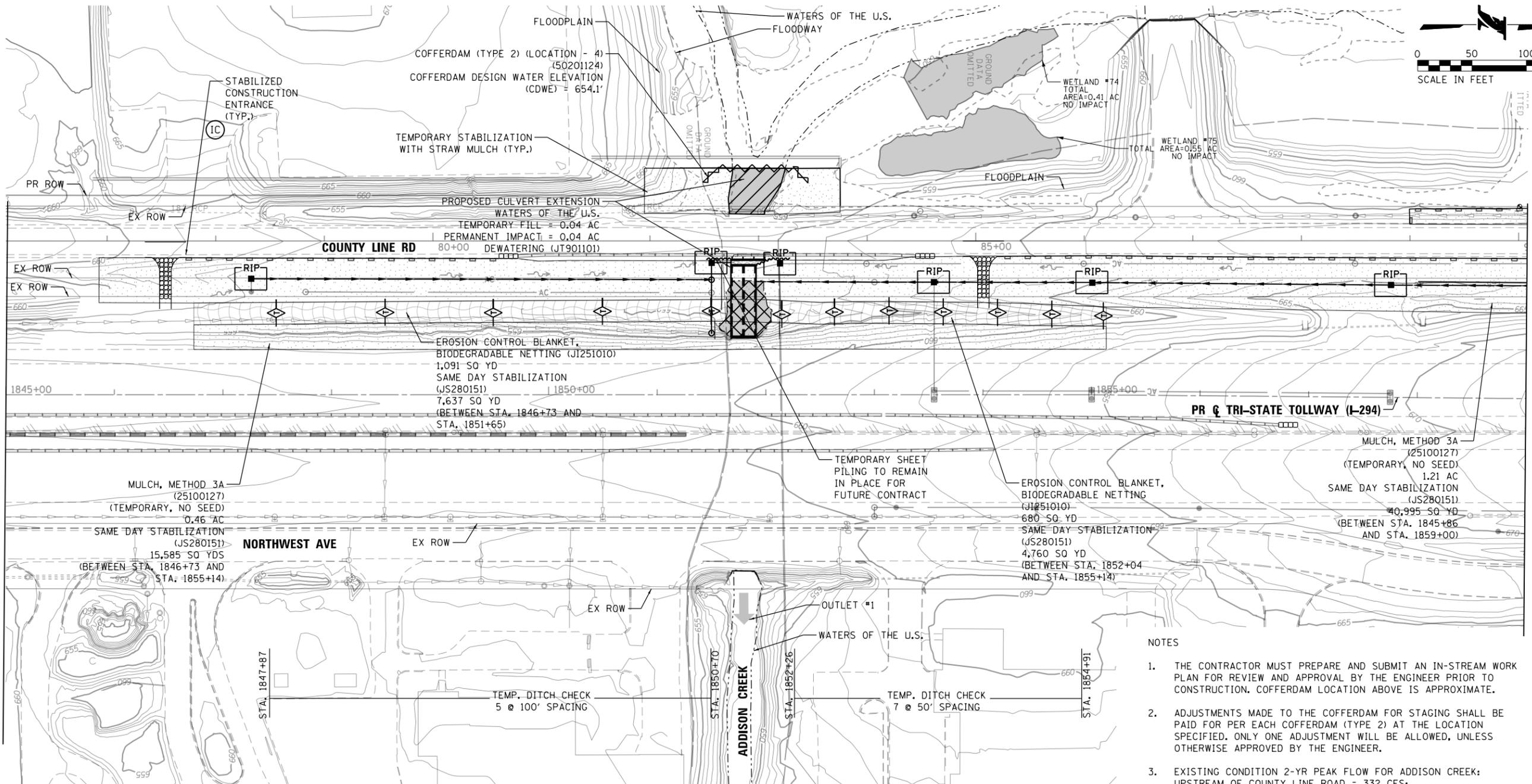
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 EROSION AND SEDIMENT CONTROL SCHEDULE

SHEET NO. EC-X  
 DRAWING NO. XX OF XXX



MATCH LINE STA 1845+00.00  
SEE SHEET EC-10

MATCH LINE STA 1859+00.00  
SEE SHEET EC-12

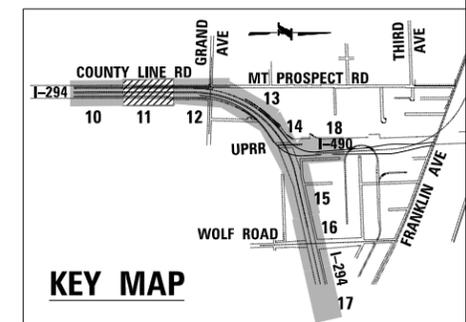


**NOTES**

1. THE CONTRACTOR MUST PREPARE AND SUBMIT AN IN-STREAM WORK PLAN FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO CONSTRUCTION. COFFERDAM LOCATION ABOVE IS APPROXIMATE.
2. ADJUSTMENTS MADE TO THE COFFERDAM FOR STAGING SHALL BE PAID FOR PER EACH COFFERDAM (TYPE 2) AT THE LOCATION SPECIFIED. ONLY ONE ADJUSTMENT WILL BE ALLOWED, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. EXISTING CONDITION 2-YR PEAK FLOW FOR ADDISON CREEK: UPSTREAM OF COUNTY LINE ROAD = 332 CFS; ELEVATION = 652.30 NAVD 88

**LEGEND:**

- |  |  |  |  |
|--|--|--|--|
|  | TEMPORARY STABILIZATION WITH STRAW MULCH (JS280150)  |  | WETLAND/WATERS OF THE U.S. PERMANENT IMPACT  |
|  | EROSION CONTROL BLANKET, BIODEGRADABLE NETTING (J1251010) TEMPORARY EROSION CONTROL SEEDING (28001100) |  | WETLAND/WATERS OF THE U.S. TEMPORARY FILL    |
|  | SILT FENCE (JS280050)  |  | COFFERDAM (TYPE 2) (LOCATION - 4) (50201124) |
|  | SUPER SILT FENCE (JS280100)  |  | WETLANDS/WATERS OF THE US NO IMPACT          |
|  | CULVERT INLET PROTECTION-STONE (JS280140)  |  | TREE PROTECTION (JS280120)                   |
|  | INITIAL CONSTRUCTION ITEM  |  |  |
|  | STABILIZED CONSTRUCTION ENTRANCE (JS280070)  |  |  |
|  | PROPOSED DRAINAGE PATH   |  |  |
|  | RECTANGULAR INLET PROTECTION (JS280180)  |  |  |
|  | FILTER FABRIC INLET PROTECTION, BASKET TYPE (JS280210)   |  |  |
|  | FILTER FABRIC INLET PROTECTION, COVER TYPE (JS280205)  |  |  |
|  | TEMPORARY DITCH CHECKS (JS280305)  |  |  |



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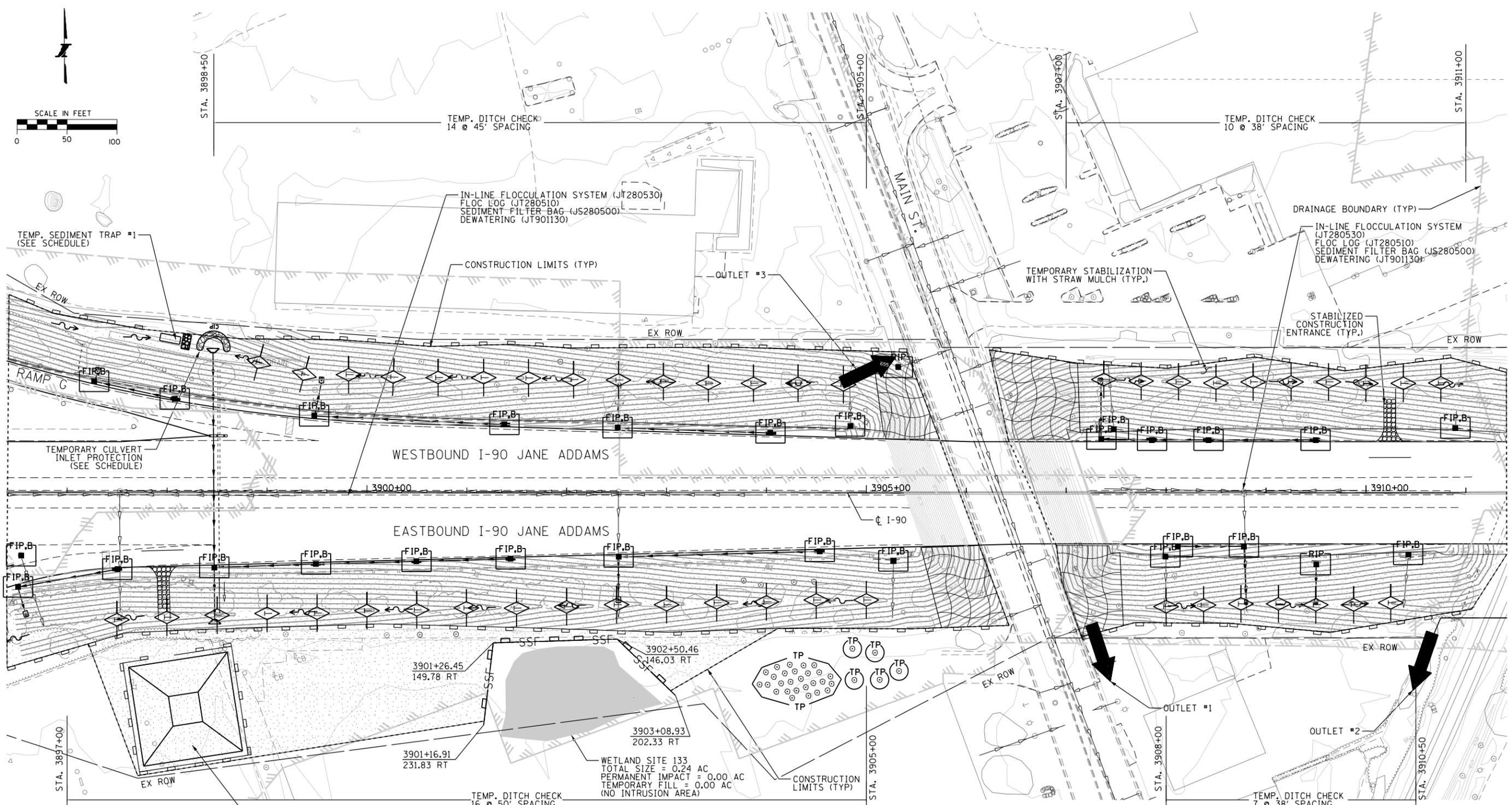
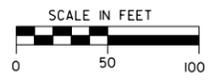
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**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
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 DOWNERS GROVE,  
 ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. EROSION CONTROL /TEMP DRAINAGE PLAN  
 PRE-STAGE B - STA 1845+00 TO 1859+00

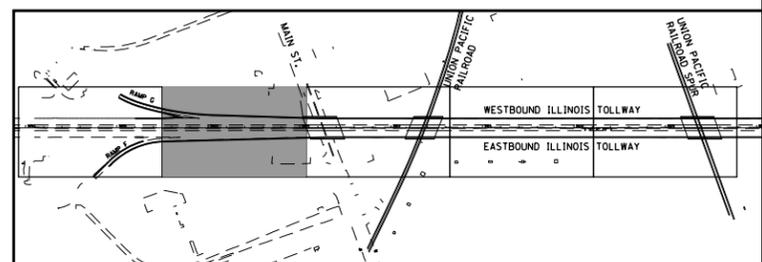
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**LEGEND:**

- |   |   |   |   |
|---|---|---|---|
| STONE OUTLET STRUCTURE SEDIMENT TRAP (JS280030),(JS280040),(JS280140) (IC)                              | CULVERT INLET PROTECTION STONE (JS280140) (IC)      | PROPOSED DITCH FLOW                         | INITIAL CONSTRUCTION ITEM (IC)            |
| FILTER FABRIC INLET PROTECTION, BASKET TYPE (JS280210) (IC)   | TEMPORARY DITCH CHECKS (JS280305)                   | EXISTING DITCH FLOW                         | TREE PROTECTION (JS280120)                |
| RECTANGULAR INLET PROTECTION (JS280180) (IC)  | SILT FENCE (JS280050) (IC)                          | STABILIZED CONSTRUCTION ENTRANCE (JS280070) | WETLAND/WATERS OF THE US TEMPORARY FILL   |
| EROSION CONTROL BLANKET, BIODEGRADABLE NETTING (J1251010), TEMPORARY EROSION CONTROL SEEDING (28001100) | TEMPORARY STABILIZATION WITH STRAW MULCH (JS280150) | SUPER SILT FENCE (JS280100)                 | WETLAND WATERS OF THE US PERMANENT IMPACT |

**KEY MAP**



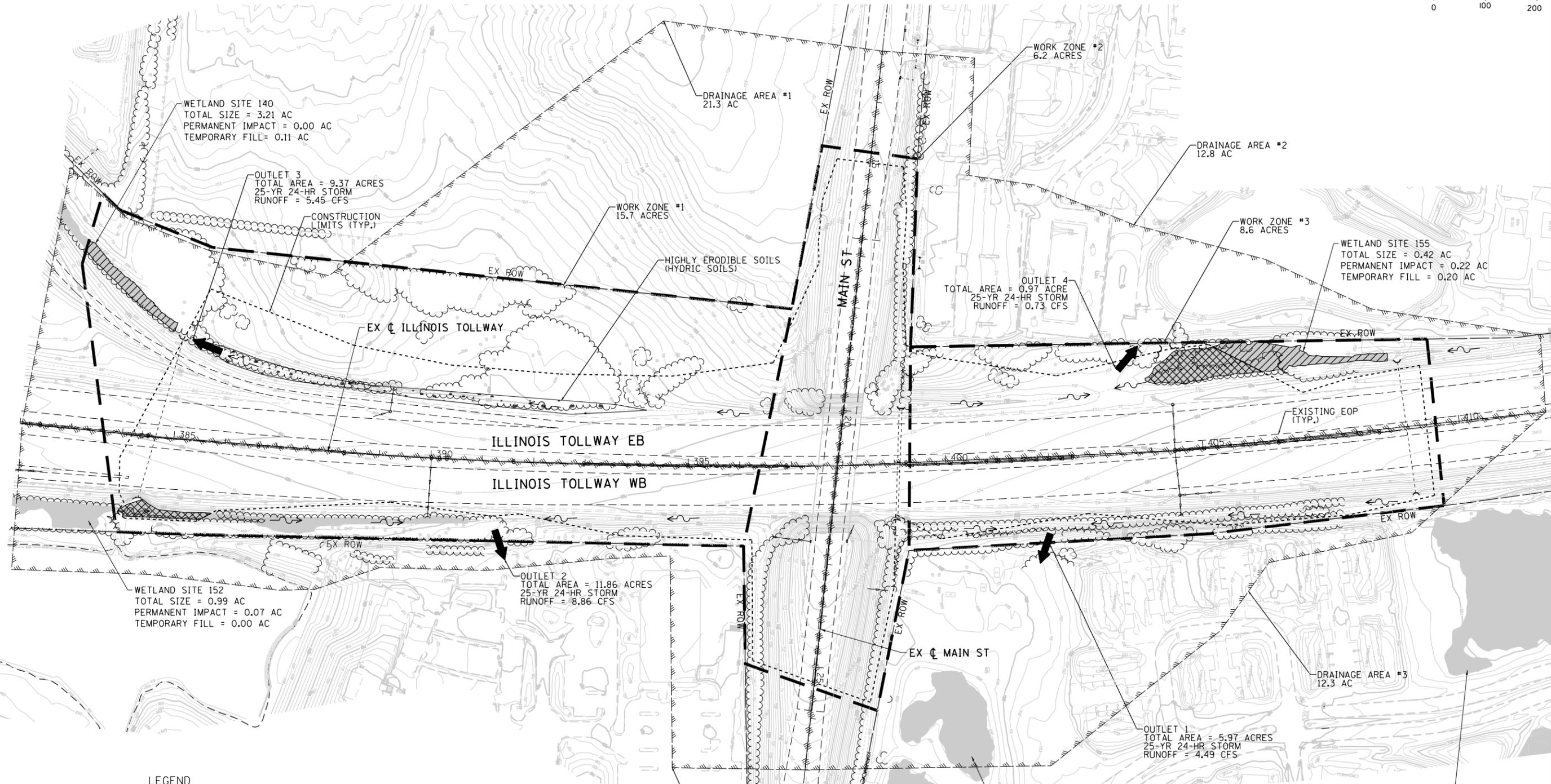
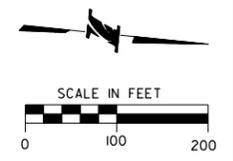
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**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE,  
 ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. XX-XX-XXXX  
 EROSION AND SEDIMENT CONTROL  
 PLAN

SHT NO. EC-X  
 DRAWING NO.  
 XX OF XX



**LEGEND**

- SWALE
- SHEET FLOW
- OUTLET
- DITCH FLOW
- DRAINAGE DIVIDE
- EXISTING WETLAND / WOUS
- TEMPORARY WETLAND / WOUS IMPACT
- PERMANENT WETLAND / WOUS IMPACT
- HIGHLY ERODIBLE SOIL (HYDRIC SOIL)

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 PLOT DATE = 1/10/2020 PLOT SCALE = 200.0000 / in.

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 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. XXXXX  
**EROSION AND SEDIMENT CONTROL  
 OVERVIEW**

SHEET NO.  
 EC-X  
 DRAWING NO.  
 XX OF XXX

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**APPENDIX D Illinois Tollway Erosion and Sediment  
Control Plan Technical Review  
Checklist**



Project: \_\_\_\_\_

Contract Number: \_\_\_\_\_

DSE: \_\_\_\_\_

Date: \_\_\_\_\_

Tollway Reviewer \_\_\_\_\_

Date: \_\_\_\_\_

Items are to be checked off by the DSE and the form shall be submitted to the Tollway for review.

DSE to indicate:  
√ = Provided or Completed  
NA = Not Applicable

Tollway reviewer to indicate:  
C = Complies  
D = Deficient or Incomplete  
NA = Not Applicable

**A. Design Concept Submittal**

General

1. \_\_\_\_\_ Define the project boundaries, identify adjacent land uses, and existing and proposed topography.
2. \_\_\_\_\_ Determine the erosion potential of existing soils, including classifications, slope lengths, permeability, shrink-swell potential, texture, erodibility factor, water table depth, and depth to bedrock, and identify critical areas such as hydric soils, soils which are highly susceptible to wind or water erosion, steep slopes, areas of existing erosion, and groundwater seepage zones.
3. \_\_\_\_\_ Determine if a TMDL allocation, listing as a 303(d)-impaired water, or Watershed Management Plan is approved for any water body in which stormwater from the project will directly discharge.
4. \_\_\_\_\_ Define the existing drainage network, including storm sewers, culverts, ditches, swales, constructed bioswales, channels, wetlands, streams, and rivers that enter, cross, or may be impacted by the construction of the Project. Identify locations where off-site drainage will enter the project area and locations where stormwater discharge will leave the project.
5. \_\_\_\_\_ Identify all receiving waters including MS4's, wetlands, lakes, creeks, and rivers. Determine whether any receiving water is listed by the IDNR as a Biologically Significant Stream.
6. \_\_\_\_\_ Based on a 25-year, 24-hour storm event, determine the amount of runoff from the project area and tributary watershed areas.
7. \_\_\_\_\_ Identify all locations where existing ditches, swales, channels, streams, or rivers will need to be diverted to facilitate construction.

8. \_\_\_\_\_ Identify the locations of any native or mature vegetation, specimen or high-quality trees, bioswales, or other ecologically significant vegetation. Define areas where protection of existing vegetation will be required.
9. \_\_\_\_\_ Identify the type and location of any special management areas, such as floodplains, floodways, wetlands, creeks, rivers, protected habitat, nature preserves, etc.
10. \_\_\_\_\_ Define any additional right-of-way or construction easements necessary to accommodate the implementation of the erosion and sediment control measures.
11. \_\_\_\_\_ Identify areas of known environmental contamination which, when disturbed, could potentially impact stormwater quality.
12. \_\_\_\_\_ Estimate the total area of earth disturbing work activities.

#### Government and Regulatory Agency Coordination

13. \_\_\_\_\_ Evaluate the project for the need to obtain an U.S. Army Corps of Engineers Section 404 permit. Determine if ESCP review by other agencies will be required as a result of the need for an Illinois Department of Natural Resources Floodway/Floodplain Management permit or an Illinois Environmental Protection Agency Individual Section 401 permit.
14. \_\_\_\_\_ Evaluate the project for a NPDES Permit No. ILR10 – Storm Water Discharges from Construction Site Activities. If required, begin necessary coordination related to National Historic Preservation Act and Endangered Species Act compliance.
15. \_\_\_\_\_ Evaluate the project for County Stormwater Management Agency requirements and/or the need for coordination with the County Soil and Water Conservation District.
16. \_\_\_\_\_ Evaluate the project for municipal MS4 requirements. Requirements established by agencies of a lower level of government that exceed or are more restrictive than Illinois Tollway criteria shall be considered and followed to the maximum extent possible. The Illinois Tollway is exempt from permitting by lower levels of government and shall not apply for such permits.

#### Narrative

17. \_\_\_\_\_ Provide a narrative in the form of a Landscape, Erosion & Sediment Control Technical Memorandum including all necessary exhibits. This technical memorandum shall discuss sensitive resources and landscape features to be protected, soil erosion and sediment control regulatory requirements, and present the proposed landscape and soil erosion/sediment control plan concept and components to be implemented including rationalization for their selection. The memorandum shall include a thorough discussion of the findings and conclusions reached from the Project Site Evaluation and shall also identify any local stakeholders that will require coordination to achieve a successful project design. In addition, the DSE shall examine and discuss whether the project can avoid or minimize resource impacts. A decision on avoidance may not be possible at this point in project development, but avoidance possibilities shall be examined.

Overview Drawing(s) at 1" = 50' or larger

18. \_\_\_\_\_ existing and conceptual proposed drainage patterns, storm conveyance systems, and areas of earth disturbance
19. \_\_\_\_\_ project centerline, stationing and ramp baseline, as applicable
20. \_\_\_\_\_ existing and proposed roadway geometry
21. \_\_\_\_\_ ROW limits and areas of planned ROW acquisition
22. \_\_\_\_\_ existing contours and elevations (half tone)
23. \_\_\_\_\_ existing tree masses, shrub masses, constructed bioswales, and areas with trees 6-inch DBH and greater
24. \_\_\_\_\_ existing fence lines and walls
25. \_\_\_\_\_ drainage areas and associated acreages tributary to the project and within the project limits
26. \_\_\_\_\_ existing drainage network and structures, including storm sewers, culverts, headwalls, swales, ditches, channels, creeks, streams, rivers, and outlets
27. \_\_\_\_\_ floodplain and floodway limits, labeled with elevations clearly noted
28. \_\_\_\_\_ special management areas such as floodplains, floodways, wetlands, creeks, rivers, protected habitat, nature preserves, etc., labeled with the type and location

Other

29. \_\_\_\_\_ Submit the Environmental Studies Inventory Sheet, Part I and supporting documents using the Tollway's WBPM system.
30. \_\_\_\_\_ Provide a rough cost estimate for erosion and sediment control, including any additional right-of-way costs for implementing the ESCP.
31. \_\_\_\_\_ Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section A.
32. \_\_\_\_\_ Any additional information required by the Illinois Tollway Project Manager.

**B. Preliminary Design Submittal**

General

1. \_\_\_\_\_ Address, in writing, all Illinois Tollway comments from previous submittal.
2. \_\_\_\_\_ Provide preliminary Erosion and Sediment Control General Notes plan sheet. See Appendix 3 of the Tollway's *Erosion and Sediment Control, Landscape Design Criteria* manual for an example sheet and Appendix 5 of the Tollway's *Erosion and Sediment Control, Landscape Design Criteria* manual for a list of example notes. The DSE shall include and modify the notes applicable to the project and provide additional general notes as required.

3. \_\_\_\_\_ Provide preliminary Erosion Control Legend plan sheet. Show standard symbols, non-standard symbols, and abbreviations. See Appendix 3 of the Tollway's *Erosion and Sediment Control, Landscape Design Criteria* manual for an example sheet. Alternatively, include a legend on each ESCP sheet with all applicable measures for the project.
4. \_\_\_\_\_ Provide preliminary Erosion and Sediment Control Schedule plan sheet. The schedule should include the anticipated pay items, pay item measurement units, pay item numbers, and rows for plan sheet numbers. Include an additional row labeled "At Engineers Discretion" and a row labeled "Record Quantities" for use by the CM. At this stage of design development, actual quantities shall be provided to the maximum extent possible. Multiple sheets may be required based on the number of control measures specified.
5. \_\_\_\_\_ Provide preliminary Wetlands and In-Stream Notes plan sheet for any projects involving work within or near wetlands and waterways. See Appendix 3 of the Tollway's *Erosion and Sediment Control, Landscape Design Criteria* manual for an example sheet and Appendix 5 of the Tollway's *Erosion and Sediment Control, Landscape Design Criteria* manual for a list of example notes.

#### Overview Drawing(s) at 1" = 50' or larger

6. \_\_\_\_\_ Provide a preliminary overview drawing(s) reflecting any revisions called for in the previous review.
7. \_\_\_\_\_ Based on soils report information, refine soil classifications and adjust ESCP concept, as necessary. Show any areas with hydric soil or soils with a high susceptibility to erosion.

#### ESCP Drawings at 1" = 50'

8. \_\_\_\_\_ Show all information provided on the overview drawings, including existing contours, structures, and features at half tone and preliminary proposed contours at full tone.
9. \_\_\_\_\_ Delineate disturbed areas and provide drainage patterns for proposed conditions. Make special note of drainage areas used to size the perimeter controls, sediment traps, or detention basins. Include areas that will be disturbed for the Contractor to access the work area(s).
10. \_\_\_\_\_ Show the direction of sheet flow, existing and proposed ditch flows, and outlets.
11. \_\_\_\_\_ Identify areas that will require use of staged construction with temporary or permanent stabilization of slopes before additional excavation or placement of fill.
12. \_\_\_\_\_ Show areas with known environmental contamination. Note: The SWPPP Narrative must describe how affected materials are to be handled to prevent stormwater pollution.
13. \_\_\_\_\_ Show recommended topsoil stockpile and on-site borrow locations with erosion and sediment control measures around the perimeter of the stockpiles.

14.  Identify tree protection and sediment control measures that must be in place prior to start of grading. These include sediment basins, sediment traps, and silt fences. These practices shall be identified on the plan as Initial Construction.
15.  Identify wetlands, surface water features and other environmentally sensitive areas within and adjacent to the project limits and which portions of these (if any) may be impacted. Provide preliminary control measures for protection of these resources against sediment runoff and accidental intrusion. These measures shall be identified on the plan as Initial Construction.
16.  Identify locations where temporary stream diversions or cofferdams will be needed for installation or maintenance of culverts or bridges. These measures shall be identified on the plan as Initial Construction.
17.  Identify the permanent and temporary storm water practices that must be in place before grading occurs in each specific area along the route. These include storm water detention sites, stabilized channel outlets, stabilized temporary swales or diversion dikes, and any needed stream diversions. These practices shall be identified as Initial Construction.
18.  Identify reaches that will have temporary pipe slope drains and temporary berms for fill areas and new embankments.
19.  Show floodplain and floodway elevations.
20.  Layout the ESCP showing type and location of erosion and sediment control measures to be used. Annotate as needed to convey the design intent. Complete detailing is not required at this phase.

#### Other

21.  Preliminary cost estimate.
22.  Preliminary Special Provisions.
23.  Any additional information required by the Illinois Tollway Project Manager.
24.  Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section B.
25.  Provide Permanent Landscape Plans at 1" = 50' showing final landscape post construction features and permanent seeding. Refer to Section II Landscape for requirements.
26.  Submit the Environmental Studies Inventory Sheet, Part II and supporting documents using the Tollway's WBPM system.
27.  Provide the Preliminary SWPPP. The Designer shall modify Special Provision 111.2 to satisfy this requirement. It is expected that the preliminary SWPPP be fully developed based on the current project design.

## C. Pre-Final Design Submittal

### General

1. \_\_\_\_\_ Address, in writing, all Illinois Tollway comments from previous submittal.
2. \_\_\_\_\_ Provide Pre-Final Erosion and Sediment Control General Notes.
3. \_\_\_\_\_ Provide Pre-Final Erosion and Sediment Control Legend, reflecting any changes to the overall design.
4. \_\_\_\_\_ Provide Pre-Final Erosion and Sediment Control Schedule. Summarize, by drawing number, the measures to be installed, pay items, pay item numbers, and quantities. Provide additional quantities over and above the plan quantities for use "At Engineer's Discretion". Coordinate these quantities with the Illinois Tollway Project Manager prior to submitting plans.
5. \_\_\_\_\_ Provide Pre-Final Wetlands and In-Stream Notes. The DSE shall include any modifications to the preliminary notes as applicable to the project and provide additional notes as required.
6. \_\_\_\_\_ Provide Erosion Control Plan Construction Sequence sheet. Show construction sequences for installing control measures in relation to specific stages of construction and earth disturbance activities.
7. \_\_\_\_\_ Provide detailed design sheets using the Section M Base Sheets for any measures not covered by the Section K Standard Drawings. Provide the dimensions, material and installation details.

### Overview Drawing(s) at 1" = 50' or larger

8. \_\_\_\_\_ Provide Pre-Final Overview Drawings reflecting any changes to the overall design.
9. \_\_\_\_\_ Show work stages that define the suggested sequencing of construction to limit the size of the area disturbed at one time to a maximum of 20 acres.

### ESCP Drawings at 1" = 50'

10. \_\_\_\_\_ Provide Pre-Final ESCP Drawings reflecting any changes to the overall design.
11. \_\_\_\_\_ Identify any erosion or sediment control measures that will serve as permanent erosion control measures remaining after construction is complete.
12. \_\_\_\_\_ Verify that sediment traps, sediment basins, dewatering basins, temporary swales and temporary channel diversions will fit in the intended area(s).
13. \_\_\_\_\_ Label the specific location(s), size(s) or length(s) of all erosion and sediment control measures shown on the drawings and not specified on the Erosion and Sediment Control Schedule.
14. \_\_\_\_\_ Provide the area, in acres, controlled by each temporary sediment basin, sediment trap, temporary diversion, temporary swale, or culvert inlet protection and not specified on the Erosion and Sediment Control Schedule.

15. \_\_\_\_\_ Show the location and label the size and I.D. number of existing wetland areas, other environmentally sensitive areas, and label which portions of these (if any) will be impacted. Labels shall include the total acreages within the project limits and any associated temporary fill or permanent impacts. Identify each feature or portion thereof to be protected as a "No Intrusion Area" and protect with Super Silt Fence.

Other

16. \_\_\_\_\_ Pre-final cost estimate.
17. \_\_\_\_\_ Pre-final Special Provisions.
18. \_\_\_\_\_ Pre-final SWPPP. The SWPPP shall not be considered complete until the Designer has fully prepared the site description, along with identification, implementation, and maintenance of BMPs to reduce pollutants in stormwater discharges.
19. \_\_\_\_\_ Any additional information required by the Illinois Tollway Project Manager.
20. \_\_\_\_\_ NPDES NOI form, including supporting documentation.
21. \_\_\_\_\_ County Soil and Water Conservation District submittal (if required).
22. \_\_\_\_\_ County Stormwater Management Agency submittal (if required).
23. \_\_\_\_\_ Submittal information for other agencies, as required.
24. \_\_\_\_\_ Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section C.

**D. Final Design Submittal**

1. \_\_\_\_\_ Address, in writing, all Tollway comments from previous submittals.
2. \_\_\_\_\_ Final overview and ESCP drawings
3. \_\_\_\_\_ Final Special Provisions and SWPPP (Special Provision 111.2)
4. \_\_\_\_\_ Final cost estimate
5. \_\_\_\_\_ Final quantity and design calculations
6. \_\_\_\_\_ Professional Engineer's seal and signature on plans
7. \_\_\_\_\_ Any additional information required by the Illinois Tollway Project Manager
8. \_\_\_\_\_ Prepare and submit the Erosion and Sediment Control Technical Review Checklist, Section D.

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**APPENDIX E Illinois Tollway Example Erosion and  
Sediment Control Design Notes**

## **Erosion and Sediment Control General Notes**

*Note: The following are example design notes for consideration by the Designer for use on the Erosion and Sediment Control Plan sheets. These notes are intended to serve as a design aid only and shall be incorporated and/or modified to address the needs of each individual design contract.*

1. For standard erosion and sediment control general notes see Standard K1 Drawings.
2. The Contractor shall treat disturbed and other project areas to control dust. Water shall be applied to such areas as directed by the Engineer, calcium chloride shall not be used for this purpose. Dust shall be controlled through a uniform application of sprayed water in a manner meeting Engineer approval and in accordance with the Contractor's Dust Control Plan submitted in accordance with Article 107.36 of the Tollway Supplemental Specifications. The number of applications and the amount of water shall be based on field and weather conditions.
3. The permanent vegetation plan shall be used on all disturbed areas whenever possible. A quantity for Item JS280150 Temporary Stabilization with Straw Mulch has also been provided for temporary stabilization of all anticipated disturbed areas.
4. A nominal quantity for Item JS280051 Re-Erect Silt Fence has been provided. Re-erection of silt fence shall be as approved and directed by the Engineer.
5. A nominal quantity for Item JS280151 Same-Day Stabilization has been provided for use as directed by the CM to stabilize erosive prone areas or critical disturbed areas where there is a risk that sediment laden runoff may enter sensitive environmental areas.

## Erosion and Sediment Control In-Stream and Streamside Notes

*Note: The following notes shall be incorporated by the Designer into the Erosion and Sediment Control Plans for any contracts requiring work within or immediately adjacent to a waterbody and subject to a USACE 404 permit.*

### 1. No Work in Flowing Water

No work shall be performed in flowing water. Work in and near critical areas shall be isolated from concentrated flows or stream flow. Once work in the area begins, priority shall be given to completion of the work and final stabilization of all disturbed areas.

### 2. Isolated Work Area

All disturbed areas and work areas must be isolated from waterway flows at all times. The diversion/isolation of flow must be constructed from non-erodible materials. The USACE must be in agreement with the overall methods of diversion/isolation prior to the commencement of construction.

### 3. Work in Waterways

- A. During work on the banks of the swale/river/stream/wetland, work must be timed to take place during low or no flow conditions.
- B. Concentrated flow must be isolated from the work area using a non-erodible cofferdam, steel sheets, aqua barriers, jersey barriers, etc. The exact means and methods shall be discussed during a scheduled pre-construction in-stream work meeting. Earthen cofferdams are not permissible.
- C. The in-stream work plan will be designed to allow for the conveyance of the 2-year peak flow past the work area without overtopping the cofferdam. The USACE has the discretion to reduce this requirement if documented to be infeasible or unnecessary.
- D. Cofferdams must be constructed from shore and no equipment may enter flowing water any time. If the installation of the cofferdam cannot be completed from shore, construction of a causeway will be necessary to ensure that equipment does not enter flowing water. Equipment may enter the coffered area once the cofferdam is in place and the isolated area is dewatered.
- E. If bypass pumping is necessary, the inlet of the pump shall be placed in a sump pit and the outlet placed on a non-erodible energy dissipating surface prior to rejoining the waterway flow or wetland. Filtering of by-pass water is not required unless the bypass water has become sediment-laden as a result of construction activities.
- F. If dewatering the construction area is necessary, all water removed from the work area shall be filtered using filter bags or an alternate approved measure. Water must have sediment removed before being allowed to return to the source creek/stream/river/wetland. Discharge from dewatering shall be to a stable surface that extends to the point where water re-enters the waterway. Discharged water shall be no more turbid than the receiving water. Discharge shall be immediately stopped if receiving waters show evidence of cloudy water, erosion, or sediment accumulation.
- G. The side slopes must be re-seeded and stabilized with appropriate erosion control blanket prior to accepting flows. The bottom of the swale must be brought back to its original grade and stable enough to accept flows.
- H. An In-Stream Work Plan must be submitted and approved by the Engineer prior to the start of any work near wetlands or Waters of the U.S. Additionally, a pre-activity meeting shall be held with the Engineer and the Illinois Tollway Environmental Unit to discuss the Contractor's means and methods.

## **Erosion and Sediment Control Wetland and Waters of the U.S. Notes**

*Note: The following notes shall be incorporated by the Designer into the Erosion and Sediment Control Plans for any contracts with wetlands or other Waters of the U.S. are located within the contract limits.*

1. Wetland areas outside of the work zone are to be avoided. If the Contractor should encroach upon any wetland area that is not within the construction limits and/or permitted for impact through the USACE, the Contractor is subject to fines. Contractor shall notify the Engineer immediately of any wetland impacts outside of the work zone. Impacted areas shall be repaired immediately by the Contractor in coordination with and to the satisfaction of the USACE.
2. All impacts to wetlands, Waters of the U.S. and open water detention facilities are subject to the review and approval by resource and regulatory agencies. Those agencies include but are not limited to the USACE, the Illinois Department of Natural Resources, and the Illinois Environmental Protection Agency.

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**APPENDIX F Illinois Tollway SWPPP Preparation  
Guide**

## Section 1. Site Description

The planning phase is an important stage of project development, as this is where all the information is gathered that will be used in the decision-making process throughout the design and implementation of the project. Much of the information required for the SWPPP is collected in the planning phase, including the Project Site Evaluation and Project Site Analysis. This section will be used to describe the project-specific conditions, constraints, and requirements which serve as the basis for selection of the control measures intended to meet regulatory requirements and prevent stormwater impacts to the maximum extent practical on Illinois Tollway projects.

The Site Description provides a description of the location and nature of the construction activities, an inventory of project design considerations and limitations (e.g., soil conditions and erosion hazards, drainage system, and receiving waters, natural or mature vegetation to be protected, unique adjoining land uses), and regulatory considerations (e.g., floodplain, wetlands, threatened or endangered species, historic or archeological resources).

Include the following in Section 1 of S.P. 111.2:

### a) Project Location

#### INSTRUCTIONS

Provide a brief narrative description of the project location, including latitude and longitude, county(s), and milepost numbers for the beginning and ending limits of the project.

#### EXAMPLE TEXT

The work under this contract shall be performed along the proposed North South Toll Highway Extension (I-355) between station 389+00 and 283+00 (M.P. 5.6 and M.P. 3.6) and related construction of the Illinois Route 7 (159th Street) interchange in Will County, Illinois. The project is generally located at 42°7'19" North Latitude and 88°25'57" West Longitude.

### b) Description of the Construction Activity

#### INSTRUCTIONS

The narrative shall explain the project, purpose, scope, and magnitude of construction, in a manner that is easily understood by a person who is not familiar with the project. An emphasis shall be placed on describing roadway and bridge construction, drainage improvements, in-stream work, earthwork, clearing and tree removals, and similar construction activities that may potentially impact stormwater quality during construction of the project. The description shall contain information sufficient for the user to evaluate the environmental impact, effectiveness, and acceptability of the control measures included to minimize impacts to stormwater.

#### EXAMPLE TEXT

The work under this contract includes, but is not limited to the removal of existing Illinois Route 7 between Sta. 296+13 to Sta. 349+07 and replacement with a new four lane pavement section, construction of structures carrying Illinois Route 7 (159th Street),

Gougar Road, 163rd Street, and 167th Street over the proposed North-South Toll Highway, structures carrying the proposed North-South Toll Highway over Fiddymont Creek; construction of a box culvert which carries the South Branch of Fiddymont Creek under the proposed mainline, construction of required embankments for the Gougar Road pavement widening at locations designated in the plans, a full diamond interchange connecting both directions of Illinois Route 7 to both directions of I-355, Ramp Toll Plazas, overhead canopy, parking area, toll collection facilities, traffic signals and ancillary items on Ramps A and D; construction of stormwater detention ponds and stormwater release control structures, adjustment or removal of existing drainage structures and construction of new drainage structures, roadway lighting, installation of steel plate beam guardrail, pavement marking and delineation, maintenance of traffic, restoration of landscaping, construction of approach slabs, and removal of existing and replacement of new traffic signs and supports including trusses.

c) Sequence of Major Earth Disturbing Construction Activities

**INSTRUCTIONS**

Provide a description of the intended sequence of soil-disturbing activities by stages and locations. Reference to the Suggested Progress Schedule, Erosion and Sediment Control Plans, and Landscape Plan shall be provided.

**EXAMPLE TEXT**

The project will be completed under a single stage of construction. The following is a description of the intended sequence of major activities which will disturb soils for major portions of the construction site, such as clearing, excavation, grading and on-site or off-site stockpiling of soils or storage of materials:

1. Install Initial Erosion and Sediment Control Measures
2. Dewater the existing detention basin to be expanded, by pumping through Sediment Filter Bags before release to adjacent storm sewers
3. Clearing, Removals and Tree and Shrub Removals
4. Earthwork
5. Removal of Unsuitable Material from the site
6. Embankment Construction
7. Grading and Shaping of Ditches
8. Topsoil Furnishing and Placing
9. Install Proposed Culverts, Storm Sewers, and End Sections including placing Stone Riprap for velocity control at outlets
10. Install Temporary Seeding/Stabilization on all disturbed areas including Erosion Control Blanket on bare earth slopes
11. Install Articulated Concrete Block Revetment Mat in detention ponds and along low-flow lines
12. Final Grade and Permanently Seed/Stabilize all disturbed areas
13. Remove Temporary Erosion and Sediment Control Measures and restore affected areas

The aforementioned general description of construction staging will be modified by the Contractor's Progress Schedule that will be part of the SWPPP. The Contractor shall

revise the Suggested Progress Schedule which will be maintained and update as necessary and made part of the SWPPP.

Additional details regarding the progress schedule and erosion and sediment control sequencing are shown on Sheets PRG-1 and PRG-2 "Suggested Progress Schedule", Sheets EC-6 through EC-21 "Erosion and Sediment Control Plan", and Sheets LP-1 through LP-13 "Landscape Plan" and shall be made part of the SWPPP.

d) Total Construction Area and Total Area of Earth Disturbance

**INSTRUCTIONS**

Provide the total area of the construction site, and the total area of the site that will be disturbed by excavation, grading, or other earth disturbing work activities. The total project area shall represent the total area of the project from the beginning to ending station, regardless of specific work activity expected to take place. When determining the area of soil disturbance, the area represents the total for all soil disturbance activities associated with the project. The area of soil disturbance includes, but is not limited to, the following:

- Clearing of the land both for access (i.e. access roads) to the site as well as preparing the site for constructing the project;
- Constructing access roads to the site;
- Grading of the project site;
- Equipment staging area, maintenance area, and construction easement, if they occur on a soil surface which has not already been included in the calculation for area of soil disturbance;
- Material and/or soil stockpiles on soil surfaces (not those on an impervious surface such as concrete or asphalt);
- Area of asphalt or concrete pavement removal only if it is removed entirely to the soil surface; and
- Area that is related to demolition and removal of existing structures if that demolition and removal occurs to expose the soil surface.

**EXAMPLE TEXT**

The total area of the construction site is estimated to be 95 acres.

The total project area of the site that it is estimated to be disturbed by excavation, grading, or other earth disturbing activities is approximately 63 acres.

e) Runoff Coefficients

**INSTRUCTIONS**

Provide the weighted average of the runoff coefficient for the project after construction activities are completed and percentage impervious area before and after construction. Providing both the pre-construction and post construction runoff coefficients and impervious areas supports and justifies the Permanent Stormwater Management Controls identified in Section 2(e).

## EXAMPLE TEXT

The following estimates are provided for the construction site:

Percentage impervious area before construction: 0%

Runoff coefficient before construction: 0.30

Percentage impervious area after construction: 90%

Runoff coefficient after construction 0.89

### f) Soil Characteristics

## INSTRUCTIONS

For soil maps, see the Natural Resources Conservation Service Web Soil Survey at <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>. This online interface provides identification, mapping, and quantification of soil characteristics within a user specified area of interest. Soil survey data may also be collected from published soil survey reports, where available. Field studies are helpful and often necessary to verify the accuracy of online data, especially when work is to be performed adjacent to sensitive areas and for areas within the existing Illinois Tollway ROW where native soils have been previously disturbed. Accordingly, available geotechnical reports or data shall be consulted for relevant information regarding soil conditions. The geotechnical report may either provide or contain information related to the soil particle size, organic content, soil structure, and soil permeability. General information regarding these soil properties relative to their potential for erosion is provided below:

- **Particle Size:** Soils that contain high proportions of silt and very fine sand are the most erodible and are easily detached and carried away. The erosion potential of soil decreases as the percentage of clay or organic matter increases. Clay acts as a binder and tends to limit erosion potential. Most soils with high clay content are relatively resistant to detachment by rainfall and runoff. Once eroded, however, clays are easily suspended and settle out very slowly.
- **Organic Content:** Organic matter creates a favorable soil structure, improving its stability and permeability. This increases infiltration capacity, delays the start of erosion, and reduces the amount of runoff. The addition of organic matter increases infiltration rates (and, therefore, reduces surface flows and erosion potential), water retention, pollution control, and pore space for oxygen.
- **Soil Structure:** Organic matter, particle size, and gradation affect soil structure, which is the arrangement, orientation, and organization of particles. When the soil system is protected from compaction, the natural decomposition of plant debris on the surface maintains a healthy soil food web. The soil food web in turn maintains the porosity both at and below the surface.
- **Soil Permeability:** Soil permeability refers to the ease with which water passes through a given soil. Well-drained and well-graded gravel and gravel mixtures with little or no silt are the least erodible soils. Their high permeability and infiltration capacity help prevent or delay runoff.

Provide a narrative summary of the available soil information relative to its erosive potential. The narrative shall emphasize describing and identifying the locations of soils relative to planned construction activities, which have a high potential for erosion relative to the locations of planned construction activities. For areas of native soils, include the unit name, slope information, and erosivity values. In addition, the location of any on-site hydric soils shall be described (due to their high susceptibility to erosion) and provide an estimate of the number of acres that will likely be disturbed. Ensure that any such areas are identified on the Erosion and Sediment Control Overview Drawings.

#### **EXAMPLE TEXT 1**

Based upon the U.S. Department of Agriculture web-based soils mapping information, a description of the existing soil conditions and soil types within the project limits are summarized below:

- The primary soil type within the project limits is Winfield silt loam, 2 to 5% slopes, nonhydric soil (477B). A small portion in the north section of the project area is mapped as Menfro-Hickory silt loams, 18 to 35% slopes, nonhydric soil (701F). The Winfield silt loam has a soil erodibility factor (K) of 0.12 which indicates a low susceptibility of soil erosion. However, the Menfro-Hickory silt loam has a K-factor rating of 0.52 which represents severe susceptibility to erosion. The area with soils of high erosion susceptibility generally occurs from Sta. 206+00 to Sta. 296+00 and is shown on the Erosion and Sediment Control Overview Sheet. The silt loam soils which dominate the project area will exhibit moderate runoff potential and a low settlement rate.

#### **EXAMPLE TEXT 2**

Based on information provided in the Geotechnical Engineering Report for the project, existing soil conditions within the project limits relative to their erosion potential are generally characterized as follows:

- Fill materials were encountered below the surfacing materials (topsoil and asphalt pavement/subbase aggregate) to depths of approximately 12 to 18 feet below existing grades. Fill materials encountered consist of elastic silt with sand, silt with sand, sandy silt, which visually classify as MH, ML, and SC, respectively, in accordance with the Unified Soil Classification System (USCS) and have an organic content of less than 1%. Based on the particle size distributions, the existing soils at the site are generally considered to have a moderately highly erodibility. With the low clay content of the soils (generally less than 3%), turbidity in stormwater runoff is not considered a significant factor.

### g) Topography and Drainage

#### **INSTRUCTIONS**

Provide a description of drainage patterns and topographic features relative to their potential to affect erosion and sediment control. Describe how stormwater will drain from the site throughout all phases of the project development and after final stabilization. Incorporate a description of all conveyance channels (e.g., ditches, streams) and drainage features (pipes/structures, basins, ponds, etc.). Describe the location of points of

discharge to all waterway(s) that will receive stormwater from the site, including streams, rivers, lakes, and wetlands.

**EXAMPLE TEXT**

A description of the existing drainage patterns and topographic features relative to their impact on erosion and sediment control is summarized below:

- Most of the project area (approximately 88%) is stabilized with turf grasses. The remaining portion of the project area includes invasive trees and shrubs.
- The topography across the project is generally flat with slopes between 0-2%. There are no steep or lengthy slopes within the project limits that represent areas of increased erosion potential.
- The current stormwater runoff flows north toward Peace Creek and south toward an unnamed tributary to Peace Creek. These current locations are shown on Sheets DR-1 and DR-4.

After grading and installation of stormwater conveyances, site runoff will be collected by storm drain inlets, an earth dike, and vegetated ditches which will convey the runoff to a permanent sediment basin near the northern limits of the project (see Sheet DR-06). Stormwater will be discharged from the sediment basin, through a revetment mat spillway, and enter a natural vegetated area before discharging to Peace Creek. The remaining discharge will flow south and southwest through natural vegetated areas before discharging to the unnamed Tributary to Peace Creek.

h) Drainage System Ownership

**INSTRUCTIONS**

Identify the ownership or jurisdiction of the drainage system (municipality or agency) the project will drain into. The owner(s) of the drainage system(s) may include stormwater systems, combined sewers, and/or surface waters and drainage channels. Depending on the location and configuration of the project, this may include the Illinois Tollway, IDOT, cities/villages, townships, counties, and/or other entities.

**EXAMPLE TEXT**

The drainage systems which receive stormwater discharge from the project are owned by the Village of Franklin Park, the Illinois Department of Transportation, and the Illinois Tollway.

i) Site Maps

**INSTRUCTIONS**

The ILR10 permit requires that site map(s) be provided to illustrate the locations of various features. Specifically, these include:

- Drainage patterns and approximate slopes anticipated before and after major grading activities;
- Locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking;
- Areas of soil disturbance;
- The location of major structural and nonstructural controls identified in the plan;
- The location of areas where stabilization practices are expected to occur;
- Locations of on-site or off-site soil stockpiling or material storage; and
- Surface waters (including wetlands) and locations where stormwater is discharged to a surface water.

The Designer shall provide a narrative description addressing each of the items identified above with reference to applicable plan sheets.

**EXAMPLE TEXT**

The plan documents identified below, hereby incorporate by reference, contain site map(s) indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of major soil disturbance, location(s) of proposed soil stockpiles or material storage locations, the location of major structural and nonstructural erosion and sediment controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands), and locations where stormwater is discharged from the project to a surface water. These include:

Drainage Plan	DR-01 through DR-10
Grading Plan	GR-01 through GR-10
Erosion and Sediment Control Plan	DR-01 through DR-10
Landscape Plan	LP-01 through LP-10

j) Receiving Waters and Wetland Acreage

**INSTRUCTIONS**

List the first receiving water(s) that receives stormwater discharge from the project site and/or from the MS4 that directly receives the discharge from the project. Describe the location of the project with respect to the receiving waters and how stormwater is conveyed to the receiving water. Projects may have multiple discharge points and each receiving water shall be identified. Show the location of the receiving waters on the ESCP (Erosion and Sediment Control Plan). Indicate whether any receiving waters are listed by the IDNR as a Biologically Significant Stream. The list of IDNR Biologically Significant Streams can be found here:

<https://dnr.illinois.gov/conservation/biologicalstreamratings.html>

Also, describe the locations and aerial extent of any wetland acreage within the project limits.

**EXAMPLE TEXT**

The primary streams and/or tributaries which receive runoff from the project are Stoney Fork Creek and Fishing Creek.

Stormwater runoff from the project directly discharges from one location (Outfall #1) near Sta. 3056+00 as shown on Sheet EC-01 to an unnamed tributary of Stony Fork Creek.

A second outfall (Outfall #2) is located near Sta. 3078+00 shown on Sheet EC-03 where it discharges through a proposed detention pond into an existing ditch located in Illinois Tollway ROW along State Road. From the proposed detention pond, stormwater runoff from the project will discharge into Fishing Creek.

There are three (3) wetlands totaling 1.2 acres and two (2) Waters of the U.S. (WOUS) totaling 0.9 acres within the project limits.

k) 303(d) Listed Receiving Waters

**INSTRUCTIONS**

Once the receiving waters have been identified and listed, determine if the receiving water is on the current IEPA 303(d) list. The current list can be found here:

<https://www2.illinois.gov/epa/topics/water-quality/watershed-management/tmdls/Pages/303d-list.aspx>

For any receiving waters listed on the 303(d) list for sediment or a parameter that addresses sediment (e.g., total suspended solids, turbidity, siltation), provide the following information:

- The name(s) of the listed waterway and identify all pollutants causing impairment;
- A description of how the Erosion and Sediment Control Plan will prevent a discharge of sediment resulting from a storm event equal to or greater than a 25-year, 24-hour rainfall event, if the receiving water is listed as impaired for sediment (e.g., total suspended solids, turbidity, siltation);
- If pollutants other than sediment are identified as causing the impairment, provide a description of how pollution prevention BMPs have been incorporated into the site design to prevent their discharge;
- A description of the location(s) of direct discharge from the project site to the 303(d) waterways; and
- A description of the location(s) of any dewatering discharges to the 303(d) listed waterways.

**EXAMPLE TEXT**

The direct receiving water for the project is the Example River and is not identified by the IDNR as a "biologically significant stream".

The Example River (segment IL\_F-16) is listed on the 2018 IEPA 303(d) list as impaired for the following:

- Aquatic Life: Total Suspended Solids (TSS)
- Primary Contact Recreation: Fecal Coliform

The erosion and sediment control practices as described in the following section and as shown on the Erosion and Sediment Control Drawings have been designed based on a 25-year, 24-hour rainfall event. The Contractor will install and maintain all erosion and sediment control practices throughout the period of construction as shown in the plans and as directed by the Engineer. If necessary, instruction will be given to the Contractor to provide additional erosion and sediment control practices. The potential of construction activities impacting Example River is reduced to the maximum extent practical by the construction BMPs (perimeter erosion barrier, drainage structure inlet filters, temporary ditch checks, temporary seeding with erosion control blanket, temporary sediment basin, and polymer water treatment) in this plan.

To prevent further fecal coliform impairment due to the project, portable restroom facilities will not be placed within 50 feet of the banks of the Example River nor will the facilities be placed near catch basins or other drainage structures.

The runoff from the project is conveyed to Example River through open ditch discharges at the locations shown on the Erosion and Sediment Control Overview Plan and Sheet EC-3. There is no enclosed drainage system.

The design and implementation of dewatering systems as needed to construct facilities included in this contract are the responsibility of the Contractor. Prior to the start of construction, the Contractor is required to submit a Dewatering Plan which will include, in part, a description and location of dewatering discharges. The Dewatering Plan shall be incorporated by reference into the SWPPP for the project.

The above BMPs will be implemented by the Contractor to prevent further degradation of the Example River for TSS and fecal coliform.

l) Receiving Waters with Total Maximum Daily Load (TMDL)

<b>INSTRUCTIONS</b>
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For discharges to waters for which there is a TMDL allocation for sediment or a parameter that addresses sediment (e.g., total suspended solids, turbidity, siltation), provide a description of the erosion and sediment control strategy that has been incorporated into the site design that is consistent with the requirements of the TMDL, including any timeframes. The description shall include:

- The name(s) of the listed waterway;
- Description of the erosion and sediment control strategy consistent with the requirements of the TMDL; and
- If a specific numeric waste load allocation has been established that would apply to the project discharges, provide a description of the necessary steps to meet that allocation.

Reports for impaired waterways with established TMDL's can be found here for reference:

<https://epa.illinois.gov/topics/water-quality/watershed-management/tmdls.html>

**EXAMPLE TEXT 1**

There is no IEPA-established or approved TMDL published for the receiving water(s) listed in Section 1.j.

**EXAMPLE TEXT 2**

There is no IEPA-established or approved TMDL published for the receiving water(s) listed in Section 1.j. However, Example River segment JG-01 is listed for impairment of the aquatic life use caused by TSS. Example River segment JG-01 is also listed for impairment of the aesthetic quality use caused by excess sedimentation and siltation, a similar measure of sediment loads in a waterbody. Although no sediment-related TMDL has been established, an implementation plan has been developed for the watershed which outlines the actions necessary to achieve the goals. The plan includes recommended best management practices (BMPs) for nonpoint sources including the use of Conservation Buffers and Sediment Control Basins. In accordance with the TMDL report and based on the 2% slope of the existing buffer, a continuous 54-foot-wide section of existing filter strip along Example River shall be protected from disturbance due to construction. Additionally, a temporary sediment basin with a minimum of 3,600 ft<sup>3</sup>/acre of storage shall be provided and maintained throughout the duration of construction. The Contractor shall visually monitor the discharge from the basin daily to ensure the discharge remains clear of suspended sediments. If necessary, polymer flocculant shall be applied to the basin to control sediment discharges.

m) Site Features and Sensitive Areas to be Protected

**INSTRUCTIONS**

Identify all sensitive environmental resources or site features on or adjacent to the project site that have the potential to be impacted by the proposed construction and are to be protected and/or remain undisturbed. These may include but are not limited to:

- Steep slopes;
- Highly erodible soils;
- Wetlands;
- Streams and other waterways;
- Existing natural buffers;
- Specimen trees;
- Natural and mature vegetation;
- Nature preserves;
- Floodplains;
- Bioswales;
- Threatened or endangered species; and
- Historic/archaeological resources.

Some or all of the above items may not exist on the project site, in which case indicate so in this section; not mentioning them does not meet the requirement.

Explain what measures will be taken to protect any identified resources or sensitive areas to be protected. These features may require greater protection measures and/or possible mitigation procedures.

**EXAMPLE TEXT 1**

There are no sensitive environmental resources or site features on or adjacent to the project site that have the potential to be impacted by the proposed construction and are to be protected and/or remain undisturbed.

**EXAMPLE TEXT 2**

All unimpacted wetlands within the ROW and wetlands located adjacent to the ROW are to be protected during construction. Super Silt Fence will be provided at the boundary of the wetland areas to be protected and serve to designate the "No Intrusion Area". Additionally, the adjacent lands owned by the Forest Preserve District of Lake County are be protected using Super Silt Fence barrier.

n) Pollutants and Pollutant Sources

**INSTRUCTIONS**

Conduct an assessment of construction activities that have the potential to contribute sediment or other pollutants to stormwater discharges. Pollutant-generating activities to be considered include, but are not limited to:

- Clearing, grading, excavating;
- Paving operations;
- Concrete cutting and grinding;
- Concrete washout and waste handling;
- Structure construction/painting/cleaning;
- Building and structural demolition;
- Drilled piers, piles, and caisson construction;
- Dewatering;
- Bulk material handling and storage;
- Solid waste management;
- Non-special and hazardous wastes;
- Sanitary and septic waste;
- Vehicle/equipment maintenance and fueling;
- Vehicle/equipment use and storage;
- Landscaping and vegetation management; and
- Pesticide and herbicide application.

Based on the above assessment, identify materials and equipment expected to be used on the site that have the potential to affect the quality of stormwater discharges from the construction site. The principal pollutant of concern is sediment; however, many other

pollutants may be found in stormwater runoff from construction sites. Potential pollutants to be considered include, but are not limited to:

- Soil and Sediment;
- Demolition Waste (e.g., asbestos, wood debris; freon; aluminum, zinc, masonry block rubble, and concrete rubble);
- Paving Operations Materials and Waste (e.g., hot asphalt, asphalt emulsion, liquid asphalt, saw-cutting slurries, and concrete washout);
- Cleaning Products (e.g., acids, chlorine, detergents, solvents, thinners, ammonia, caustic sodas, bleaching agents, chromate salts, and tri-sodium phosphate);
- Joint and Patching Compounds (e.g., patching compounds, levelers, drywall joint compounds, polymeric compounds, water reducing admixtures, sealants, and waterproofing coatings);
- Concrete Curing Compounds (e.g., floor hardeners, methacrylate, and epoxy resin products);
- Painting Products and Wastes (e.g., paint, dyes, stripping pigments, sanding residue, paint strippers, acetone, methyl ethyl ketone, resins, sealants, solvents, thinners, lacquers, varnish, enamels, gum spirit, and turpentine);
- Sandblasting Materials and Waste Products (e.g. sandblasting abrasives, rust, rubble, lead-based paint waste);
- Landscaping Materials and Wastes (e.g. plant materials, aluminum sulfate, elemental sulfur, herbicides, organic and inorganic fertilizers and nutrients such as nitrogen, phosphorous, and potassium, pesticides, gypsum, lime, mulch, sand, gravel, and topsoil);
- Soil Amendments and Stabilization Products (e.g. polymer/copolymer, straw/mulch, lignin sulfonate, psyllium, guar/plant gums, and gypsum);
- Building Construction Materials and Wastes (e.g. treated wood products, drywall, pipe, insulation, brick, glass, plastics, cardboard, packaging);
- Vehicle and Equipment Fluids (e.g., TPH and fuels, oils and grease, coolants/antifreeze, solvents, sealers, acids, benzene and derivatives, lubricants, and discharges from batteries);
- Portable Toilet Wastes [e.g., bacteria, biochemical oxygen demand (BOD), pathogens, and sanitary wastes];
- Litter and Miscellaneous Solid Waste (e.g., paper, cans, and bottles, plastic, and other dry garbage);
- Glues, Adhesives, and Sealants;
- Contaminated Soils; and
- Dust Palliative Products.

Complete this section using the checklist provided in the SWPPP template. As the above is not an all-inclusive list, additional items should be added based on project-specific

requirements. The Designer shall ensure that appropriate controls are provided in Section 2 of the SWPPP to address all identified potential contaminants.

o) Applicable Federal, State or Local Requirements

**INSTRUCTIONS**

The management practices, controls and other provisions contained in the SWPPP must be at least as protective as the requirements contained in the Illinois Urban Manual. In addition, the SWPPP must include the procedures and requirements specified in applicable erosion and sediment control site plans or stormwater management plans approved by local officials. Requirements specified in erosion and sediment control site plans, site permits or stormwater management plans approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under the ILR10 permit and are enforceable under the permit even if they are not specifically included in the SWPPP.

In addition to the above, the Designer shall list additional state or local regulations that apply to the project or any applicable procedures or requirements specified on the Contract Plans and approved by state or local officials. This could include requirements of the County Stormwater Management Ordinance, County Flood Damage Prevention Ordinance, County Soil and Water Conservation Ordinance, or other requirements that define protective measures to be used during construction, including any project specific environmental commitments (if applicable).

While coordination with the County Soil and Water Conservation District and/or County Stormwater Management Commission is not typically required, the need for such coordination may be required if the project requires a Section 404 permit from the USACE. At the discretion of the USACE, the Erosion and Sediment Control Plans may be required to be submitted to the Soil and Water Conservation District or County Stormwater Management Commission for review and approval. When required, the Designer shall ensure that the requirements are incorporated into the Contract Plans and documents and secure the necessary approvals. Accordingly, the SWPPP shall identify the applicable approvals and reflect that the Erosion and Sediment Control Plans have been prepared to comply with the agency requirements and that the Contractor is required to comply with any and all agency directives.

Any federal or state permits other than the ILR10 permit obtained for the project including, but not limited to, those issued by the USACE, IDNR, and IEPA shall be identified and the SWPPP shall reflect that compliance with all provisions of such permits is required.

**EXAMPLE TEXT**

Procedures and requirements specified in applicable sediment and erosion control site plans or stormwater management plans approved by local officials, or are required by Federal or State regulatory agencies are described below:

- The management practices, controls, and other provisions provided in the SWPPP are at least as protective as the requirements contained in the Illinois Urban Manual.

- The State of Illinois procedures and standards for urban soil erosion and sediment that are applicable to protecting surface waters, upon submittal of the Notice of Intent to authorize discharges under the ILR10 permit, are incorporated by reference and are enforceable under the permit even if they are not specifically included in the plan. Any additional BMPs which are required beyond those specified herein and/or shown on the Erosion and Sediment Control Plans shall also meet the requirements of the Illinois Urban Manual.
- The proposed improvements comply with FAA Advisory Circular (AC) No. 150/5200-338, Hazardous Wildlife Attractants on or near Airports (dated August 28, 2007). Specific requirements pertaining to stormwater management facilities, wetland mitigation, and landscaping were coordinated with and confirmed by the FAA and the U.S. Department of Agriculture - Animal and Plant Health Inspection Service (USDAAPHIS). The principal criteria include no new wildlife attractants (e.g., open water, wetlands, or vegetation attractive to wildlife) within five miles of the airport.
- In-stream work within the Kankakee River will not occur from March 15 to July 15 to minimize potential impacts to the sheepsnose mussel, a state listed fish species, and to the sauger (*Sander canadense*), a known host fish species of the sheepsnose mussel.
- The bottom of new culverts greater than 48 inches in diameter or height associated with Waters of the U.S. are to be buried below streambed elevations to maintain a natural condition, when feasible. Bottomless culverts are included in the design plans, where feasible, based on size of the span, geometry, skew, potential environmental impact associated with installation, and cost.
- The project is subject to all requirements of a Section 404 permit issued by the USACE. All in-stream work will be performed in accordance with the Chicago District, USACE - Regulatory Branch Requirements for In-stream Construction Activities (USACE, 2013). This includes the use of non-erodible cofferdams, filtering of dewatering operations, timber/work mats and the use of low ground-pressure equipment for work in wetlands (where practical). The Contractor is required to abide by all conditions of the Section 404 permit during construction.
- The project is entirely located within the existing Illinois Tollway ROW. There are no local Municipal Separate Storm Sewer System (MS4) requirements applicable to the contract.

## Section 2. Controls

This section of the plan addresses the controls that will be implemented for each of the major construction activities, and for all use areas, borrow sites, and waste sites within Illinois Tollway ROW. Include the following in Section 2 of S.P. 111.2:

- a) Stabilization Practices

<b>INSTRUCTIONS</b>
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Stabilization practices provide the first line of defense in preventing off-site sedimentation and are designed to prevent erosion through protection and preservation of soil. Stabilization practices may include:

- Temporary Stabilization with Straw Mulch;
- Same-Day Stabilization;
- Erosion Control Blanket;
- Temporary Seeding;
- Permanent Seeding;
- Tree Protection Fence;
- Mulching;
- Geotextiles;
- Sod;
- Vegetative Buffer;
- Staged or Staggered Development;
- Dust Control Watering;
- Dust Suppression Agents; and
- Other appropriate measures.

The Designer shall select temporary soil stabilization BMPs to be used and describe how each BMP will be used during construction. For the description of how each practice will be used, write the description in a manner that explains its function for erosion and sediment control, locations where the practice will be applied, and timing of its use.

**EXAMPLE TEXT**

Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating or other earth disturbing activities have permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization of disturbed areas must be initiated within 1 working day of permanent or temporary cessation of earth disturbing activities and shall be completed as soon as possible but not later than 14 days from the initiation of stabilization work in an area. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

Where shown on the Contract Plans, Same-Day Stabilization shall be utilized to reduce the movement of soils once they are exposed by the Contractor's operations. Same-Day Stabilization is to be implemented after the initial perimeter controls are in place and concurrently with the Contractor's daily operations as directed by the Engineer. In this case, the work zone must be left in such condition that the grading areas disturbed that day, are stabilized, and measures are in place to control sediment laden stormwater runoff to the satisfaction of the Engineer.

The Engineer may also direct the Contractor to provide Same-Day Stabilization to critical disturbed areas where there is a risk of sediment laden runoff occurring. When directed by the Engineer, Same-Day Stabilization of specified areas shall be placed at the locations specified by the Engineer and once the Contractor's activities are completed for the work day.

Same-Day Stabilization may consist of either temporary erosion control measures or the permanent landscaping indicated on the Contract Plans. When permanent landscaping is not possible, due either to construction staging or site constraints, Same-Day Stabilization shall consist of temporary erosion control measures.

The following stabilization practices will be used for this project:

- Temporary Stabilization with Straw Mulch
- Same-Day Stabilization
- Erosion Control Blanket
- Temporary Seeding
- Permanent Seeding
- Tree Protection Fence
- Mulching
- Geotextiles
- Sod
- Vegetative Buffer
- Staged or Staggered Development
- Dust Control Watering
- Dust Suppression Agents
- Soil Stockpile Management
- Winter Protection
- Other (specify):
- Other (specify):
- Other (specify):

Provided below is a description of interim stabilization practices, including site specific scheduling of the implementation of the practices to be used on the contract:

- Erosion Control Blanket: Applied to protect exposed soil surfaces against erosion due to rainfall or flowing water. Erosion control blankets are proposed at slopes greater than 1:3 (V:H) and in areas of concentrated flows.
- Temporary Stabilization with Straw Mulch: Applied to disturbed areas on slopes 1:3 (V:H) or flatter.
- Same-Day Stabilization: Shall apply to work within 100 feet of Example Creek as shown on Sheet EC-3. Temporary Stabilization with Straw Mulch shall be used as the stabilization method. The Contractor shall provide Same-Day Stabilization at other work locations as directed by the Engineer throughout the contract duration.
- Tree Protection Fence: In select locations, tree protection fencing will be utilized to prevent damage and erosion of tree roots and to preserve tree bark and appearance. These areas are shown on Sheets EC-01 and EC-03 of the Erosion and Sediment Control Plans.
- Dust Control Watering: Implemented using a spray application of water as necessary to control fugitive dust emissions. Repetitive treatment will be applied

as needed to accomplish dust control when temporary dust control measures are used. A water truck will be present on site (or available) for sprinkling/irrigation to limit the amount of dust leaving the site. Watering will be applied daily (or more frequently) to be effective. If field observations indicate that additional protection (in addition to, or in place of watering) is necessary, alternative dust suppressant controls will be implemented at the discretion and approval of the Engineer.

- Soil Storage Pile Protection: Soil storage piles containing more than 10 cubic yards of material shall not be located within 25 feet of a roadway or drainage channel. Filter barriers, consisting of silt fence or equivalent, shall be installed immediately on the downslope side of the piles.

Provided below is a description of final stabilization practices, including site specific scheduling to be used on the contract:

- Permanent Seeding: Once grading is completed, straw and hydraulic mulch (Mulch Method 2) and permanent seed will be applied to all prepared slopes up to 1:10 (V:H). Erosion control blanket and permanent seeding will be applied to all disturbed areas with slopes 1:10 (V:H) or steeper. Refer to the Landscape Plans for details.

The Engineer and Contractor shall maintain records of the dates when major grading activities occur, when construction activities have temporarily or permanently ceased on a portion of the site, and when stabilization measures area initiated.

#### b) Structural Practices

<b>INSTRUCTIONS</b>
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Structural practices involve the installation of devices to divert flows from exposed soils, store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include:

- Silt fence;
- Temporary ditch checks;
- Storm drain inlet protection;
- Sediment traps;
- Sediment basins;
- Temporary pipe slope drains;
- Temporary stream crossings;
- Stabilized construction entrances;
- Trackout control mats;
- Temporary riprap;
- Earth dikes;
- Temporary swales;
- Temporary rock check dams;
- Temporary culvert inlet protection; and
- Other appropriate measures.

The Designer shall select temporary structural practice BMPs to be used and describe how each BMP will be used during construction. For the description of how each practice will be used, write the description in a manner that explains its function for erosion and sediment control, locations where the practice will be applied, and timing of its use.

**EXAMPLE TEXT**

Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Included in the description is the site-specific scheduling of the implementation of the practices and the locations for their use.

The following structural practices will be used for this project:

- Silt Fence
- Super Silt Fence
- Temporary Ditch Checks
- Temporary Rock Check Dams
- Filter Fabric Inlet Protection, Basket Type
- Filter Fabric Inlet Protection, Cover Type
- Rectangular Inlet Protection
- Culvert Inlet Protection Fence
- Culvert Inlet Protection Stone
- Sediment Traps
- Sediment Basins
- Temporary Pipe Slope Drains
- Temporary Stream Crossings
- Stabilized Construction Entrances
- Trackout Control Mat
- Temporary Riprap
- Temporary Swales
- Temporary Channel Diversion
- Diversion Dike
- Sediment Filter Bag
- Dewatering Basin
- Silt Curtain
- Cofferdam
- Other (specify):
- Other (specify):
- Other (specify):
- Other (specify):

Description of Structural Practices:

- Silt Fence: Shall be installed at the locations indicated on the Erosion and Sediment Control Plans and other locations where it is deemed necessary to filter

sediment from storm runoff. The fence is designed to retain sediment-laden water to allow settlement of suspended soils before filtering through the mesh fabric for discharge downstream. Perimeter silt fence shall be installed prior to the initiation of earth disturbing construction activities. Silt fence will be installed around temporary topsoil stockpiles and will be installed prior to beginning stockpiling activities.

- **Stabilized Construction Entrances:** Vehicles and equipment will access the construction site at the designated stabilized construction entrances to control off-site tracking of sediments at locations shown on the plans or as directed by the Engineer. Stabilized construction entrance(s) shall be constructed in conformance with the Illinois Tollway Supplemental Specifications and Standard Design Details. The rough texture of the stone helps to remove clumps of soil adhering to construction vehicle tires through the action of vibration and jarring over the rough surface and the friction of the stone matrix against soils attached to vehicle tires. Any track-out that occurs beyond the stabilized construction entrance shall be removed by wet sweeping no later than the end of the day in which the track-out occurs, or more frequently as directed by the Engineer.
- **Fabric Inlet Protection:** Will be provided at all proposed drainage structures as they are constructed and any existing structures that will be receiving flow within the construction limits. The primary function is to place controls in the path of flow sufficient to slow sediment laden water to allow settlement of suspended soils before discharging into the storm sewer system. Fabric inlet protection will consist of manufactured filter baskets in paved areas and rectangular inlet protections in unpaved areas.
- **Culvert Inlet Protection:** Required at all proposed upstream culvert headwalls as they are constructed and any existing culverts that will be receiving flow within the construction limits. Inlet protection is placed around an inlet to trap sediment and debris and prevent it from entering a storm sewer system. Culvert Inlet Protection Fence and Culvert Inlet Protection Stone BMPs shall be used at locations specified in the Erosion and Sediment Control Plans. The type of culvert inlet protection has been selected based on size of the contributing drainage areas and the anticipated flow characteristics.

c) Treatment Chemicals

**INSTRUCTIONS**

Describe the planned use of all polymer flocculants or treatment chemicals at the site. Describe the location, use, and application technique, along with an explanation of need for their use. If the use of treatment chemicals is not planned, state as such.

**EXAMPLE TEXT 1**

The use of polymer flocculants or other chemicals to treat stormwater runoff on the project are not planned or anticipated.

**EXAMPLE TEXT 2**

The project will require construction of temporary cofferdams along the banks of the Brook River as shown on Sheet EC-05. The area enclosed by the temporary cofferdams will be dewatered to complete the necessary bridge repairs. Any turbid water produced during dewatering will be pumped through an in-line flocculation system to remove suspended solids prior to discharge to the Brook River. Water soluble anionic Polyacrylamide (PAM) products will be used in concert with the in-line system to remove suspended solid laden water prior to discharge from the temporary cofferdams installed at the I-88 crossing over the Brook River.

d) Permanent Storm Water Management Controls

<b>INSTRUCTIONS</b>
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Permanent stormwater management measures are installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. Such practices may include:

- Stormwater detention structures;
- Stormwater retention structures (including wet ponds);
- Flow attenuation by use of open vegetated swales and natural depressions;
- Infiltration of runoff on site;
- Outfall velocity dissipation devices
- Bioswales; and
- Sequential systems (which combine several practices).

The Contract Plans shall incorporate green infrastructure stormwater management techniques where appropriate and practicable. The practices selected for implementation shall be determined based on the technical guidance in the Illinois Tollway Drainage Design Manual. If practices are applied to situations different from those covered in the Illinois Tollway Drainage Design Manual, the technical basis for such decisions will be explained.

Per the Illinois Tollway's General Permit ILR40, one or more of the following general strategies for permanent stormwater management shall be adopted, in order of preference:

- Preservation of natural features of the site, including natural storage and infiltration
- Preservation of existing natural streams, channels, and drainage ways
- Minimization of impervious surfaces
- Conveyance of stormwater in open vegetated channels
- Construction of structures that provide both quantity and quality control
- Maintain natural buffers around surface waters, minimize soil compaction, and unless infeasible, preserve topsoil.

Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

The Designer shall describe the permanent stormwater management controls that will be installed during construction to control pollutants in stormwater discharges that will occur after construction operations have been completed. Describe the installation, maintenance, and any temporary use of these practices prior to final stabilization. This discussion shall include the technical basis used to select these practices.

#### EXAMPLE TEXT 1

There are no new impervious surfaces or new pollutant sources following completion of construction. Therefore, no permanent stormwater management controls are to be provided as part of this contract.

#### EXAMPLE TEXT 2

Permanent stormwater management controls to be installed as part of the project are as follows:

- Dry bottom detention basins will be utilized in the interchange, as well as various ditch checks and a wet pond south of the interchange. Open vegetated (sodded) swales will be utilized for stormwater conveyance for sedimentation removal. Facilities are identified on Plan Sheets DR-01 and DR-13.
- Open cell articulated concrete revetment mat will be used for storm drainage outlet protection against erosion and the double 6' x 4' box culvert for the South Tributary to Muddy Creek will utilize Grade No. 7 riprap for velocity dissipation. Finally, the Muddy Creek bridge will utilize RR2 riprap for scour protection. Refer to Plan Sheet DR-04 for details.

#### e) Pollution Prevention

#### INSTRUCTIONS

The pollution prevention requirements specified in the ILR10 permit include:

- Minimizing the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge;
- Minimizing the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on the site to precipitation and to stormwater. Minimization to exposure is not required for any products or materials where the exposure to precipitation and to stormwater will not result in a discharge of pollutants, or when exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use);
- Minimizing the exposure of fuel, oil, hydraulic fluid and other petroleum products by storing in covered areas or containment areas; and

- Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures.

Example language to address the pollution prevention requirements of the ILR10 permit is provided in text below. The Designer shall review the example language and shall modify or provide additional requirements to thoroughly address the planned construction operations associated with each project.

#### EXAMPLE TEXT

The following pollution prevention measures will be implemented to minimize the exposure of products or materials to precipitation and stormwater and minimize the discharge of pollutants on the project site:

- **Vehicle/Equipment Storage, Cleaning and Maintenance.** Construction vehicles will be inspected frequently to identify any leaks, which will be repaired immediately, or the vehicle will be removed from site. If minor vehicle/equipment maintenance must occur on site, repairs and maintenance will be made within an approved staging or storage area, or other approved location, to prevent the migration of mechanical fluids to watercourses, wetlands or storm drains. Spill response equipment shall be readily available when performing any vehicle or equipment maintenance. When not in use, vehicles and equipment utilized for construction operations will be staged outside of the regulatory floodplain and away from any natural or created watercourses, ponds, drainage-ways or storm drains.

Cleaning of vehicles and equipment is discouraged and will be performed only when necessary to perform repairs or maintenance. Cleaning of vehicles and equipment with soap, solvents or steam shall not occur on the project. Vehicle and equipment wash water shall be contained for percolation or evaporative drying away from storm drain inlets or watercourses.

- **Prohibited Discharges.** The following non-storm water discharges are prohibited: concrete and wastewater from washout of concrete (unless managed by an appropriate control), wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials, fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance, soaps, solvents, or detergents, toxic or hazardous substances from a spill or other release, or any other pollutant that could cause or tend to cause water pollution.
- **Material Delivery and Storage.** The following procedures and practices for the proper handling, delivery, and storage of products and construction materials will be followed to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff:
  - Fuel, oils, hydraulic fluids, and other petroleum products shall be stored under cover or in a containment area.
  - Locate chemical and material storage areas away from low elevation areas, drainage areas, and stream banks, and outside the 100-year floodplain.

- Provide readily available Safety Data Sheets for all materials used or stored on the project site.
- Ensure access is available to storage areas to allow for spill clean-up and emergency response.
- Maintain temporary containment facilities in a condition free of accumulated rainwater and spills.
- Store materials in their original containers and maintain the original product labels in place and in a legible condition. Replace damaged or otherwise illegible labels immediately.
- Keep ample supply of appropriate spill clean-up material near storage areas.
- Minimize the material inventory stored on-site to the extent practical.
- All materials stored on site will be stored in a neat, orderly manner in their appropriate containers.
- Substances will not be mixed with others unless recommended by the manufacturer.
- The Contractor will inspect storage areas daily to ensure proper use and disposal of materials on-site.
- Whenever possible, all product will be used before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- If surplus product must be disposed of, manufacturer's or local and state recommended methods for proper disposal will be followed.
- Keep an accurate, up-to-date inventory of material delivered and stored on-site.
- Have employees trained in emergency spill clean-up procedures present when dangerous materials or liquid chemicals are unloaded.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.
- Spill Response. The following practices will be followed to minimize, control and respond to spilled material:
  - The Contractor shall prepare and implement a Spill Prevention and Control Plan.

- Manufacturer's recommended methods for spill cleanup will be clearly posted, and site personnel will be made aware of the procedures and location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area(s) and shall be appropriate for the materials stored.
- All spills will be cleaned up immediately after discovery.
- The Contractor will dispose of used clean-up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose, in accordance with all applicable laws, rules, and regulations.
- Spills of toxic or hazardous material will be reported to the appropriate state or local government agency, regardless of size.
- In the event of any spills, the Spill Prevention and Control Plan will be adjusted to include additional measures to prevent the type of spill from recurring.
- The Contractor shall be responsible for day-to-day operations and will designate a Spill Prevention and Cleanup Coordinator (Coordinator). The Coordinator will designate at least two (2) other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel, listed below, will be posted in the material storage area and in the office trailer on-site.

**Spill Prevention and Cleanup Coordinator:**

\_\_\_\_\_

Printed Name

\_\_\_\_\_

Contractor Name

**Additional Trained Spill Prevention and Response Personnel:**

\_\_\_\_\_

Printed Name

\_\_\_\_\_

Contractor Name

\_\_\_\_\_

Printed Name

\_\_\_\_\_

Contractor Name

f) Other Controls

**INSTRUCTIONS**

Requirements for other controls are specified in the ILR10 permit and include:

- **Waste Disposal.** No solid materials, including building materials, shall be discharged to Waters of the United States, except as authorized by a Section 404 permit.
- **Sanitary Wastes.** The plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.
- **Concrete and Asphalt Wastes:** For construction sites that receive concrete or asphalt from off-site locations, the plan must identify and include appropriate controls and measures to reduce or eliminate discharges from these activities.
- **Hazardous and Toxic Wastes.** The plan shall ensure that regulated hazardous or toxic waste must be stored and disposed of in accordance with any applicable State and Federal regulations. The plan shall include spill response procedures and provisions for reporting if there are releases in excess of reportable quantities.

Example language to address the pollution prevention requirements of the ILR10 permit is provided in example text below. The Designer shall review the example language and shall modify or provide additional requirements to thoroughly address the planned construction operations associated with each project.

**EXAMPLE TEXT**

Practices to prevent the discharge of pollutants to the storm drain system or to watercourses as a result of the creation, collection, and disposal of wastes are as follows:

- **Solid Wastes.** No solid materials, including building materials, shall be discharged into Waters of the U.S., except as authorized by a Section 404 permit. Solid waste storage areas shall be located at least 50 feet from drainage facilities and watercourses and outside of areas prone to flooding or ponding. Designate waste storage areas and provide dumpsters of sufficient size and number with lids to contain the solid waste generated by the project. In addition, provide trash receptacles in laydown yards, field trailer areas or at locations where workers congregate for lunch and break periods. Non-salvageable solid waste shall be disposed in accordance with all laws, rules, and applicable regulations.
- **Sanitary Waste Materials.** The Contractor shall not create or allow unsanitary conditions. All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities will be provided at the site throughout the construction phase. They must be utilized by all construction personnel and serviced by a commercial operator to maintain function and prevent unsanitary conditions. Portable toilets must be

securely anchored and are not allowed within 30 feet of stormwater inlets or within 50 feet of a Water of the U.S.

- **Concrete Wastes:** Concrete washout and slurries generated from saw-cutting, coring, grinding, milling, grooving, or similar construction activities are required to be contained and are prohibited from entering storm drains or watercourses. Concrete waste management and disposal shall conform to Article 280.28 of the Illinois Tollway Supplemental Specifications.
- **Concrete Dust Particles:** Dust particles and other fine materials generated due to the use of rubblized or recycled concrete as roadway base, must be removed from stormwater prior to the water discharging outside of Illinois Tollway ROW. This material can be removed via vegetated ditches if there is enough time and space for removal prior to the discharge of the stormwater outside the ROW. For those areas where there is not enough space and time for vegetative remediation, other methods for removing said materials will be identified. For construction areas adjacent to creeks and streams, the stormwater's pH must also be moderated prior to discharge.

Special BMPs designed to remove concrete or limestone dust particles from stormwater runoff in contact with recycled or rubblized concrete underpavement must be removed once the stormwater discharging from the site is determined to be clean. This is often several months following completion of the project. The Contractor may have to return to the project area following project completion to remove these BMPs and restore the affected work area.

- **Hazardous Material Spill Response Wastes.** The Contractor shall include as part of their Spill Prevention and Control Plan a description of the procedures for the storage and disposal of regulated hazardous or toxic waste, spill response procedures, and provisions for reporting if there are releases in excess of reportable quantities.

g) Natural Buffers

<b>INSTRUCTIONS</b>
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For any stormwater discharges from construction activities within 50 feet of a Waters of the United States, except for activities for water-dependent structures authorized by a Section 404 permit, the ILR10 permit requires:

- A 50-foot undisturbed natural buffer be provided between the construction activity and the Waters of the United States; or
- Provide additional erosion and sediment controls within that area.

Existing natural buffers shall be provided or maintained adjacent to surface waters to the maximum extent practical based on actual site conditions. In no scenario shall existing buffer areas be less than 50 feet wide without the use of additional erosion and sediment controls.

If the required buffer width is infeasible, additional erosion and sediment control BMPs are required in order to reasonably ensure the same amount of pollutant removal that a natural vegetated buffer would provide. This means that another level of protection will need to be provided in addition to the usual perimeter control BMP. The additional erosion and sediment controls can be in the form of redundant BMPs. Redundant sediment controls shall be placed at least 5 feet apart unless limited by lack of available space. As an alternative, Super Silt Fence combined with the use of Same-Day Stabilization can be used to meet this requirement. Other options shall be approved by the Illinois Tollway Environmental Unit.

This section shall describe the locations and width(s) of any existing natural buffers to be maintained and their locations shall be shown on the Erosion and Sediment Control Plans. For any buffers less than the minimum widths, provide a narrative description of the additional erosion and sediment controls to be provided in the affected area.

#### **EXAMPLE TEXT 1**

There are no Waters of the United States, including existing natural buffers, within the project limits or within 100 feet of the project boundaries.

#### **EXAMPLE TEXT 2**

Portions of the grading associated with Detention Basin #1 will occur within the 50-foot existing natural buffer areas associated with Example Creek. The existing buffer area generally consists of sparse ground cover (medium density invasive weeds and sampling trees). The scope of the project has been designed such that it is economically and physically infeasible to avoid these impacts.

The project will provide and maintain a buffer of 25 feet that is supplemented by additional erosion and sediment controls to provide enhanced protection of Example Creek due to the planned buffer disturbance. Prior to the start of earth-disturbing work activities, redundant sediment control barriers consisting of Super Silt Fence shall be installed 5-feet apart along the buffer protection area as depicted on plans. Additionally, the use of same-day stabilization with Erosion Control Blanket shall govern earth disturbing work within 100 feet of the banks of Example Creek.

### **Section 3. Maintenance**

#### **INSTRUCTIONS**

The ILR10 permit requires that the SWPPP include a description of procedures to maintain in good and effective operating conditions, all erosion and sediment control measures and other Best Management Practices identified in the plan.

Example language to describe the maintained requirements for commonly used control measures is provided in the example text below. The Designer shall review the example language and modify or provide additional requirements based on the specific needs of each project.

## EXAMPLE TEXT

The following is a description of minimum procedures that shall be used to maintain, in good and effective operating conditions, vegetation, erosion and sediment control measures and other protective measures identified in this plan:

- Erosion and Sediment Control Manager (ESCM): The Contractor shall assign an ESCM to the project. This person is required to have taken an approved sediment and erosion control training course. The ESCM will be responsible for supervising the maintenance of erosion & sediment control measures and implementation of this plan.
- Protection of Existing Vegetation: Replace damaged vegetation with similar species as directed by the Engineer. Restore areas disturbed, disrupted or damaged by the Contractor to pre-construction conditions or better at no additional expense to the contract. Trim any cuts, skins, scrapes or bruises to the bark of the vegetation and utilize local nursery accepted procedures to seal damaged bark. Prune all tree branches broken, severed or damaged during construction. Cut all limbs and branches, one-half inch or greater in diameter, at the base of the damage, flush with the adjacent limb or tree trunk. Provide smooth cuts perpendicular to the root, all cut, broken, or severed, during construction, roots 1-inch or greater in diameter. Cover roots exposed during excavation with moist earth and/or backfill immediately to prevent roots from drying.
- Fabric Inlet Protection: Remove sediment from inlet filter baskets when basket is 25% full or 50% of the fabric pores are covered with silt. Clean filter if standing water is present longer than one hour after a rain event. When there is evidence of sediment accumulation adjacent to the inlet protection, the deposited sediment shall be removed by the end of the day in which it was found or by the end of the following day if removal by the end of the same business day is not feasible. Remove trash accumulated around or on top of inlet protection device. When filter is removed for cleaning, replace fabric if any tear is present.
- Outlet Protection/Temporary Riprap: Restore dislodged protection and correct erosion that may occur. Remedy deficient areas prone to increased erosion immediately to prevent greater deficiencies.
- Temporary Ditch Checks: Remove sediment from upstream side of ditch checks when sediment has reached 50% of height of structure. Repair or replace ditch checks whenever tears, splits, unraveling or compressed excelsior is apparent. Replace torn fabric mat that may allow water to undermine ditch check. Remove debris (garbage, crop residue, etc.) when observed. Reestablish the flow over the center of the ditch check. Water or sediment going around the ditch check indicates incorrect installation, device needs lengthening, or the selected device is inappropriate for site conditions. Remove ditch checks once all upslope areas are stabilized and seed or otherwise stabilize temporary ditch check areas.

- **Temporary Rock Check Dams:** Remove sediment from upstream side of the check dam when sediment has reached 50% of height of check dam. Replace the aggregate and fabric when sediment has filled all voids in the stone, so that sediment is filtered and discharged. Repair or replace fabric whenever tears, splits or unraveling are apparent. Repeated failures necessitate a design review. Restore outside slopes to 1:2 (V:H). Stone placed for restoration is the same size as originally specified to allow proper interlock. Restore the center of the rock check dam periodically to ensure it is lower than the sides. Retrench the fabric if undercutting occurs. Reduce center flow line or lengthen check dam if water flows around device.
- **Temporary Erosion Control Seeding:** Reapply seed if stabilization hasn't been achieved. Apply temporary mulch to hold seed in place if seed has been washed away or found to be concentrated in ditch bottoms. Restore rills as quickly as possible on slopes steeper than 1:4(V:H) to prevent sheet-flow from becoming concentrated flow patterns. Mow, if necessary, to promote seed soil contact when excessive weed development occurs (a common indication of ineffective temporary seeding). Supplement seed if weather conditions (extreme heat or cold) are not conducive to germination.
- **Stone Rock Outlet Structure Sediment Trap:** Clean trap of silt when trap becomes 50% full. Restore the trap to its original design dimensions. Replace any riprap displaced from the spillway. Remove any accumulated sediment, trash, or debris from the outlet.
- **Silt Fence:** Repair tears, gaps or undermining. Restore leaning silt fence and ensure taut. Repair or replace any missing or broken stakes immediately. Clean fence line if sediment reaches one-third height of barrier. Remove fence once final stabilization is established. Repair fence if undermining occurs anywhere along its entire length.
- **Temporary Stabilized Construction Entrances:** Replenish stone or replace exit if vehicles continue to track sediment onto the roadway from the construction site. Sweep sediment on roadway from construction activities immediately. Ensure culverts (if provided) are free from damage and repair or replace as needed.
- **Mulch:** Repair straw if blown or washed away, or if hydraulic mulch washes away. Place tackifier or an Erosion Control Blanket if mulch does not control erosion.
- **Sod:** Limit foot traffic for the first two to three weeks. Ensure irrigation rate does not result in runoff. Install salt-tolerant sod where needed. Replace when >25% of any individual piece of sod is no longer viable. Restore areas where rolling edges are present, or sod is displaced.
- **Stockpile Management:** Repair and/or replace perimeter controls and stabilization measures when stockpile material has potential to be discharged or leave the limits of the protection. Remove all off-tracked material by sweeping or other methods. Update the SWPPP any time a stockpile location has been removed, relocated, added or required maintenance. During summer months, stockpiles should be watered to maintain the cover crop.

- Erosion Control Blanket: Repair damage due to water running beneath the blanket and restore blanket when displacement occurs. Reseeding may be necessary. Replace all displaced blanket and restaple.
- Silt Curtain: Inspect the flotation device, fabric, load line, anchors, and buoys, as well as the location and functionality. Additionally, the bottom of the silt curtain shall be inspected for folds and accumulated silt, which may pull the silt curtain under the water. Repairs or replacement of the silt curtain shall occur immediately following discovery. Follow manufacturer's recommendations for fabric and material repair. Accumulated sediment shall be removed per manufacturers' direction.
- Temporary Pipe Slope Drains: Fill eroded area at inlet with well-compacted soil. Stabilize outfall to eliminate scour. Repair leaks along length of pipe and re-compact soil to stabilize pipe. Reconnect pipe at joints when separation occurs. Restore or increase anchors along length of pipe to ensure pipe stability. If slope drain washes out, it may be necessary to use aggregate-lined channels or additional drains.
- Dewatering: Ensure proper operation and compliance with permits or water quality standards. Remove accumulated sediment from the flow area. Dispose of sediment in accordance with all applicable laws and regulations. Remove and replace dewatering bags when half full of sediment or when discharge rate is impractical. Immediately stop discharge if receiving areas show signs of cloudy water, erosion, or sediment accumulation.
- Temporary Concrete Washout: Do not discharge wastewater into the environment (Note: acidity, not particulates, is environmentally detrimental). Facilitate evaporation of low volume washout water. Clean and remove any discharges within 24 hours of discovery. If effluent cannot be removed prior to anticipated rainfall event, place and secure a non-collapsing, non-water collecting cover over the washout facility to prevent accumulation and precipitation overflow. Replace damaged liner immediately. Remove washout when no longer needed and restore disturbed areas to original condition. Properly dispose of solidified concrete waste.
- Material Delivery & Storage: Document the various types of materials delivered and their storage locations in the SWPPP. Update the SWPPP any time significant changes occur to material storage or handling locations and when they have been removed. Cleanup spills immediately. Remove empty containers.
- Solid Waste Management: Designate a waste collection area(s) and identify them in the SWPPP. Inspect inlets, outfalls and drainageways for litter, debris, containers, etc. Observe the construction site for improper waste disposal. Update the SWPPP any time the solid waste management plan significantly changes. Collect items discarded outside of designated areas.
- Vehicle and Equipment Fueling, Cleaning and Maintenance: Cleanup spills immediately. Contractor must provide documentation that spills were cleaned, materials disposed of, and impacts mitigated. Update the SWPPP when designated location has been removed, relocated, added or requires maintenance. In the event of a spill into a storm drain, waterway or onto a paved surface, the owner of the fuel must immediately act to contain the spill. Once contained, clean up the spill. As an initial step this may involve collecting

any bulk material and placing it in a secure container for later disposal. Follow-up cleaning will also be required to remove residues from paved or other hard surfaces.

- **Portable Restroom Facilities:** Maintain in accordance with applicable laws to prevent unsanitary conditions. Check for leaks and remove and replace as needed.

#### Section 4. Inspections and Corrective Actions

<b>INSTRUCTIONS</b>
---------------------

Example language provided in the SWPPP template has been prepared consistent with the requirements of the ILR10 permit. This section requires no action on the part of the Designer to complete.

#### Section 5. Non-Stormwater Discharges

<b>INSTRUCTIONS</b>
---------------------

A list of allowable non-stormwater discharges provided in the ILR10 permit is provided in the SWPPP template. The Designer shall check the appropriate box for each discharge indicating whether it is expected on the project.

For each allowable non-stormwater discharge anticipated to occur on the project, the Designer shall provide a description of the measures to be used to control the discharge of the associated non-stormwater component of the discharges.

<b>EXAMPLE TEXT</b>
---------------------

The following non-stormwater discharges may combine with stormwater discharges that are treated by the measures included in this plan and are anticipated on the project:

Allowable Non-Stormwater Discharges	Likely to be Present on the Site	
	Yes	No
Waters used to wash vehicles where detergents are not used	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Waters used to control dust	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless spilled materials have been removed) and where detergents are not used.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Landscape irrigation drainages	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Uncontaminated groundwater or spring water	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Foundation or footing drains where flows are not contaminated with process materials, such as solvents	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Potable water sources including uncontaminated watermain or fire hydrant flushing water	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discharges from dewatering of trenches and excavations if managed by appropriate controls	<input checked="" type="checkbox"/>	<input type="checkbox"/>

For each non-stormwater discharge anticipated on the project, the measures which will be used to eliminate or reduce the non-stormwater component of the discharge are described below:

- Discharges from Dewatering: Discharges from dewatering operations must be directed through an appropriate pollution prevention/treatment measure, such as a sediment filter bag, sediment trap or sediment basin prior to being discharged from the site or into Waters of the U.S. Under no circumstances are discharges from dewatering operations to be discharged directly into streams, rivers, lakes or other areas beyond the permitted project area. Likewise, discharges into storm sewer systems that do not drain to a suitable on-site treatment facility, such as a basin, are also prohibited. To the extent feasible, vegetated areas of the site shall be used to infiltrate dewatering water before discharge.

Discharges from dewatering operations shall be conducted in a manner sufficient to prevent erosion and minimize sediment from the discharge to the maximum extent practical. Dewatering discharges shall also be treated or controlled to minimize discharges of pollutants and shall not include visible floating solids or foam, oil, grease, or other similar products.

Discharge from dewatering shall be a stable surface using an aggregate leveling pad and secondary containment in accordance with Illinois Tollway standards. Discharge shall be no more turbid than the receiving water and will be immediately stopped if the receiving water shows signs of cloudy water, erosion, or sediment accumulation.

- Waters used to control dust: A water truck will be present on site (or available) for sprinkling/irrigation to limit the amount of dust leaving the site. Watering will be applied daily (or more frequently) to be effective. Caution will be used not to overwater, as that may cause erosion. If field observations indicate that additional protection is necessary, alternative dust suppressant controls will be implemented at the discretion and approval of the Engineer.
- Cleaning of vehicles and equipment is discouraged and will be performed only when necessary to perform repairs or maintenance. Cleaning of vehicles and equipment with soap, solvents or steam shall not occur on the project. Vehicle and equipment wash water shall be contained for percolation or evaporative drying away from storm drain inlets or watercourses.

## Section 6. Contractor Inventory of Hazardous Materials and Substances

<b>INSTRUCTIONS</b>
---------------------

This section provides a table to be completed by the Contractor to list the materials or substances which are expected to be present on-site during construction, and where the exposure to precipitation or stormwater may result in a discharge of pollutants. This section requires no action on the part of the Designer to complete.

## Section 7. Contractor Required Submittals

<b>INSTRUCTIONS</b>
---------------------

Compliance with the ILR10 permit requires that the Contractor provide information regarding their means and methods pertaining to certain permit elements. An example list of requirements has been provided in the example text below. The Designer shall review the example language and modify or provide additional requirements based on the specific needs of the project.

In addition, this section shall identify additional submittals that are required to fulfill the relevant requirements of the Illinois Tollway Supplemental Specifications and any federal or state environmental permits. An example list of requirements has been provided in the example text below. The Designer shall review the example language and modify or provide additional requirements based on the specific needs of the project.

#### EXAMPLE TEXT

The Contractor shall provide, as an attachment to their signed Contractor Certification Statement, a narrative description of how they will comply with the requirements of the SWPPP with regard to the following items:

- **Stabilized Construction Entrances:** Identify the location(s) of stabilized construction entrances to be used and provide a description of how they will be maintained. Indicate if any changes to the suggested locations (if any) shown on the plans are proposed.
- **Material Delivery, Storage and Use:** Discuss where and how materials, including chemicals, concrete curing compounds, petroleum products, etc. will be stored to prevent spills.
- **Solid Waste Management and Disposal:** Discuss the procedures to be used to contain, and the method of disposal, for construction waste and litter.
- **Sanitary Waste:** Discuss how sanitary wastes will be contained and disposed along with the locations of portable restroom facilities. A schedule of maintenance shall be provided.
- **Spill Response and Control:** Provide a Spill Prevention and Control Plan describing the steps that will be taken to respond to, control, and report chemical or petroleum spills which may occur. Procedures to address spills in excess of RCRA reportable quantities must be provided.
- **Concrete Residuals and Washout Wastes:** Discuss the location and type of concrete washout facilities to be used on this project and how they will be identified and maintained.
- **Vehicle and Equipment Cleaning and Maintenance:** Discuss where vehicle and equipment cleaning and maintenance will be performed and the BMPs that will be used for spill containment and spill prevention, containment, and treatment of wash waters.
- **Dewatering:** Provide a Dewatering Work Plan for excavation activities that encounter groundwater or other water that needs to be removed from the construction area. The plan must detail a system that will remove sediments and other pollutants (if present) from the water prior to discharge. The plan shall be submitted and approved prior to the commencement of dewatering activities.
- **Polymer Use:** If the use of polymers or other treatment chemicals are specified for use, a Polymer Treatment Work Plan shall be submitted for approval to the Engineer, covering the use of all polymer flocculants or treatment chemicals at the site. Dosage of treatment chemicals shall be identified, Safety Data Sheets shall be provided, procedures for storage and use of the treatment chemical must be described, and staff responsible for

use/application must be identified. Documentation of training for the individuals who will be applying the polymers/treatment chemicals shall be provided. The polymer treatment system must be designed by a Certified Professional in Erosion and Sediment Control (CPESC).

In addition to the above, the Contractor is required to provide the following submittals to demonstrate compliance with the Illinois Tollway Supplemental Specifications and any federal or state environmental permits:

- Dust Control Plan pursuant to Article 107.36 of the Illinois Tollway Supplemental Specifications. The plan shall be submitted and approved prior to commencement of earth disturbing work activities.
- Erosion and Sediment Control Schedule pursuant to Article 280.02 of the Illinois Tollway Supplemental Specifications. The schedule shall be submitted and approved prior to commencement of earth disturbing work activities.
- Proposed Borrow, Use, and Waste Area approval pursuant to Article 107.22 of the Illinois Tollway Supplemental Specifications. The Contractor shall provide a written request to the Engineer using an A-50 Form for any proposed alternative use of the Illinois Tollway ROW. The A-50 Form shall be approved prior to any such use by the Contractor and approval of such requests shall not be assumed.
- In-Stream Work Plan which meets the requirements of the USACE pursuant to conditions of the Section 404 permit issued by the USACE. The plan shall be submitted and approved prior to the commencement of work subject to the Section 404 permit.

The above submittals shall be incorporated by reference and become part of the SWPPP.

## **Certification Statements**

<b>INSTRUCTIONS</b>
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The SWPPP template provides certification statements for all SWPPP's subject to ILR10 permitting. This section requires no action by the Designer unless the SWPPP is prepared for a project which does not require an ILR10 permit. In such cases, the certification statements are not required and shall not be included as part of the SWPPP.

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## **APPENDIX G Illinois Tollway Roadside Mowing Guide**

*Illinois Tollway*

# *Roadside Mowing Guide*

*March 2010*

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## **Section 1 – Roadside Vegetation Management**

The purpose of this guide is to serve as a standardized reference for systemwide mowing management by promoting a safe, economically responsible and aesthetically pleasing natural roadside turf environment. It is the intent to provide general vegetation management methods to reduce soil erosion, enhance water quality, conserve energy, manage existing turf and control invasive plants. Modifications may be necessary to allow flexibility for various roadway circumstances, equipment limitations and needs.

### **A.) General Appearance and Function:**

For new plantings the natural roadside turf management intent generally will promote the practical use of native plants, and for existing conditions is to provide a responsible uniform maintenance practice for relevant right-of-way locations. For existing grasses this practice would generally incorporate reduced cutting frequency from that of conventionally manicured turf grass and by cutting most backslopes when turf reaches approximately 18 inches, or possibly greater in rural locations. The zone immediately along the edge of pavement would continue to maintain a standard manicured appearance through regular cuttings at approximately 6 inches height. The intended result will be a natural rather than a traditional manicured appearance.



Example: less desirable conventional backslope turf mowing practice



Example: more desirable natural turf mowing practice, taller heights on backslopes

## **Section 2 – Mowing Guidelines**

(see figures 1, 2 and 3)

## **A.) Shoulder (and Median) Mowing:**

**Mowing Frequency: As needed, approximately 3 – 5 cycles per year**

**Mowing Height: Minimum 6 inches**

Shoulder and median cutting cycles may be made as needed to maintain a manicured appearance and should typically begin when 50 percent of the vegetation reaches 10 inch height. Mower equipment settings shall be adjusted to maintain the vegetation height between 6 and 12 inches.

The width of the cut shall be approximately 15 feet wide from the edge of the shoulder or through the ditch line and is generally intended to be one pass of the mowing equipment. This practice may require a range of mowing widths to continuously manage drainage through the ditch line.

Mowing and vegetation control should be provided on all medians less than 100 feet in width. Medians 100 feet and wider may be managed at discretion of each maintenance section and is dependent upon the terrain.

## **B.) Backslope (and Interchange) Mow Management-**

### **URBAN AREAS:**

**Mowing Frequency: Between 1 to 3 cycles per year**

**Mowing Height: Minimum 6 inches**

For the purposes of Tollway vegetation management, urban areas are defined as having a surrounding setting that is characteristic of city or town development. The start of rural location limits commonly begin west of the Fox River, but exact locations should be determined by each maintenance section.

Urban mowing of all accessible areas beyond the "Shoulder and Median Mowing" limits shall typically be conducted between one to three mowing cycles each year. Mower equipment settings shall be adjusted to cut vegetation once heights reach approximately 18 inches.

Mowing areas generally include interchange infields and back-slopes to the fence line. A single mowing pass along the fence line may be provided on a more frequent basis in areas such as those adjacent to residential neighborhoods.

### **RURAL AREAS:**

**Mowing Frequency: Approximately 1 cycle every 1 – 2 years (less as practical)**

**Mowing Height: Minimum 6 inches (up to 15 inches)**

For the purposes of Tollway vegetation management, rural areas are defined as those outside urban areas, generally with a surrounding setting characteristic of that beyond a city or town.

Rural mowing of all accessible areas beyond the "Shoulder and Median Mowing" limits shall typically be conducted in one cycle every (1) one or two (2) years or less depending on site conditions. Mower equipment settings shall be adjusted to cut vegetation once heights reach approximately 18 inches or higher when practical and desirable.

Mowing areas generally include interchange infields and back-slopes to the fence line. Mowing frequency should be evaluated each year and is intended to be the least possible to control weed growth and undesirable woody vegetation.

## **C.) Facility Mowing:**

The area immediately surrounding Oasis, Toll Plazas, Maintenance Yards and other Tollway structures and facilities may be maintained with conventional lawn maintenance methods (Shoulder Mowing and/or Traditional Mowing) of increased mowing frequency for a more manicured turf appearance. Additional care and watering may also be required for turf areas with traditional mowing practices and should also apply to surrounding trees, shrubs and other ornamental plants during the summer months or dry periods, as needed.

#### **D.) Safety and Best Management Practices Notes:**

- a.) Operator training is provided by each maintenance section and should be completed prior to use of any mowing equipment.
- b.) Additional mowing may be performed in areas where vegetation impedes roadside drainage. If possible mowing in drainage ditches should be performed when the areas are dry to reduce turf damage and potential soil erosion.
- c.) Spot mowing may be performed for noxious weed control. Blanket mowing of larger select areas may also be provided when increased control of noxious weeds is desirable and to aesthetically blend mow areas. When cutting for weed control the timing is important and typically should be completed before the targeted plant flowers, reducing the ability to propagate, but may vary for various plant types (see Section 4).
- d.) Shoulder Mowing may also be expanded where lower grass heights are desirable, such as, delineation of message signs. This shall be performed with long, smooth approach transitions to the signage, so the mowed edge does not produce an abrupt or ragged appearance.
- e.) Medians and Interchange infields less than approximately 100 feet wide shall be completely mowed according to the regular 'Shoulder Mowing' cycle.
- f.) Slopes greater than 2.5:1 shall not be mowed with conventional mowers.
- g.) Areas with steep slopes or poor access or conditions that currently have reduced mowing restrictions may remain as such unless otherwise directed or indicated on the vegetation management maps.
- h.) All mowing should be performed in a manner to prevent scalping, equipment rutting tracks or other turf and slope damage. Whenever possible mowing should not be done when ground conditions are wet or where equipment slipping could cause turf damage or lead to potential soil erosion and sediment loss.
- i.) Designated locations behind noise walls may be considered for regular 'Shoulder Mowing' practices to maintain a manicured appearance and control debris adjacent to residential and urban locations.
- j.) Regular Shoulder Mowing practices using one pass of the tractor mower width may be permitted along the right-of-way fence in urban areas as needed to control weed growth or to maintain a manicured appearance adjacent to similar residential and urban conditions.
- k.) Urban backslopes with flatter grades and adjacent to currently groomed commercial or residential locations may be considered for more frequent mowing practices to blend with the surrounding land use. These locations should typically be determined by each Maintenance Section and identified on Vegetation Management Maps.
- l.) All areas should be patrolled for debris prior to mowing. Permanent obstructions with low visibility may be marked with appropriate stakes to more clearly identify obstacles.
- m.) When mowing must be done near, between or around trees and shrubs, care should be exercised to avoid damaging plants and their supports. Mowing equipment, such as smaller tractors, may be required when occasional mowing within groups of tree plantings is needed. Care should be taken near newly planted seedlings and the use of mowing markers may be provided to delineate mowing limits. Trees are typically

located within the 'Backslope mowing zones to reduce mowing frequency and subsequent maintenance needed around plantings.

- n.) Backslope mowing should be performed during the spring or during the fall mowing cycles whenever possible. Shoulder Mowing may be performed as needed to maintain specified turf heights.

## **Section 3 – Management / Weed Control:**

### **A.) Vegetation Management Maps:**

The maintenance methods provided in this guide is suggested as a general reference for standardized practice but will not include all situations or most desirable practices. Many areas throughout the system may also require variation of standardized measures to best address site specific conditions. Preparation of Vegetation Management Maps may be desirable for each maintenance section to assist in directing some of the variations of mowing and maintenance activities. Items that may be delineated include special conditions, mowing limits, frequency and locations for monitoring weed control. Changes in the general guidance for back-slopes, interchange infields or other locations may also be provided on the mowing plans.

Areas planted in native grasses and/or wildflowers may require special mowing practices (or prescribed burning) and should be indicated on the Maps.

### **B.) Herbicides and Weed Control:**

When noxious weeds are not able to be controlled by cutting, herbicide application may be considered as an alternative management tool. Other invasive and nuisance weed species should be controlled by mowing at proper times of the year to manage growth and spreading. Chemical treatment must be applied by registered applicators. Illinois state-listed noxious weeds (see list below) should be managed in a timely manner and during the most effective time for control. Use of specific herbicides selected for targeted plants are most effective in eradicating growth. Care should be taken to preclude damage of desirable vegetation. Spot spraying of target weeds should be the first consideration in chemical control. Blanket spraying should only be used in areas containing high concentrations of the target weeds when other options are not effective.

#### Illinois Noxious weeds List (as of current printing):

1. Marihuana (*Cannabis sativa* L.)
2. Giant Ragweed (*Ambrosia trifida* L.)
3. Common Ragweed (*Ambrosia artemisiifolia* L.)
4. Canada Thistle (*Cirsium arvense*)
5. Perennial Sowthistle (*Sonchus arvensis*)
6. Musk Thistle (*Carduus nutans*)
7. Perennial sorghum types, including Johnsongrass (*Sorghum halepense*)
8. Kudzu (*Pueraria lobata*)

#### Other common invasive or nuisance weeds include, but not limited to:

1. Leafy Spurge
2. Purple Loosestrife
3. Garlic Mustard
4. Reed Canary Grass
5. White and Yellow Sweet Clover

6. Cut-leaf and Common Teasel

Effective and safe weed management control may be developed for problem areas by contacting the USDA Midwest Area Weed Management Unit.

**C.) Marking Limits for Special Mow Areas:**

Selective mowing stakes (Article 250.08 of the Standard Specifications) may be used to delineate mowing lines for special mowing practices of wildflower, wetland and/or other conservation areas requiring guidance of mower operations.

When the complete right-of-way is mowed, use extra care in areas beyond the clear zone to identify and save desirable volunteer trees and shrubs.

**D.) Mowing Equipment:**

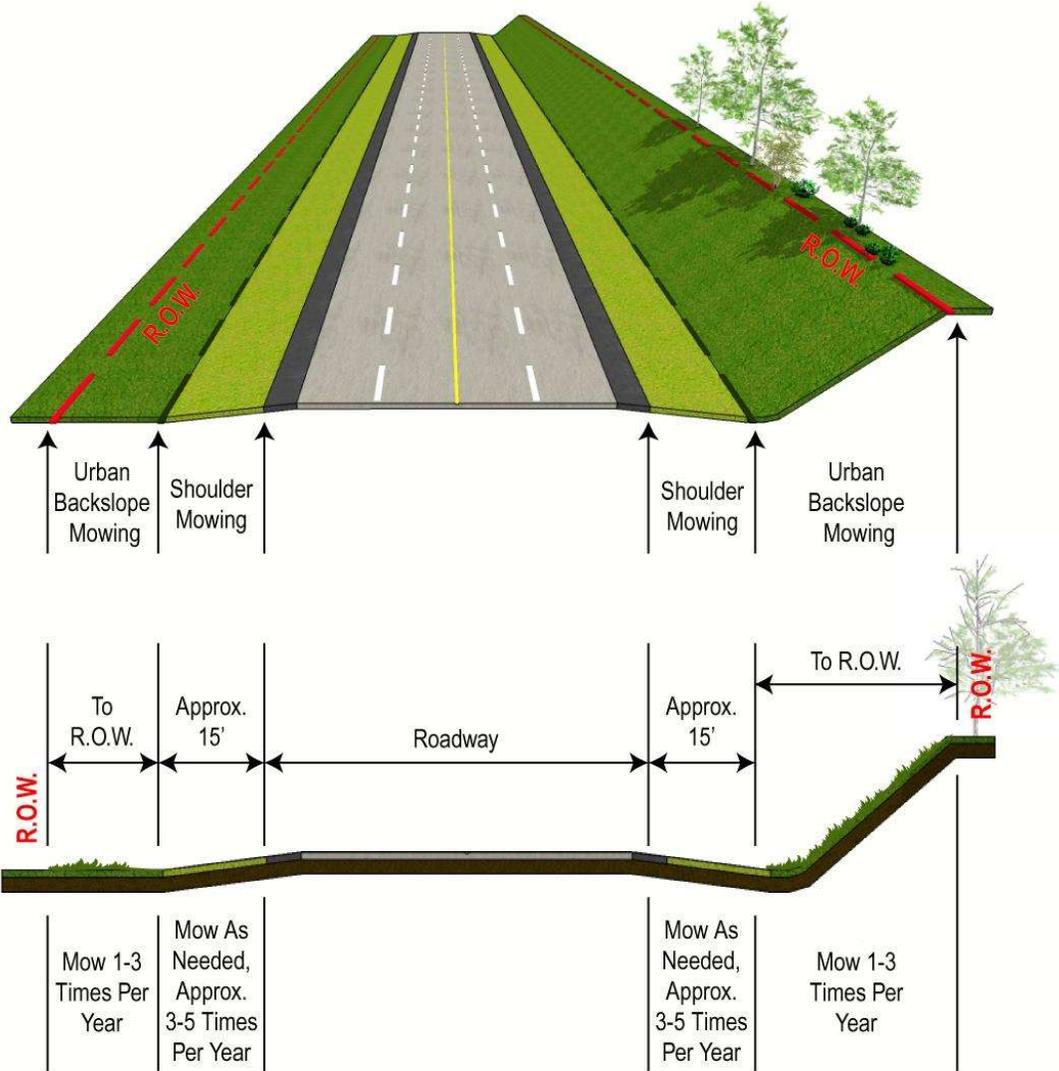
Large tractors with flail or rotary mowing equipment attachments are used for most roadway mowing conditions.

Smaller rotary tractors and/or hand mowing equipment should be used in locations that are not easily accessible to larger tractor units. These locations may include, between tree groupings, around culvert inlets and outlets, near building facilities or other locations that may cause unwanted damage to desirable vegetation or structures.

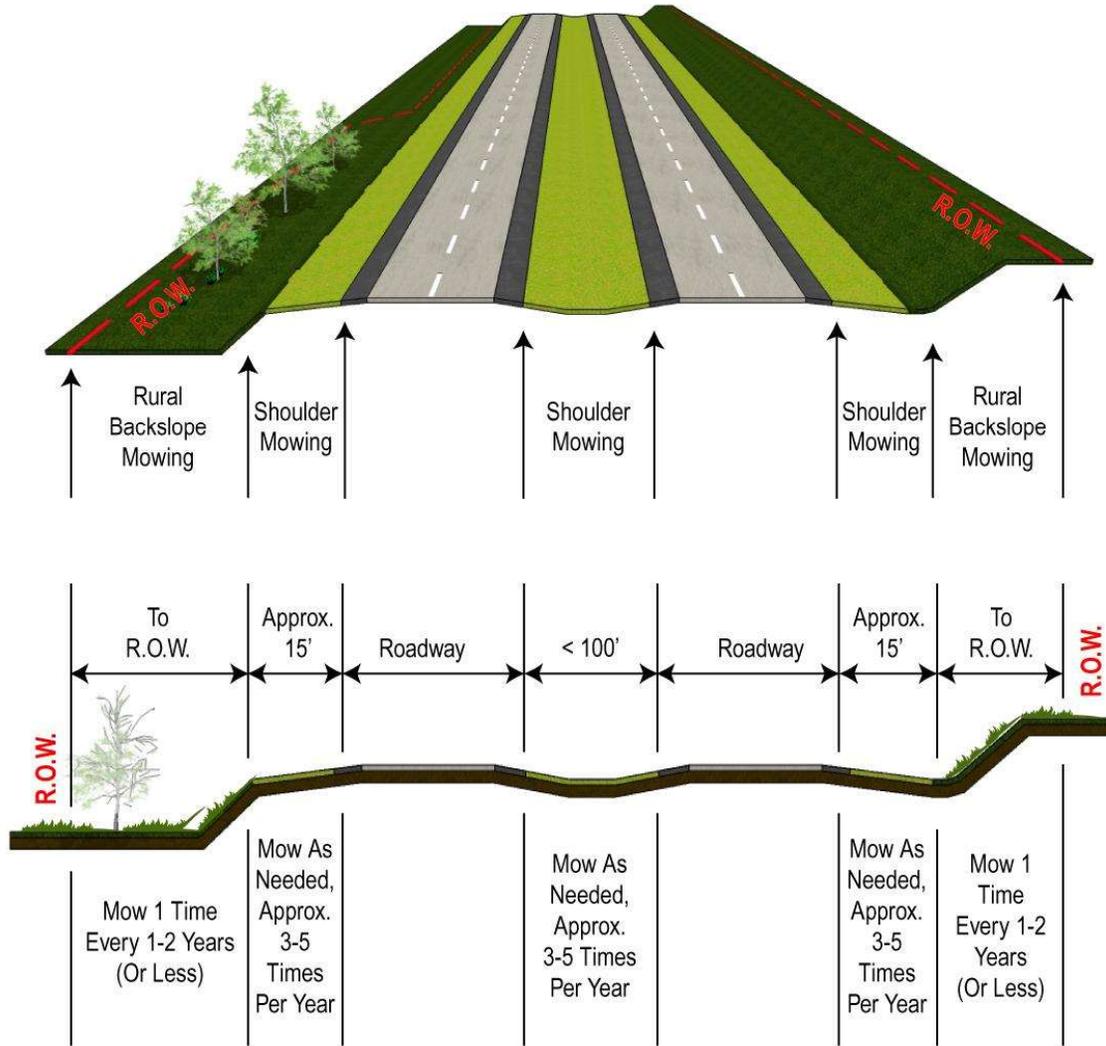
Slope mowers are designed for use on slopes steeper than 3 to 1. These mowers are equipped with proper center-of-gravity mechanics and can maneuver slopes safely while reducing damage to slopes. The equipment should be operated as provided by each manufacturer.

All mowing equipment should be checked to confirm the proper mowing deck heights are set prior to cutting. Adjustments to mowing equipment may be considered to achieve higher cuts if desirable and beneficial, particularly for rural backslope and interchanges. Adjustments, changes or additions to mowing equipment should be coordinated with specific manufacturers to provide safe results.

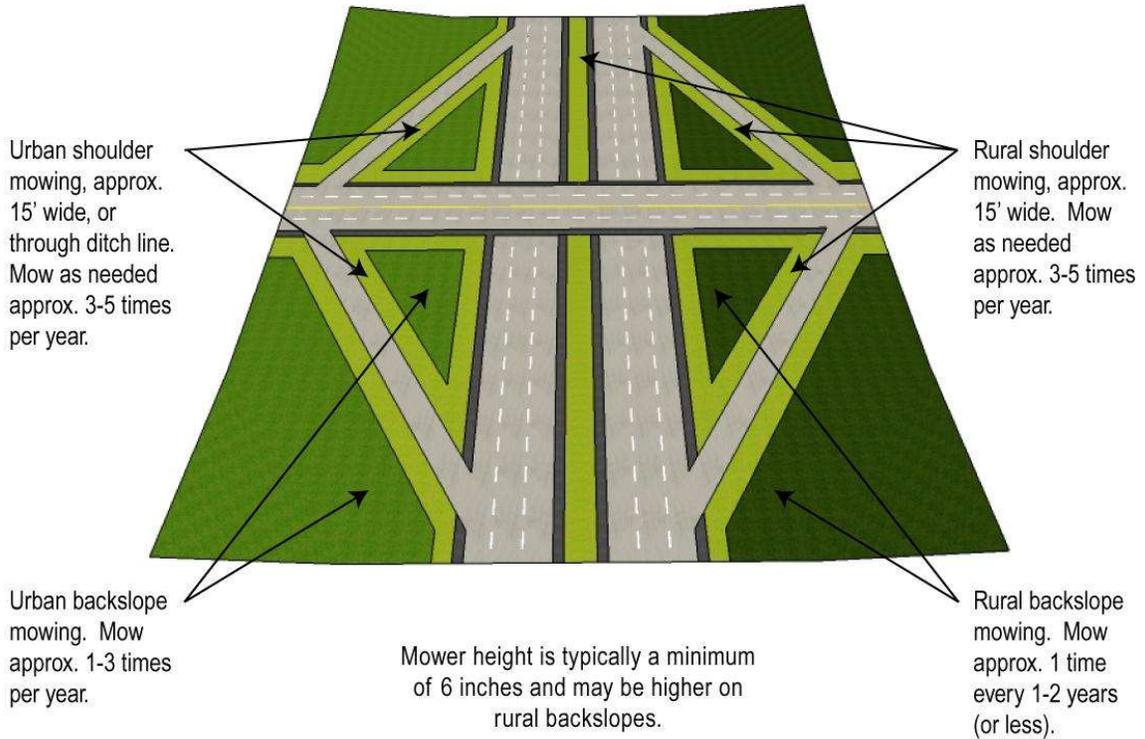
**Figure 1**  
 Typical URBAN Mow Zones



**Figure 2**  
Typical RURAL Mow Zones



**Figure 3**  
URBAN (Left) and RURAL (Right)  
Interchange Mow Zones



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**APPENDIX H Illinois Tollway Landscape Design  
Submittal Checklist**



**Landscape Design Submittal Checklist**

Project: \_\_\_\_\_

Contract Number: \_\_\_\_\_

DSE: \_\_\_\_\_

Date: \_\_\_\_\_

Tollway Reviewer \_\_\_\_\_

Date: \_\_\_\_\_

Items are to be checked off by the DSE and the form shall be updated and included with each submittal to the Illinois Tollway for review.

Tollway reviewer to indicate;  
C = Compliant  
D = Deficient  
NA = Not Applicable

**A. Landscape Design Concept Submittal:**

1. \_\_\_\_\_ Site Location Map

2. \_\_\_\_\_ Issues and Opportunities Diagram delineating the following:

\_\_\_\_\_ a) Identification of the landscape character of the existing and adjacent sites by text and photo or graphic image illustration

\_\_\_\_\_ b) Landscape features to be preserved or that may influence the design. Coordinate the location of vegetation to be preserved with the grading and drainage concepts to ensure adequate root zone protection is provided

\_\_\_\_\_ c) Important viewsheds that are to be protected or enhanced

\_\_\_\_\_ d) Important features, natural or built, within or outside the Illinois Tollway ROW, including AASHTO Clear Zones, tree and shrub planting setbacks, utility lines and associated offset distances, that may influence the design will be identified and recorded

\_\_\_\_\_ e) Views to or from the site that should be screened

\_\_\_\_\_ f) Historic features or influences

\_\_\_\_\_ g) Topographic and hydraulic features

\_\_\_\_\_ h) Overall strengths and weaknesses of the site

\_\_\_\_\_ i) Identification of any agencies, municipalities, community groups or individuals that the design team will have to coordinate with to achieve a successful landscape design

3. \_\_\_\_\_ Concept Plans

\_\_\_\_\_ a) The plans must be coordinated with grading/drainage design and any utility and lighting layouts

- \_\_\_ b) The plans shall be at a 1" = 100' scale to represent the overall concept and at a 1" = 50' to adequately represent typical sections of the concept where additional detail is so desired
  - \_\_\_ c) Any important viewsheds that are to be protected or enhanced should be indicated on the plan/plans
  - \_\_\_ d) Views to or from the site that should be screened should also be indicated.
  - \_\_\_ e) AASHTO Clear Zone lines based on design speeds and/or Illinois Tollway 60-foot tree and shrub planting setback from roadway pavements
  - \_\_\_ f) Utility lines, structures and fencing along with associated planting offset distances
- 
- 4. \_\_\_ List of plant species to be used. Verify plant species are appropriate for surrounding land uses and meet requirements of other agencies, i.e. specialized facilities such as airfields
  - 5. \_\_\_ List or copies of the relevant information and design criteria collected through the coordination process
  - 6. \_\_\_ Rough cost estimate
  - 7. \_\_\_ Additional information required by the Illinois Tollway Landscape Architect or Project Engineer



Project: \_\_\_\_\_

Contract Number: \_\_\_\_\_

DSE: \_\_\_\_\_

Date: \_\_\_\_\_

Tollway Reviewer \_\_\_\_\_

Date: \_\_\_\_\_

Items are to be checked off by the DSE and the form shall be updated and included with each submittal to the Illinois Tollway for review.

Tollway reviewer to indicate;  
C = Compliant  
D = Deficient  
NA = Not Applicable

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**B. Preliminary Plans and Special Provisions:**

1.  a) The Preliminary Plans submittal includes plans, text, and specifications developed to a 60% level of completeness
- b) The Plans include existing vegetation to be preserved, and are coordinated with, and complimentary to, the proposed grading and drainage designs and utility drawings
- c) Any alternative grading solutions and drainage systems proposed are described in text and also displayed in plan and cross section format.
- d) The background documentation maintained by the DSE meets the requirements of the Illinois Tollway Environmental Studies Manual
- e) This documentation identifies all special requirements used to select specific measures
2.  Site Location Map
3.  Plan or plan views show the schematic layout of the overall landscape design. The overall design is delineated at a scale of 1" = 50' and at 1" = 20' in areas where additional detail is required.
4.  The Tree Preservation Plan includes the following:
  - a) Existing tree locations
  - b) Size (DBH), species and condition
  - c) Methods of protection, including fencing and wrapping
  - d) Defined safe area to protect tree root structures based on the analysis of the Existing Vegetation Assessment, if required by the Illinois Tollway Landscape Architect
5.  Preliminary detailed plans of any atypical or special areas

6. \_\_\_\_ Preliminary planting and construction details
7. \_\_\_\_ Preliminary details of any hard-landscaped elements such as paving or special features
8. \_\_\_\_ Cross sections that adequately display significant changes in grade or width of the area to be planted and the viability of the landscape concept
9. \_\_\_\_ Plant names and sizes are indicated on the plans
  - \_\_\_\_ a) Illinois Tollway Project Engineer and the Landscape Architect will determine the viability of the plant material selection with due consideration to site conditions and salt tolerance
10. \_\_\_\_ Landscape Materials List includes the following:
  - \_\_\_\_ a) Preliminary schedule of quantities and construction cost estimate for plant material
  - \_\_\_\_ b) All measures to be installed
  - \_\_\_\_ c) Planting schedule, indicating species (common and botanical names), plant identification Key codes or abbreviations, plant sizes to be used, plant spacing for each species, and quantity
  - \_\_\_\_ d) Maintenance guidelines, provisions for care, and fertilizer requirements for an 820 day/three-year establishment period for a tree planting project or a two-year establishment period for a seeding-only project
11. \_\_\_\_ Outline or special provisions to the Standard Specifications that follow the accepted Illinois Tollway standards
12. \_\_\_\_ A coordination schedule for the installation and inspection of the planting material
13. \_\_\_\_ Addressed all Illinois Tollway comments from the previous submittal in writing
14. \_\_\_\_ Any additional information required by the Illinois Tollway project engineer



Project: \_\_\_\_\_

Contract Number: \_\_\_\_\_

DSE: \_\_\_\_\_

Date: \_\_\_\_\_

Tollway Reviewer \_\_\_\_\_

Date: \_\_\_\_\_

Items are to be checked off by the DSE and the form shall be updated and included with each submittal to the Illinois Tollway for review.

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**C. Pre-Final Plans and Special Provisions:**

1.  a) Pre-Final Plan phase will develop the plans, text, and specifications submitted at the Preliminary Plans and Special Provisions Phase to a 99% level of completeness
- b) All drawings are coordinated with the grading, drainage, and utility packages.
- c) All drawings are fully annotated and show dimensions, notes, references, symbols, legends, and labels
- d) The drawings are cross referenced to a fully detailed plant schedule
- e) The plant schedule fully delineates the species (common and botanical name and size), type, spacing, and quantity of all plants selected
- f) All details for planting, hard-landscape, and special features are complete and cross referenced to the plans
- g) The Specifications and Special Provisions follow Illinois Tollway format and are complete with all materials, ways, and means specified
2.  Site location map
3.  Plan or plan views show the schematic layout of the overall landscape design. The overall design is delineated at no less than a scale of 1" = 50' and at 1" = 20' in areas where additional detail is required.
4.  The Tree Preservation Plan includes the following:
  - a) Existing tree locations
  - b) Size, species, and condition
  - c) Methods of tree protection, including fencing and wrapping

- \_\_\_ d) Defined safe area to protect tree root structures, based on the analysis of the Existing Vegetative Assessment
- 5. \_\_\_ Detailed plans of any atypical or special areas
- 6. \_\_\_ Planting and construction details
- 7. \_\_\_ Details of any hard-landscape elements, such as paving or special features
- 8. \_\_\_ Cross sections that adequately display significant changes in grade or width of the area to be planted and the viability of the landscape concept
- 9. \_\_\_ Plant types (common/botanical names or key codes) and sizes are indicated on plans
- 10. \_\_\_ Landscape Materials List includes the following:
  - \_\_\_ a) Schedule of quantities and construction cost estimate for plant material
  - \_\_\_ b) All measures to be installed
  - \_\_\_ c) Planting schedule which fully delineates the species, type, spacing, and quantity of all plants selected
  - \_\_\_ d) Maintenance guidelines and provisions for care, and fertilizer requirements for an 820 day/three-year establishment period for a tree planting project or a two-year establishment period for a seeding-only project
- 11. \_\_\_ Specifications and special provisions that follow Illinois Tollway standards
- 12. \_\_\_ A coordinated schedule for the design installation and inspection of the planting material
- 13. \_\_\_ Addressed all Illinois Tollway comments from the previous submittal in writing
- 14. \_\_\_ Any additional information required by the Illinois Tollway project engineer



Project: \_\_\_\_\_

Contract Number: \_\_\_\_\_

DSE: \_\_\_\_\_

Date: \_\_\_\_\_

Tollway Reviewer \_\_\_\_\_

Date: \_\_\_\_\_

Items are to be checked off by the DSE and the form shall be updated and included with each submittal to the Illinois Tollway for review.

Tollway reviewer to indicate;  
C = Compliant  
D = Deficient  
NA = Not Applicable

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**D. Final Plans and Special Provisions:**

1. \_\_\_\_\_ All comments and questions received during the review of Pre-Final Plans are adequately addressed in writing or resolved by revisions to the final or Special Provisions.
2. \_\_\_\_\_ All drawings are at 100% completeness
3. \_\_\_\_\_ Site location map
4. \_\_\_\_\_ Plan or plan view showing the schematic layout of the overall landscape design. The overall design is delineated at no less than a scale of 1" = 50' and 1" = 20' in areas where additional detail is required
5. \_\_\_\_\_ The Tree Preservation Plan includes the following:
  - \_\_\_\_\_ a) Existing tree locations
  - \_\_\_\_\_ b) Size and species (common and botanical name)
  - \_\_\_\_\_ c) Methods of protection, including fencing and wrapping
  - \_\_\_\_\_ d) Defined safe areas needed to protect tree root structures, based on the analysis of the Existing Vegetative Assessment
  - \_\_\_\_\_ e) The drawings are cross referenced to a fully detailed plant schedule. The plant schedule identifies the species (common and botanical name), size, type and quantity
6. \_\_\_\_\_ Detailed plans of any atypical or special areas
7. \_\_\_\_\_ Planting and construction details
8. \_\_\_\_\_ Details of any hard-landscaped elements, such as paving or special features
9. \_\_\_\_\_ Cross sections that adequately display significant changes in grade or width of the area to be planted and the viability of the landscape concept

10. \_\_\_\_ Plant types (common/botanical names or key codes) and sizes are indicated on the plans
11. \_\_\_\_ Landscape Materials List, includes the following:
  - \_\_\_\_ a) Schedule of quantities and construction cost estimate for plant material
  - \_\_\_\_ b) All measures to be installed
  - \_\_\_\_ c) Planting schedule
  - \_\_\_\_ d) Maintenance guidelines, provisions for care, and fertilizer requirements for an 820 day/three-year establishment period for a tree planting project or a two-year establishment period for a seeding-only project
12. \_\_\_\_ Specifications and special provisions that follow Illinois Tollway standards
13. \_\_\_\_ Registered Landscape Architect's seal and signature on plans
14. \_\_\_\_ Address all Illinois Tollway comments from the previous submittal in writing
15. \_\_\_\_ Any additional information required by the Illinois Tollway project engineer

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**APPENDIX I**   **Illinois Tollway Sample Landscape  
Plans**

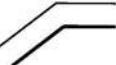
**INDEX OF DRAWINGS**

1. TITLE SHEET
2. INDEX OF DRAWINGS & LEGEND
3. GENERAL NOTES
4. SUMMARY OF QUANTITIES
5. SCHEDULE OF QUANTITIES
6. SCHEDULE OF QUANTITIES
7. SCHEDULE OF QUANTITIES
8. SUGGESTED PROGRESS SCHEDULE
9. LANDSCAPE PLAN - KEY MAP
10. 406+50 TO 422+00
11. 422+00 TO 437+00
12. 437+00 TO 451+00
13. 451+00 TO 465+00
14. 143RD STREET 97+67.65 TO 107+00
15. 465+00 TO 476+00
16. 476+00 TO 480+00
17. ARCHER AVENUE 110+00 TO 123+55.66
18. 480+00 TO 495+00
19. 495+00 TO 509+50
20. 509+50 TO 524+00
21. 524+00 TO 537+00
22. 537+00 TO 553+00
23. 553+00 TO 562+00
24. 562+00 TO 575+00
25. 575+00 TO 585+00
26. 583+00 TO 585+00
27. 585+00 TO 600+00
28. 600+00 TO 613+00
29. 613+00 TO 626+00
30. 626+00 TO 640+00
31. 640+00 TO 654+00
32. 654+00 TO 668+00 (NORTH)
33. 654+00 TO 668+00 (SOUTH)
34. 668+00 TO 682+00
35. 682+00 TO 696+00
36. 696+00 TO 708+00
37. 708+00 TO 720+00
38. 720+00 TO 734+00
39. 734+00 TO 748+00 (EAST)
40. 734+00 TO 748+00 (WEST)
41. 1-55 1696+92.57 TO 1708+00
42. 748+00 TO 763+00 (WEST)
43. 748+00 TO 763+00 (CENTER)
44. 748+00 TO 763+00 (EAST)
45. 763+00 TO 776+00 (EAST)
46. 763+00 TO 776+00 (WEST)
47. 776+00 TO 787+00
48. WATERFALL GLEN FOREST PRESERVE
49. BLACK PARTRIDGE FOREST PRESERVE
50. KEEPATAW FOREST PRESERVE

**ISTHA STANDARD DRAWINGS**

STANDARD #	TITLE
D2-00	SYMBOLS AND PATTERNS
D7-00	LANDSCAPE PLANTING DETAILS
E1-00	CONSTRUCTION SIGNS
E3-00	TEMPORARY GORE DETAILS AND SHOULDER CLOSURE DETAILS
K1-00	TEMPORARY EROSION AND SEDIMENT CONTROLS

**LEGEND**

	R.O.W.		EXISTING GAS PIPELINE
	MAJOR DECIDUOUS TREE		EXISTING ELECTRIC LINE
	MINOR DECIDUOUS TREE		EXISTING OVERHEAD SIGN
	EVERGREEN TREE		DIRECTION OF RAMP TRAFFIC
	SHRUB BEDS WITH MULCH		EXISTING ELECTRIC LINE
	EXISTING TREE LINES		FUTURE BIKE PATH LOCATION (ALONG EAST R.O.W.)
	EXISTING NOISE WALL LOCATION		
	CONTOURS		
	EXISTING FIBER OPTIC LINE		
	EXISTING FENCE LINE		

DRAWN .....

DATE .....

CHECKED .....

SCALE .....



**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**

2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING NO.

INDEX OF DRAWINGS  
AND LEGEND

.....OF.....

# GENERAL NOTES

(ILLINOIS STATE TOLL HIGHWAY AUTHORITY)

1. DURING CROSSROAD CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT ADJACENT TRAFFIC LANES OPEN TO TRAFFIC FROM DEBRIS BEING BLOWN OR OTHERWISE REMOVED FROM THE CONSTRUCTION AREAS. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR KEEPING DEBRIS OFF OF THE ADJACENT TRAVELED LANE SURFACE. STREET SWEEPING, AS SPECIFIED BY THE ENGINEER, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
2. POLLUTION CONTROL: THE CONTRACTOR WILL BE REQUIRED TO COMPLY WITH ALL STATE REGULATIONS REGARDING AIR, WATER AND NOISE POLLUTION. HE WILL NOT BE ALLOWED TO BUILD FIRES ON THE SITE.
3. FLUORESCENT VESTS AND HARD HATS: ALL CONSTRUCTION PERSONNEL WILL BE REQUIRED TO WEAR FLUORESCENT ORANGE, FLUORESCENT YELLOW/GREEN OR A COMBINATION OF FLUORESCENT ORANGE AND FLUORESCENT YELLOW /GREEN VESTS AND HARD HATS AT ALL TIMES WHILE ON THE CONSTRUCTION SITE. COMPLIANCE WITH THIS REQUIREMENT SHALL BE CONSIDERED AS INCIDENTAL TO THE CONTRACT.
4. THE SCALE SHOWN ON THE DRAWINGS APPLIES ONLY TO FULL SIZE PLANS AND NOT TO THE REDUCED SIZE PLANS. SCALE BARS ARE PROVIDED ON APPLICABLE SHEETS.
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN EXISTING FIELD CONDITIONS BEFORE BIDDING ON THIS PROJECT, SPECIFICALLY AS THEY RELATE TO LUMP SUM PAY ITEMS.
6. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL DIMENSIONS AND CONDITIONS EXISTING IN THE FIELD PRIOR TO CONSTRUCTION AND ORDERING MATERIALS.
7. THE CONTRACTOR WILL NOT BE ALLOWED TO SET UP AN OFFICE OR YARD ON THE TOLLWAY PROPERTY WITHOUT WRITTEN APPROVAL FROM THE CHIEF ENGINEER OF THE AUTHORITY.
8. THE APPROXIMATE LOCATIONS OF KNOWN UTILITIES ARE SHOWN ON THE PLANS. HOWEVER, THE AUTHORITY DOES NOT GUARANTEE THEIR ACCURACY. THE CONTRACTOR SHALL VERIFY THE LOCATION OF THESE UTILITIES AND THE EXISTENCE AND LOCATION OF ANY UTILITIES NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL CALL J.U.L.I.E., (800)892-0123, 48 HOURS BEFORE ANY DIGGING OPERATION.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL UNDERGROUND OR SURFACE UTILITIES EVEN THOUGH THEY MAY NOT BE SHOWN ON THE PLANS. ANY UTILITY THAT IS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AND/OR THE OWNER. THIS WORK SHALL BE AT THE CONTRACTOR'S EXPENSE.
10. WHENEVER, DURING CONSTRUCTION OPERATIONS, ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINE OF DRAINAGE STRUCTURES SUCH THAT THE NATURAL FLOW OF WATER IS CONSTRICTED, IT SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES SHALL BE FREE FROM DIRT AND DEBRIS. THE WORK SPECIFIED ABOVE WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
11. WHEN EXISTING DRAINAGE FACILITIES ARE DISTURBED, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY OUTLETS AND CONNECTIONS FOR ALL PRIVATE OR PUBLIC DRAINS, SEWERS OR CATCH BASINS. HE SHALL PROVIDE FACILITIES TO TAKE IN ALL STORM WATER WHICH WILL BE RECEIVED BY THESE DRAINS AND SEWERS AND DISCHARGE THE SAME. HE SHALL PROVIDE AND MAINTAIN AN EFFICIENT PUMPING PLANT, IF NECESSARY, AND A TEMPORARY OUTLET AND BE PREPARED AT ALL TIMES TO DISPOSE OF THE WATER RECEIVED FROM THESE TEMPORARY CONNECTIONS UNTIL SUCH TIME AS THE PERMANENT CONNECTIONS WITH SEWERS ARE BUILT AND IN SERVICE. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
12. COOPERATION WITH UTILITIES: THE CONTRACTOR SHALL IN ACCORDANCE WITH ARTICLE 105.07 OF THE TOLLWAY SUPPLEMENTAL SPECIFICATIONS, COORDINATE ALL WORK INVOLVING EXISTING OR PROPOSED UTILITIES. THE FOLLOWING AGENCIES AND REPRESENTATIVES HAVE BEEN CONTACTED IN REFERENCE TO THIS CONTRACT AND PERTINENT UTILITY INFORMATION HAS BEEN INCORPORATED INTO THESE PLANS. ADDITIONAL INQUIRIES AND COMMUNICATIONS MAY BE DIRECTED TO:

- SBC  
65 WEST WEBSTER STREET, FLOOR 4E  
JOLIET, IL 60431  
MR. BOB HODOROWICZ  
815/727-8299
- COMMONWEALTH EDISON COMPANY  
SOUTHWEST REGION HEADQUARTERS  
2 LINCOLN CENTER  
DARBROOK TERRACE, IL 60181  
PUBLIC RELLOCATION SOUTHWEST REGION  
MR. TOMY COX  
815/724-5010
- COMCAST  
688 INDUSTRIAL DRIVE  
ELMHURST, IL 60126  
MR. BOB SCHULTER  
630/600-6347
- NICOR  
1844 FERRY ROAD  
MAPERVILLE, ILLINOIS 60563  
MR. SCOTT TOSOSOILL  
708/983-8676 X 2362
- BP AMOCO PIPELINE COMPANY  
28100 TORCH PKWY  
MARGENYVILLE, ILLINOIS 60555  
MS. MARY FOSTER
- TEXAS EASTERN PRODUCTS PIPELINE COMPANY (TEPPCO)  
PO BOX 426  
SEYMOUR, INDIANA 47274-0426  
MR. DWANE STOUT, RIGHT-OF-WAY REPRESENTATIVE  
812/522-2969  
812/522-1298 FAX
- WOLVERINE PIPE LINE COMPANY  
8105 VALLEYWOOD LANE  
PORTAGE, MICHIGAN 49024-5281  
MR. FRED WIPSEAR  
269/323-2491 X 24
- J.U.L.I.E.  
JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS  
800/892-0123
- LAKEHEAD PIPELINE COMPANY  
MR. BRAD SHAWIA  
CIVIL ENGINEERING  
119 NORTH 25TH STREET EAST  
P.O. BOX 789  
SUPERIOR, WI 54880  
715/394-1518  
715/394-1564 FAX
- ILLINOIS DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS DISTRICT 1  
201 WEST CENTER COURT  
SCHAMBOURG, IL 60156-1096  
MS. DIANE ONEFFE, DEPUTY DIRECTOR, REGION ONE  
847/705-4110  
847/705-4468 FAX
- WILL COUNTY DEPARTMENT OF HIGHWAYS  
16841 WEST LARAMAY ROAD  
JOLIET, IL 60433  
MR. SHELDON LATZ  
COUNTY ENGINEER  
815/727-8476  
815/727-9806 FAX
- EXXON MOBIL PIPELINE COMPANY  
2140 S. WATER STREET  
WILMINGTON, IL 60481  
MR. JIM TAYLOR
- ILLINOIS STATE TOLL HIGHWAY AUTHORITY  
2700 OGDEN AVENUE  
DOWNERS GROVE, IL 60515  
MR. DANA HAYWARD  
630/241-6800 X 3941  
630/241-6105 FAX

(UTILITIES CONTINUED...)

COOK COUNTY HIGHWAY DEPARTMENT  
69 WEST WASHINGTON STREET  
SUITE 2100  
CHICAGO, IL 60602  
THEODORE P. GEORGAS  
ASSISTANT SUPERINTENDENT OF HIGHWAYS  
312/603-1700  
312/603-9957 FAX

PEOPLES GAS  
MR. STEVE GRIFFIN  
122 SOUTH MICHIGAN AVENUE  
CHICAGO, IL 60603  
312/240-4740

UNICAL PIPELINE COMPANY  
MR. DAVID T. HOCKING  
UTILITY TECHNICIAN  
18401 SOUTH WOLF ROAD  
P. O. BOX 630  
MOKENA, IL 60448  
(708) 479-9260

13. THE STANDARD DRAWINGS LISTED IN THE PLANS INDEX ARE INTENDED TO BE THE LATEST REVISIONS AND SHALL TAKE PRECEDENCE OVER EARLIER REVISIONS THAT MAY BE REFERRED TO ELSEWHERE IN THE PLANS OR SPECIAL PROVISIONS.
14. ALL FRAMES AND GRATES, SIGNS, FENCES AND DELINEATORS DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
15. NIGHT OPERATIONS: WHEN ARTIFICIAL LIGHTING IS UTILIZED IN NIGHT OPERATIONS, THE CONTRACTOR SHALL EXERCISE UTMOST PRECAUTION IN PREVENTING ADVERSE VISIBILITY TO THE MOTORING PUBLIC, AS WELL AS THE ADJOINING RESIDENTIAL AREAS.
16. WHERE SECTION, SUB-SECTION MONUMENTS OR BENCH MARKS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL PROPERTY MARKS AND MONUMENTS UNTIL THE OWNER, AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATIONS.
17. THE CONTRACTOR IS REQUIRED TO OBTAIN ALL NECESSARY PERMITS AND WRITTEN AUTHORIZATIONS FROM IDOT, WILL AND COOK COUNTY HIGHWAY DEPARTMENTS FOR CONSTRUCTION ABOVE, ADJACENT TO, AND ON ROADWAYS WITHIN THEIR JURISDICTIONS.
19. ALL ELEVATIONS ARE BASED ON UNITED STATES COAST AND GEODETIC SURVEY DATUM. BENCHMARKS FOR THE PROJECT ARE DESCRIBED IN THE PLANS.
20. THE CONTRACTOR SHALL BE MADE AWARE THAT ALL CONSTRUCTION VEHICLES SHALL BE LIMITED TO 15 FEET ABOVE EXISTING GRADE WHILE CROSSING UNDER COMMONWEALTH EDISON'S TRANSMISSION LINES.
21. THE CONTRACTOR SHALL NOTIFY THE AGENCIES AND UTILITIES AT LEAST TO DAYS PRIOR TO ANY CONSTRUCTION IN THE AREA AND SHALL COMPLY WITH ALL RESTRICTIONS FOR EQUIPMENT MOVEMENTS AND CLEARANCES IN REGARDS TO THEIR FACILITIES.
22. THE CONTRACTOR'S OPERATIONS AND TEMPORARY STORAGE ACTIVITIES SHALL BE LIMITED TO THE WORK AREA AND/OR CONSTRUCTION LIMITS. ANY ADDITIONAL STAGING AREAS ADJACENT TO THE PROJECT ARE SUBJECT TO PRIOR APPROVAL BY THE APPROPRIATE AGENCY. NO ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR COMPLIANCE WITH THE ABOVE REQUIREMENTS.
23. FENCE: EXISTING FENCE THAT HAS TO BE DISCONNECTED AND/OR REMOVED FOR THE CONTRACTOR'S OPERATION SHALL BE RECONNECTED AND/OR REPLACED BY THE CONTRACTOR IN KIND AT NO ADDITIONAL COST TO THE TOLLWAY. TEMPORARY FENCE SHOULD BE INSTALLED IF EXISTING FENCE IS TO BE REMOVED BY THE CONTRACTOR IN ACCORDANCE WITH SECTION 664 OF THE STANDARD SPECIFICATIONS. ANY RIGHT-OF-WAY MARKERS DISTURBED BY THE CONTRACTOR'S OPERATION SHOULD BE RE-ESTABLISHED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
24. RESTORATION OF THE PROJECT WILL BE COMPLETED TO THE SATISFACTION OF THE ILLINOIS TOLLWAY AND APPROPRIATE GOVERNING AGENCIES BEFORE PAYMENT IS MADE TO THE CONTRACTOR. THIS WORK SHALL BE CONSIDERED INCLUDED IN THE OVERALL PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
25. COORDINATION OF MAINTENANCE OF TRAFFIC: THE ATTENTION OF THE CONTRACTOR IS DIRECTED TO THE FACT THAT OTHER SEPARATE CONTRACTS WILL BE IN FORCE THAT INTERSECT THE LIMITS OF THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE OTHER CONTRACTORS IN THE PHASING AND PERFORMANCE OF THIS WORK SO AS NOT TO DELAY, INTERRUPT OR HINDER THE PROGRESS OR COMPLETION OF THE WORK BEING PERFORMED BY OTHER CONTRACTORS. SHOULD A CONFLICT ARISE BETWEEN THE CONTRACTOR WITH RESPECT TO SEQUENCE OF CONSTRUCTION OR MAINTENANCE OF TRAFFIC REQUIREMENTS, SAID CONFLICTS SHALL BE RESOLVED BY, OR AT THE DIRECTION OF THE ENGINEER.
26. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE TOLLWAY ELECTRICIAN AT LEAST 10 DAYS IN ADVANCE OF ANY CONSTRUCTION NEAR TOLLWAY OWNED ELECTRICAL, COMMUNICATIONS OR TRAFFIC CONTROL CABLES. TOLLWAY ELECTRICIANS WILL LOCATE ANY POSSIBLE INTERFERING CABLES, ANY BURIED CABLE AT OR NEAR A PROPOSED CONSTRUCTION LOCATION SHALL FIRST BE EXPOSED BY THE CONTRACTOR BY HAND DIGGING, ONCE EXPOSED, AND IF THE ENGINEER DETERMINES THERE IS A CONFLICT, THE TOLLWAY ELECTRICIANS SHALL RELOCATE THE CABLES. IF CONTRACTOR CUTS OR DAMAGES ANY CABLES, EITHER THROUGH CARELESSNESS OR FAILURE TO FOLLOW THE ABOVE PROCEDURE, HE SHALL BE HELD RESPONSIBLE FOR THE REPAIRING OF ALL DAMAGES AT THIS EXPENSE. TO THE SATISFACTION OF THE TOLLWAY. THIS WORK SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. TOLLWAY ELECTRICIAN LOCATES SHALL BE REQUESTED BY CONTACTING FRANK TOMASELLI AT 630/241-6800 X 3510. TOLLWAY COMMUNICATIONS LOCATES SHALL BE REQUESTED BY CONTACTING BILL SPRINGER AT 630/241-6800 X 3405

DRAWN .....

DATE .....

CHECKED .....

SCALE .....



THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY

2700 OGDEN AVENUE  
DOWNERS GROVE, ILLINOIS 60515

REVISIONS

NO.	DATE	DESCRIPTION

DRAWING NO.

GENERAL NOTES

..... OF .....

**SUGGESTED PROGRESS SCHEDULE**

WORK ITEMS	2008				2009				2010			2011			2012				
	SUMMER	FALL	WINTER	SPRING	SUMMER	FALL	SPRING	SUMMER	FALL	SPRING	SUMMER	FALL	SPRING	SUMMER	FALL	SPRING			
	INITIAL PLANTINGS				INTERIM COMPLETION DATE	PERIOD OF ESTABLISHMENT						INTERIM COMPLETION DATE	EXTENDED WOODY PLANT CARE			FINAL COMPLETION DATE			
PLANT TAGGING	■																		
WOODY PLANTINGS		■		■															
SPRING REPLACEMENTS								■			■								
FALL REPLACEMENTS							■			■									
WOODY PLANT CARE															■		■	■	
INSPECTIONS				■						■					■		■	■	
CLEARING, WATERFALL GLEN & BLACK PARTRIDGE			■																
COVER CROP SEEDING, WATERFALL GLEN & BLACK PARTRIDGE				■															
COVER CROP SEEDING, KEEPATAW	■																		
PERMANENT SEEDING & MULCH, KEEPATAW		■	■	■															

**NOTE:** THIS PROGRESS SCHEDULE REPRESENTS THE DESIGN SECTION ENGINEER'S SUGGESTED SCHEDULING OF THE OVERALL CONTRACT. THE CONTRACTOR SHALL SUBMIT HIS/HER SCHEDULE IN ACCORDANCE WITH S.P. 124.

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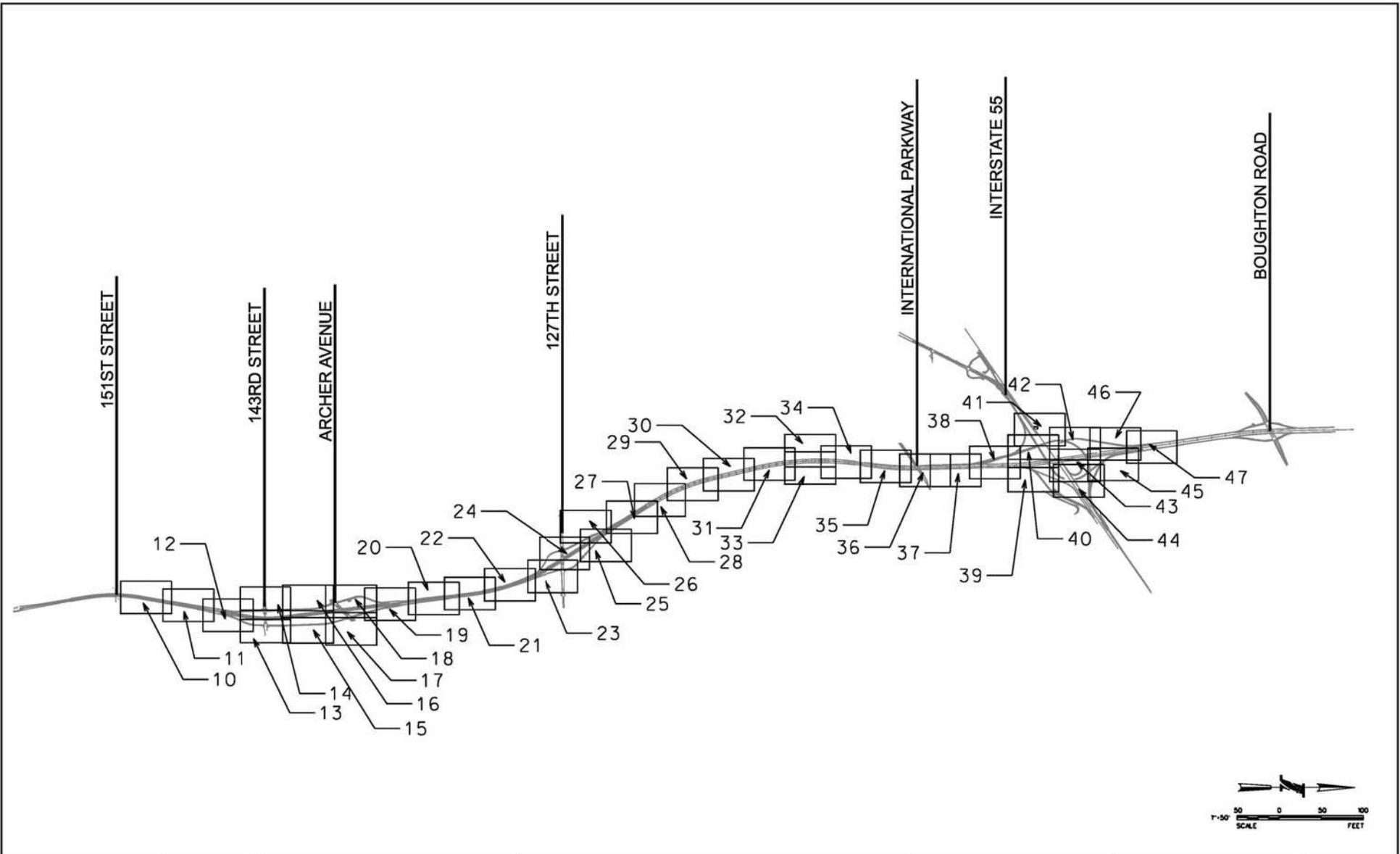


REVISIONS	
NO.	DATE

DRAWING NO. ....  
**SUGGESTED PROGRESS SCHEDULE** ..... OF .....

DWG.	LOCATION	TREE SPECIFICATIONS												
		JIA20010 EACH IH	JIA20011 EACH SH	JIA20025 EACH BO	JIA20030 EACH EO	JIA20035 EACH HO	JIB20001 EACH TTM	JIB20010 EACH BL	JID20010 EACH PNS	JID20020 EACH PBS	JID20022 EACH PBS	JID20030 EACH PCS	JID20040 EACH PAP	
	ABBREVIATIONS													
10	406+50 TO 422+00													
11	422+00 TO 437+00													
12	437+00 TO 451+00													
13	451+00 TO 465+00	150												
14	143RD STREET 97+67.65 TO 107+00	80	45											
15	465+00 TO 476+00													
16	476+00 TO 480+00	50												
17	ARCHER AVENUE 110+00 TO 123+55.66													
18	480+00 TO 495+00	50				10				60				
19	495+00 TO 509+50													
20	509+50 TO 524+00			15	9			95						
21	524+00 TO 537+00												12	
22	537+00 TO 553+00												52	
23	553+00 TO 562+00									12			19	
24	562+00 TO 575+00	45								23		18	14	
25	575+00 TO 585+00					23								
26	583+00 TO 585+50													
27	585+00 TO 600+00					10	30						50	
28	600+00 TO 613+00													
29	613+00 TO 626+00													
30	626+00 TO 640+00													
31	640+00 TO 654+00													
32	654+00 TO 668+00													
33	654+00 TO 668+00													
34	668+00 TO 682+00													
35	682+00 TO 696+00													
36	696+00 TO 708+00													
37	708+00 TO 720+00													
38	720+00 TO 734+00													
39	734+00 TO 748+00 (EAST)	90				4								
40	734+00 TO 748+00 (WEST)													
41	1-55 1696+92.57 TO 1708+00													
42	748+00 TO 763+00 (WEST)									38				
43	748+00 TO 763+00 (CENTER)													
44	748+00 TO 763+00 (EAST)					28								
45	763+00 TO 776+00 (EAST)					52								
46	763+00 TO 776+00 (WEST)					14								
47	776+00 TO 787+00					11				71	3			
	ESTIMATED QUANTITY TOTALS	465	45	15	9	152	30	155	8	144	3	18	147	

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					SCHEDULE OF QUANTITIES		



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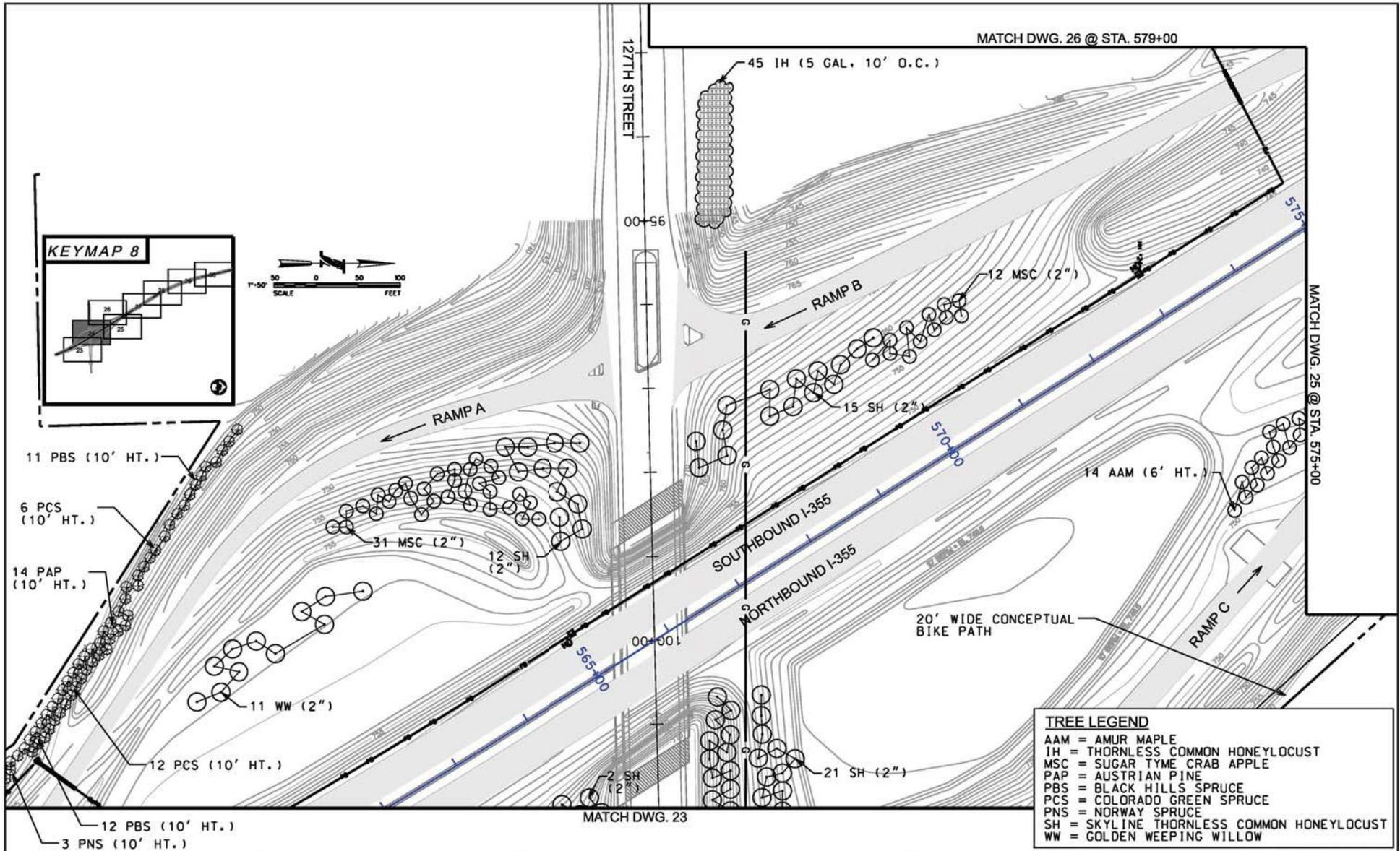
DATE .....  
 SCALE .....

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

**LANDSCAPE PLAN  
 KEY MAP**

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DATE .....

SCALE 1"=50'

**THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY**  
 2700 OGDEN AVENUE  
 DOWNERS GROVE, ILLINOIS 60515

REVISIONS		
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LANDSCAPE PLAN  
 STA. TO STA.

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## **APPENDIX J Illinois Tollway Tree Survey Protocol**

# TREE SURVEY PROTOCOL

Tree Surveys must follow Illinois State Toll Highway Authority (ISTHA) protocol as described in Appendix J, which are based on industry standards and consensus best management practices. The following protocol applies to all construction and development projects that may impact on the root zone of a tree that occur on Illinois Tollway, including, but not limited to, Illinois Tollway construction projects and Illinois Tollway issued permits for new construction, demolition, and utility installation. This includes adjacent property owners, utility companies or local agencies when they are working on Illinois Tollway right-of-way or other properties. The designer or permittee on a project, will otherwise be known in this documents as the Design Section Engineer (DSE), must evaluate their project and confirm the scope and limits of the Tree Survey with the Illinois Tollway Landscape Architect prior to initiating the Tree Survey. The Illinois Tollway reserves the right to modify or change standards outlined in this protocol or manual if different or more stringent, legal or project requirements are needed based on emergencies, site conditions, or project.

For the purposes of this Tree Survey protocol, all trees three (3) inches or greater in diameter as measured at a point four and one-half (4.5) feet above the highest ground level (i.e. diameter at breast height [DBH]) at the base of the tree must be survey located, measured, identified and health evaluated. This Tree Survey protocol DBH requirement encompasses the minimum tree trunk diameter and tree size that is commonly selected by bats for nesting and includes trees as defined in Article 201.02 of the Illinois Department of Transportation *Standard Specifications for Road and Bridge Construction*, where the term "tree" is defined as a woody perennial plant typically having a single main stem or trunk, as well as tree species that do not adhere to this specific growth form, the diameter of which is six (6) inches DBH. The term "tree" for the Illinois Tollway also includes woody perennial plants having a single main stem or trunk, as well as tree species that do not adhere to this specific growth form, of four (4) inches or more DBH when such have been intentionally planted for landscaping, environmental mitigation, or habitat preservation/enhancement.

This protocol also applies to trees that are identified by the Illinois Exotic Weeds Act (525 ILCS 10/) or trees outlined within the *Invasive Plant Species – Regulated by the Illinois Exotic Weed Act (Technical Forestry Bulletin NRES-1601, University of Illinois Extension)*. All standing trees must be identified and evaluated so they can be quantified for removal and protection. Survey locate, measure and identify all standing trees including those that are dead, dying, or diseased, or trees posing a high or extreme risk per International Society of Arboriculture (ISA), TRAQ methodology or equivalent professional judgment. All tree species identification and health evaluation must be determined by an ISA Certified Arborist. The ISA Certified Arborist must be a current member of the Illinois Arborist Association (IAA) or American Society of Consulting Arborists (ASCA), or a registered Consulting Arborist as designated by ASCA.

## 1.0 Planning and Design

### 1.1 Preliminary Planning

The Illinois Tollway considers trees as assets to the Tollway system that must be considered for preservation and protection during design and construction. Communication is key to ensuring trees are properly preserved and protected before, during and after construction activities. Providing opportunities for communication early and frequently throughout the planning, design and construction process can help avoid unnecessary tree damage or removal by identifying, investigating and addressing tree issues and conflicts promptly.

Refer to the Environmental Studies Manual and Design Section Engineer Manual section 9.4.4.18 Erosion Control and Landscape for a description of the required project field reconnaissance studies. The requirement for a Tree Survey is determined during the field reconnaissance for the Environmental Studies Inventory Sheet (ESIS) Part I or may be determined during the Existing Vegetative Assessment (EVA). Based on the ESIS Part I and EVA determination, the DSE must follow the Tree Survey Protocol criteria and recommend Tree Survey scope and limits to the Illinois Tollway for review and approval.

## 1.2 Pre-Design Meeting (Optional)

The project DSE may initiate a Pre-Design Planning meeting with Illinois Tollway if the project size and scope are larger than 1 acre or is recommended. This meeting should occur prior to beginning project design and engineering. The purpose of the meeting is to:

- To learn about the project, scope, location and timeline.
- Discuss trees that are candidates for preservation and how they, and their associated tree protection zones, can best be incorporated into the design.
- Determine which tree protection methods and what level of Tree Survey, design plans, drawings, details and written specifications are required.

Following the Pre-Design Planning meeting, the appropriate Tree Survey must be conducted as approved by the Illinois Tollway.

## 1.3 Survey of Existing Conditions

Tree Surveys for Illinois Tollway projects that include temporary easements on private property, forest preserve properties, park district properties, Illinois Natural Areas Inventory (INAI) Sites, and Illinois Nature Preserves must also follow applicable and appropriate methodologies for the property owner. The Tree Survey protocol outlined below applies to work on or within Illinois Tollway owned properties and permanent easements. The Illinois Tollway may request a more detailed ecological plant assessment if the project appears to impact any areas of higher quality native vegetation, at their discretion.

### 1.3.1 Tree Survey Protocol

A Tree Survey must be provided for sites with significant tree cover or tree cover near proposed work areas and for projects with significant scope and site disturbance. A Tree Survey may be a separate digital drawing from the site topographic digital survey drawing but the Tree Survey submitted with design and construction documents must reference and show the site surface features, topography, and utility information with the Tree Survey information on the same drawing when printed. A digital Tree Survey with existing site surface features, topography and utility information is needed to develop realistic tree protection plans for the design and construction document phase of the project. A digital Tree Survey must provide the following information directly related to tree preservation.

1. Survey Preparation. A Tree Survey must be completed by a licensed Professional Surveyor along with an International Society of Arboriculture (ISA) Certified Arborist. The Arborist must be certified in the jurisdiction where project is located and be a current member of the Illinois Arborist Association (IAA) or American Society of Consulting Arborists (ASCA), or be registered as a Consulting Arborist as designated by ASCA. The printed Tree Survey must be signed and sealed by the Professional Surveyor and signed by the ISA Certified Arborist with

typed name, signature, certification identification number and certification expiration date. The Arborist should identify the parts of the Tree Survey that are covered by their certification and signature.

2. Existing Conditions. The printed signed and sealed Tree Survey must show the existing site topography, all above ground and below ground utilities, site features, trees, wetlands, structures and other applicable survey requirement as listed in the IDOT Survey Manual.
3. Trees to be Surveyed. Trees that must be surveyed include all trees with a diameter at breast height (DBH) of three (3) inches or greater, including trees that have been intentionally planted for landscaping, environmental mitigation, or habitat preservation/enhancement purposes located on the proposed project site and within 15 feet of the proposed soil disturbance. Trees must be visually assessed by a Certified Arborist and data must be collected on which species are present, their DBH and the general health condition. The boundaries of forested areas present within the proposed limits of disturbance must be surveyed to sub-meter accuracy using a digital survey Global Positioning System (GPS). A forest is defined as a biological community that is dominated by trees and other woody vegetation. Tree species that are identified by the Illinois Exotic Weeds Act (525 ILCS 10/) or trees listed within the *Invasive Plant Species – Regulated by the Illinois Exotic Weed Act (Technical Forestry Bulletin NRES-1601, University of Illinois Extension* or are field identified in poor health condition should be photographed and the photo image name should correspond to its Tree Survey identification. Invasive trees, exotic weed trees and trees in poor health should be identified and listed separately on the tree survey.
4. Tree Health and Structure Assessment. Tree health and structure must be assessed as part of a Tree Survey. Tree health refers to the vigor of the tree. Signs of disease are considered when evaluating the health of a tree. The structure of the tree refers to the branching and rooting pattern. The normal shape and branch pattern of individual tree species is considered and compared to the tree species in the field. Circling or bound roots, missing, cut, twisted, crossing or rubbing branches are also considered when rating the structure of the tree.

In general, the health and structure of each tree must be assigned to one of the following condition categories based on visible root, trunk, central leader, scaffold branch, twig, and foliage conditions at the time of the inventory. This rating systems is adapted from an established system by the ISA.

1. Good. 60-100% overall health and condition rating.
  2. Fair. 20-60% overall health and condition rating.
  3. Poor. 1-20% overall health and condition rating.
  4. Dead. 0% overall health and condition rating.
5. Tree Origin. Each assessed tree must be evaluated to determine if the tree was intentionally planted and is therefore a landscaped tree or if the tree is present from natural germination and should be considered as a volunteer tree.
  6. Screening Trees. Screening trees are typically coniferous, or trees that contain foliage throughout the year compared to deciduous trees, that do not contain foliage for portions of the year. Deciduous trees have reduced screening functions during portions of the year when foliage is not present. Screening trees are trees that obstruct the view of a commercial, institutional, or residential lot from an adjacent building or the street are not present within the survey limits. Each assessed tree must be evaluated to determine if the tree provides a screening benefit.
  7. Trees with Special Functions. Trees that serve as a buffer between a highway and a State-listed Natural Area, Nature Preserve, or Land and Water Reserve are considered to possess special functions. Each assessed tree must be evaluated to determine if the tree provides a 'special function'.
  8. Specimen and Exceptional Trees. Specimen trees are those listed on the most current National Register of Champion Trees and the most current Illinois Big Tree Register; those that are outstanding examples

possessing exceptional size, form, etc.; or those having recognized historical significance. Exceptional trees are native trees that are average to high quality based on their coefficient of conservatism (C-value, Wilhelm and Rericha, 2017), have large size, and have good structure or landscaped trees that provide visual aesthetics, have large size, and have good health and structure. Each assessed tree must be evaluated to determine if the tree meets the definition of specimen or exceptional.

9. Bat Habitat. If specifically required by the Illinois Tollway or permitting agency, the tree assessment can include a bat habitat assessment component for bat species present within Northern Illinois. The methodologies for completing a bat habitat assessment must follow current USFWS Phase I Habitat Assessment guidelines. The USFWS defines suitable habitat for listed bat species.

#### 1.4 Tree Protection

The objective of tree protection requirements is to minimize the negative impacts of construction activities on trees within Illinois Tollway properties or trees within fifteen (15) feet of Illinois Tollway property. With proper planning, many negative impacts on trees can be avoided. For instance, placement of underground utilities and service connections should be designed so that the proposed service lines are installed as far away from existing trees as possible. The specifications that follow detail minimum distances that the edge of excavation needs to be to ensure that there is minimal impact to trees.

Protection of trees is vital to achieving the maximum continued benefits trees can provide. Trees, especially large or old trees, are a resource that is irreplaceable in the lifespan of humans. For that reason, the Illinois Tollway requires tree protection based on tree protection zones (TPZ) and best management practices to be a necessary aspect to construction activities. Tree protection zones are based on the protection of above and below ground parts of the tree and surrounding site to maintain the best possible tree health.

Avoiding impacts on trees is also typically the most cost-effective option. Best management practices can require costs as well as adjustments to the design and construction activities. However, damage to and removal of trees typically results in higher costs. It is the Illinois Tollway's primary goal to protect these irreplaceable resources that may easily be preserved.

Trees identified for protection must have tree protection and accurate TPZ shown on plans.

The final plans must be based on the specifications outlined within this manual and must include, but are not limited to, the following elements:

1. The Tree Survey Plan, Demolition Plan, Grading Plan and Erosion Control Plan sheets as applicable must graphically show the:
  - a) Location, genus and DBH of all protected trees on site with accurate location of TPZ's.
  - b) Location, genus and DBH of trees removed with identifying survey numbers shown.
  - c) Location of tree protection fencing and other tree protection measures.
2. Written description of tree protection measures, including any required surface protection measures, trunk protection or other preservation methods required for the TPZ. Specifications and pertinent drawings are required part of a tree protection plan.

##### 1.4.1 Tree Protection Zone

The Tree Protection Zone (TPZ) is the undisturbed area around a tree that extends out to one (1) foot minimum beyond the drip line of the tree and to a minimum depth of two (2) feet below finish grade, where construction or

construction-related activities are prohibited. Adjustments to the TPZ are determined by the DRT or as approved by other approved Illinois Tollway personnel.

The TPZ provides sufficient space to prevent, reduce or minimize impact to the above and below ground parts of a tree or changes to the site. Obvious damage to the trunk or canopy is visible while below ground damage to roots is worse over time as it is usually hidden and roots provide necessary water, nutrients, and are the anchor that holds the tree upright. Large structural roots commonly extend two to four times the width of the tree canopy. Small roots under the canopy and extending beyond the structural roots gather vital water and nutrients. Root cutting, soil compaction, elevation changes, or changes to soil chemistry can have severe impacts on tree health and cause eventual tree mortalities. Soil compaction from even foot traffic can impact roots' ability to uptake water and nutrients, while vehicles and heavy equipment require immediate remediation measures to prevent tree mortality.

Prohibited activities within outlined TPZs include but are not limited to:

- Attaching signs to or wrapping materials around trees/plants unless otherwise allowed
- Digging
- Trenching
- Excavation or other digging unless otherwise indicated
- Grading or soil fill
- Root cutting
- Directing of stationary vehicle or equipment exhaust towards Protection Zone
- Dumping or spilling of any fuels, chemicals or other toxic or harmful substances
- Impoundment of water
- Heat sources, flames, ignition sources and smoking within or directly impacting TPZs
- Soil compaction or disturbance
- Foot traffic, equipment traffic or vehicle traffic
- Parking vehicles or equipment
- Erection of sheds, walls or structures
- Storage of construction materials, debris, excavated material, bathroom or washing facilities for any length of time

### Determining Tree Protection Zones

The standard required TPZ is shown on the Tree Protection detail within the Illinois Tollway Section K Erosion Control and Landscape Standard Drawings. The diameter of TPZs should generally be a circular shape based on the outer-most branch drip line to protect the essential small root mass area between projecting branches. In construction projects there may be instances where the utility excavation must cross through a TPZ of a tree that is identified as a tree that should remain. In these cases, a Certified Arborist must be employed to maintain the long-term health of the tree by preparing, pruning, treating, watering, monitoring and maintaining the affected tree throughout the construction period. For a tree to be a candidate to remain and be treated and not be required to be removed, the construction encroachment distance into the TPZ edge should not be closer to the trunk than 1.5 feet for every 1-inch of DBH on more than two sides. Changes to the shape and size of TPZs after design approval must be approved by the Illinois Tollway, or designee.

## 1.5 Tree Survey Application to Proposed Plans

Tree asset Preservation, Removal and Replacement of Trees information must be provided on the proposed construction documents to allow the Illinois Tollway to be aware of the tree assets within the system, to track their health condition, to quantify removals and replacement and present the information accurately with pay items. Tree Survey information should be shown on proposed plans as described below.

1. Demolition or Removals Plan. Show Tree Survey information and tree protection information on the project Demolition or Removals Plan. Show and identify all trees and other vegetated areas to be protected or removed and show the limits of disturbance.
2. Grading and Soil Erosion Control Plan. Show Tree Survey information on the Grading and Erosion Control Plans. Indicate soil erosion control measures with locations of preserved trees and associated Tree Protection Zones (TPZ). Approved grading within TPZ should follow current Tree Protection detail requirements within the Section K Erosion Control and Landscape Standard drawings and requirements noted in article 1.4.1 Tree Protection Zones above.
3. Utilities. Existing Trees should be shown on proposed utility plans and all above and below ground utilities should be shown on the printed Tree Survey drawings. The utilities may be part of the digital site topographic Survey drawing for the project, and the digital Survey drawing may be referenced into the digital Tree Survey drawing and formatted for printing of the Tree Survey. Indicate location of existing water, fiber optic, electric, natural gas, stormwater or sanitary sewer lines, pipes, conduits, vaults, or access holes. Include information on installation of proposed utilities (i.e. bored or trenched), location and depth of trench (if applicable), location of bore pits (if applicable).
4. Construction Logistics. Show Tree Survey information and construction logistics items on the Demolition Plan and Erosion Control Plan as applicable. Construction Logistic items include location of construction entrance and exit routes, material and spoil storage areas, wash-out areas, dewatering areas, worker parking, equipment travel route from staging/parking to work area, and other similar soil disturbing facilities or work.

## 1.6 Mitigation for Tree Removals

The Illinois Tollway policy for Preservation, Removal and Replacement of Trees is found in Appendix K of the Erosion Control and Landscape Manual. The policy states the required replacement mitigation for tree removals based on the DBH of the removed tree.

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## **APPENDIX K Illinois Tollway Preservation, Removal and Replacement of Trees**

## **PRESERVATION, REMOVAL AND REPLACEMENT OF TREES**

### 1. Policy:

The Illinois State Toll Highway Authority (Tollway) recognizes the essential functions and values that trees contribute to the roadside infrastructure and the environment. Accordingly, the Tollway is committed to protect and preserve existing trees within project limits consistent with the standards of highway and public safety and to the extent practical. When trees of value must be removed opportunities will be pursued to provide replacement trees.

### 2. Purpose:

This document provides guidance for decision making pertaining to the preservation, removal and replacement of existing roadside trees in conjunction with the planning, design and construction improvements. The intent of this guidance is to replace vegetation of value when trees cannot be preserved and require removal.

### 3. Guidelines for implementation:

For consideration of tree replacement the term "tree" shall mean a live woody perennial plant in good health, having a single main stem or trunk, the diameter of which is 6 inches or greater at diameter breast height (DBH) measured at a point 4.5 feet above the highest ground level at the base of the tree. The term "tree" also may include woody perennial plants having a single main stem or trunk of 4 inches or greater DBH when determination is made that such plants have been deliberately planted for specific functional landscape, environmental mitigation or habitat preservation/enhancement purposes.

Replacement does not apply to the removal of trees that are dead, dying, diseased, severely damaged or in poor health and form. Tree replacement for invasive, volunteer or undesirable woody vegetation is not typically required; however, wooded tree stands may be evaluated to determine a reduced suitable replacement rate when the invasive or undesirable tree species provides an identified environmental or functional value.

#### (a.) Tree Preservation and Tree Removal:

Tree preservation and protection should be explored before consideration of removal and replacement. When removal is necessary locations for on-site replacement should be pursued before considering potential off-site mitigation solutions.

An evaluation shall be conducted by the Designer with qualified personnel whenever tree removal is proposed and identified during the Phase I study or the Environmental Studies Inventory (ESIS) documents. Depending on the scale and scope of work, the evaluation may necessitate a tree survey. All evaluation methods should include an analysis report and summary of recommendations to demonstrate compliance with policy and that the necessary loss of valued

vegetation has been minimized and mitigated. The information shall be submitted to the Tollway Project Manager and Landscape/Environmental Unit for review. If any of the conditions in APPENDEX III of the Environmental Studies Manual (ESM) apply, a project submittal may also be required to the Illinois Department of Natural Resources (IDNR) for completion of the natural resource review process. Resulting documentation should accompany subsequent phases of the project's development and implementation. Tree protection areas and sensitive environmental issues should also be noted in the contract documents and discussed during the pre-construction meeting.

Alternate options for mitigation may be considered for unique specimen trees, such as those on the inventory of state record; outstanding examples possessing exceptional size and form, or of recognized historical significance.

(b.) Tree Replacement:

General replacement ratios for trees shall be:

<u>Tree(s) Removed Diameter Breast Height (DBH)</u>	<u>Number of Replacement Trees</u>
greater than 24" diameter	2
6" to 24" diameter	1

An estimated replacement ratio of 0.1 to 0.8 for invasive or undesirable tree species removed (6" diameter or greater) in wooded tree stands may be considered when environmental or functional value has been determined.

Plantings shall be accomplished in conformance with applicable sections of the most current Standard and Tollway Supplemental Specifications for Planting Woody Plants (Section 253) and the Erosion and Sediment Control, Landscape Criteria Manual. To provide the best chances of establishment, sizes for replacement trees shall typically be 1 caliper inch to 2 caliper inches for each replacement tree. Consideration may be given for other equivalent replacement material sizes and ratios when special conditions are identified and provided for review in the design evaluation report.

Suitable tree replacement locations should be provided at locations on-site, as near to the removal areas as practical and address locations identified in the Phase I report. If final tree replacement quantities result in undesirable crowding of trees at nearby right-of-way locations, consideration may be given to reduce the number of replacement trees required to be planted and/or designate other practical locations within the right-of-way.

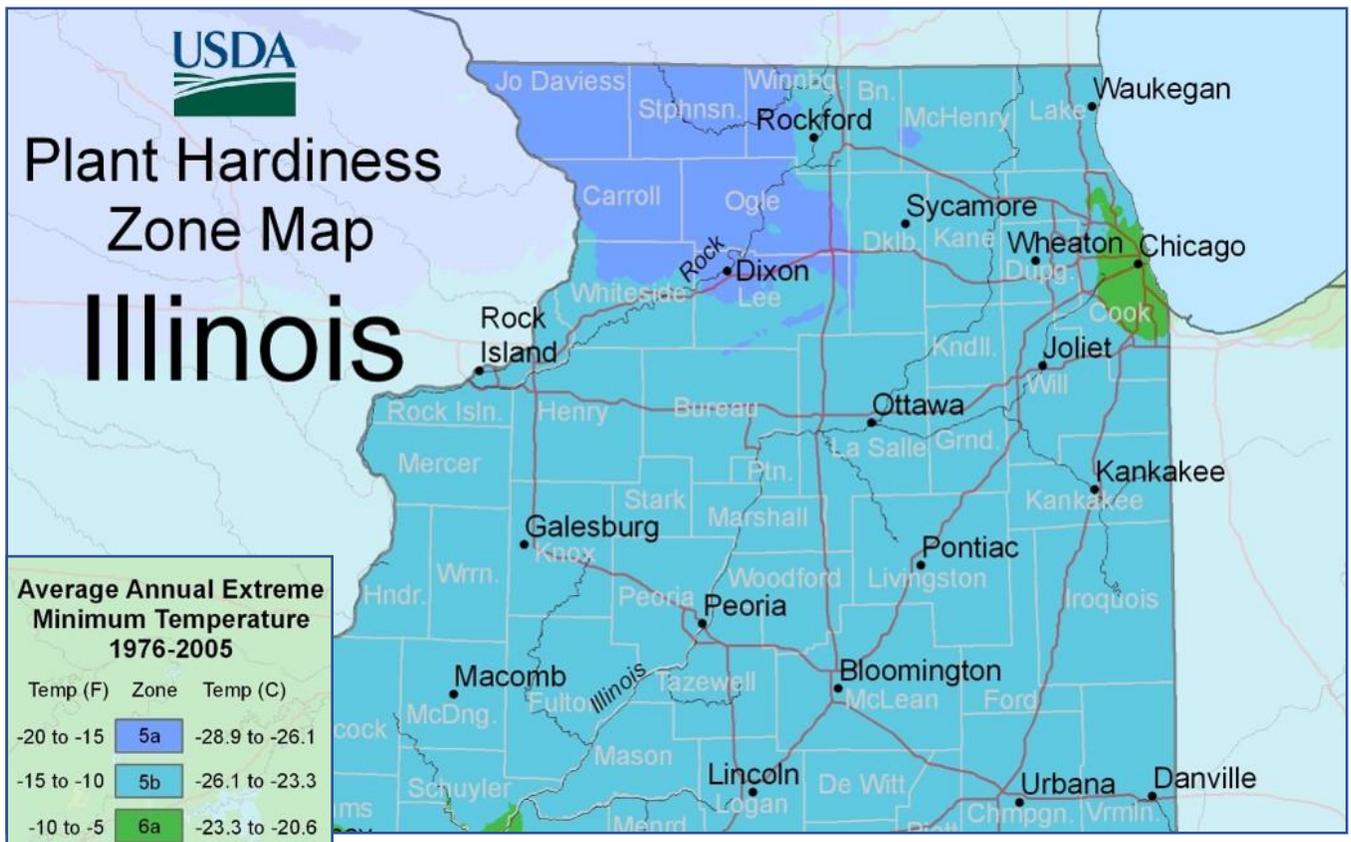
Off-site options for tree replacement may be considered based on goals, priorities, and the particular circumstances of each project. Where trees must be removed for Tollway projects in urban areas, sensitivity should be afforded to the concerns of adjacent community and affected residents in determining appropriate replacement solutions.

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**APPENDIX L U.S. Department of Agriculture Illinois  
Plant Hardiness Zone Map**

# U.S. Department of Agriculture – Illinois Plant Hardiness Zone Map

The Illinois Plant Hardiness Zone Map below provides information regarding the annual average minimum winter temperature divided into 5-degree Fahrenheit zones. Northern Illinois represents 3 unique zones, (5a, the coldest to 6a the warmest). Likewise, a hardiness zone designation has been assigned to all plant materials to aid designers and gardeners in the proper selection of winter hardy plants for a specific region. The design team shall verify that all plant materials selected for use on Illinois Tollway landscape plans are hardy to the geographical region in which the project is located and that the plant material has specific tolerances to the site conditions where they are to be planted. In cases where two hardiness zones may adjoin one another, the colder of the two zones shall be used for plant selection to avoid winter damage should a rare cold period be experienced.

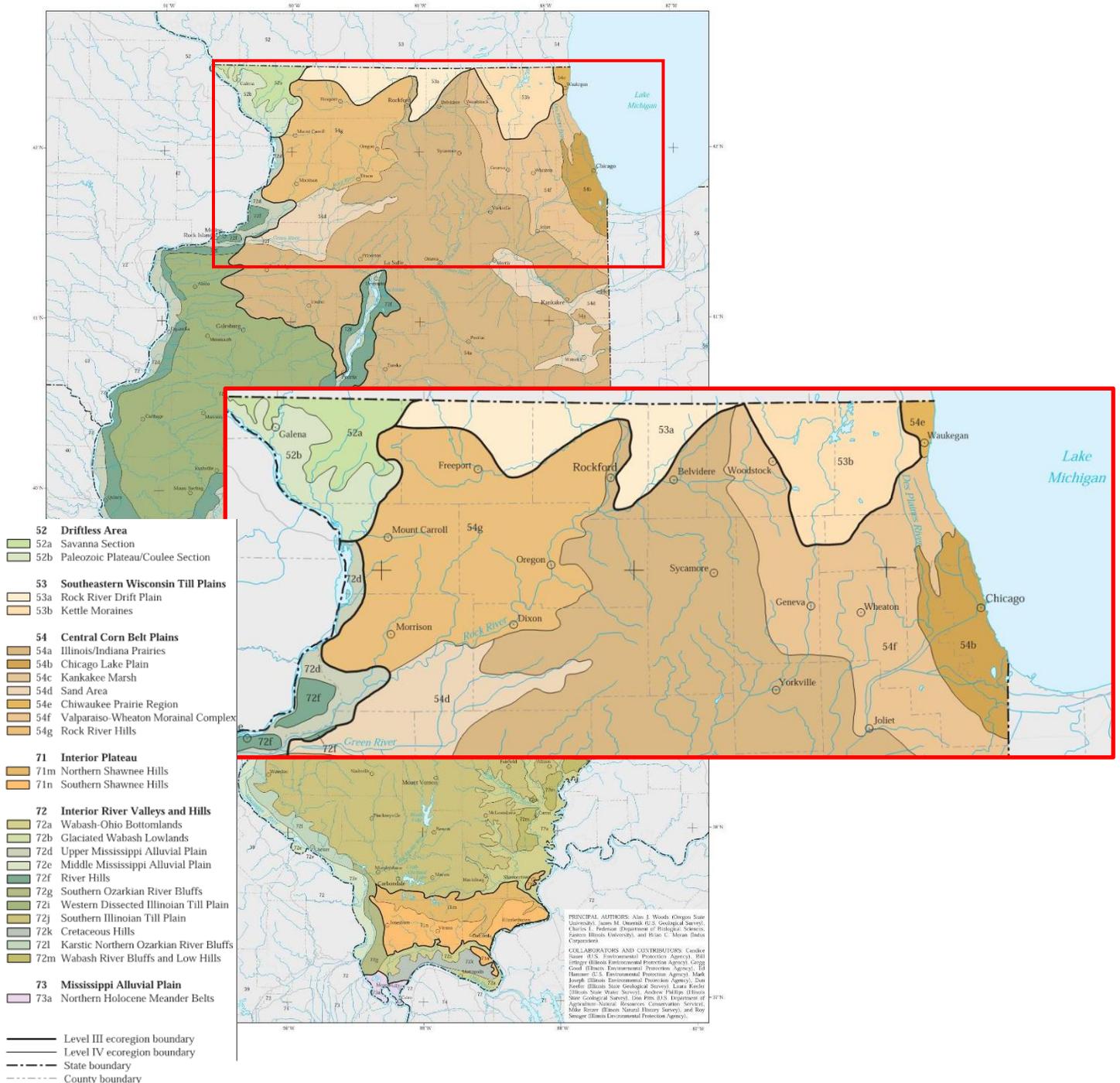


# EPA Level III Eco-Regional Map

## Illinois Eco-Regions

The Illinois Eco-Regional Map below provides information regarding specific areas where plants are documented as growing naturally and native in Illinois. Native plants and seed obtained directly from their natural habitat show superior hardiness to the native soils, weather and temperature conditions of the immediate area. The FHWA Ecoregional Revegetation Application (ERA) tool allows the designer to map to the Environmental Protection Agency Level III ecoregion for their project site, open the list of native plants for that ecoregion, apply desired plant attribute and tolerance filters to narrow the plant list, and then download the focused plant list in spreadsheet form for review and final selections for the project.

ILLINOIS LEVEL III AND LEVEL IV ECOREGIONS



# Tollway Plant Selection Resources

The Illinois Tollway provides a list of suggested trees and shrubs in Section 4.2.12 Plant Materials of the Erosion and Sediment Control, Landscape Design Criteria Manual and maintains a primary and secondary plant list selection matrix for design reference. These plants have proven durable, long-lived and tolerant of the local climate and salt spray exposures experienced along the Illinois Tollway. While the list is extensive, the Illinois Tollway encourages the diversity of plant material to include Illinois native plants and to improve the health of the local ecosystem. For this effort, designers are encouraged to explore the plant selection resources provided below and then cross-reference the plant options with local expertise from local nurseries, growers, gardeners and other designers, along with any current Illinois Tollway plant selection tables to confirm the right plant for the right conditions.

Recommended sources for selecting plant materials include:

- Tollway Plant Materials List in Section 4.2,
- Morton Arboretum,  
[https://mortonarb.org/app/uploads/2022/09/Northern-Illinois-Tree-Species-List\\_092022-1.pdf](https://mortonarb.org/app/uploads/2022/09/Northern-Illinois-Tree-Species-List_092022-1.pdf)
- FHWA Ecoregional Revegetation Application (ERA)- EPA Level III National Ecoregional mapping and plant database. (See Illinois Ecoregion Map above.)  
<http://nativerevegetation.org/era/>,
- FHWA Environmental Review Tool Kit – Ecosystems and Vegetation Management  
[https://www.environment.fhwa.dot.gov/env\\_topics/ecosystems\\_vegetation.aspx](https://www.environment.fhwa.dot.gov/env_topics/ecosystems_vegetation.aspx)
- USDA Plants,  
<https://plants.usda.gov/>
- Chicago Botanic Garden,  
<https://www.chicagobotanic.org/plantinfo/plantprofiles>

Recommended plant search process:

1. Search for native plants from the specific eco-region where the project is located using the ERA tool. Apply filters for trees, shrubs or perennials and graminoids. Print out a spreadsheet of the filtered list.
2. Pour through the attributes for each plant, highlighting the plants that are tolerant for the project site conditions. Mark other plants that might have some attributes unmarked or have most but not all the attributes that you are looking for, and research those further.
3. Search the FHWA Environment site for plant and resource lists, roadside restoration essays and a quick cross-reference on the highlighted and marked ERA plants.
4. Check the USDA Plants site for native-by-county maps and plant information sheets on your highlighted/marked plants. Select plants found native within county or adjacent counties to the project site. Begin to mark plants off your list.
5. Review the local Morton Arboretum and Chicago Botanic Garden plant lists and review the information and plant attributes from local experts. Add another round of marks for plants that local experts do not support.
6. Check plant availability with local native plant nursery growers and those within 200 miles of the project site. Finalize your plant palette.